

Draft National Policy Statement for Nuclear Power Generation (EN-6)

Department of Energy and Climate Change

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Part 1: Role of this NPS in the planning system

1.1 Introduction

- 1.1.1 This National Policy Statement (NPS), taken together with the ‘*Overarching National Policy Statement for Energy: A Framework Document for Planning Decisions on Nationally Significant Energy Infrastructure*’ (EN-1), provides the primary basis for decisions taken by the Infrastructure Planning Commission (IPC) on applications it receives for the energy infrastructure defined at paragraph 1.7. Under the Planning Act 2008, the IPC also has to have regard to: any local impact report submitted by a relevant local authority; any relevant matters prescribed in regulations; and any other matters which the IPC thinks are both important and relevant to the decision.
- 1.1.2 The Planning Act 2008 also requires that the IPC must decide an application in accordance with the relevant NPSs except to the extent it is satisfied that to do so would:
- lead to the UK being in breach of its international obligations;
 - be in breach of any statutory duty that applies to the IPC;
 - be unlawful;
 - result in adverse impacts of the development outweighing the benefits; or
 - be contrary to regulations about how its decisions are to be taken.
- 1.1.3 Applicants should therefore ensure that their applications, and any accompanying supporting documents and information, are consistent with this NPS, EN-1 and any other NPSs that are relevant to the application in question¹.
- 1.1.4 This NPS may be helpful to local planning authorities (LPAs) in preparing their local impact reports. In England and Wales this NPS may also be a material consideration in decision making on applications that fall under the Town and Country Planning Act 1990 (as amended). Where relevant, decision makers of such applications in England should apply the policy and guidance in this NPS as far as practicable.
- 1.1.5 The Marine Management Organisation (MMO) will determine applications in accordance with the Marine Policy Statement (MPS) and any applicable marine plans, unless relevant considerations indicate otherwise. This NPS may be a relevant consideration for the MMO when it is determining such applications. This NPS may also be a relevant consideration in the preparation of marine plans.

¹ For example, EN- 5 the Electricity Networks NPS.

1.2 Relationship with EN-1

1.2.1 This NPS is part of a suite of energy NPSs of which EN-1 covers:

- the high-level objectives, policy and regulatory framework for new energy infrastructure consistent with sustainable development and the Government's policies on mitigating and adapting to climate change;
- the need and urgency for new energy infrastructure and the social and economic benefits of meeting that need;
- the need for specific technologies, including the infrastructure covered by this NPS;
- the key principles to be followed in the consideration and examination of applications;
- the role of the Appraisal of Sustainability (AoS) and its outcome in relation to the suite of energy NPSs;
- policy on good design, climate change adaptation and other matters relevant to more than one technology specific NPS; and
- the assessment and handling of generic impacts that are not specific to particular technologies.

1.2.2 Further information on the relationship between NPSs and the town and country planning system, as well as information on the role of NPSs and the arrangements in the devolved administrations, will be issued by the Department for Communities and Local Government (CLG).

1.3 Geographical coverage

1.3.1 This NPS, together with EN-1, is the primary decision-making guidance document for the IPC when considering development consent applications for the construction of new nuclear power stations in England and Wales. None of the sites listed in this NPS are in Scotland or Northern Ireland².

1.3.2 In Scotland the IPC will not examine applications for nationally significant energy infrastructure projects except in specific circumstances as set out in EN-1. However, energy policy is generally a matter reserved to UK Ministers and this NPS may therefore be a relevant consideration in planning decisions in Scotland.

1.3.3 In Northern Ireland, planning consent for all nationally significant energy infrastructure projects are devolved to the Northern Ireland Executive, so the IPC will not examine applications for energy infrastructure in Northern Ireland

1.3.4 It is Government policy that the IPC should only be able to grant development consent for a new nuclear power station in relation to a site that the Government has assessed to be potentially suitable. This is to ensure development consent applications for sites listed in this NPS have been:

² See Part 5 of this NPS for the list of sites.

- assessed strategically by the Government using criteria that have been subject to public consultation;
- subject to an Appraisal of Sustainability (AoS) that incorporates the requirements of the Strategic Environmental Assessment (SEA) Directive;
- subject to a strategic level Habitats Regulations Assessment (HRA)³; and
- been the subject of public consultation and Parliamentary scrutiny.

1.3.5 Accordingly, the NPS only has effect in relation to applications for the development of new nuclear power stations on sites listed in this NPS. This means that the IPC has the function of deciding applications in relation to the development of new nuclear power stations only on those sites. In the event that a development consent application for a new nuclear power station is submitted to the IPC for a site not listed in this NPS, that application would need to be decided by the Secretary of State.

1.4 Period of validity and review

1.4.1 The NPS will remain in force in its entirety unless withdrawn or suspended in whole or in part by the Secretary of State. It will be kept under review by the Secretary of State to ensure that it remains appropriate for IPC decision making. Further information can be found in CLG's NPS guidance.

1.5 Appraisal of Sustainability⁴

1.5.1 This NPS has been subject to an Appraisal of Sustainability (AoS)^{5,6} incorporating the requirements for Strategic Environmental Assessment (SEA). The development of this NPS and the assessment of sites has been informed by the AoS. The AoS assesses the NPS as a whole and a summary of the main findings is provided here. The Government has also produced a non-technical summary of the main AoS report and each site listed in this NPS has been subject to an appraisal of sustainability.

1.5.2 The AoS identifies that the draft Nuclear NPS could bring significant benefits in meeting the Government's climate change and energy security objectives.

1.5.3 The AoS identified possible significant adverse effects on internationally important nature conservation sites. The relative significance of the effects and the effectiveness of any mitigation measures will have to be determined in any subsequent Environmental Impact Assessment (EIA) at the project level and with individual development consent applications.

³ An HRA is a requirement of the Habitats Directive and is carried out to assess the potential impacts on European designated sites. See section 1.6.

⁴ *Planning for New Energy Infrastructure: Appraisal of Sustainability for the draft Nuclear National Policy Statement: Main Report*, <http://www.energy-nps-consultation.decc.gov.uk>

⁵ As required by section 5(3) of the Planning Act 2008

⁶ *Planning for New Energy Infrastructure: Appraisal of Sustainability for the draft Nuclear National Policy Statement: Main Report*, <http://www.energy-nps-consultation.decc.gov.uk>

- 1.5.4 The AoS identified key inter-relationships between biodiversity and other sustainability effects. These are most notably in relation to flood risk management, health and well-being and sustainable communities. The IPC should take account of the main AoS report and relevant report(s) in any decision it makes in relation to a development consent application.
- 1.5.5 The AoS identified the potential for inter actions and cumulative adverse effects in relation to water quality, habitat loss and “coastal squeeze”⁷ on European designated sites where there are clusters of potentially suitable sites for new nuclear power stations. Potential impacts on soil structure and quality may affect the soil-water regime which, in turn, may affect terrestrial habitats. These issues will need to be considered in project level Habitats Regulations Assessments (HRA).
- 1.5.6 The AoS also identified that the effects associated with the management of hazardous wastes, including radioactive wastes are cross cutting: they can affect other sustainability topics⁸. The significance of these effects can only be determined through studies as part of the project level EIA and HRA.
- 1.5.7 There is the potential for positive effects on local employment opportunities. As such the IPC should expect a development consent application to contain an assessment of the considerations given to socio-economic as well as environmental issues. This might be especially relevant where there is the potential for cumulative positive effects for economic development at the regional level e.g. in the south west and north west of England.

1.6 Interaction with the Habitats Directive

- 1.6.1 The Nuclear NPS is a plan for the purposes of the Habitats Directive⁹. Its objective is to deliver new nuclear power electricity generation on the sites listed in this NPS by the end of 2025.

⁷ The reduction in habitat area which can arise if the natural landward migration of a habitat under sea level rise is prevented by the fixing of the high water mark. e.g. a sea wall.

⁸ *Planning for New Energy Infrastructure: Appraisal of Sustainability for the draft Nuclear National Policy Statement: Main Report, Chapter 6: Radioactive waste, spent fuel and hazardous waste*, <http://www.energynpsconsultation.decc.gov.uk>

⁹ The European Directive (92/43/EEC) on the Conservation of Natural Habitats and Wild Flora and Fauna (the Habitats Directive) protects habitats and species of European nature conservation importance by establishing a network of internationally important sites designated for their ecological status. These are referred to as Natura 2000 sites or European Sites (which is the term used in the main HRA Report and throughout all the Site HRA Reports), and comprise Sites of Community Importance (SCI), Special Protection Areas (SPAs) (as classified under the EC Birds Directive 1979), Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC), and European Offshore Marine Sites (EOMS) designated under the EC Habitats Directive. For the purposes of the Nuclear NPS HRA – all SAC cSAC SPA pSPA EOMS and Ramsar sites are referred to as European sites. It is Government policy to treat Ramsar sites, designated by the Ramsar Convention on Wetlands (1971) and potential SPAs (pSPAs) as if there are fully designated European Sites for the purpose of considering any development proposals that may affect them. Planning Policy Statement 9 Biodiversity and Geological Conservation; Government Circular: Biodiversity & Geological Conservation – Statutory Obligations and their impact within the planning system (ODPM, 2005); Technical Advice Note (TAN) 5 Nature Conservation and Planning (WAG, 1996).

- 1.6.2 The Government has assessed this plan and has concluded that it cannot rule out the potential for adverse effects on the integrity of designated European sites adjacent to or at a distance¹⁰ from each site listed in this NPS. In line with the requirements set out in Article 6(4) of the Habitats Directive the Government considered potential alternatives to the plan and nominated sites, and concluded that there were no alternatives that would better respect the integrity of European sites and deliver the objectives of this plan¹¹. Accordingly the Government has presented a case for Imperative Reasons of Overriding Public Interest (IROPI) which sets out the rationale for why the plan should proceed given the uncertain conclusions reached at the assessment stage of the HRA. This can be found at Annex A.
- 1.6.3 The conclusions of the HRA including the examination of alternative plans and the IROPI case are set out in the main HRA report¹². When individual consent applications are submitted to the IPC in line with the Nuclear NPS the applications constitute projects with regard to the Habitats Directive. The IPC must assess them accordingly, taking into account the findings of the plan level HRA. Individual consent applications will be required to be supported by more detailed project level HRA, including Appropriate Assessment where necessary¹³.
- 1.6.4 This NPS should be read in conjunction with the main HRA report.

1.7 Infrastructure covered by this NPS

- 1.7.1 This NPS covers the following type of nationally significant energy infrastructure:
- Nuclear power generation with a capacity of more than 50megawatts(e) (MW).

¹⁰ The HRA applied a 20km search area, but in consultation with the Statutory Consultees also considered European sites at a greater distance from the nominated sites where potential impact pathways (e.g. hydrological connectivity) were known to exist.

¹¹ *Habitats Regulations Assessment of the draft Nuclear National Policy Statement: Main Report*, <http://www.energynpsconsultation.decc.gov.uk>

¹² *Habitats Regulations Assessment of the draft Nuclear National Policy Statement: Main Report*, <http://www.energynpsconsultation.decc.gov.uk>

¹³ Appropriate Assessment is an assessment required under the Birds Directive 79/409/EEC and Habitats Directive 92/43/EEC when any plan or project is likely to have a significant effect, either individually or in combination with other plans or projects, on a Natura 2000 site.

Part 2: Government policy on new nuclear power stations and energy infrastructure development

Summary of Government policy on the need for new nuclear power:

In the long term, meeting the objectives in the *Low Carbon Transition Plan* will be a significant challenge. To achieve these objectives it is likely that by 2050 the UK will have to reduce emissions from the power sector to almost zero¹⁴.

- Leading up to that period (and as set out in EN-1) there is a significant need for new major energy infrastructure including net additional electricity generating infrastructure.
 - around 30% of electricity generation will be from renewable sources by 2020;
 - under central assumptions there will be a need for approximately 60GW of net new capacity by 2025¹⁵;
 - of this 60GW as much as 35GW could come from renewables (in line with our international obligations) with 25GW from other conventional generation capacity;^{16,17}.
- Within the context of the overall strategic framework set by the Government, in principle new nuclear power should be free to contribute as much as possible towards meeting the need for 25GW of new non-renewable capacity.
- The Government expects that under this approach a significant proportion of the 25GW will in practice be filled by nuclear power¹⁸.
- The Government believes that, it is in the public interest for sites that can have new nuclear power stations constructed on them significantly earlier than 2025 to make a contribution in displacing CO₂ as soon as possible.
- All ten sites in this NPS are needed.
- The IPC should start its examination of development consent applications for new nuclear power stations on the basis that need has been demonstrated and should give this need, and the benefits of meeting it, substantial weight in determining the applications.

¹⁴ *The UK Low Carbon Transition Plan: National Strategy for Climate Change and Energy*, July 2009, p54

¹⁵ Projections from Redpoint modelling for the Renewable Energy Strategy (RES), Redpoint/Trilemma 2009: Implementation of the EU 2020 renewables target in the UK electricity sector: RO Reform – http://decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx.

¹⁶ Projections from Redpoint modelling for the Renewable Energy Strategy (RES), Redpoint/Trilemma 2009: Implementation of the EU 2020 renewables target in the UK electricity sector: RO Reform – http://decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx.

¹⁷ Part 3 of EN-1.

¹⁸ Although it is not possible to predict whether or not there will be more than one reactor at each of the 10 sites included in this NPS, a single reactor at each of the 10 sites would result in 12 to 17 GW of nuclear capacity, depending on the reactor technology chosen. The inclusion of ten sites in the NPS will allow energy companies to fill a significant proportion of the

2.1 Introduction

- 2.1.1 The *White Paper on Nuclear Power* set out the UK's policy on nuclear power¹⁹. It states that new nuclear power stations should have a role to play in this country's future energy mix alongside other low carbon sources of electricity. The White Paper also states that it would be in the public interest to allow energy companies the option of investing in new nuclear power stations; and that the Government should take active steps to facilitate this²⁰.
- 2.1.2 The *White Paper on Nuclear Power* also sets out the Government's policy on the siting of new nuclear power stations and committed to undertake a Strategic Siting Assessment²¹. The Government conducted the SSA in 2009 and the results of the SSA have informed the development of this draft NPS²².
- 2.1.3 Since the publication of the *White Paper on Nuclear Power* and the commencement of the SSA, the Government has published the *UK Low Carbon Transition Plan (LCTP)*, *National Strategy for Climate Change and Energy*²³. The LCTP concludes that if the UK is to meet its objectives on climate change and become a low carbon economy, it needs its electricity supply to be almost entirely 'decarbonised' by 2050²⁴. To achieve this nuclear power needs to be part of the UK's energy mix alongside renewable energy and coal with carbon capture and storage (CCS)²⁵.
- 2.1.4 EN-1 sets out the Government's policy on the need for new energy infrastructure within the context of the LCTP and should be read in conjunction with this NPS. This NPS sets out the policy for the development of new nuclear power stations within a defined planning horizon up to the end of 2025. It also lists 10 sites that have been assessed as potentially suitable, and which the Government considers are all necessary for the development of new nuclear power stations in order to meet the objectives set out in the LCTP.
- 2.1.5 As a result of the publication of the LCTP and of ongoing efforts to combat climate change, the Government now believes that it is in the public interest that sites that can be deployed significantly earlier than 2025 should be allowed to contribute to displacing CO₂ as soon as possible.

25GW capacity gap even if some sites fail at the project level.

¹⁹ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>

²⁰ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>, p7

²¹ The SSA developed criteria for determining the suitability of sites for new nuclear power stations and then assessed nominated sites against the criteria

²² Relevant SSA documents include: *Towards a National Nuclear Policy Statement; Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK*, July 2008, URN 08/925 and *Towards a National Nuclear Policy Statement: Government response to consultations on the SSA and siting criteria for new nuclear power stations in the UK; and to the study on the potential environmental and sustainability effects of applying the criteria*, January 2009, URN 09/581

²³ http://decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx

²⁴ *The UK Low Carbon Transition Plan: National Strategy for Climate Change and Energy*, July 2009, p171

²⁵ *The UK Low Carbon Transition Plan: National Strategy for Climate Change and Energy*, July 2009, p54

2.1.6 In response to these policies energy companies have announced that they intend to develop 16GW of new nuclear power generation capacity by the end of 2025.^{26,27,28,29}

2.2 Need for new electricity generation capacity

2.2.1 As set out in EN1 demand for electricity generation in 2020 is likely to be similar to current levels i.e. around 60GW. However in the next 10 – 15 years a significant amount of existing generating capacity – about 22GW - is due to close. This is because it either does not meet European emission standards or because existing nuclear power stations are coming to the end of their scheduled lives³⁰.

2.2.2 To maintain levels of energy security similar to today, and because electricity is an essential component of any modern society, there is a need to replace capacity. The option of not doing so is not tenable. This is because of the harmful impacts on human health that could arise as a result of interruptions to essential services such as hospital equipment, water and sewage treatment facilities and public safety arising from interruptions to traffic and train signalling infrastructure and security systems.

2.2.3 The Government has committed the UK to reduce carbon emissions by 80% by 2050 and has put in place a set of five year carbon budgets to 2022 to keep the UK on track. *The Low Carbon Transition Plan* sets out the Government's strategy for moving towards a low carbon economy. Doing so will require electricity supply to be almost entirely decarbonised by 2050. The move to a low carbon economy could also mean that electricity demand increases in the longer term as we use more electricity for transport and domestic use such as heating buildings (see Figure 1 below for an illustration of how energy demand may evolve).

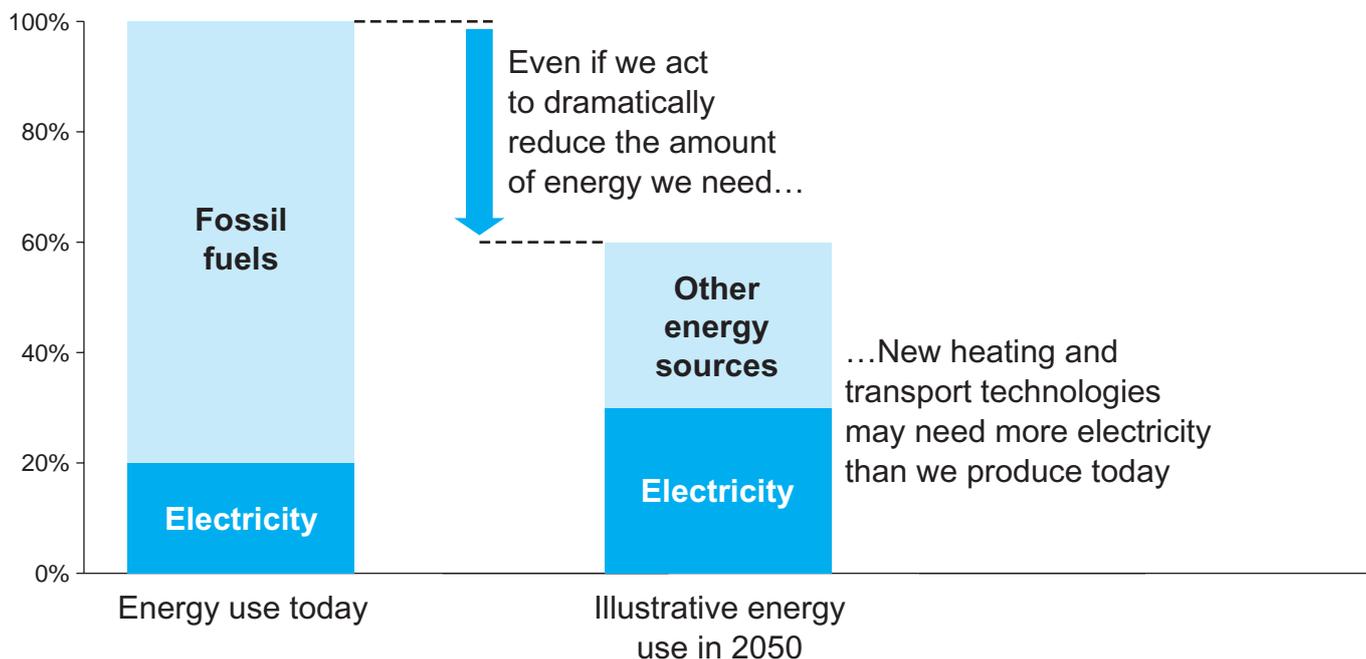
²⁶ <http://www.centrica.co.uk/index.asp?pageid=217&newsid=1783>

²⁷ http://www.edfenergy.com/media-centre/press-news/EDF_Energy_welcomes_Government_announcement_on_nuclear_sites.shtml

²⁸ <http://www.rwe.com/web/cms/en/216362/rwe-npower/more-/our-business/nuclear-power/>,
<http://pressreleases.eon-uk.com/blogs/eonukpressreleases/archive/2009/04/29/1382.aspx>

²⁹ http://www.scottishpower.com/PressReleases_1948.htm

³⁰ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>, p45

Figure 1

Even after we have reduced our energy demand significantly, changing technologies for transport and heating could possibly increase our use of electricity by 2050.

Source: *The Low Carbon Transition Plan: National Strategy for Climate Change and Energy*, July 2009, p167

Note: Other energy sources likely to include a mix of bioenergy, hydrogen, residual fossil fuels and other sources of primary energy

2.2.4 EN-1 sets out the expected overall impact of plant closures on electricity supply (available capacity), compared to the National Grid's projection of demand. It also shows how the market is responding to the need to replace closing plant with over 20 GW of investment under construction or with planning consent. For example:

- 2 GW of generating capacity has recently completed construction and will be commissioned in 2009;
- 8 GW of new generating capacity is currently under construction; and
- an additional 10.5 GW has both planning consent and agreement to connect to the grid, but has not yet started consultation.

2.2.5 The UK needs new energy infrastructure that reflects the need for security of supply on the basis of diverse and low carbon sources. There will be a requirement for significant new build renewable electricity generation capacity. The Government's lead scenario for the Renewable Energy Strategy suggests that around 30% of electricity could be generated from renewable sources by 2020. Taking into account planned closures and other factors as well as the renewable targets, the lead RES scenario suggests that we might need around 100 GW of total capacity in 2020 of which 43 GW will be new generating capacity (26 GW of renewables against 17 GW of other generating

capacity). By 2025, there could be a need for around 109 GW of total capacity with cumulative new generation capacity of approximately 60 GW (35 GW of renewables and about 25 GW of other capacity). (This is only one scenario, based on the Redpoint report³¹ and the modelling results are dependent on a number of input assumptions).

2.2.6 This means:

- having made good progress in building new infrastructure, there is a need to continue progress with further capacity of different kinds to be constructed to ensure security of supply; the need for new build in the central scenario in 2020 is more than 20GWs over that which has already obtained
- planning consent and close to another 20GWs by 2025; and
- because energy infrastructure typically takes some years to build, there is a requirement for applications for projects to be consented in time.

2.2.7 The precise mix to be deployed will depend on specific decisions made by energy an effective regulatory framework with strategic government interventions.

2.3 The need for nuclear power

2.3.1 Nuclear power is low-carbon, economic, dependable, safe, and capable of increasing diversity of energy supply and reducing our dependence on any one technology or country for our energy or fuel supplies. Excluding nuclear power as an option for generating electricity would make it harder and more expensive to meet our emission targets. It could also jeopardise the security of the UK's energy supply^{32,33}.

2.3.2 **Nuclear power is low carbon.** *The White Paper on Nuclear Power* reviewed the evidence on the lifecycle CO₂ emissions from nuclear power stations, (including their construction and the mining and transportation of uranium). It concluded that emissions in the range of 7-22g/kWh is a prudent estimate³⁴. This is in line with research published by the OECD and IAEA³⁵ and is similar to the lifecycle CO₂ emissions from wind power and much less than fossil fuelled plant³⁶.

³¹ Redpoint/Trilemma 2009: Implementation of the EU 2020 renewables target in the UK electricity sector: RO Reform – http://decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/renewable/res/res.aspx

³² *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525 <http://www.berr.gov.uk/files/file43006.pdf>, p156

³³ Modelling for the CCC report using MARKAL, finds that if CCS were unavailable at reasonable cost out to 2050, then a significant expansion of nuclear power (to nearly 40 GW by 2050) and some further expansion of renewables would be the least-cost option to meet emissions reductions of 80%, with an additional loss in economic surplus of £17.5bn (real 2000 prices, discounted out to 2050). If nuclear as well as CCS were not available, the modelling suggest that 80% (or even 90%) emissions reductions would still be attainable, but only at substantial additional cost, with the loss in economic surplus increasing a further £79.2bn.

³⁴ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525 <http://www.berr.gov.uk/files/file43006.pdf>, p50

³⁵ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525 <http://www.berr.gov.uk/files/file43006.pdf>, p50

³⁶ Sustainable Development Commission, *The Role of Nuclear Power in a Low Carbon Economy, Paper 2: Reducing CO₂ Emissions – Nuclear and the Alternatives*, March 2006.

- 2.3.3 **Nuclear power contributes to energy security.** New nuclear power stations will help to ensure a diverse mix of technology and fuel sources. This increases the resilience of the energy system. It reduces exposure to the risks of supply interruptions and of sudden and large spikes in electricity prices that can arise when a single technology or fuel dominates electricity generation³⁷.
- 2.3.4 **Nuclear power enhances generation diversity.** The characteristics of nuclear power are very different from those of generation from conventional fossil fuel or renewable sources³⁸. The presence of nuclear power in the mix allows extra scope in managing risks to energy security. The characteristics of nuclear power that can affect energy security are set out below.
- 2.3.5 Nuclear fuel fabrication is a stable and mature industry with a range of uranium sources. Additionally the International Energy Authority (IEA) has concluded that there are adequate uranium resources to supply the expected global expansion of nuclear power³⁹.
- 2.3.6 Moreover, the supply chains of nuclear fuel, gas and coal are not interdependent. An interruption in the supply of gas or coal is unlikely to affect the supply of uranium. Consequently including new nuclear power stations in the generating mix increases the diversity of fuels that we rely on and reduces the risks of interruptions to fuel supply⁴⁰.
- 2.3.7 Unlike other generation technologies such as fossil fuel, fluctuations in fuel prices do not significantly affect the cost of electricity from nuclear power stations. This is because fuel costs for gas fired generation are estimated to be approximately 70% of the total costs compared with approximately 10% for nuclear power⁴¹.
- 2.3.8 In situations where gas prices are high, the relatively low generation costs of nuclear power means that it can place downward pressure on long-run wholesale prices. This would help to reduce the UK's exposure to higher costs during the transition to a low-carbon economy and decarbonised power sector⁴².
- 2.3.9 **Nuclear power is proven technology.** Nuclear power is also a proven and dependable technology that can be deployed on a large scale⁴³. This is important because energy companies will seek to minimise long term business risk by investing in technologies which have been proven to be reliable and capable of generating sufficient returns.

³⁷ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>, p56

³⁸ *The Future of Nuclear Power: The Role of Nuclear Power in a Low Carbon UK Economy, A Consultation Document*, URN07/970, p14, p55

³⁹ NEA and IAEA, *Uranium 2005: Resources, Production and Demand*, 2006 (The 'Red Book')

⁴⁰ *The Future of Nuclear Power: The Role of Nuclear Power in a Low Carbon UK Economy, A Consultation Document*, May 2007, URN07/970, p14, p56

⁴¹ *The Future of Nuclear Power: The Role of Nuclear Power in a Low Carbon UK Economy, A Consultation Document*, May 2007, URN07/970, p57

⁴² CBI report: *Decision time: Driving the UK Towards a Sustainable Energy Future*, July 2009, p8

⁴³ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>, p37

2.3.10 Given the characteristics of nuclear power, the need for low carbon electricity generation and within the context of the overall strategic framework set by the Government, in principle new nuclear power should be free to contribute as much as possible towards meeting the need for 25GW of new non-renewable capacity. The Government expects that under this approach a significant proportion of the 25GW will in practice be filled by nuclear power.

2.4 The need for the early deployment of new nuclear power stations

2.4.1 In its response to the consultations on the SSA process the Government said that, “Given the importance of meeting our CO₂ emissions targets, the Nuclear NPS will reflect the Government’s view both on the role of nuclear power in the energy mix and the importance of early deployment in the period 2017-2025. The Government will consider whether there is a public interest in some or all of the sites on the Nuclear NPS being deployed by a date which is earlier than 2025 and if so, it will take account of this when assessing the suitability of the sites considered through the SSA and will reflect this in the Nuclear NPS.”⁴⁴

2.4.2 Failure to take account of the ability to develop new nuclear power stations significantly earlier than the end of 2025 will increase the risk that the UK is locked into higher CO₂ emissions than would otherwise be necessary. This is because of the high-carbon nature of thermal generation capacity that might otherwise help to meet the demand for electricity. In turn this will mean that it will become correspondingly more difficult and expensive to meet the Government’s targets for significant and urgent decarbonisation of the economy⁴⁵.

2.4.3 Given the need to decarbonise the power sector it is the Government’s view that it is in the public interest to give priority to sites listed in this NPS where new nuclear power stations can be developed significantly earlier than the end of 2025. The IPC should give significant weight to the benefits that will arise from significantly earlier development of new nuclear power stations.

2.4.4 To meet the urgent need to decarbonise the economy it is Government policy that all sites listed in this NPS must be deployable by the end of 2025⁴⁶. When considering an application to construct a new nuclear power station by a date significantly earlier than the end of 2025, significant weight should be given to the benefit of displacing CO₂ emissions that would result from that application receiving development consent.

2.4.5 In looking for evidence that a site is capable of development significantly earlier than the end of 2025 the IPC should, amongst other things, expect the applicant to

⁴⁴ *Towards a National Nuclear Policy Statement: Government response to consultations on the SSA and siting criteria for new nuclear power stations in the UK; and to the study on the potential environmental and sustainability effects of applying the criteria*, January 2009, URN 09/581, p21

⁴⁵ *Meeting the Energy Challenge, A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525 <http://www.berr.gov.uk/files/file43006.pdf>, p71 and Annex A

⁴⁶ *Towards a National Nuclear Policy Statement: Government response to consultations on the SSA and siting criteria for new nuclear power stations in the UK; and to the study on the potential environmental and sustainability effects of applying the criteria*, January 2009, URN 09/581, p9

submit evidence of local engagement, pre-application work and agreements for grid connection with National Grid for the significantly earlier date. The IPC should note that development significantly earlier than the end of 2025 may be even more important where there is a need to respond to even more challenging emission target reductions than those set out in the LCTP.

2.5 The need for the sites listed in this NPS

- 2.5.1 To contribute to the delivery of the objectives in the LCTP and within the context of the overall strategic framework it has set, the Government believes that in principle new nuclear power should be free to contribute as much as possible towards meeting the need for 25GW of new non-renewable capacity.
- 2.5.2 To ensure that this NPS does not act as restraint on the ability of energy companies to provide this capacity from nuclear power, it is essential that this NPS has sufficient sites to allow nuclear to contribute as much as possible towards meeting the need for 25GW of new capacity. Equally, there can be no certainty that development consent on all sites listed in the NPS will be granted as issues may emerge once they are analysed in detail by the IPC.
- 2.5.3 On the basis of the SSA and the Alternative Sites Study⁴⁷ the Government believes that only a limited number of sites are potentially suitable for the deployment of new nuclear power stations by the end of 2025.
- 2.5.4 The Government has therefore concluded that it is necessary to include all ten sites in this NPS to ensure that sufficient sites are available for development to allow energy companies to fill a significant proportion of the 25GW of new capacity even if a number of sites fail at the project level.
- 2.5.5 Although it is not possible to predict whether or not there will be more than one reactor at each of the 10 sites included in this NPS, a single reactor at each of the 10 sites⁴⁸ would result in 12 to 17 GW of nuclear capacity, depending on the reactor technology chosen. The Government does not consider it is appropriate to include more than ten sites in this NPS at this stage when the need is balanced against the potential harm to Natura 2000 sites and other factors like planning blight.
- 2.5.6 France has already demonstrated that it is technically feasible to build nuclear power stations at the rate that would be needed in the UK if new nuclear power stations were to be constructed on all 10 sites listed in this NPS by the end of 2025⁴⁹. Without pre-judging the IPC's decision on any application, it is, therefore, important for the IPC to consider and grant consent at a rate that is consistent with the rate at which energy companies may wish to build new nuclear power stations.

⁴⁷ *A consideration of alternative sites to those nominated as part of the government's strategic siting assessment process for new nuclear power stations: prepared by Atkins for the Department of Energy and Climate Change*, <http://www.energynpsconsultation.decc.gov.uk>

⁴⁸ It is possible, subject to the IPC, that some sites could accommodate more than one reactor.

⁴⁹ Nuclear Energy Association, *Nuclear Energy Outlook 2008*, NEA No. 6348, p318

Part 3: Policy of assessment of development consent applications

3.1 Introduction

- 3.1.1 EN-1 sets out the policy on how the assessment of development consent applications should be undertaken and contains policy on the IPC's assessment of alternative sites.
- 3.1.2 This Part contains additional policy on the consideration of "alternative sites" and the Government's policy on the siting of nuclear power stations. This Part should be read in conjunction with Part 4 of EN-1.
- 3.1.3 The policy guidance in EN-1 on the Environmental Statement also applies to this NPS therefore the terms 'effects', 'impacts' or 'benefits' should accordingly be understood to mean likely significant 'effects', 'impacts' or 'benefits'.
- 3.1.4 The IPC will need to call upon the relevant regulators to provide advice where regulatory matters affect planning decisions. Likewise, the regulators may need to discuss with the IPC its draft decisions, so as to consider whether any proposed IPC decision would impinge on regulatory matters. This Part of the NPS therefore provides policy guidance on the interaction between the regulatory and planning regimes.
- 3.1.5 This Part also contains policy on the assessment of other considerations that will be relevant to the IPC in reaching its decisions. These are: consideration of good design; consideration of combined heat and power and consideration of climate change adaptation.
- 3.1.6 Finally, this Part sets out the Government's policy on the management and disposability of radioactive waste produced by new nuclear power stations.

3.2 Policy on the siting of new nuclear power stations

- 3.2.1 The Government's policy is that before any site for a new nuclear power station is subject to a development consent application to the IPC, it should have been subject to a strategic siting assessment. This is to ensure that the Government has assessed the site's strategic suitability and to reduce public anxiety arising from uncertainty about the possible sites of new nuclear power stations.
- 3.2.2 The Strategic Siting Assessment (SSA) and the development of the NPS were designed to ensure, as far as possible, that the Government has considered and assessed at a strategic level, alternative sites to those listed in the Nuclear NPS. This was intended to minimise the need for the IPC to consider alternative sites when it considers an application for a particular site. The IPC should have regard to this when assessing a development consent application.

- 3.2.3 It is for energy companies, not the Government to develop, operate and decommission new nuclear power stations. For this reason the SSA assessed sites through a nomination-driven process, recognising that industry and others are well placed to identify sites that could be suitable for new nuclear power stations and that could be developed by the end of 2025.
- 3.2.4 In particular, the Government believes that before deciding to put forward a site as part of the SSA process, many nominators will have considered the strategic merits of the site in comparison to others. It was in the nominator's best interests to thoroughly consider alternative sites, and to nominate those sites which it believed are feasible for development by the end of 2025.
- 3.2.5 The Government has assessed all of the sites listed in this NPS at a strategic level. All of the listed sites are considered to be potentially suitable for the development of new nuclear power stations by the end of 2025. Accordingly, this NPS has effect only in relation to applications for new nuclear power stations on the sites listed in this NPS. The IPC does not have the function of deciding applications for sites that are not listed in this NPS.
- 3.2.6 If the IPC receives a development consent application for a site not listed in this NPS the IPC is required to make a recommendation to the Secretary of State in accordance with the Planning Act 2008. The Secretary of State will be the decision maker. In considering any recommendation made by the IPC, the Secretary of State would expect to have regard to whether the site met the SSA Criteria and would expect to consider whether to review the SSA. The Secretary of State would also expect to take account of the contents of this NPS insofar as it was relevant.

3.3 Alternatives⁵⁰

- 3.3.1 This section contains the Government's policy on the assessment of alternative sites to those listed in this NPS and alternative means of achieving the objectives of this NPS.
- 3.3.2 It is Government policy that a development consent application or alternative proposal for a site not listed in this draft NPS would need to demonstrate that the site is suitable for the deployment of a new nuclear power station by the end of 2025 and that it has met the SSA criteria.
- 3.3.3 In order to aid the Government's consideration of alternative sites, the Government commissioned Atkins Ltd to conduct a detailed screening exercise to identify whether there are any potentially suitable alternative sites in England and Wales which had not been nominated by energy companies or other third parties.

⁵⁰ Because the sites in this NPS have been assessed by the Government and given the need for all the sites listed in this NPS an "alternative site" is a site that is not listed in this NPS.

- 3.3.4 That screening exercise identified three sites which Atkins Ltd believed to be “worthy of further consideration”⁵¹. After further consideration of those sites, the Government has concluded that none are credible sites for the deployment of new nuclear power stations by the end of 2025.
- 3.3.5 In assessing alternative sites, the IPC should have regard to the importance attached to the deployment of sites significantly earlier than 2025. However if a site cannot be developed until significantly later in the period 2017-2025, it will not necessarily be an alternative to a site that can be developed in the first half of that period.
- 3.3.6 Additionally the Government has undertaken an assessment to consider whether or not the objectives of this NPS can be delivered using alternative options⁵². It is the Government’s view that none of the alternative options looked at can be relied upon to deliver the objectives of this NPS by the end of 2025. The IPC should have regard to the conclusions of this assessment when considering any alternative proposal to a development consent application.
- 3.3.7 In addition to the text on “Alternatives” in section 4.4 of EN-1, in view of the need for new nuclear power stations, when judging an alternative proposal submitted by a third party, the IPC should be guided by whether there is a realistic prospect of the alternative site, layout or design being able to generate a comparable amount of low-carbon electricity on the site by the end of 2025 or earlier.
- 3.3.8 As explained in the IROPI assessment in Annex A and Part 2 of this NPS, the Government considers that all of the sites listed in this NPS are needed and that the IPC should not consider any of the listed sites as alternatives to each other.
- 3.3.9 The policy in this section does not override any obligation on the IPC or the applicant to fulfil any legal requirements to consider alternatives or any policy on considering alternatives set out elsewhere in this NPS.

3.4 Relationship between the regulatory framework for nuclear power stations and the planning regime

- 3.4.1 As with other major energy infrastructure the regulators⁵³ play an important role in ensuring the safety, security and protection of people and the environment in relation to the design, construction, operation and decommissioning of nuclear power stations

⁵¹ Atkins Ltd used the term “worthy of further consideration” in recognition that it is for Government to determine whether the three sites are suitable or potentially suitable from the perspective of the SSA. This also recognises that Atkins Ltd has carried out its analysis based on national- and strategic-level information which is some way short of the information provided by nominators as part of the SSA process. In order to help assess whether these sites are alternatives the Government conducted a Habitats Regulations Assessment and Appraisal of Sustainability for each site, and gave further consideration to whether the sites would be likely to be deployable by 2025 and likely to meet the SSA criteria.

⁵² *Planning for New Energy Infrastructure: Appraisal of Sustainability for the draft Nuclear National Policy Statement: Main Report*, <http://www.energynpsconsultation.decc.gov.uk>

⁵³ The Nuclear Installations Inspectorate (NII), the Environment Agency (EA), the Office for Civil Nuclear Security, (OCNS) and the Department for Transport (DfT).

and the transport of nuclear material. Annex C of the *White Paper on Nuclear Power* summarises the primary responsibilities of those organisations involved in the regulation of nuclear power generating stations⁵⁴.

- 3.4.2 In respect of the regulatory activities conducted by the Environment Agency (EA), the Nuclear Installations Inspectorate (NII)⁵⁵, the Office for Civil Nuclear Security (OCNS) and the Department for Transport⁵⁶ the IPC should make its decisions in relation to a development consent application on the basis that:
- the relevant licensing and permitting regimes will be properly applied and enforced;
 - it does not need to consider matters that are within the remit of the nuclear regulators⁵⁷; and that
 - it should not delay a decision on whether to grant consent until completion of the licensing or permitting process.
- 3.4.3 The IPC should not review or revisit any regulatory decision that has already been made in relation to the proposed development. This will help to ensure that there is clarity and clear division between the regimes for planning and regulation of the nuclear industry.
- 3.4.4 The IPC can consider and determine an application for development consent where the relevant licensing, permitting and authorisations process is still in progress⁵⁸. It will, however, need to be satisfied that the necessary licence, authorisation or permit can or is likely to be issued in due course. It should expect the applicant to have involved the relevant regulators at the pre-application stage so that the applicant can incorporate the regulators' requirements in proposals.
- 3.4.5 If the regulatory approvals process is incomplete the IPC may need to seek from the regulators a "letter of comfort". This would provide a regulatory view on the likely timing of any necessary licence, authorisation or permit, and any regulatory conditions that are likely to be attached to the application. In addition the IPC should liaise with the

⁵⁴ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525, Annex C, p181

⁵⁵ NII and OCNS are both part Nuclear Directorate within the Health and Safety Executive (HSE). Between June and September 2009, Government consulted on legislative proposals to restructure the Nuclear Directorate as an independent Statutory Corporation under the auspices of HSE (A consultation on the restructuring of the Health and Safety Executive's Nuclear Directorate, June 2009, URN 09D/609). The proposals are designed to enhance transparency and accountability, improving the organisational framework for the sustained delivery of robust, effective and efficient nuclear regulation in the UK. The Government expects to publish its response to the consultation towards the end of 2009, and the consultation proposed that the new body come into effect in autumn 2010.

⁵⁶ The safety of nuclear transports (and security of less sensitive nuclear material) is regulated by the Department for Transport under *The Carriage of Dangerous Goods and the Use of Transportable Pressure Equipment Regulations 2007*.

⁵⁷ For example, the Generic Design Assessment (GDA). The purpose of GDA is to provide a robust, transparent and independent review of the "licensibility" of nuclear power station designs. This begins prior to the assessment of other site licensing issues and before large capital commitments need to be made, thus reducing any project risk and uncertainty associated with the regulatory process. The GDA process commenced in 2007 and the regulators have stated that they expect it to be completed in 2011. <http://www.hse.gov.uk/newreactors/newnuclearprogramme.htm>

⁵⁸ This includes relevant all licences, permits and authorisations.

regulators over any conditions it is considering attaching to a development consent in order to ensure that these conditions are consistent with the regulatory approvals process.

3.5 Consideration of good design

- 3.5.1 Section 10(3)(b) of the Planning Act 2008 requires the Secretary of State to have regard to the desirability of good design in designating an NPS. Section 4.5 of EN-1 sets out the principles of good design that should be applied to all energy infrastructure.
- 3.5.2 The IPC needs to be satisfied that, having regard to regulatory and other constraints, nuclear power stations are as durable and adaptable (including taking account of natural hazards such as flooding) as they can be, subject to the need to ensure the safety and security of the power station. In so doing, the IPC should satisfy itself that, in the design and layout of the station, the applicant has taken into account both aesthetics and functionality (including fitness for purpose).
- 3.5.3 The IPC should expect applicants to demonstrate good design particularly in respect of landscape and visual amenity. The design of the project should seek to mitigate impacts on the environment and human health.
- 3.5.4 For some structures where the functional requirements may change over the lifetime of the structure, such as sea defences, they should be capable of being adapted without major re-design or physical disruption. Finally the design and construction should where practicable use the principles of sustainable development.

3.6 Consideration of Combined Heat and Power (CHP)

- 3.6.1 The Government requires applications for thermal generating stations to either include CHP or contain evidence that the possibilities for CHP have been fully explored.
- 3.6.2 The potential for delivering CHP from a nuclear power station is constrained by the need to minimise the radiological consequences to the public in the unlikely event of a serious nuclear accident. Consistent with the SSA demographic criterion applied to the siting of new nuclear power stations sites are likely to be located away from major population centres, which may limit the viability of CHP schemes.
- 3.6.3 In keeping with applications for other thermal generating stations, evidence should be presented to the IPC that demonstrates the applicant has fully considered the opportunities for CHP. However when considering a development consent application for a new nuclear power station, the IPC should note that the presumption is that CHP opportunities will be limited.

3.7 Climate change adaptation

- 3.7.1 In designating a NPS section 10(3)(a) of the Planning Act requires the Secretary of State to have regard to the desirability of mitigating, and adapting to, climate change. The Government's policy on climate change adaptation is set out in EN-1.
- 3.7.2 EN-1 sets out how the NPS puts Government policy on climate change adaptation into practice, and in particular it describes how applicants and the IPC should take the effects of climate change into account when developing and giving consent for infrastructure. While climate change mitigation is essential to minimise the most dangerous impacts of climate change, previous global emissions of greenhouse gases mean that some degree of continued climate change is likely for at least the next 30 years.
- 3.7.3 Climate change is likely to mean that the UK will experience hotter, drier summers and warmer wetter winters. There is a likelihood of increased flooding, drought, heat waves, intense rainfall events and other extreme weather events such as storms, as well as rising sea levels. Adaptation is therefore necessary to deal with the potential effects of changes that are already happening.
- 3.7.4 To support planning decisions, the Government produces a set of UK Climate Projections and is developing a statutory National Adaptation Programme⁵⁹. In addition, the Government's Adaptation Reporting Power⁶⁰ will ensure that reporting authorities (a defined list of public bodies and statutory undertakers, including energy utilities) assess the risks to their organisation presented by climate change. The IPC may take into account energy utilities' reports to the Secretary of State when considering adaptation measures that an applicant proposes for new energy infrastructure.
- 3.7.5 New nuclear power stations will typically be long-term investments: they will need to remain operational in the face of a changing climate over many decades. Consequently, applicants must consider the effects of climate change on any new nuclear power station during the planning and design of the station, during operation (including the period of waste storage) and where appropriate, decommissioning. The Environmental Statement should set out how the proposal will take account of the projected impacts of climate change. While not required by the EIA Directive, the IPC will need this information.
- 3.7.6 In consultation with the EA and NII applicants should use the latest set of UK Climate Projections⁶¹ and the Government's latest national Climate Change Risk Assessment when available,⁶² to ensure that they have identified appropriate measures to adapt to the risks of climate change. Applicants should apply as a minimum, the emissions scenario that the independent Committee on Climate Change suggests the world is

⁵⁹ Section 58 of the Climate Change Act 2008.

⁶⁰ Section 62 of the Climate Change Act 2008.

⁶¹ See <http://ukclimateprojections.defra.gov.uk>.

⁶² Section 56 of the Climate Change Act 2008.

currently most closely following – and the 10%, 50% and 90% estimate ranges. These results should be considered by the applicant alongside relevant research which is based on the climate change projections.

- 3.7.7 In addition the applicant should apply the high-emissions scenario - high impact, low likelihood - to those elements of their application that are critical to the safe operation of the station.
- 3.7.8 Should a new set of UK Climate Projections become available after the preparation of the ES, the IPC should consider whether they need to request further information from the applicant.
- 3.7.9 If any adaptation measures give rise to consequential impacts the IPC should consider the impact of those latter in relation to the application as a whole and the guidance set out in Part 4 of this NPS or in EN-1.
- 3.7.10 The IPC should satisfy itself that there are no critical features of the station that may be seriously affected by more radical changes to the climate beyond that projected in the latest set of UK climate projections. When making this assessment, the IPC should take account of the latest credible scientific evidence on, for example, sea-level rise – by referring to additional maximum credible scenarios, from, organisations such as the Intergovernmental Panel on Climate Change or EA. The IPC should also satisfy itself that necessary action can be taken to ensure the operation of the infrastructure over its estimated lifetime.
- 3.7.11 Where adaptation measures are necessary to deal with the impact of climate change, and that measure would have an adverse effect on other aspects of the project and/or surrounding environment, the IPC may consider requiring the applicant to ensure that the adaptation measure could be implemented should the need arise, rather than at the outset of the development (for example increasing the height of an existing, or requiring a new, sea wall).
- 3.7.12 As the sites listed in this NPS are either coastal or estuarine, applicants should in particular set out how they would take account of climate change adaptation measures in response to the effects of climate change including:
- coastal erosion and increased risk from storm surge and rising sea levels;
 - effects of higher temperatures, including higher temperatures of cooling water;
 - increased risk of drought leading to a lack of available cooling water.
- 3.7.13 The nuclear licensing process requires that new nuclear power stations are located, constructed, operated and decommissioned with the long-term impacts of climate change in mind. This process begins with the Generic Design Assessment (GDA).

- 3.7.14 The regulators undertake an assessment of the external hazards to nuclear power stations. This includes an assessment of the reasonably foreseeable effects of climate change over the lifetime of the station⁶³. The IPC should have regard to any advice from the NII and the EA in relation to climate change impacts and appropriate adaptation measures.

3.8 Radioactive waste management

- 3.8.1 The Nuclear White Paper set out the Government's policy that "before development consents for new nuclear power stations are granted, the Government will need to be satisfied that effective arrangements exist or will exist to manage and dispose of the waste they will produce"⁶⁴. The Government has considered this issue and this section sets out the Government's conclusions.
- 3.8.2 This section considers in particular "higher activity wastes". On the presumption of a once through fuel cycle for new nuclear power stations, as set out in the Nuclear White Paper (and therefore assuming no reprocessing of spent fuel), "higher activity wastes" will comprise of spent fuel and intermediate level waste (ILW).
- 3.8.3 Geological disposal is the way higher activity waste will be managed in the long term. This will be preceded by safe and secure interim storage until a geological disposal facility can receive waste. The Government set out a framework to implement this policy in the *Managing Radioactive Waste Safely (MRWS) White Paper* published in June 2008⁶⁵.
- 3.8.4 New nuclear power stations will also produce other waste streams: low level waste (LLW), liquid and gaseous discharges, and non-radioactive wastes. The Government considers that arrangements already exist for the effective management and disposal of wastes in these categories, as demonstrated by the experience of dealing with such wastes from existing nuclear power stations.
- 3.8.5 The UK has robust legislative and regulatory systems in place for the transport of radioactive wastes, including higher activity waste. Transports of radioactive wastes are, and will continue to be, required to meet a number of national and international requirements to ensure the safety and security of such materials. The IPC should consider any issues in relation to the transport of these wastes in accordance with section 3.4 above.

⁶³ *Safety Assessment Principles for Nuclear Facilities*, p38, <http://www.hse.gov.uk/nuclear/saps/saps2006.pdf>

⁶⁴ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525, <http://www.berr.gov.uk/files/file43006.pdf>, p9

⁶⁵ *MRWS White Paper*, <http://mrws.decc.gov.uk/>

Higher activity waste

3.8.6 In reaching its view on the management and disposal of waste from new nuclear power stations the Government has had particular regard to:

- whether geological disposal of higher activity radioactive waste, including waste from new nuclear power stations, is technically achievable;
- whether a suitable site can be identified for the geological disposal of higher activity radioactive waste;
- and whether safe, secure and environmentally acceptable interim storage arrangements will be available until a geological disposal facility can accept the waste.

Whether geological disposal is technically achievable

3.8.7 The Government has accepted the Committee on Radioactive Waste Management's (CoRWM⁶⁶) recommendation on legacy wastes⁶⁷ that "within the present state of knowledge, geological disposal is the best available approach for the long-term management of all the material categorised as waste in the CoRWM inventory when compared with the risks associated with other methods of management. The aim should be to progress to disposal as soon as practicable, consistent with developing and maintaining public and stakeholder confidence"⁶⁸.

3.8.8 Given international experience and the UK's own research, the Government is confident that a geological disposal facility could be built which would meet regulatory approval. The British Geological Survey reported in 2006 that "over 30% of the UK has suitable geology for siting a deep geological disposal facility"⁶⁹ and CoRWM found that "there is high confidence in the scientific community that there are areas of the UK where the geology and hydrogeology at 200 metres or more below ground will be stable for a million years and more into the future"⁷⁰.

3.8.9 A number of geological disposal concepts, based on the use of multiple containment barriers, have been shown to be capable of meeting high standards of safety and security⁷¹. The technology to implement these disposal concepts, such as engineered

⁶⁶ CoRWM's primary task is to provide independent scrutiny on the Government's and NDA's proposals, plans and programmes to deliver geological disposal, together with robust interim storage, as the long term management option for the UK's higher activity wastes. www.corwm.org.uk/

⁶⁷ "Legacy wastes" is a common term used to describe radioactive waste which already exists or whose arising is committed in future by the operation of an existing nuclear power station.

⁶⁸ CoRWM Report: Recommendations to Government page 111. www.corwm.org.uk/Pages/Current%20Publications/700%20-%20CoRWM%20July%202006%20Recommendations%20to%20Government.pdf

⁶⁹ UK Nirex Ltd and British Geological Survey, "A note by the British Geological Survey and Nirex on the Suitability of UK Geology for Siting a Repository for Radioactive Waste", document 1797, March 2006.

⁷⁰ CoRWM Report: Recommendations to Government page 106.

⁷¹ The OECD Nuclear Energy Agency, taking inputs from policy-makers, regulators and waste management organisations, has published a statement that geological disposal provides an acceptable and technologically feasible method for the long-term management of long-lived high-activity wastes such as spent fuel. www.nea.fr/html/rwm/reports/2008/nea6433-statement.pdf

barriers and materials, is already available⁷², and although no spent fuel geological disposal facility is currently in operation, programmes in Finland and Sweden are advanced, to the stage of extensive underground investigations. These programmes are on course to have such a facility operational by about 2020. The Nuclear Decommissioning Authority's (NDA) delivery organisation will meet all relevant regulatory requirements in its delivery of the geological disposal facility^{73,74}.

- 3.8.10 The Government considers, based on scientific consensus and international experience that despite some differences in characteristics, and spent fuel from new nuclear build would not raise such different technical issues compared with nuclear waste from legacy programmes as to require a different technical solution. The disposability assessments that have been conducted by the NDA as part of the Generic Design Assessment (GDA) process support this view and have concluded that, compared with legacy wastes and existing spent fuel, no new issues arise that challenge the fundamental disposability of the wastes and spent fuel expected to arise from operation of the EPR and AP-1000 reactors. This conclusion is supported by the similarity of the wastes to those expected to arise from the existing PWR at Sizewell B. NDA has concluded that given a disposal site with suitable characteristics, the wastes and spent fuel from the EPR and AP-1000 are expected to be disposable⁷⁵.

Whether a suitable site can be identified

- 3.8.11 The MRWS White Paper sets out the framework for the implementation of geological disposal, including a flexible site selection process based on voluntarism and partnership. Experience around the world in developing geological disposal facilities demonstrates that this approach is likely to be the most successful way to develop a safe, secure, and environmentally acceptable facility that secures public confidence, which is why the Government has adopted this approach.
- 3.8.12 The MRWS process for implementing geological disposal is flexible and able to incorporate both robust technical site investigations and ongoing interactions between the project and the potential host community. The Government has therefore not set a fixed delivery timetable, but in planning the implementation of the national policy of geological disposal, the NDA has assessed that a UK facility could be operational for the disposal of legacy ILW by about 2040⁷⁶, with legacy HLW/spent fuel emplacement beginning around 2075. Disposal of legacy waste is estimated to be completed by

⁷² Posiva Oy (Finland) Environmental Impact Assessment Report: Expansion of the Repository for Spent Fuel, 2008. www.posiva.fi/en/nuclear_waste_management/required_permissions_and_procedures/environmental_impact_assessment_procedure

⁷³ The NDA was established to deliver the Government's commitment to deal with the nuclear legacy. It is the body responsible for implementing the Geological Disposal Facility (GDF).

⁷⁴ *MRWS White Paper*, p38

⁷⁵ *Summary Disposability Assessment for the AP-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>.

⁷⁶ "GDF PIP presentation to CoRWM 17_9_08 issue 1", available at www.corwm.org.uk/Pages/Plenary%20Meetings/Forms/Meetings.aspx

around 2130 and it is currently anticipated that disposal of new build wastes would begin once disposal of legacy wastes is completed (though it might be possible to dispose of new build ILW somewhat earlier).

- 3.8.13 The Government has said that it favours a single geological disposal facility for all higher activity wastes if that proves technically possible, however it has not ruled out the alternative of there being more than one facility, and the site selection process set out in the MRWS White Paper is designed to be sufficiently flexible to accommodate this.
- 3.8.14 The MRWS White Paper sets out a step-by-step site selection process. Formal “expressions of interest” by communities about potential involvement, which is the first step in the process, have already been received by the Government⁷⁷.
- 3.8.15 The Government is committed to making the voluntarist and partnership approach to site selection work through the MRWS process. However, the Government recognises it has a responsibility to deal with long-term higher activity waste management and is committed to geological disposal as the technical solution, such that it will seek to develop alternative ways to implement that solution if the current framework, as set out in the MRWS White Paper, ultimately proves to be unsuccessful in the UK⁷⁸.

Interim Storage

- 3.8.16 Geological disposal will be preceded by safe and secure interim storage. The first higher activity waste from a new nuclear power station is expected to arise shortly after the power station starts generating electricity, which is currently anticipated to be around 2018. All higher activity waste will have to be stored until a geological disposal facility can accept the waste.
- 3.8.17 The time that will be required for the safe and secure onsite interim storage of spent fuel and intermediate level waste is contingent on a number of factors. It is possible to envisage a scenario in which onsite interim storage might be required for 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. However this is based on some conservative assumptions and there are a number of factors that could reduce, or potentially increase, the total duration of onsite spent fuel storage⁷⁹.
- 3.8.18 Based on domestic and international experience the Government is satisfied that interim storage facilities are and will be safe and effective, and will remain so for as long as is necessary, for example through building of new stores and periodic refurbishment of stores if needed, until geological disposal is available for use. In the

⁷⁷ www.copelandbc.gov.uk/PDF/08-PR-%20jun-25%20expression-%20of-%20interest.pdf
www.allerdale.gov.uk/council-and-democracy/council-news/news-releases.aspx?prid=1020
www.cumbriacc.gov.uk/news/2008/december/09_12_2008-121129.asp?Layout=Print

⁷⁸ *MRWS White Paper*, p47

⁷⁹ These factors are discussed in more detail in the paper “The arrangements for the management and disposal of waste from new nuclear power stations: a summary of evidence”, which is being published alongside the NPS consultation.

event that geological disposal facilities are not available to accept radioactive waste in accordance with the indicative timetable set out above, the Government is satisfied that interim storage will provide an extendable, safe and secure means of containing waste for as long as it takes to site and construct a geological disposal facility.

- 3.8.19 As recommended by CoRWM, the MRWS White Paper commits that there will be ongoing research and development to support optimised delivery of the geological disposal programme, and the safe and secure storage of radioactive waste in the interim. The NDA and other organisations are carrying out research and development on waste treatment, packaging, storage and geological disposal.

Conclusion

- 3.8.20 Having considered this issue, the Government is satisfied that effective arrangements will exist to manage and dispose of the waste that will be produced from new nuclear power stations. As a result the IPC need not consider this question.
- 3.8.21 As set out in Part 1, this NPS has been subject to an Appraisal of Sustainability. The AoS has examined the impacts on sustainability if radioactive wastes from new nuclear power stations were managed in line with the policies and processes considered by the Government in reaching its conclusion on this issue. The Government has taken into account the potential impacts identified in the AoS in making its assessment, and has concluded that none of the potential sustainability impacts identified in the AoS prevent it from reaching its conclusion.
- 3.8.22 In line with commitments to review this NPS the Government will keep the arrangements for radioactive waste management and disposal under review and will consider whether any new significant evidence or material provides ground for revisiting its conclusion.

Part 4: Policy and guidance for the IPC when considering nuclear specific impacts and siting issues

4.1 Introduction

- 4.1.1 Part 4 of EN-1 contains policy and guidance for the IPC when assessing potential impacts of energy infrastructure projects. It says that in some cases the NPSs on individual technologies provide more detail on impacts that are specific to the technology in question.
- 4.1.2 The Government expects that development consent applications should cite the key operational aspects of the power station, and in particular the infrastructure that has the potential to directly cause a radiological hazard such as the reactor building (including the associated turbine hall), spent fuel and intermediate level waste stores, within the boundary that was nominated into the SSA.
- 4.1.3 However, applications for development consent may include land additional to the boundary for other aspects of the power station, such as car parks, access roads or marine landing facilities, or for construction and decommissioning of a nuclear power station.
- 4.1.4 While the AoS and HRA reports for each site contain an assessment of the potential impacts of construction and decommissioning at a site, detailed assessment of the potential impacts will take place at the development consent stage.

Nuclear Specific Impacts

- 4.1.5 This Part therefore sets out policy and guidance for the IPC in assessing specific potential impacts and siting criteria in relation to new nuclear power stations. This is drawn to the IPC's attention because the AoS and HRA assessments identified the potential for adverse effects from the impacts set out below. To distinguish between those broader generic impacts of new energy infrastructure described in EN-1, in this Part these impacts are referred to as "Nuclear Specific Impacts". The IPC should note that the guidance in this NPS is in addition to the guidance set out in EN-1 and does not replace it. The IPC should follow the policy and guidance on impacts in this NPS and EN-1 together.
- 4.1.6 In considering Nuclear Specific Impacts the IPC should also refer to the main reports of the AoS and HRA, the relevant site AoS and HRA reports and Part 5 of this NPS.

4.1.7 The Nuclear Specific Impacts drawn to the attention of the IPC in this Part of the NPS are:

- flood risk, (including tsunamis and storm surge)
- water quality and resources
- coastal change
- biodiversity and geological conservation
- landscape and visual
- socio-economic
- human health and well being.

Flag for Local Consideration

4.1.8 This Part also contains policy and guidance on the assessment of specific siting considerations that may arise when a development consent application is submitted to the IPC.

4.1.9 These specific siting considerations are referred to as “flag for local consideration” criteria. “Flag for local consideration” are siting criteria that the Government identified through the SSA consultation in 2008 but which Government considered (usually due to the need for detailed site-specific investigations and data) were more appropriately assessed at the local level⁸⁰.

4.1.10 The Government considers these to be relevant to the siting of new nuclear power stations⁸¹: they will form an important consideration at the development consent stage. The fact that they are flagged for local consideration rather than applied through the SSA recognises that assessment at a strategic level cannot adequately address these issues. The flags for local consideration to be considered by the IPC are as follows:

- proximity to (civil) aircraft movements
- access to transmission networks
- (proximity) to significant infrastructure and resources
- emergency planning
- demographics.

⁸⁰ *Towards a Nuclear National Policy Statement: Consultation on the Strategic Siting Assessment Process and Siting Criteria for New nuclear Power Stations in the UK* (July 2008), p13

⁸¹ For consistency these criteria will be referred to as “flags for local consideration” in this NPS

4.1.11 Some criteria designated as “flag for local consideration” will be more appropriately assessed by the regulators: others will be more appropriately addressed by the IPC, Table 1 highlights these differences. The IPC should note that the advice of the relevant regulator will be central in its consideration of criteria designated “flag for local consideration”. In some instances both by the regulator and the IPC will need to consider the criteria.

SSA Discretionary and Exclusionary Criteria

4.1.12 The IPC should be aware that in assessing the strategic suitability of a site the Government used exclusionary and discretionary criteria in the SSA. These criteria were developed having taken account of a range of sources and after extensive consultation with other government departments, regulators and stakeholders⁸².

- Exclusionary criteria: are those criteria that, for safety, regulatory, environmental or other reasons, will categorically exclude a site from further consideration in the SSA. The sites listed in this NPS have already satisfied these criteria. The IPC need not consider them further, although the relevant regulator may wish to consider issues related to these criteria again during development consent.
- Discretionary criteria: are those that the Government considered, for various reasons, could, either singly or in combination, make a site potentially unsuitable for a new nuclear power station. These criteria covered issues such as flood impacts, impact on biodiversity, cultural heritage or access to suitable cooling. The IPC may need to consider the impacts associated with these criteria (see Table 1) when it receives a development consent application. This is because the SSA process did not involve site-specific investigations or draw on detailed site-specific data. In assessing these criteria the IPC should refer to the guidance on impacts set out in this part of the NPS.

⁸² *Towards a Nuclear National Policy Statement: Consultation on The Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK*, July 2008, *Towards a National Nuclear Policy Statement: Government Response to consultations on the SSA and siting criteria for new nuclear power stations in the UK; and to the study on the potential environmental and sustainability effects of applying the criteria*, January 2009, URN 09/581, p21.

Table 1 showing the full list of criteria used in the SSA and the “flag for local consideration criteria. In respect of the flags for local consideration, where the IPC and a regulator are both listed in the third column, the IPC will need to consider the advice of the listed regulator when assessing that flag for local consideration.

SSA Criterion	Category i.e. exclusionary, discretionary or “flag for local consideration”	Body with prime responsibility for assessment of criterion at development application stage	How criterion should be addressed
Demographics	Exclusionary for SSA but flag for local consideration for sites that meet the SSA criterion.	NII	Through NII advice on application and policy in this NPS. This criterion is assessed again at the development consent stage recognising that populations may change over time – see sect 4.13
Proximity to military activities	Exclusionary and Discretionary	MoD supported by NII	Through MoD advice on application, supported by NII. The criterion could rule out a site for nuclear power generation.
Flooding, tsunami and storm surge	Discretionary	IPC – supported by EA and NII	Through policy in this NPS see sect. 4.2 and EN-1.
Coastal processes	Discretionary	IPC – supported by EA	Through policy in this NPS see sect. 4.4 and EN-1.
Proximity to hazardous industrial facilities and operations	Discretionary	HSE (via NII)	Through HSE (NII) advice on application.
Proximity to internationally designated sites of ecological importance	Discretionary	IPC	Through policy in this NPS see sect. 4.5 and EN-1.

SSA Criterion	Category i.e. exclusionary, discretionary or “flag for local consideration”	Body with prime responsibility for assessment of criterion at development application stage	How criterion should be addressed
Nationally designated sites of ecological importance	Discretionary	IPC	Through policy in this NPS see sect 4.5 and EN-1.
Areas of amenity, cultural heritage and landscape value	Discretionary	IPC	Through policy in EN-1.
Size of site to accommodate operation	Discretionary/ Flag for local consideration	NII/OCNS	Through NII/OCNS advice on application.
Access to suitable sources of cooling	Discretionary	NII/EA/IPC	Through policy in this NPS at sect.4.3 and EN-1 and advice on application from EA and NII.
Seismic risk (vibratory ground motion)	Flag for local consideration	NII	Through NII advice on application.
Capable faulting	Flag for local consideration	NII	Through NII advice on application.
Non-seismic ground conditions	Flag for local consideration	NII	Through NII advice on application.
Meteorological conditions	Flag for local consideration	NII	Through NII advice on application.
Proximity to mining, drilling and other underground operations	Flag for local consideration	NII	Through NII advice on application.

SSA Criterion	Category i.e. exclusionary, discretionary or “flag for local consideration”	Body with prime responsibility for assessment of criterion at development application stage	How criterion should be addressed
Emergency planning	Flag for local consideration	NII/IPC	Through NII advice on application and policy in this NPS at sect. 4.12.
Proximity to civil aircraft movements	Flag for local consideration	IPC to consider – supported by Civil Aviation Authority/ LPA and NII	Through policy in this NPS see sect. 4.9 and EN-1.
Access to transmission networks	Flag for local consideration	IPC to consider	Through policy in this NPS see sect. 4.10, EN-1 and EN-5.
Significant infrastructure/ resources	Flag for local consideration	IPC to consider	Through policy in this NPS, see sect. 4.11.

4.1.13 Where the “flag for local consideration” criteria are to be assessed by the regulators the IPC should consider the regulator’s advice as part of its own assessment of an application.

4.2 Nuclear specific impacts: flood risk (including tsunami and storm surge)

Introduction

- 4.2.1 Nuclear power stations are likely to need access to direct cooling water. As the sites listed in this NPS indicate, this means that, in the UK, nuclear power stations are more likely to be developed on coastal or estuarine sites. Without appropriate mitigation measures the potential effects of climate change makes these sites at greater risk of flooding. However, on the basis of the SSA and AoS, at the strategic level the potential risks are considered to be manageable.
- 4.2.2 The relative significance of the effects depend on the type, scale, detailed design and site characteristics of the proposed new nuclear power station. In developing this NPS the sustainability of each site in relation to flood risk has been appraised. The AoS reports for individual sites set out the findings, which are also summarised in the main AoS report.
- 4.2.3 The construction of new nuclear power stations could also result in positive effects. For example, measures taken to mitigate the risk of flooding at a new nuclear power station may also protect existing developments in the area.
- 4.2.4 The AoS identified that there are likely to be positive and negative cumulative effects in the south-west and north-west of England, where nominated sites are relatively close to each other and are likely to be in the same flood-defence system.

Applicant's Assessment

- 4.2.5 In addition to meeting the requirements in EN-1 applicants for development consent should identify the potential effects of the credible maximum scenario in the most recent projections of marine and coastal flooding. The applicants must then be able to demonstrate that they could achieve where necessary future measures for adaptation and flood management at the site. Where possible, safety and operational critical installations should be sited in the areas at least risk of flooding.

IPC Decision Making

- 4.2.6 The sequential test has been undertaken as part of the SSA. As a result there is no requirement for the IPC to conduct the sequential test and seek to identify sites which are of a lower flood risk for a site listed in this NPS.
- 4.2.7 The Government has taken a sequential approach to the SSA by assessing all sites at a strategic level and by using the results of the screening exercise undertaken by Atkins Ltd. The Government has considered whether or not the objectives of this NPS can be met through reasonably available alternative sites in lower flood zones than those nominated.

- 4.2.8 The Government has concluded that the alternative sites that have been identified in the Alternative Sites Study⁸³ cannot be considered as reasonably available alternatives to those nominated. In the terms of the sequential test, this means that there are no reasonably available alternative sites to the sites listed in this NPS⁸⁴.
- 4.2.9 The Government has also concluded that nominated sites in lower flood zones should not be considered as reasonably available alternatives to those in the higher flood zones. This is because the NPS sets out that all the sites listed in this NPS are needed in order for the Government to meet its objectives on climate change and for the UK to become a low carbon economy⁸⁵.
- 4.2.10 Therefore even though a potentially suitable site is in a lower flood zone than another potentially suitable site, it is not a reasonably available alternative site to the site in the higher flood zone.
- 4.2.11 Even though the Government has applied the sequential test at the strategic level there will still be a requirement for a developer to submit to the IPC a flood risk assessment. This should identify and assess the risks of all forms of flooding to and from the project, and demonstrate how these flood risks will be managed, taking climate change into account.
- 4.2.12 The IPC will need to be satisfied that a sequential approach has been applied at the site level and that critical infrastructure is sited in the lowest flood risk areas within the site.
- 4.2.13 Once the Sequential Test has been met the Exception Test still applies. It will be for the applicant to demonstrate that the application meets the Exception Test⁸⁶. The IPC should only grant development consent where the Exception Test has been met.

Mitigation

- 4.2.14 It is the Government's view that all sites listed in this NPS can, based on the evidence provided for the SSA, be protected from flooding (including tsunami, flash flood and storm surge, taking into account the UK Climate Impacts Programme 2009(UKCIP)⁸⁷.
- 4.2.15 Based on the advice of the regulators the IPC should be satisfied that the applicant is able to demonstrate suitable flood risk mitigation measures. Whilst the risk of such scenarios arising is low, these mitigation measures should take account of the potential effects of the credible maximum scenario in the most recent marine and coastal flood projections. Applicants should demonstrate that future adaptation/flood mitigation is in

⁸³ *A consideration of alternative sites to those nominated as part of the government's strategic siting assessment process for new nuclear power stations: Prepared by Atkins for the Department of Energy and Climate Change, www.energyupsconsultation.decc.gov.uk.*

⁸⁴ See Part 5 for the list of sites.

⁸⁵ See the IROPI argument at Annex A and Part 2 of this NPS.

⁸⁶ See EN-1 for policy and guidance on meeting the requirements of the Exception Test.

⁸⁷ UK Climate Change Impacts Programme at www.ukcip.org.uk

line with these projections and would be achievable at the site for the duration of the life of the station and the interim spent fuel stores.

- 4.2.16 Applicants should set out measures to mitigate the risk of flooding on or from individual sites, that may result from new works, including where relevant, possible marine landing jetties/docks.
- 4.2.17 The mitigation measures set out in EN-1 apply to this NPS.

4.3 Nuclear specific impacts: water quality and resources

Introduction

- 4.3.1 The AoS identified potential adverse effects on water resources including effects on coastal processes, hydrodynamics and sediment transport⁸⁸. Adverse effects on water resources could occur through increased demand, particularly during construction. The AoS also identified indirect effects on nationally and internationally designated habitats, including from the thermal impact of cooling water discharges. This section should therefore be read in conjunction with the guidance on Biodiversity impacts in this NPS and EN-1. The relative significance of these effects depends on the location of the site, proximity to water bodies and the existing water surplus/deficit status within the region.

Applicant's Assessment

- 4.3.2 Where the project is likely to have effects on water quality or resources the applicant should undertake an assessment as part of the Environmental Statement. As set out in EN-1 this should identify:
- existing levels of water quality at and near to the proposed project site;
 - existing discharges if the new nuclear power station is to be sited with existing energy infrastructure which has relevant discharges, and /or the differential discharges if the proposed development replaces an existing one;
 - existing water abstraction levels if relevant as above, proposed abstraction levels and the effects on water resources (including any use of mains supplies);
 - within a reasonable distance of the project site, any cumulative effects when considered with other industrial sites or projects existing or planned⁸⁹.
- 4.3.3 The applicant's assessment should also set out the characteristics of cooling water for new nuclear power stations and the implications on marine and estuarine environments.

⁸⁸ Planning for New Energy Infrastructure: Appraisal of Sustainability for the draft Nuclear National Policy Statement: Main Report.

⁸⁹ It is not possible to specify a fixed distance that constitutes "reasonable" that would apply in all circumstances. This criterion must be determined for the unique aspects of each application.

IPC Decision Making

- 4.3.4 As well as taking account of the guidance set out in EN-1 the IPC should consider the cumulative effects of a development consent application for the construction of a new nuclear power station at a specific site with other major infrastructure proposals and its interactions with other plans such as Water Company Resource Plans and Shoreline/ Estuary Management Plans and River Basin Management Plans.

Mitigation

- 4.3.5 In addition to the mitigation measures set out in EN-1, in the design of any direct cooling system the locations of the intake and outfall should be sited to avoid or minimise adverse impacts. There should also be specific measures to minimise fish impingement and/or entrainment and excessive heat from discharges to receiving waters.
- 4.3.6 The Radioactive Substances Act 1993 mitigates against the potential effects of liquid radioactive discharges at nuclear power station sites. Discharges into water sources will be controlled in accordance with permits issued by the Environment Agency. The contamination of soils and water sources can be mitigated through the EIA process and managed through the possible implementation of Environmental Management Plans.

4.4 Nuclear specific impacts: Coastal change

Introduction

- 4.4.1 The AoS identified that the development and construction of new coastal and fluvial defences and possible marine landing jetties/docks could affect coastal processes, hydrodynamics and sediment transport processes at coastal and estuarine sites. These impacts could lead to localised or more widespread coastal erosion or accretion. There could also be changes to offshore features such as submerged banks and ridges and marine ecology. On the Severn Estuary there is the potential for cumulative effects on coastal change.

Applicant's Assessment

- 4.4.2 As well as referring to EN-1, the applicant's EIAs/HRAs for sites on the Severn Estuary should give consideration to the potential for cumulative effects on coastal change.
- 4.4.3 In light of the AoS applicants should assess the site's geology, soils and geomorphological processes in order to understand the ongoing natural geological, coastal and geomorphic processes. This will include identifying impacts on coastal processes, intertidal deposition and soil development processes that maintain terrestrial habitats.

IPC Decision Making

- 4.4.4 The IPC should examine the broader context of coastal processes around the proposed site, and the influence in both directions, i.e. coast on site, and site on coast.

- 4.4.5 For sites such as Oldbury and Hinkley Point, other major schemes proposed in the Severn Estuary may result in in-combination effects, (for example the Severn Tidal Power Schemes and the Bristol Deep Sea Container Terminal).
- 4.4.6 The possible in-combination effects of such schemes will require more detailed assessment by the IPC as at the strategic level it is not possible to identify whether or not such schemes would have a detrimental impact on coastal erosion at the listed sites on the Severn Estuary.
- 4.4.7 Having taken account of the effects of climate change over the lifetime of the project (including any de-commissioning period) the IPC should be satisfied that the application will include measures to mitigate the effects of coastal erosion.

Mitigation

- 4.4.8 The IPC should expect applicants to demonstrate appropriate mitigation measures to address adverse effects on marine biodiversity and coastal geomorphology. This should be done in consultation with the Marine and Fisheries Agency (and, in due course, the MMO), the EA, LPAs, other statutory consultees, Coastal Partnerships and other coastal groups, as it considers appropriate. Where applicants have not done so the IPC should consider what appropriate mitigation conditions might be attached to the granting of development consent.

4.5 Nuclear specific impacts: biodiversity and geological conservation

Introduction

- 4.5.1 *The Overarching National Policy Statement for Energy, EN-1* describes generic impacts of new energy infrastructure on biodiversity and geology.
- 4.5.2 The AoS for the Nuclear NPS has identified potential cumulative ecological effects at sites in the south-west and north-west of England. It has also identified some common implications for biodiversity resulting from :
- water discharge, abstraction and quality issues;
 - habitat (and species loss) and fragmentation/coastal squeeze
 - disturbance events (noise, light and visual);
 - air quality.

Applicants Assessment

- 4.5.3 As well as taking account of the guidance set out in EN-1 applicants should consider the effects of the construction of a new nuclear power station on the soil-water regime and its effects on terrestrial habitats in any project level HRA.
- 4.5.4 At the project level baseline studies on nationally and internationally important habitats and species that may be affected as a result of the development should be undertaken by the applicant to inform assessments of the cumulative ecological effects .

IPC Decision Making

- 4.5.5 As well as taking account of the guidance set out in EN-1 the IPC should look for a Environmental Management Plan as part of the ES.
- 4.5.6 The IPC should assess the potential cumulative effects in accordance with EN-1.

Mitigation

- 4.5.7 As well as the options for mitigation set out in EN-1, the AoS and HRA of this NPS have identified possible mitigation options. These include variations to building layout to avoid ecologically sensitive areas and on-site measures to protect habitats and species and to avoid or minimise pollution and the disturbance of wildlife. The implementation of mitigation options for significant adverse effects can be more certain if the developer's Environmental Statement includes an Environmental Management Plan.

4.6 Nuclear specific impacts: landscape and visual

Introduction

- 4.6.1 The AoS identified that the potentially suitable sites share the following landscape issues: the sites are generally in less populated areas that may have value for visual amenity and as landscape resources; they are coastal/estuarine sites; and that the scale of the facilities means that the scope for visual mitigation is quite limited. In addition, because of the timescales involved, there is some uncertainty over future land uses once sites are decommissioned.
- 4.6.2 There is the potential for long-term effects on landscape through, especially in West Cumbria, because of the proximity to the National Park, and at Sizewell, given the Area of Outstanding Natural Beauty.
- 4.6.3 Visually-intrusive cooling towers can increase a nuclear power station's visual impacts on the landscape. However, with the exception of Oldbury, cooling towers are not the preferred option proposed by the nominators for cooling.
- 4.6.4 At all sites, construction can cause short-term effects on the landscape, including visual impact. This is likely to be as a result of construction plant and equipment, land disturbance and removal of vegetation. In addition, increased traffic during construction and operation may have adverse effects on the landscape, including, for example, noise, light and dust pollution that can affect tranquillity.
- 4.6.5 As a result of a number of sites in the south-west and north-west of England there is the potential for regional cumulative landscape effects.
- 4.6.6 In assessing landscape and visual effects resulting from transmission networks, EN-5 applies.

Applicant's Assessment

- 4.6.7 EN-1 sets out detailed policy guidance on the considerations for the applicant.

IPC Decision Making

4.6.8 As well as referring to EN-1, the IPC should note the potential for regional cumulative landscape effects in the north-west of England. When considering an application for one of the sites listed in those areas the IPC should consider the capacity of those areas to accommodate the cumulative impact of landscape effects.

Mitigation

4.6.9 As well as referring to EN-1, there are possibilities to mitigate certain potential adverse landscape and visual effects, for example through project design to minimise impacts on sensitive areas. The significance of impacts and the potential effectiveness of mitigation proposals can only be determined with detailed baseline studies to inform further visual impact studies at each site as part of the EIA.

4.7 Nuclear specific impacts: socio-economic

Introduction

- 4.7.1 The AoS identified that there are likely to be positive effects of local economic significance, although these are less significant at the regional scale except where there are clusters of potentially suitable sites for new nuclear power stations, particularly in the south-west and north-west of England.
- 4.7.2 An influx of workers could change the local population dynamics. It could alter the demand for services and facilities in the settlements nearest to the construction work. There could also be effects on social cohesion depending upon how population dynamics and service provision change.
- 4.7.3 The creation of job opportunities could have benefits for other local services in the area. For example, the nuclear industry in Cumbria has had significant effects on the local economy. It is estimated that approximately one third of employment in West Cumbria depends upon Sellafield because of off-site multiplier effects⁹⁰.
- 4.7.4 However, if development consent were to be granted to a number of sites within a region, and these were developed in a similar timeframe, there could be short term negative effects. These effects could include a potential shortage of construction workers to meet the needs of other industries and major projects within the region. There could also be pressure on local services, particularly at a sub-regional level.
- 4.7.5 The AoS identified that incoming populations, especially during construction, could increase the demand on community facilities and physical infrastructure (including for energy, water, transport and waste).

Applicants Assessment

4.7.6 Through the EIA applicants should identify any positive and negative socio-economic impacts associated with the construction, operation and decommissioning of a new nuclear power station.

⁹⁰ IDM and ERM (2006) *Potential New Build in Cumbria, An Assessment of Implications for the County, Final Report*.

- 4.7.7 This assessment should demonstrate that the applicant has taken account of, amongst other things, potential pressures on local and regional resources, demographic change and economic benefits.

IPC Decision Making

- 4.7.8 The IPC should give the potential socio-economic benefits significant weight when assessing development consent applications.
- 4.7.9 The IPC should consider any positive provisions the developer has made through developer contributions and any options for phasing development in relation to the socio-economic impacts.

4.8 Nuclear specific impacts: human health and well-being

Introduction

- 4.8.1 Given the concerns in relation to health issues associated with construction, operation and decommissioning of new nuclear power stations, this NPS considers the potential impacts on human health and well-being. The AoS identified that there could be positive effects for health and well being resulting from new nuclear power stations. This section should be read in conjunction with the section on “Health” in EN-1.
- 4.8.2 The AoS noted that the sites listed in the NPS are on coastal or estuarine locations in rural areas and that there is the potential for impact on land that has recreational and amenity value. Therefore this section should also be read in conjunction with “Land Use including Open Space, Green Infrastructure & Green Belt, in EN-1.
- 4.8.3 The operation of new nuclear power stations is unlikely to be associated with significant noise⁹¹ and air quality effects (although there may be local effects from transport and associated activities during construction). The subsequent effects on human health of these potential effects are unlikely to be significant.
- 4.8.4 In the event of an incident there could be a risk to health from exposure to radiation for workers and the public. This could arise from the operation and decommissioning of new nuclear power stations and from the storage, transportation and disposal of radioactive waste. It is Government’s view that these impacts are unlikely to arise. If they do they are likely to be limited due to the existing safety and environmental regulatory mechanisms⁹².
- 4.8.5 In common with other major industrial processes, the construction, operation and decommissioning of new nuclear power stations could affect health care provision. For example, the facility could increase demand on health monitoring services.

⁹¹ This includes potential vibration effects which are covered in EN-1.

⁹² *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM7296, URN 08\525, p80.

Applicant's assessment

- 4.8.6 The applicant should work with the local authority and the local primary care trust in identifying any potentially significant health impacts and in identifying mitigation measures. Where such measures relate to better public information on the extent of risk in relation to radiological hazard, the applicant should consult the Health Protection Agency on the appropriate standards for radiological protection⁹³.

IPC decision making

- 4.8.7 Given the potential for positive employment opportunities as a result of the development of new nuclear power stations the IPC should give significant weight to the effect of employment on human health and well being⁹⁴.

Mitigation

- 4.8.8 The potential for health impacts will be mitigated by satisfying the relevant regulatory regime.
- 4.8.9 The risk of adverse effects resulting from exposure to radiation for workers, the public and the environment will be mitigated because of the need to satisfy the requirements of the UK's strict regulatory regime.
- 4.8.10 The European Council Directive 96/29/Euratom of 13 May 1996 (the Basic Safety Standards Directive)⁹⁵ requires Member States to ensure that all new classes or types of practice resulting in exposure to ionising radiation are justified in advance of being first adopted or first approved by their economic, social or other benefits in relation to the health detriment they may cause. This process is known as Regulatory Justification. The Secretary of State for Energy and Climate Change is the Justifying Authority for the implementation of the Directive.
- 4.8.11 The Secretary of State's proposed decisions that two nuclear power station designs, Areva's EPR and Westinghouse's AP1000, should be Justified under the terms of the Directive, are the subject of a public consultation, published at the same time as the consultation on this draft Nuclear NPS.
- 4.8.12 The IPC should note that the basic safety standards for the protection of the workforce and general public against the dangers of ionising radiation set out in the Directive are enforced before, during and after operation of nuclear power stations, including the management and disposal of waste by the UK's regulatory framework. This aims to reduce potential health impacts to acceptable levels and ensure that radiation doses are well within internationally agreed limits. The IPC should not consider whether or not the aims of the directive have been or will be implemented.

⁹³ This is particularly relevant in relation to emergency planning.

⁹⁴ Waddell G and Burton K (2006): 'Is work good for your health and well-being?', TSO, London

⁹⁵ Council Directive 96/29/Euratom of 13 May 1996, laying down basic safety standards for the health protection of the workforce and general public against the dangers of ionising radiation. Official Journal of the European Communities (OJ L 159, 29.6.1996, p.1) http://ec.europa.eu/energy/nuclear/radioprotection/doc/legislation/9629_en.pdf

4.9 Flag for local consideration: proximity to aircraft movements

- 4.9.1 As part of the SSA, all nominated sites were assessed against their proximity to civil and military aircraft movement and were found to be potentially suitable. Although the assessment guidance in EN-1 applies, given the specific security arrangements in relation to air movements around nuclear sites, and the potential impact that new nuclear power stations may have on existing aerodromes, the IPC should ensure that any application has assessed the proximity of aircraft movements to the nominated site. Where necessary the IPC should seek the advice of the Nuclear Installations Inspectorate to ensure that proposed arrangements sufficiently safeguard the safety of the site. For this reason the NII will also assess this criterion.
- 4.9.2 In accordance with Statutory Instrument 2007 No 1929 (*The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulation 2007*) nuclear power stations in the UK are afforded an element of protection from aviation activity. This is done through the establishment of a Restricted Area (RA) at each station. Aviation activity within any Restricted Area is limited to that specifically permitted by the Statutory Instrument. Typically, such Restricted Areas have a radius of two nautical miles and extend vertically to 2000 feet above the surface. The Regulations will be revised as necessary to take account of new installations. The IPC should ensure the relevant government department is aware of the need to implement this requirement when a development consent application is submitted.

4.10 Flag for local consideration: access to transmission networks

- 4.10.1 In response to the SSA consultation⁹⁶ the Government said that issues surrounding electricity transmission would be considered at the application stage because not enough information was available to make an assessment in relation at the strategic level.
- 4.10.2 When considering a development consent application the IPC should refer to EN-5, Electricity Networks Infrastructure for guidance on where grid connection has or has not been secured.

4.11 Flag for local consideration: impact on significant infrastructure and resources

- 4.11.1 Significant infrastructure includes:
- motorways, major highways (for example A roads)⁹⁷
 - strategic rail network
 - gas transmission network

⁹⁶ *Towards a Nuclear National Policy Statement: Government Response to consultations on the SSA and siting criteria for new nuclear power stations in the UK; and to the study on the potential environmental and sustainability effects of applying this criteria*, January 2009, URN 09/581, p42.

⁹⁷ This also includes trunk roads and for example, the primary route network.

- electricity transmission network
- airports
- ports
- water – Source Protection Zones (now incorporated into impact on water quality and resources).

- 4.11.2 The AoS identified that there may be adverse effects during the construction and decommissioning phases on regional transport networks that may already be under stress, particularly where there are clusters of potentially suitable sites for new nuclear power stations. In considering this issue the policy set out in “Transport and Traffic impacts” in EN-1 applies.
- 4.11.3 Applications should demonstrate that the proposed development would not have an unacceptable negative impact on significant infrastructure. The IPC will need to take into account the local authority impact report, advice from the regulators and relevant policy in this NPS in assessing impacts on significant infrastructure and resources.

4.12 Flag for local consideration: emergency planning

- 4.12.1 In complying with the conditions of the nuclear site licence and their obligations under the *Radiation, Emergency Preparedness and Public Information Regulations 2001* (REPPPIR), all nuclear operators are required to specify and implement adequate arrangements for dealing with an incident or emergency, and its effects arising on the site. This would ensure that members of the public are properly informed and prepared, in advance, about what to do in the unlikely event of a radiation emergency, and that they receive information if a radiation emergency actually occurs. This would include an up to date assessment of evacuation routes.
- 4.12.2 Development of appropriate emergency plans in accordance with the nuclear site license and REPPPIR requires a detailed understanding of the nature of the local residential and working population, the capability and redundancy of the local infrastructure and the capability of local emergency services.
- 4.12.3 The licensing, and therefore the operation, of the facility is contingent on emergency planning arrangements being satisfactorily in place. Given the importance of local level detail and input to the assessment of emergency planning arrangements, the Government does not generally believe that it is possible to determine the ability of a site to meet emergency planning obligations at a national level for the purposes of the SSA.
- 4.12.4 The IPC should ensure that applicants have set out how they will approach emergency planning and that they have consulted with the NII and the Emergency Planning Authority, usually the local authority, on their applications. The final emergency planning and assessment arrangements must meet the requirements of the NII and the Emergency Planning Authority.

4.13 Flag for local consideration: demographics

- 4.13.1 The objective of Government's policy on demographics and the siting of nuclear power stations is to limit the radiological consequences to the public in the unlikely event of a serious nuclear accident. This policy is a measure of prudence over and above the stringent regulatory requirements imposed on nuclear operators to prevent such accidents.
- 4.13.2 The NII implements this policy by advising planning authorities whether proposed developments near to nuclear facilities are consistent with Government policy. Planning authorities take this advice into account in considering whether or not to approve planning applications.
- 4.13.3 It should be noted that although a site may meet the SSA criterion on demographics, this does not guarantee that the demographic features of a site will be acceptable to the NII following detailed regulatory assessment at the time of considering a nuclear site licence application.
- 4.13.4 When carrying out an assessment of a nuclear site licence application (at or around the time of a site specific development consent application), the NII will consider the population characteristics of the proposed site and specific details of the reactor design in order to establish the acceptability of the risks posed by the proposed nuclear power station to the local population. In certain circumstances this may include taking into account any changes since the SSA was carried out. This could lead to the NII refusing to grant a licence to construct the nuclear power station on the proposed site, or may lead to a requirement for design changes to reduce the health risk to a tolerable level. It is therefore possible that a site which meets the proposed SSA demographic criteria could be rejected on these grounds at a later stage.
- 4.13.5 Furthermore, once a new power station receives planning consent and a nuclear site licence, arrangements will be put in place with Local Planning Authorities and Nuclear Site Licensees which place constraints on development around nuclear sites. These constraints are designed to control residential, industrial and commercial developments. The aim is to preserve the general characteristics of the area around the nuclear site throughout its lifecycle, and to ensure that the basis on which the site is licensed is not undermined.
- 4.13.6 The IPC must ensure that the NII has been consulted on the demographic features of the site, and that the local planning authorities have been consulted on the consequences of restrictions that may be placed on the surrounding area.

Part 5: Assessment of sites nominated as part of the Strategic Siting Assessment process

5.1 Introduction

5.1.1 Part 3 of this NPS set out that the Strategic Siting Assessment is designed to identify sites that are considered to be potentially suitable for the deployment of new nuclear power stations by the end of 2025. All the sites listed in this NPS have been assessed by Government through the Strategic Siting Assessment. The Government's preliminary conclusion is that the following sites are potentially suitable for the deployment of new nuclear power stations by the end of 2025⁹⁸:

- Bradwell
- Braystones
- Hartlepool
- Heysham
- Hinkley Point
- Kirksanton
- Oldbury
- Sizewell
- Sellafield
- Wylfa

5.2 About the SSA process

5.2.1 The Government set out the final process and criteria for the Strategic Siting Assessment in January 2009⁹⁹. Sites had to be nominated by 31st March 2009. Site nominators had to demonstrate they had taken sufficient steps to raise awareness of their nomination with local communities, and that the site was credible for deployment by the end of 2025. Nominations were published and there was an initial opportunity for the public to comment on nominations. Sites were assessed under the Strategic Siting Assessment¹⁰⁰.

⁹⁸ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

⁹⁹ Department of Business, Enterprise and Regulatory Reform (BERR), *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581

¹⁰⁰ Site nominations and public comments can be viewed at online at <http://www.energy-nps-consultation.decc.gov.uk>

- 5.2.2 The Consultation on the SSA Process and Criteria¹⁰¹ and the Government Response to the Consultation on the SSA Process and Criteria¹⁰² contain details of the issues that nominators were asked to consider and that have formed part of the assessment. This also included guidance to nominators. A summary of the SSA criteria which gives background to the criteria and how these were used to assess nominations is below. This does not replace the full explanations of the criteria in the consultation the Government response.
- 5.2.3 The range of sources that the Government used in coming to its decision can be viewed at <http://www.energynpsconsultation.decc.gov.uk> and include comments made by the public during the initial opportunity for public comments, the Appraisal of Sustainability and Habitats Regulations Assessment reports on each site and in the NPS as a whole, and advice from specialists such as the regulators¹⁰³.

5.3 About the sites

- 5.3.1 The sites in the NPS were nominated into the SSA by third parties. Nominators did not have to own the land that they nominated. The ownership of land is a commercial concern that is subject to change, and in general has not been reflected in the NPS. However, the IPC should ensure that applications for development consent include up to date information about the ownership and land use of the site, and consulted with the owners of the land. Where the land is subject to alternative use, the IPC should consider that in conjunction with the guidance on land use in EN-1.
- 5.3.2 To provide certainty to the public, Parliament and the IPC on the area of land that has been assessed, sites have been delineated by a boundary on a map at 1:10,000 scale. The maps are at Annex B.
- 5.3.3 These sites have been assessed by Government as potentially suitable for the operation of nuclear power stations and for the safe and secure storage of spent fuel and intermediate level waste produced from operation and decommissioning of the station until it can be sent for disposal in a geological disposal facility.
- 5.3.4 To reduce the likelihood of further land being needed, and increase the usability of their site, nominators were encouraged to ensure that the area nominated included within it all likely actual site plans and all reasonable variations to those plans. It is therefore possible that the nominated area will be larger than the actual site plan that will be put forward, in due course, for development consent.

¹⁰¹ BERR, *Towards a Nuclear National Policy Statement: Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK*, July 2008, URN 08/925, <http://www.berr.gov.uk/files/file47136.pdf>

¹⁰² BERR, *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581

¹⁰³ Nuclear Installations Inspectorate, Office for Civil Nuclear Security and the Environment Agency. The Government was also advised by the Civil Aviation Authority, the Ministry of Defence, the Department for Transport, and MWH Enfusion Ltd (on the Appraisal of Sustainability and Habitats Regulations Assessment).

- 5.3.5 However, Government was of the view that it was not reasonable to expect nominators to include detailed lay-outs or additional land for construction or decommissioning in nominations. In addition, the Government also recognises that planning assumptions may change and that an element of flexibility may be needed to accommodate detailed local level discussions.
- 5.3.6 The SSA did not ask how many reactors may be developed at a site. For the majority of the criteria, the assessment has been about the land within the boundary that has been nominated and so the distinction is not relevant. However, for size of site (D9) and cooling (D10), the assessment has been carried out on the basis of one reactor. The Appraisal of Sustainability has also used a base case of one reactor, apart from at Hinkley Point and Sizewell where the Appraisal of Sustainability took note of nominator statements that they plan to develop twin reactors at the site.
- 5.3.7 This does not mean that more than one station could not be built at any site but does mean that the differing impacts of a second station would need to be taken into account by the IPC or the regulators as appropriate should such an application come forward. The Government would not expect to re-assess a site, nor to re-run the relevant Appraisal of Sustainability and Habitats Regulations Assessment assessments, should proposals for more than one reactor be submitted (either collectively or separately) for that site.

5.4 The SSA criteria and how sites were assessed

- 5.4.1 A summary of the SSA criteria which gives background to the criteria and how these were used to assess nominations is below. This does not replace the full explanations of the criteria in the Consultation on the SSA Process and Criteria and the Government Response to that consultation.

Conditions of nominating

Background

The Government Response to Consultation on the SSA Process and Criteria set out that the Government would screen nominations against the conditions of nominating which included consideration of the steps taken to raise awareness of their nominations with local communities, and consideration of the credibility of deployment of one or more new nuclear power stations on the site by the end of 2025.

Conditions of nominating (*continued*)

Raising awareness

The nominator of the site must have demonstrated that they, or where applicable, a third party¹⁰⁴, have taken steps to raise awareness of the nomination with local communities living in the vicinity of the site, including the owner(s) of the nominated sites. The consultation document made a number of suggestions of appropriate ways in which a nominator may do this, without being prescriptive and recognising that different nominators may need to take different approaches. However, as a minimum, nominators should have made the local authority, Regional Development Agency (RDA) and any land owners aware of their nomination, and take steps to publicise their nomination to the wider community through advertisements in local newspapers.

Credibility of deployment by the end of 2025

Although nominations did not have to be made by a credible nuclear power operator¹⁰⁵ (CNPO) the Government had to be satisfied that the site is credible for deployment by the end of 2025, and failure to do so would result in a nomination not being included in the SSA.

Nominations had to therefore include either a letter of support from a CNPO (which demonstrated why the CNPO considers the site to be credible for deployment by the end of 2025), or, if there was no letter of support from a CNPO, a statement from the nominator of the site demonstrating that the site is credible for deployment by the end of 2025. Given the importance of early deployment as outlined in Chapter 2 of the Government Response and Part 2 of this NPS, nominators also explained what prospects there are for deployment earlier within the 2025 timeframe at the site.

The Government Response made clear that the letter of support from the CNPO or the nominator's own statement should demonstrate the achievability of timescale for deployment by the end of 2025 and that it should focus on factors such as constructability, site planning, commissioning and the potential timing of any transmission and distribution infrastructure required to make the site operational and licensing issues. The Government Response also made clear that the above was not an exhaustive list and the Government was looking for a statement that demonstrates that the end of 2025 timescale is credible, rather than a detailed project plan, which will not normally be needed.

¹⁰⁴ In some cases public awareness raising and engagement on a nomination may be carried out by third parties, such as potential operators, rather than the nominator themselves.

¹⁰⁵ A Credible Nuclear Power Operator (CNPO) is one which currently operates a nuclear power plant anywhere in the world; and currently operates an electricity generating station subject to UK health, safety and environmental regulation, or, which has made a public commitment to become an operator of an electricity generating station (with a capacity in excess of 50MW) by 2016-2025 in a market subject to UK health, safety and environmental regulation.

Conditions of nominating (*continued*)

Notes on the assessment

In considering whether the minimum stipulations on raising awareness were met, the Government contacted the relevant RDAs and local authorities to verify that they had been notified. It was not practicable for the Government to contact landowners in the time available. The Government considered the evidence provided by nominators on this.

In considering whether a site is credible for deployment by the end of 2025 the Government considered the information nominators supplied with regard to whether it is reasonable to construct, plan, commission, and connect the site within the necessary timeframe, along with any other reasonable factors. This involved the consideration of advice from suitably qualified experts¹⁰⁶ on whether it was reasonable to conclude that a site could be deployed by the end of 2025 from the information given by nominators.

C1: Demographics

Background

The Government has a longstanding policy regarding local demographics which would limit the radiological consequences to the public in the unlikely event of an accident involving the spread of radioactive materials beyond the site boundary. This policy is a measure of prudence over and above the stringent regulatory requirements imposed on nuclear operators to prevent such accidents.

The Health and Safety Executive, through the Nuclear Installations Inspectorate administers the Government's policy on the control of population around existing licensed nuclear sites. The Nuclear Installations Inspectorate fulfils this function by advising planning authorities whether proposed developments near to nuclear facilities are consistent with Government policy. Planning authorities take this advice into account in considering whether or not to approve planning applications.

What did the Government assess?

In the Consultation on the SSA Process and Criteria the Government proposed to assess sites against the "semi-urban" demographic criterion and exclude from consideration in the SSA areas where the local population density exceeds the semi-urban criterion.

In this assessment where areas of a nominated site exceeded the semi-urban criterion (see Heysham, C1), the Government has considered further advice from the regulators to see whether the site remains viable.

Such flexibility is possible since for licensing the regulators have advised that they would need to be satisfied that only those parts of the power station which contribute a radiological hazard can be located in areas which do not exceed the semi-urban criterion. If the area that exceeded the semi-urban criterion would be required for siting those elements which have a direct potential to cause radiological hazard the site would be excluded.

¹⁰⁶ Atkins Ltd. The advice is published at <http://www.energynpsconsultations.decc.gov.uk>

C1: Demographics (continued)**Notes on the assessment**

Undertaking demographic assessments against the SSA criterion is complex, and the Government decided that it would be unreasonable to expect nominators to carry it out themselves; it therefore requested the Nuclear Installations Inspectorate to undertake such assessments for each nominated site¹⁰⁷.

It should be noted that although a site may meet the semi-urban criterion as part of the SSA, this does not guarantee that the demographic features of a site will be acceptable to the Nuclear Installations Inspectorate following its detailed regulatory assessment at the time of considering a nuclear site licence application.

C2 and D5: Proximity to military activities (exclusionary and discretionary)**Background**

The government assessed sites against these criteria to :

- seek to avoid the external hazards to nuclear power station safety that could be created by neighbouring military activities; and
- ensure that the capabilities of the armed forces to carry out essential training and operations are not adversely affected by the siting of new nuclear power stations.

What did the Government assess?

Against criterion C2, as set out in the guidance to nominators in the Government Response to consultation¹⁰⁸ sites could be rejected (in whole or in part) if the site is:

- within certain Military Low Flying Tactical Training Areas and Air Weapon Ranges;
- within the air space surrounding a Ministry of Defence aerodrome or an aerodrome used for defence activities contained within a designated Military Air Traffic Zone (MATZ);
- within the air space surrounding a Ministry of Defence aerodrome or an aerodrome used for defence activities contained within a designated Air Traffic Zone (ATZ);
- within or affects the use of the areas used for live firing or other military training activities. These include (but are not limited to) the following areas: Aldershot and Minley Training Area, Hankley and Elstead Commons Training Area, Leek and Upper Hulme Training Area, Longmore Range and Training Area, Otterburn Training Area and Salisbury Plain Training Area;
- within the explosive safeguarding zones surrounding Ministry of Defence explosive storage facilities.

¹⁰⁷ Health and Safety Executive are shortly to publish guidance on their approach to demographic assessments. This will be available on the Health and Safety Executive land use planning website <http://www.hse.gov.uk/landuseplanning/nuclear.htm>

¹⁰⁸ BERR, *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581

C2 and D5: Proximity to military activities (exclusionary and discretionary) *(continued)*

Against criterion D5, the Government assessed whether sites are in close proximity to or may affect other Ministry of Defence assets or activities and whether it is reasonable to conclude, at a strategic level, that such proximity should not rule out the site for consideration for a new nuclear power station. The Government has also considered whether there was evidence that impacts could potentially be adequately mitigated without compromising the Ministry of Defence facility or the nuclear installation.

This included consideration of whether any likely nuclear power station development within the nominated site boundary would adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime and whether it could be protected against the risk of external hazards created by neighbouring military activities.

Ministry of Defence assets or activities considered under this criterion included (but were not limited to) technical sites and transmitters, offshore danger areas and nuclear facilities (including ports used by military vessels).

Notes on the assessment

The Government was advised by the Ministry of Defence and the Nuclear Installations Inspectorate in reviewing the nomination against these criteria.

D1: Flooding, storm surge and tsunami (discretionary)

Background

The Government response to the Consultation on the SSA Process and Criteria outlined that the SSA process will consider flooding issues from two perspectives. First, the possible threats to the safety of a new nuclear power station in an area exposed to flood risk. Secondly, the wider impacts of flood protection countermeasures on areas surrounding potential new nuclear power station sites.

What did the Government assess?

The Government assessed whether it is reasonable to conclude, at a strategic level, that a nuclear power station within the nominated site could be protected against flood risks throughout its lifetime, including the potential effects of climate change, storm surge and tsunami, taking into account possible countermeasures and mitigations.

Notes on the assessment

For the purposes of this assessment the lifetime of the station includes allowing for the safe and secure storage of all the spent fuel and intermediate level waste produced from operation and decommissioning until it can be sent for final disposal in a geological disposal facility (GDF).

D1: Flooding, storm surge and tsunami (discretionary) (continued)

The time that will be required for the safe and secure onsite interim storage of spent fuel and intermediate level waste is contingent on a number of factors.

It is possible to envisage a scenario in which onsite interim storage might be required for 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. However, this is based on some conservative assumptions and there are a number of factors that could reduce or potentially increase, the total duration of onsite spent fuel storage. These factors are discussed in more detail in the paper "The arrangements for the management and disposal of waste from new nuclear power stations: a summary of evidence", which is being published alongside the draft Nuclear NPS. These include the actual level of burn up achieved; design of the disposal package; the final Geological Disposal Facility design and its geological setting. These could offer scope for shortening the required storage time.

In assessing both D1 (flooding) and D2 (coastal processes) the Government has been advised by the Environment Agency and the Nuclear Installations Inspectorate. Sites were assessed against the climate change allowances in Planning Policy Statement 25 (PPS25)¹⁰⁹ and then UK Climate Projections 2009 (UKCP09)¹¹⁰ findings. This advice looked at the capacity of nominated sites to withstand flood risk and coastal erosion including the potential effects of climate change using modelling data that looks ahead to 2100. The Nuclear Installations Inspectorate examined at a strategic level the adaptability of the proposed flood protection mechanism to changes in the demand to give confidence that if the current predictions are revised, modifications to the defences are practicable. This will be examined in more detail as part of the planning and licensing stage.

Given the principles set out in the waste assessment, it is possible that there could be waste on site for longer than the assessment has been able to look ahead. Predictions of potential climate change impacts become less certain the further into the future the assessments are for, and it is not practicable to consider beyond 2100 at this stage.

Whilst the assessment has only covered the next hundred years, the regulators are satisfied that additional safeguards are in place to ensure that only suitable sites achieve development and ongoing operational consent. Firstly, the capacity of new nuclear power stations to withstand the potential impacts of climate change will be reviewed in more detail as part of the site licensing process and as part of the Flood Risk Assessment that applicants must undertake in conjunction with their applications to the IPC. The IPC must be satisfied that applicants have demonstrated to the satisfaction of the regulators that their application has taken account of the potential effects of the maximum credible scenario in the most recent marine and coastal flood projections, in order for this to progress. Any site which was selected for development and subsequent licensing would be required to periodically update these projections as part of the site licence conditions.

¹⁰⁹ Planning Policy Statement 25: Development and Flood Risk, December 2006, Annex D pp.22-25
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf>

¹¹⁰ See <http://ukclimateprojections.defra.gov.uk>

D1: Flooding, storm surge and tsunami (discretionary) *(continued)*

Secondly, should sites achieve development consent, their capacity to withstand potential climate change will remain under consideration throughout the life of the nuclear power station. Once licensed, as part of the site licensing conditions, the licensee must review their safety case at regular intervals (typically on a ten year basis). This review will take the most recent climate change projections into account and allow the necessary modifications to flood defences and/or operating arrangements to be undertaken. The objective of the review is to compare the safety case of the site against modern standards to see if there are reasonably practicable improvements that could be made, to demonstrate that the plant is safe to continue to operate, including spent fuel and radioactive waste storage for the next defined period (typically ten years) and to identify any life-limiting factors. Failure to comply with any of the site licensing conditions (including participation in the periodic review) could ultimately result in a direction to undertake activities that would bring the plant into a compliant position.

Given these safeguards the Government and regulators believe that it is reasonable to assess sites for potential suitability to 2100.

The site summaries refer to the flood zones that nominated sites cover. For a definition of each of the flood zones see Planning Policy Statement 25 (PPS25). The assessment also considered the potential wider impact of flood protection countermeasures on areas surrounding the nominated sites.

PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk of flooding¹¹¹. The Government has applied the sequential approach in the SSA and concluded that all sites have demonstrated and passed the flood risk sequential test and can be included in this NPS. Further details are in Section 4.2 of this NPS.

D2: Coastal processes (discretionary)

Background

Low-lying land adjacent to the coastline or an estuary can be at risk of coastal flooding caused by high tides, storm surges and extreme waves. Coastal processes, such as erosion, also have the potential to pose risks to nuclear power stations over their lifetime although there may sometimes be ways to mitigate such risks.

What did the Government assess?

The Government assessed whether it was reasonable to conclude, at a strategic level, that a nuclear power station within the nominated site could be protected against coastal erosion and other landscape change scenarios, including the potential effects of climate change, for the lifetime of the station, taking into account possible countermeasures and mitigations.

¹¹¹ See *Planning Policy Statement 25: Development and Flood Risk* (PPG25), July 2001
<http://www.communities.gov.uk/publications/planningandbuilding/pps25floodrisk> for guidance

D2: Coastal processes (discretionary) (continued)**Notes on the assessment**

For the purposes of this assessment, the lifetime of the station includes allowing for the safe and secure storage of all the spent fuel and intermediate level waste produced from operation and decommissioning until it can be sent for final disposal in a geological disposal facility (GDF).

The time that will be required for the safe and secure onsite interim storage of spent fuel and intermediate level waste is contingent on a number of factors. It is possible to envisage a scenario in which onsite interim storage might be required for 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. However, this is based on some conservative assumptions and there are a number of factors that could reduce or potentially increase, the total duration of onsite spent fuel storage. These factors are discussed in more detail in the paper "The arrangements for the management and disposal of waste from new nuclear power stations: a summary of evidence", which is being published alongside this NPS. These include the actual level of burn up achieved; design of the disposal package; the final Geological Disposal Facility design and its geological setting. These could offer scope for shortening the required storage time.

In assessing both D1 (flooding) and D2 (coastal processes) the Government has been advised by the Environment Agency and the Nuclear Installations Inspectorate. Sites were assessed against the climate change allowances in Planning Policy Statement 25 (PPS25)¹¹² and then UK Climate Projections 2009 (UKCP09)¹¹³ findings. This advice looked at the capacity of nominated sites to withstand flood risk and coastal erosion including the potential effects of climate change using modelling data that looks ahead to 2100. This is because predictions of potential climate change impacts become less certain the further into the future the assessments are for and it is not practicable to consider beyond 2100 at this stage. More detailed assessments will be needed for planning and licensing. Any site which was selected for development and subsequent licensing would be required to periodically update these projections as part of the site licence conditions.

The assessment was based on the existing knowledge of the Environment Agency of the risk of coastal erosion at sites, of historical coastal events in the region and the most current Shoreline Management Plan policy (in the case of some nominated sites in draft form). For those nominated sites which are adjacent to existing licensed sites, there is also a considerable wealth of information on the prevailing coastal performance and local management arrangements which informed the judgements made. Estimates for the coastal erosion given in the nominations in the vicinity of nominated sites were also considered for their reasonableness.

¹¹² Planning Policy Statement 25: Development and Flood Risk, December 2006, Annex D pp.22-25
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf>

¹¹³ See <http://ukclimateprojections.defra.gov.uk>

D2: Coastal processes (discretionary) (continued)

Notes on the assessment (continued)

During the assessment the practicability of the proposed mitigation measures were reviewed along with the implications for areas beyond the immediate site boundary where reliance was placed on defences potentially without the control of the site.

Given the safeguards set out against criterion D1, including periodic review, which would equally be applied to consideration of coastal processes, the Government and regulators believe that it is possible to assess sites for potential suitability to 2100.

The Government was advised by the Environment Agency, supported by the Nuclear Installations Inspectorate, in reviewing the nomination against this criterion.

D3: Proximity to hazardous facilities (discretionary)

Background

The safety regulation of nuclear power stations requires that the risks posed by external hazards are minimised. These considerations extend beyond the natural hazard issues described above to include a requirement to consider the man-made external hazards to the nuclear power station's safety.

What did the Government assess?

The assessment considered whether it was reasonable to conclude that a new nuclear power station at the nominated site could be protected against potential risk arising from proximity to hazardous facilities arising throughout its lifetime taking into account suitable counter measures and mitigations.

The Government Response set out that a nominated site may be unsuitable, on a discretionary basis, if it is within the consultation distance of an existing or proposed hazardous facility.

Notes on the assessment

Given the security considerations around the information for this criterion, the Government did not require nominators to provide information themselves although many nominators did.

The Government was advised by the Health and Safety Executive in assessing nominations against this criterion. In regard to establishments subject to the Control of Major Accidents and Hazards (COMAH) Regulations 1999 (which is determined by chemical type and inventory), HSE has developed a methodology for assessing development near to such sites – the Planning Advice for Developments near Hazardous Installations (PADHI) system¹¹⁴. This gives guidance to planning authorities in considering the suitability of domestic, institutional and industrial developments within a series of zones (inner, middle and outer, the latter forming a Consultation Distance around hazardous installations).

¹¹⁴ See the Consultation on the SSA Process and Criteria for more detail on the PADHI system: BERR, Towards a nuclear national policy statement: Consultation on the Strategic Siting Assessment process and criteria URN 08/295 <http://www.berr.gov.uk/files/file47136.pdf> pp52-53

D3: Proximity to hazardous facilities (discretionary) (continued)**Notes on the assessment (continued)**

Some sites on the PADHI database may be subject to the Hazardous Substances Consent Regulations¹¹⁵ but not to COMAH. The HSE also considered all sites which qualify for Hazardous Substances Consent for which the HSE produce planning consultation zones.

D4: Proximity to civil aircraft movements (discretionary)**Background**

The Consultation on the SSA Process and Criteria set out that there is a risk to all nuclear facilities (as there is everywhere), related to an aircraft crashing on or near to the site. Large aircraft crashes are a rare event in the UK, however, the risk across the country is not uniform. The mitigations to protect new nuclear power stations can also have an impact on civil aircraft movements. Please see the consultation document for a detailed description of this criterion.

What did the Government assess?

The Government considered whether it is reasonable to conclude that:

- any likely nuclear power station development within the nominated site boundary can be protected against risks from civil aircraft movement¹¹⁶; and
- the effects on air traffic and aerodromes can potentially be mitigated.

Notes on the assessment

The Government was advised by the Civil Aviation Authority and Nuclear Installations Inspectorate in considering this criterion.

Unlicensed aerodromes that have not lodged aerodrome safeguarding plans have not been assessed as part of the SSA, but this has been flagged to the IPC as an issue for local consideration.

¹¹⁵ Planning Hazardous Substances Act 1990 and the Planning (Hazardous Substances) Regulations 1992 as amended by the planning (Control of Major – Accident Hazards) Regulations 1999.

¹¹⁶ This may involve a consideration of the application of the Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007 to the nominated site.

D6: Internationally designated sites of ecological importance (discretionary)

Background

There are numerous ecological sites across the UK that are protected from the impacts of development by International and European legislation and agreements. The Consultation on the SSA Process and Criteria set out that the SSA will, through the application of criterion D6, seek to ensure that developers minimise the adverse impact of new nuclear power stations on the UK's most environmentally sensitive features¹¹⁷.

What did the Government assess?

The Government considered the Habitats Regulations Assessment and Appraisal of Sustainability reports on each nominated site to assess whether European sites (defined below) would be directly or indirectly affected by the deployment of a new nuclear power station on the site; the likely level of impact and whether it was reasonable to conclude, at a strategic level, that the plan would not have an adverse effect on the integrity of such sites (including a consideration of whether it should be possible to avoid or mitigate any effects) in line with the standards set by the Habitats Directive. The statutory consultees¹¹⁸ were consulted on these reports and their advice informed the assessment.

Where it was not possible to rule out an adverse effect on the integrity sites protected under the Habitats Directive, the Government considered whether there were alternative solutions and subsequently Imperative Reasons of Overriding Public Interest (IROPI) in favour of including those sites in this NPS in accordance with article 6(4) of the Habitats Directive. The Government's consideration of IROPI is set out in Annex A of this NPS. The Government was also required to consider the issue of compensatory measures under article 6(4) of the Habitats Directive.

Notes on the assessment

The Habitats Directive protects habitats and species of European nature conservation importance by establishing a network of internationally important sites designated for their ecological status¹¹⁹.

These are referred to as Natura 2000 sites or European sites, and comprise of Special Protection Areas¹²⁰ (SPAs), Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSAC), and Sites of Community Importance (SCIs) designated and defined under the Habitats Directive.

It is Government policy to treat Ramsar sites, designated by the Ramsar Convention on Wetlands (1971) and potential SPAs (pSPAs) as if they are fully designated European sites for the purpose of considering any development proposals that may affect them¹²¹.

¹¹⁷ *Towards a nuclear national policy statement: Consultation on the Strategic Siting Assessment process and criteria*, URN 08/295 <http://www.berr.gov.uk/files/file47136.pdf>, p64

¹¹⁸ Environment Agency, Environment Agency Wales, English Heritage, Natural England, Department of the Environment, Northern Ireland, Cadw; Countryside Council for Wales, Scottish Natural Heritage, Scottish Environment Protection Agency, Historic Scotland.

¹¹⁹ The European Directive (92/43/EEC) on the Conservation of Natural Habitats and Wild Flora and Fauna.

¹²⁰ Classified under the EC Birds Directive 1979.

¹²¹ ODPM, Planning Policy Statement 9 Biodiversity and Geological Conservation; Government Circular: Biodiversity & Geological Conservation – Statutory Obligations and their impact within the planning system (ODPM, 2005); WAG, Technical Advice Note (TAN) 5 Nature Conservation and Planning (2009).

D7: Nationally designated sites of ecological importance (discretionary)

Background

In line with criterion D6, the Consultation on the SSA Process and Criteria also set out that the Government intends to use the SSA assessment to help to minimise the adverse impacts of development on nationally designated sites of ecological sensitivity, including:

- Sites of Special Scientific Interest (England, Scotland and Wales) and Areas of Special Scientific Interest (Northern Ireland), some of which are also Natura 2000 or Ramsar sites and are therefore covered by criterion D6;
- National Nature Reserves;
- Marine Nature Reserves;
- Marine Conservation Zones;
- Areas of Special Protection (England, Scotland and Wales) and Wildlife Refuges (Northern Ireland);
- Natural Heritage Areas (in Scotland);
- Limestone Pavement Orders; and

What did the Government assess?

The Government considered the potential impact of deployment of a new nuclear power station on nationally designated sites of ecological importance, the likely level of impact and whether it is reasonable to conclude, at a strategic level, that it may be possible to avoid or mitigate such impact.

Notes on the assessment

The Government assessed nominations using in particular the Appraisal of Sustainability reports in considering this criterion.

The fact that it has not been possible to conclude that there will be no adverse impacts has not necessarily resulted in a site being considered unsuitable. In conducting the assessment, the Government has, where possible, taken account of the likely level of any impact. Where appropriate, it has also taken account of the extent of the need for new generating capacity. The Government has also taken account of the fact that this is a strategic level study and that it will not always be possible to rule out adverse impacts at a strategic level.

Where a development of a nominated site was likely to affect a Site of Special Scientific Interest (SSSI), the Government has, where possible, tried to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest. The Government has done this by considering these matters through the Appraisal of Sustainability at a strategic level and by ensuring that those matters will receive further consideration through the Guidance to the IPC in Part 4 of the Overarching Energy NPS (EN-1).

The statutory consultees¹²² were consulted on these reports and their advice informed the assessment.

¹²² Environment Agency, Environment Agency Wales, English Heritage, Natural England, Department of the Environment, Northern Ireland, Cadw; Countryside Council for Wales, Scottish Natural Heritage, Scottish Environment Protection Agency, Historic Scotland.

D8: Areas of amenity, cultural heritage and landscape value (discretionary)

Background

The UK's planning system seeks to protect, where possible, sites and structures of specific amenity, cultural heritage and landscape value. For the purposes of the SSA, these sites included:

- Unesco World Heritage Sites;
- Scheduled Monuments;
- Protected Wreck Sites;
- National Parks;
- Areas of Outstanding Natural Beauty (England, Wales and Northern Ireland);
- National Scenic Areas (Scotland);
- Listed buildings;
- Conservation Areas; and
- Areas of Archaeological Importance.

What did the Government assess?

The Government considered the nomination in conjunction with the Appraisal of Sustainability reports to consider whether there was an impact on nationally designated sites, the likely level of impact and whether it was reasonable to conclude, at a strategic level, that it should be possible to avoid or mitigate such impact.

Where it is considered that the development of a site is likely to affect a National Park, the Government has had regard to the purposes of the designation of the National Park in conserving and enhancing the natural beauty, wildlife and cultural heritage of the park and of promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public. Where it is considered that the development of a site is likely to affect an Area of Outstanding Natural Beauty, the Government has had regard to the purpose of conserving and enhancing the natural beauty of the area of outstanding natural beauty.

The fact that it has not been possible to conclude that there will be no adverse impacts has not necessarily resulted in a site being considered unsuitable. In conducting the assessment, the Government has, where possible, taken account of the likely level of any impact. Where appropriate, it has also taken account of the extent of the need for new generating capacity. The Government has also taken account of the fact that this a strategic level study and that it will not always be possible to rule out adverse impacts at a strategic level.

D8: Areas of amenity, cultural heritage and landscape value (discretionary) (continued)**Notes on the assessment**

The Government assessed nominations using, in particular, the Appraisal of Sustainability reports in considering this criterion.

The statutory consultees¹²³ were consulted on these reports and their advice informed the assessment.

D9: Size of site to accommodate operation (discretionary)**Background**

Sites will have to be large enough to safely accommodate the operation of modern nuclear power stations. The availability of land is also of particular relevance in the context of security arrangements required for nuclear power station sites. Operators are required to adopt the concept of “defence-in-depth” in protecting nuclear power stations¹²⁴. This will require them to make adequate land available so that effective control over activities and access may be exercised on and around each nuclear power station.

What did the Government assess?

As set out in the Government Response to Consultation on the SSA Criteria and Process¹²⁵, the Government considered whether it was reasonable to conclude that there was enough land within the boundary nominated to safely and securely operate at least one new nuclear power station. This took consideration of whether the area nominated includes a provision for the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility. The assessment also included whether there is adequate land available so that effective control over activities and access may be exercised on and around a new nuclear power station on the nominated site.

Notes on the assessment

The Government expects nominators of new nuclear power stations to make provision for safe and secure storage of all the spent fuel and intermediate level waste produced through operation and decommissioning on the site of the station until it can be sent for disposal in a geological disposal facility. Operators were expected to factor this into the area nominated.

The Government expects nominators of new nuclear power stations to make provision for safe and secure storage of all the spent fuel and intermediate level waste produced through operation and from decommissioning on the site of the station for several decades until it can be sent for disposal in a geological disposal facility. Operators were expected to factor the need for this into the area nominated.

¹²³ Environment Agency, Environment Agency Wales, English Heritage, Natural England, Department of the Environment, Northern Ireland, Cadw; Countryside Council for Wales, Scottish Natural Heritage, Scottish Environment Protection Agency, Historic Scotland.

¹²⁴ Defence-in-depth is defined by the International Atomic Energy Agency (IAEA) as “a concept used to design security systems that require an adversary to overcome or circumvent multiple obstacles, either similar or diverse, in order to achieve his objective”.

¹²⁵ BERR, Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581, p46.

D9: Size of site to accommodate operation (discretionary) *(continued)*

Notes on the assessment *(continued)*

The Government accepts that, at this stage, nominators will not have detailed plans for construction or decommissioning and will therefore not know what land, beyond that required for operations, they will need for these activities. These elements will form part of the application for development consent to be assessed by the IPC.

Nominators were, however, encouraged to ensure that the area nominated included all likely site plans and all reasonable variations to those plans. It is therefore possible that the nominated area will be larger than the actual site plan that will be put forward, in due course, for development consent.

The Office for Civil Nuclear Security has confirmed that a rectangular area of adequate width (approximately 30 hectares) is required to provide the effective defence in depth necessary for the reactor building, spent fuel and intermediate level waste stores.

Nominators have indicated that in their view the size of site required for the operation of a permanent site of a single nuclear power unit allowing for operation, maintenance, storage of spent fuel and intermediate level waste would be between 30 to 50 hectares. The Nuclear Installations Inspectorate concur with industry's estimate. The most recent nuclear power station to be developed in the UK (Sizewell B) has a total site area of 26 hectares for operational facilities including spent fuel and waste storage.

Against this criterion the Government was advised by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security. Their advice involved consideration of both the size and the shape of the area, given that shape is particularly relevant in considering whether there is sufficient room for defence in depth of elements of the facility.

D10: Access to suitable sources of cooling (discretionary)

Background

Nuclear power stations require suitable cooling for safe and efficient operation. Feasible options for cooling include:

- direct use of sea, lake or river water without cooling towers;
- use of cooling towers, typically combined with lake or river sites and using considerably less water than direct cooling; and
- air-based cooling, with minimal water requirements but utilising large heat exchangers.

The environmental impacts of cooling depend largely on the environmental sensitivity of the area, the cooling requirements of the nuclear power station and the detailed design of the cooling system. Both abstraction and discharge of cooling water can affect the environment. Cooling towers can also have visual impact.

D10: Access to suitable sources of cooling (discretionary) (continued)**What did the Government assess?**

The Government considered whether it is reasonable to conclude that there are suitable sources of cooling for a new nuclear power station at the nominated site, taking account of potential measures to counter impacts, and mitigations.

Notes on the assessment

Nominators were expected to offer information about cooling technologies that are feasible for likely nuclear power station developments within the nominated site. They were not expected to specify particular reactor designs or the number of reactors to be developed on the nominated site.

The Government considered this criterion in conjunction with advice from the Nuclear Installations Inspectorate and the Environment Agency.

Government also considered the findings of the Appraisal of Sustainability which considered both the biodiversity and visual impacts of potential cooling technologies.

5.5 About the summaries

- 5.5.1 The summaries in this section set out why the sites have been found to be potentially suitable. They include the analysis and conclusions drawn against the SSA criteria and reflect advice received from specialists and the regulators¹²⁶. They also highlight some of the key points made during the opportunity for public comments that were considered in reaching a decision. They do not attempt to reflect all the comments made. For all the comments and a summary report please see <http://www.energynpsconsultation.decc.gov.uk>
- 5.5.2 Whilst the Government believes that these sites are potentially suitable, the Strategic Siting Assessment has identified particular issues which the Government believes require further consideration either by the applicant, the regulators, the IPC or a combination of these. The summaries highlight these issues where they arise. Where such issues are highlighted for the IPC to consider, they should be considered in conjunction with the guidance in Part 4 of this NPS and where relevant EN-1. This is not an exhaustive list of what the IPC or regulators will be considering.

¹²⁶ Nuclear Installations Inspectorate, Environment Agency, Office of Civil Nuclear Security, Civil Aviation Authority, Ministry of Defence, Department of Transport, Atkins Ltd, MWH Enfusion.

5.6 Bradwell

Description of the location

- 5.6.1 The nominated site comprises part of a former military airfield and land to the east and south of the existing Bradwell nuclear power station, a twin-reactor Magnox power station that operated from 1962 to 2002 and is now being decommissioned by the Nuclear Decommissioning Authority (NDA), who currently anticipate that this will be completed in 2104.
- 5.6.2 The majority of the site is arable farmland. The site is located on the south side of the Blackwater Estuary at the northern extremity of the Dengie peninsula some 15km east of the town of Maldon, in the parish of Bradwell-on-Sea within the District of Maldon and the County of Essex. The grid reference of the approximate centre of the nominated site is 601000, 209000. A map of the site is at Annex B.

Deployability by the end of 2025

- 5.6.3 The SSA is limited to considering sites which are credible for deployment by the end of 2025¹²⁷. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security. At Bradwell, the Government in particular notes that there is already knowledge about the site developed through the construction and operation of the adjacent power station. However, detailed consideration would still be necessary, where there were any changes in circumstances, for instance to take into account new technologies or changes to the site. The Government also notes that a grid connection agreement for a transmission capacity of 1650MW is in place with National Grid, with a connection date of 2016 (although this does not mean that the site would be deployed at that date).
- 5.6.4 The Government is satisfied from the information provided by nominators and an independent assessment that Bradwell is credible for deployment by the end of 2025.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.6.5 The Health and Safety Executive has advised that none of the site exceeds the semi-urban criterion.
- 5.6.6 In response to this criterion, responses were received during the opportunity for public comment that raised the additional population in the area during tourist season, the proximity of Bradwell to West Mersea and larger population centres at Maldon and Colchester. There were also comments on the feasibility of instituting an effective emergency plan for evacuation of the site, particularly in relation to West Mersea where access routes are prone to flooding.

¹²⁷ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

- 5.6.7 The demographics assessment covers permanent night time residents, as identified in census data. Transient holiday populations would be assessed by the Health and Safety Executive before any licence was granted should an application come forward. They do not feature as part of this assessment.
- 5.6.8 Transient holiday populations would also be factored into consideration of emergency planning if they were considered to be in relevant areas. As set out in Part 4 of this NPS, in complying with the conditions of the nuclear site license and legal obligations¹²⁸, all nuclear operators are required to specify and implement adequate arrangements for dealing with an incident or emergency arising on the site and its effects.
- 5.6.9 The emergency plan is to ensure that members of the public are properly informed and prepared, in advance, about what to do in the unlikely event of a radiation emergency occurring, and provided with information if a radiation emergency actually occurs. This would include an up to date assessment of evacuation routes for the areas which are considered relevant. However, delineation of a new emergency plan is ultimately a decision for a local emergency planning authority on the advice of the Health and Safety Executive, the site operator and others with roles in implementing the off-site emergency plan.
- 5.6.10 Development of appropriate emergency plans requires a detailed understanding of the nature of the local residential and working population, capability and redundancy of local infrastructure and capability of local emergency services. The potential of a site to meet emergency planning requirements cannot, in general, be assessed at a strategic level and has not been assessed in this case as part of the SSA. It is, however, flagged as a consideration should an application for development consent come forward, and guidance is given to the IPC in Part 4 of this NPS.

Assessment

- 5.6.11 The HSE has advised that none of the site exceeds the semi-urban criterion. This site passes the demographics criterion.

Guidance to the IPC

- 5.6.12 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.

C2 and D5: Proximity to military activities

Analysis

- 5.6.13 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas. No military firing activity occurs in the marine or landward

¹²⁸ Under the *Radiation (Emergency Preparedness and Public Information Regulations 2001 (REPPiR)*.

areas adjoining the site. There are no military explosive or military nuclear facilities within 1000 metres of the site.

- 5.6.14 The Ministry of Defence has found that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.6.15 The proximity of the site to Fingringhoe and Shoeburyness ranges and whether there was any risk posed by explosions at Shoeburyness was raised during the opportunity for public comments. Shoeburyness and Fingringhoe are 8.1km and 13.5km away from the nominated site respectively. The Ministry of Defence has advised that all weapon discharges (including ricochets) are contained within the designated Ministry of Defence Danger Areas. A study conducted on Shoeburyness in 2003-04 by Vibrock Ltd¹²⁹, an independent specialist in vibration monitoring and control concluded that during the period monitored “at no time...did any events even approach those levels considered necessary for the possible onset of the most cosmetic of damage whether the vibration was ground or airborne”.
- 5.6.16 Concerns were also raised as to whether the proximity of the site to Colchester Barracks could increase the risk of terrorist threat to the area. Ministry of Defence has advised that their facilities have appropriate security arrangements in place to counter the threat of terrorism to their own operations such as Colchester Barracks and that it is reasonable to conclude that a nuclear power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime.
- 5.6.17 *The White Paper on Nuclear Power* reviewed the arguments and evidence put forward about the risks posed to new nuclear power stations by terrorist attack. The Government set out that “having reviewed the arguments and evidence put forward, and based on the advice of the independent regulators, and the advances in the designs of power stations that might be proposed by energy companies, the Government continues to believe that new nuclear power stations would pose very small risks to safety, security, health and proliferation, and that the Government believes that the UK has an effective regulatory framework that ensures that these risks are minimised and sensibly managed by the industry”¹³⁰.
- 5.6.18 Under that regulatory framework, nuclear power stations must have their security arrangements approved by the Office for Civil Nuclear Security and arrangements must include consideration of terrorist threat. In addition, as part of the Generic Design Assessment (GDA), the threat to the new reactor designs from a wide range

¹²⁹ An Assessment of Environmental Vibration Produced During Explosive Activities at Shoeburyness, Essex from January 2003 to March 2004, undertaken on behalf of QinetiQ. Report No. R04.3760/2/DJH, dated 10th November 2005

¹³⁰ BERR, *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525 <http://www.berr.gov.uk/files/file43006.pdf>, Section 2.

of hazards is being considered. This includes consideration of the ability to withstand accidental aircraft crash or malicious activity. Demonstration of compliance with UK expectations is required to allow the designs to be considered suitable for deployment in the UK.

Assessment

5.6.19 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:

- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded in whole or in part from the assessment;
- the site is not in proximity to or may affect any Ministry of Defence assets or activities to an extent that would suggest that it should be ruled out;
- the development of a new nuclear power station at the site will not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime;
- any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime.

5.6.20 This site therefore passes these criteria.

5.6.21 In addition, the Government based on the advice and evidence outlined above the Government does not believe that the proximity of Shoeburyness and Fingringhoe poses any direct risk to the nominated site. Should this situation have changed, any risks from military activity, including ground vibration, would be considered by the Nuclear Installations Inspectorate as part of licensing.

5.6.22 Given the measures that would have to be in place as a condition of licensing to protect against risk of terrorist threat, the proximity of Colchester Barracks is not considered to affect the potential suitability of the site. The Office for Civil Nuclear Security will consider the security of the site as part of the licensing process should an application for development consent come forward.

Guidance to the IPC

5.6.23 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.

D1: Flooding, storm surge and tsunami

Analysis

5.6.24 The majority of the site is in flood zone 3, high probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year. The remainder of the site is in flood zone 1, low probability. This zone comprises land

assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)¹³¹.

- 5.6.25 A number of responses during the opportunity for public comment were received regarding the vulnerability of Bradwell to flooding, and in particular the potential impacts arising from climate change.
- 5.6.26 The Appraisal of Sustainability¹³² identified potential adverse effects relating to flood risk arising from predicted rising sea levels caused by climate change, especially during the later stages of operation and decommissioning of a potential nuclear power station.
- 5.6.27 The Environment Agency has noted that the existing power station site at Bradwell is built approximately 1.8 metres above the 1953 surge tide level and is at a low risk of flooding. The seawall is lower than the area of raised ground that the power station is built on and does not provide the power station with any flood protection. The Environment Agency has advised that current estuarine processes and rising sea-levels place an added pressure on the defences and that the condition of existing defences range from very poor to good. The Appraisal of Sustainability has noted that existing defences may require upgrading over the lifetime of a new power station and this could have potential effects on erosion and visual appearance of the coastline. Whilst the Appraisal of Sustainability finds that these effects are significant, it finds that mitigation opportunities are likely to be available following further study.
- 5.6.28 The Environment Agency has advised that it is potentially reasonable to conclude that a nuclear power station within the nominated site could potentially be protected against flood risks throughout its lifetime¹³³, including the potential effects of climate change, storm surge and tsunamis, taking into account possible countermeasures. The Environment Agency have noted in making this assessment that it is likely that any new development at Bradwell would be built on higher or raised ground so reducing the need for protection.
- 5.6.29 Concerns were expressed during the opportunity for public comment that measures to protect the site from coastal erosion and flooding could have a detrimental effect on other parts of the Blackwater Estuary, and whether these measures could cause flooding elsewhere. Although the Appraisal of Sustainability for Bradwell has noted that measures such as local land raising could increase flood risk to surrounding areas the Environment Agency has advised that it is unlikely that any development would have any adverse impact with respect to flooding on the surrounding area.

¹³¹ See PPS25 for a full definition of the flood zones and what they cover: *Planning Policy Statement 25: Development and Flood Risk*, December 2006, Annex D pp.22-25.
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf>

¹³² *Appraisal of Sustainability: Site report for Bradwell*, November 2009, <http://www.energyngpsconsultation.decc.gov.uk>

¹³³ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.6.30 The Environment Agency has advised that the access road to the power station rises to high ground so a failure of the seawall would not cause this site to be cut off.

Assessment

- 5.6.31 This site passes this criterion. This is because, based on, in particular, the advice of the Environment Agency and the findings of the Appraisal of Sustainability, it is reasonable to conclude that a nuclear power station within the nominated site could potentially be protected against flood risks throughout its lifetime, including the potential effects of climate change, storm surge and tsunamis. This takes into account the potential identified by the Environment Agency to protect the site and to mitigate risks although, as with all sites, the potential effects of any mitigation on the surrounding area will have to be carefully considered as part of a flood risk assessment should any application be forthcoming.
- 5.6.32 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.6.33 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation.
- 5.6.34 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.6.35 The Environment Agency has advised that development at the site could potentially avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime¹³⁴, including the potential effects of climate change.
- 5.6.36 Final proposals are likely to require mitigations, for instance the Environment Agency has advised that any new development at Bradwell could be built on higher or raised ground. The Environment Agency has also noted that positioning of the site could limit any future long term effects of coastal erosion.
- 5.6.37 The Appraisal of Sustainability has identified possible secondary impacts on coastal processes, hydrodynamics and sediment transport from any necessary new or upgraded coastal defences. It has found that mitigation may be possible through appropriate design and construction of defences.

¹³⁴ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.6.38 The Environment Agency has also advised that the impacts of a power station on the evolution and geomorphology of the Estuary channel may need to be considered, including the impact of elements such as outfalls of cooling water on the adjacent areas in the Estuary and what potential for change this may cause in estuarine flows.
- 5.6.39 The Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and estuary from changing and adapting naturally.

Assessment

- 5.6.40 The site passes this criterion. Based on the advice above, it is reasonable to conclude at a strategic level that a nuclear power station within the site could be protected against coastal erosion and other landscape change scenarios, including the potential effects of climate change, for the lifetime of the station, taking into account countermeasures and mitigations.

Guidance to the IPC

- 5.6.41 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.
- 5.6.42 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal change and flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations

Analysis

- 5.6.43 A small area in the south west tip of the site is within the land use planning consultation zones for the former COMAH establishment at Supergas. This was decommissioned in 1999. The land may still be covered by a Hazardous Substances Consent which is administered by the local planning authority. However, the map at Annex B illustrates that the area of overlap is only an extremely small portion of the nominated land.
- 5.6.44 The Health and Safety Executive has advised that it is reasonable to conclude that the nominated site can be protected against the risk arising from proximity to hazardous facilities throughout its lifetime taking into account possible countermeasures and mitigations. Given the small area of overlap with the consultation zones for the extant Supergas facility, it is likely that should a hazard still be posed, mitigations would be available such as siting key buildings away from that area.
- 5.6.45 The Health and Safety Executive has advised that as with all sites during licensing the licence applicant to the Health and Safety Executive will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

Assessment

- 5.6.46 The proximity of the extant Supergas facility does not affect the potential suitability of the site at this stage given the scope for avoidance or mitigation if necessary. This site passes this criterion. It is reasonable to conclude that a new nuclear power station at the nominated site could be protected against risk arising from proximity to hazardous facilities throughout its lifetime.

Guidance to the IPC

- 5.6.47 The IPC should ensure that the applicant has consulted the Local Planning Authority and the Health and Safety Executive with regard to the Supergas facility and considered appropriate mitigations if necessary.
- 5.6.48 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.6.49 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK, including the existing facility at Bradwell, receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation¹³⁵. Typically, such Restricted Areas have a radius of two nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation. The Civil Aviation Authority has advised that a Restricted Area at the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements.
- 5.6.50 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. Any potential for the existing Bradwell-associated Restricted Area to impact upon operations associated with Southend Airport and upon helicopter activity associated with the power station is mitigated by exemptions within the legislation which allows a restricted height of not less than 1500 feet (rather than 2000) for some Southend Airport related air traffic control procedures only, and allows for helicopter activity associated with the installation.

¹³⁵ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

- 5.6.51 The Civil Aviation Authority has advised that there are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations, and that the current establishment of the existing Bradwell Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.
- 5.6.52 Responses were received in the opportunity for public comments that the site is under the flight path for Stansted, Heathrow and Luton airports. The Civil Aviation Authority has advised that traffic associated with Heathrow, Stansted and Luton will routinely operate within Controlled Airspace, which over the generic Bradwell area extends vertically no lower than approximately 4500 feet.

Assessment

- 5.6.53 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

Guidance to the IPC

- 5.6.54 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests. This sets out, amongst other things, that the applicant should consult the Ministry of Defence, Civil Aviation Authority, National Air Traffic Services and any aerodrome – licensed or otherwise – where likely to be affected by the proposed development in preparing an aviation assessment. This should include consultation with Southend Airport.
- 5.6.55 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.6.56 The Appraisal of Sustainability site report has identified that there is the potential for adverse effects on sites and species considered to be of European nature conservation importance¹³⁶. This means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.

¹³⁶ *Appraisal of Sustainability: Site report for Bradwell*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

- 5.6.57 The Appraisal of Sustainability findings on sites of international importance are taken from the Habitats Regulations Assessment¹³⁷. Taking into account the strategic nature of the plan and the information available, the Habitats Regulations Assessment at this strategic level cannot rule out potential adverse effects on Dengie SPA/Ramsar site, Blackwater Estuary Ramsar Site, Colne Estuary SPA/Ramsar site and the Essex Estuaries SAC, through impacts on water resources and quality, air quality, habitat and species loss and fragmentation/ coastal squeeze and disturbance. The designations identified fall immediately adjacent or slightly within the site boundary and the Habitats Regulations Assessment finds that there is a risk that development activities encroach into these designated areas, for example the potential for a marine landing facility, cooling water infrastructure and upgraded coastal protection measures could all have adverse impacts.
- 5.6.58 In the wider context, the Habitats Regulations Assessment also concludes that adverse effects cannot be ruled out on the Mid-Essex SPA/Ramsar as a whole (for water quality impacts and impacts on birds) and the Abberton Reservoir SPA/RAMSAR (for impacts on birds only).
- 5.6.59 The assessment has proposed a suite of avoidance and mitigation measures to be considered as part of the project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

Assessment

- 5.6.60 Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment for sites of international importance, and the need for more detailed studies should an application for development consent come forward.
- 5.6.61 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in the NPS.
- 5.6.62 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in the Nuclear NPS despite the inability to rule out adverse effects on European sites¹³⁸ at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

¹³⁷ *Habitats Regulations Assessment: Site report for Bradwell*, November 2009, <http://energyngpsconsultation.decc.gov.uk>

¹³⁸ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

Guidance to the IPC

- 5.6.63 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.6.64 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Bradwell and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.6.65 The Appraisal of Sustainability report has considered the potential impacts on Nationally designated sites of ecological importance including the reason of which any site is of special scientific interest. The Appraisal of Sustainability has identified that there is the potential for adverse effects on sites and species considered to be of national importance, noting the Blackwater Estuary SSSI and the Dengie SSSI as being within 5km of the nominated site and potentially significantly affected by development.
- 5.6.66 The Dengie SSSI falls immediately adjacent to the site and there is a risk that development activities encroach into these designated areas, for example the potential for a marine landing facility, cooling water infrastructure and upgraded coastal protection measures could all have adverse impacts.
- 5.6.67 The Appraisal of Sustainability finds that this means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal. The Appraisal of Sustainability has identified potential for the mitigation or compensation of biodiversity effects, including the creation of replacement habitat for UK designated sites. The Appraisal of Sustainability site report should be referred to for more detail on potential mitigations.

Assessment

- 5.6.68 The Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.
- 5.6.69 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet the Government's energy policy objectives, as described in Part 2 of this NPS. In view

of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.

5.6.70 This site passes this criterion.

Guidance to the IPC

5.6.71 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.

5.6.72 The IPC should also refer to the Appraisal of Sustainability for Bradwell and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

5.6.73 The Appraisal of Sustainability has noted that there are no significant adverse effects anticipated on nationally designated landscape.

5.6.74 Responses during the opportunity for public comment covered a range of amenities around the site, drawing particular attention to St Peter's Chapel on Dengie, scheduled monuments and a nearby Saxon Shore Fort. These have been considered by the Appraisal of Sustainability, which has identified potential adverse effects on the settings of Othona Roman Fort and St Peter's Chapel, other nearby scheduled monuments, listed buildings and the West Mersea Conservation Area, as well as on buried archaeology of potentially high importance. However, the Appraisal of Sustainability identifies a possibility that these effects can be mitigated and gives potential mitigations. It finds that further detailed assessment at project level will be required.

5.6.75 The Appraisal of Sustainability also finds that there are likely to be indirect adverse effects of the development on nearby Special Landscape Areas¹³⁹ through inter-visibility. The Appraisal of Sustainability notes that a new nuclear power station would be set in the context of the existing power station at Bradwell which is being decommissioned. However, the landscape around the nominated site is predominantly undeveloped, and is also flat and open. The Appraisal of Sustainability has noted that there is some scope for mitigation and potential for a new landscape framework to contribute to existing published local landscape management and restoration guidelines for this local area. However, it is likely that some adverse effects on local landscape will remain.

¹³⁹ A Special Landscape Area is a non-statutory designation used by local government to categorise sensitive landscape.

Assessment

- 5.6.76 The Government notes that the Appraisal of Sustainability finds that significant adverse effects on nationally designated landscapes are not anticipated. This site therefore passes this criterion.
- 5.6.77 The potential impact on local landscape is noted. There appears to be scope to partially but not entirely mitigate effects. Impact and mitigation will need to be considered by the IPC but at this stage, the potential effects on local landscape are not felt sufficient to outweigh the need for sites as set out in Part 2 of this NPS.

Guidance to the IPC

- 5.6.78 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts, and the historic environment.
- 5.6.79 The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Bradwell and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.

D9: Size of site to accommodate operation

Analysis

- 5.6.80 The nominated area is approximately 298 hectares. The Nuclear Installations Inspectorate and Office for Civil Nuclear Security has advised that this is of sufficient size and shape for the safe and secure operation of a new nuclear power station.
- 5.6.81 The nominated land has a number of tracks and a public footpath bisecting it. The Office for Civil Nuclear Security has noted that it is a security requirement that the licence applicant has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.

Assessment

- 5.6.82 Based on the advice of the Office for Civil Nuclear Security and the Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility. An applicant would need to consider mitigations such as siting elements of a station away from public footpaths, or realignments, to meet the requirements of a nuclear site licence. Given the size of the site it is reasonable to conclude that there is the potential to mitigate these concerns.

Guidance to the IPC

- 5.6.83 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.
- 5.6.84 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimised hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

- 5.6.85 The nomination described different cooling technologies and stated a preference for direct cooling from the Estuary. Some responses during the opportunity for public comment were received about whether cooling towers would be necessary at the site. The nominator of the site has noted that the “direct cooling option will require long cooling water culverts to reach deep water to obtain the coolest water and to permit dispersion of the thermal plume to avoid any significant impact on designated ecological sites” but has indicated that direct cooling is the preferred option for the site if it can be achieved¹⁴⁰. The Environment Agency has advised that there is access to suitable sources of cooling at the site.
- 5.6.86 There were public concerns about whether local ecology around the site, including the local oyster beds, could be adversely affected by the intake and outfall of cooling water from the site and whether this could impact on the local fishing industry.
- 5.6.87 The Appraisal of Sustainability for Bradwell has identified potential effects on water quality and fish/shellfish populations in nearby coastal waters due to the abstraction and release of sea water for cooling. Indirect effects on nationally and internationally designated habitats, including from the thermal impact of cooling water discharges have also been identified. The Appraisal of Sustainability considers this of potential wider significance because of indirect effects on national and European designated sites.
- 5.6.88 The Environment Agency has advised that there is an important spawning site for herring on Eagle Bank. The Blackwater Estuary provides a major nursery ground for herring, sprat, bass, and a range of flatfish species. Migratory trout, smelt, eel and twaite shad are all present.

¹⁴⁰ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Bradwell, and in particular the nomination report for information on cooling.

- 5.6.89 The Appraisal of Sustainability advises that a more detailed appraisal would be required as part of the project level Environmental Impact Assessment level to assess the implications of this thermal discharge. This process will include an assessment of the impacts of any discharges to the aquatic environment, including impacts on specific designated sites under both the Habitats and Shellfish Directives¹⁴¹.
- 5.6.90 The Environment Agency has also advised that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges. This would require the discharges to meet regulatory standards for the protection of the quality of estuarine or coastal waters in line with future requirements of the Water Framework Directive¹⁴².

Assessment

- 5.6.91 Based on the findings of the Appraisal of Sustainability and the Environment Agency in particular it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion.
- 5.6.92 Potential impacts on ecology and any consequent potential impacts on the fishing industry should be assessed in light of the application to the IPC which will allow a greater analysis of the potential effects.

Guidance to the IPC

- 5.6.93 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.6.94 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.6.95 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

Appraisal of Sustainability and Habitats Regulations Assessment for Bradwell

- 5.6.96 The Planning Act 2008¹⁴³ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest

¹⁴¹ The Shellfish Waters Directive aims to protect shellfish populations, maintaining the high quality of shellfish in our waters. The directive sets the standard for water quality in estuaries and other areas where shellfish grow and reproduce. In the UK, the directive is implemented by the EC Shellfish Waters Directive (2006/113/EEC) and the Surface Waters (Shellfish) Directions 1997.

¹⁴² The Water Framework Directive 2000/60/EC.

¹⁴³ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Bradwell is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.

- 5.6.97 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the “Habitats Regulations Assessment”) tests whether a plan or project could have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Bradwell site.
- 5.6.98 The key findings of the Bradwell Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) the Appraisal of Sustainability notes that part of the site is in flood zone 3 and therefore has a higher risk of flooding, and that defences may require upgrading. The Appraisal of Sustainability finds that this could have potential effects on erosion and visual appearance of the coastline;
 - ii) nationally and internationally protected sites of ecological importance;
 - iii) potential effects on water quality and fish/shellfish populations in nearby coastal waters due to the abstraction and release of sea water for cooling;
 - iv) potential effects on the surrounding local landscape which is predominantly undeveloped (there are no significant adverse effects anticipated on nationally designated landscapes). In turn, potential effects upon the setting of nearby scheduled monuments and listed buildings, and the West Mersea Conservation Area, and on the setting of Othona Roman Fort and St Peter’s Chapel;
 - v) the Appraisal of Sustainability has found that Bradwell is not close to any other nominated site and therefore does not form part of a cluster. This means that regional cumulative effects are not considered relevant for this site.
- 5.6.99 The outputs of the Appraisal of Sustainability and Habitats Regulations Assessment on significant effects i) to iv) are taken into account in the summaries against the SSA criteria above.

Other issues raised during the assessment

- 5.6.100 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk>

Health

- 5.6.101 The Appraisal of Sustainability for Bradwell has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.

- 5.6.102 One of these factors of particular interest to the public is the incidence of cancer. It notes that there was, from 1962 to 2002, a nuclear power station operating on the Bradwell site. There are, therefore, historical data which can be analysed to correlate the incidence of cancer reported around this site so that it can be compared to the average prevalence of the same disease in the British population as a whole.
- 5.6.103 The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.
- 5.6.104 COMARE's tenth report¹⁴⁴ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.6.105 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.6.106 In its eleventh report¹⁴⁵ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.

¹⁴⁴ Committee on Medical Aspects of Radiation in the Environment (COMARE) (2005). *Tenth Report. The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

¹⁴⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE) (2006). *Eleventh Report. The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

- 5.6.107 The Appraisal of Sustainability reports that radioactive monitoring carried out in 2007¹⁴⁶ found generally low concentrations of artificial radionuclides in water, sediment and beach samples and in meat and seafood samples taken around the existing Bradwell nuclear power station. From this sampling, the Appraisal of Sustainability notes that the estimated total dosage levels to the public from all sources within the Bradwell area were assessed as being less than 7% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.6.108 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station at Bradwell should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally. The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear stations makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.6.109 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Tourism

- 5.6.110 Respondents to the opportunity for public comment raised their concerns about the effect a new nuclear power station could have on the tourism industry in the area.
- 5.6.111 The Appraisal of Sustainability identified that the local countryside and coastal areas are of importance to the local economy through a variety of purposes, one of which is tourism.
- 5.6.112 It is not possible at this stage to accurately assess whether a new nuclear power station would impact on tourism in the area bearing in mind that this is a strategic assessment being conducted at an early point in the planning process. As set out above, increased visual impact is likely, although this has to be seen in the context of the existing facility, which is currently being decommissioned. A new nuclear power station may also bring alternative economic benefits to a region which could have the potential to offset some disbenefits. Part 4 of this NPS gives more detail on the socio-economic impacts of new nuclear power stations and how the IPC should consider them.

¹⁴⁶ Food Standards Agency (2007). *Radioactivity In Food and the Environment (RIFE 13) Report*.

Transport

- 5.6.113 Some people raised concerns about whether the local transport network is sufficient to accommodate the increased traffic necessitated by a new station.
- 5.6.114 The Appraisal of Sustainability has considered the potential environmental and sustainability impacts of transport that could result from new nuclear power stations on the evidence available.
- 5.6.115 The Appraisal of Sustainability has noted that the relatively remote location of the nominated site and a lack of sustainable transport options to the nominated site may result in higher emissions from the transport of goods and construction and operational workforce than other nominated sites. This may be significant in terms of regional greenhouse gas emissions. However, the Appraisal of Sustainability finds that this increase in emissions can be partially mitigated through measures, such as green travel plans and construction management plans.
- 5.6.116 The Appraisal of Sustainability has found that the main impact of the site will be on the minor roads leading to it. The Appraisal of Sustainability finds that this impact can be mitigated to a certain extent by green travel planning promoting alternative to single car use to the site. This could include provision of dedicated public transport links with connection with existing rail services to the area or promotion of car sharing. The Appraisal of Sustainability finds that the impact of construction traffic could be mitigated by taking advantage of the coastal location of the site, although, it is recognised that no existing port facilities currently serve the site. The Appraisal of Sustainability notes that there could be positive local benefits associated with increased usage of the local railway services.
- 5.6.117 The Government recognises that issues such as transport, particularly during the construction phase of a nuclear power station development, may have significant impacts on both local and national infrastructure. The Government believes that to understand the potential impact of a new development on infrastructure will require detailed project specific assessments. The IPC should refer to the guidance in EN-1, including that on traffic and transport impacts, when considering this issue.

Seismic risk

- 5.6.118 During the opportunity for public comments concerns were raised about the earthquake that took place around Colchester in 1884. The Seismic Hazard Working Party was inaugurated under the auspices of the Central Electricity Generating Board (CEGB) to undertake seismic hazard reviews of CEGB sites. It examined the effects of the Colchester Earthquake of 1884 in some detail. The Seismic Hazard Working Party concluded that whilst there was considerable damage caused by the event, the actual magnitude of the event was relatively small, and that there was a sharp decay in intensity away from the epicentre. Damage local to Bradwell was restricted to chimney pots falling and roof tile damage¹⁴⁷.

¹⁴⁷ Seismic Hazard Working Party study Volume 4.4.

- 5.6.119 As outlined in the Government response to the SSA Criteria consultation¹⁴⁸ the Nuclear Installations Inspectorate has advised that seismic risk is more appropriately assessed at site licensing stage when detailed site specific and reactor design information is available. Seismic hazard was therefore identified as an SSA criteria which is flagged for local consideration. This will be done by the Nuclear Installations Inspectorate as part of licensing. In order to satisfy the regulators that site licence conditions will be met, the designers of the plant will need to demonstrate that the installed plant is able to withstand all site-specific natural hazards including earthquake, flooding or meteorological conditions. The reactor designs being considered under the Generic Design Assessment process are intended for worldwide application, with baseline seismic resistance designs in the area of 0.25g-0.5g peak ground acceleration.
- 5.6.120 This does not therefore affect the potential suitability of the site as part of the SSA.

Conclusion on the nominated site at Bradwell

- 5.6.121 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable.
- 5.6.122 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things flood risk, seismic risk, the impact on biodiversity and the potential impacts of cooling technology. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

¹⁴⁸ BERR, *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581, p38.

5.7 Braystones

Description of the location

5.7.1 The site nominated at Braystones comprises approximately 75 hectares of land located north of the Tarnside Caravan Park; West of the River Ehen; South of the Hollas Moss and Silver Tarn Site of Special Scientific Interest; and the east of the Cumbria Coastal Railway. The grid reference of the approximate centre of the site is 300300, 506600. A map of the nominated site is at Annex B.

Deployability by the end of 2025

5.7.2 The SSA is limited to considering sites which are credible for deployment by the end of 2025¹⁴⁹. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security. From the information provided by nominators and an independent assessment that there is, on balance, reasonable grounds to conclude that the Braystones site is credible for deployment by the end of 2025.

5.7.3 Deployment means commencing operation of one or more new nuclear power stations on the site. At Braystones the Government has given careful consideration to the deployability of the site given that, whilst close to the nuclear facility at Sellafield, this is a site which has not hosted a nuclear power station before.

5.7.4 There are general complicating factors when developing at locations which have not hosted nuclear facilities before including lack of pre-existing infrastructure; no history of operation at the site and consequently much less qualified information about site characteristics in relation to nuclear; and lack of qualified workforce.

5.7.5 Whilst these factors are not SSA criteria, they may have a bearing on whether a site can be deployed by the end of 2025.

5.7.6 The most significant necessary new infrastructure for this site and those at Sellafield and Kirksanton is grid infrastructure. A transmission agreement is in place between the National Grid and the nominator of the site to provide a two stage connection for RWE Cumbria Coast (North) power station at the Sellafield 400kV substation. This gives a final transmission entry capacity of 3600MW by 31st October 2022. First connection will be for 1200MW in late 2021.

5.7.7 The proximity to Sellafield gives some synergies at a strategic level when examining the potential of the site to host a nuclear facility. In addition, the nominator has undertaken a series of studies to further characterise the site, and bought land at the site thereby showing some confidence in its potential. It has also commenced engagement with relevant parties including the local authority.

¹⁴⁹ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

- 5.7.8 Government is mindful that the last operating nuclear power station in the area at Calder Hall ceased operating in 2003. Nonetheless, West Cumbria is host to the largest concentration of nuclear facilities in the UK, representing some 60% of the total industry, with a continuing focus on developing skills and education. It is therefore possible that the proximity of Braystones to Sellafield and its location in West Cumbria may give some access to qualified workforce. The sub-regional regeneration plan supports new nuclear generation¹⁵⁰ in West Cumbria as well as the building of a low-carbon economy in areas such as renewable energy, although it is noted that this report pre-dates the SSA and the nomination of Kirksanton, Braystones and Sellafield.
- 5.7.9 Government is also mindful of whether the likelihood of deploying all three sites in this region (Sellafield, Braystones and Kirksanton) before 2025 is realistic. The Braystones site does, however, on its own merits appear to be credible for deployment by the end of 2025. This takes into account the work already underway to characterise the site, that there is some level of strategic support for development in the region, the interest of the nominator of the site and the grid connection agreement in place.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.7.10 There were comments from members of the public about the proximity of the Braystones site to surrounding villages. However, the Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.
- 5.7.11 Some concerns were identified during the opportunity for public comments about the proximity of the site to a caravan park and the effect of this on emergency planning. The demographics assessment covers permanent night time residents, as identified on census data. Transient holiday populations would be assessed by the Nuclear Installations Inspectorate before any licence was granted should an application come forward. They do not feature as part of this assessment.
- 5.7.12 Transient holiday populations would also be factored into consideration of emergency planning if they were considered to be in relevant areas. As set out in Part 4 of this NPS, in complying with the conditions of the nuclear site licence and legal obligations¹⁵¹, all nuclear operators are required to specify and implement adequate arrangements for dealing with an incident or emergency arising on the site and its effects. The emergency plan is to ensure that members of the public are properly informed and prepared, in advance, about what to do in the unlikely event of a radiation emergency occurring, and provided with information if a radiation emergency actually occurs. This would include an up to date assessment of evacuation routes for the areas which are considered relevant. Delineation of a new emergency plan is ultimately a decision for a local emergency planning authority on the advice of the Nuclear Installations Inspectorate, the site operator and others with roles in implementing the off-site emergency plan.

¹⁵⁰ The West Cumbria regeneration plan "Britain's Energy Coast". <http://www.britainsenergycoast.com/nuclearnewbuild/page1.php>

¹⁵¹ under the Radiation (Emergency Preparedness and Public Information Regulations 2001 (REPPPIR).

- 5.7.13 Development of appropriate emergency plans requires a detailed understanding of the nature of the local residential and working population, capability and redundancy of local infrastructure and capability of local emergency services. The potential of a site to meet emergency planning requirements cannot, in general, be assessed at a strategic level and has not been assessed in this case as part of the SSA. It is, however, flagged as a consideration should an application for development consent come forward, and guidance is given to the ICP in Part 4.

Assessment

- 5.7.14 No area of the site exceeds the semi-urban criterion. This site passes the demographics criterion.

Guidance to the IPC

- 5.7.15 The IPC should refer to Part 4 for guidance on demographics and emergency planning.

C2 and D5: Proximity to military activities

Analysis

- 5.7.16 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges.
- 5.7.17 The Ministry of Defence has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice. The Ministry of Defence has advised that no military firing activity occurs in the marine or landward areas adjoining the site. There are no military explosive or military nuclear facilities within 1000 metres of the site.
- 5.7.18 During the opportunity for public comment some responses were received about the proximity of Eskmeals Firing Range; the possibility of World War Two bombs being washed ashore and posing a risk to a facility (possibly linked to the extant Silecroft Range), and the danger posed by military aircraft in this area. The Ministry of Defence has confirmed that the nominated site is not in proximity to any historic munitions disposal site or Danger Area. Silecroft Range was approximately 20km away from the nominated site. Whilst there are no historic records available to confirm the type of firing activities conducted at Silecroft Range, if any munitions washed up on the coast they would be made safe and removed by the Ministry of Defence.
- 5.7.19 An offshore Danger Area (D406) containing Eskmeals Firing Range is located approximately 7500m south east of the site and there were some public comments about this. However, the offshore area in which firing is contained is remote from the shore and as such the Ministry of Defence and Nuclear Installations Inspectorate has advised that there is no direct hazard from this military activity.

- 5.7.20 Restricted airspace created around a new nuclear power station at this site could extend across the Ministry of Defence Danger Area EG D406 or otherwise inhibit access to the Danger Area by aircraft. The Ministry of Defence has advised that there appears to be scope for the application of an exception to any new restricted airspace that could permit aircraft using the Danger Area to fly through it. This could, for example, be a conditional exemption by which Ministry of Defence range operators would obtain permission from the power station operator, as and when needed, to route military aircraft through the exclusion zone as part of defence activities.
- 5.7.21 Given the proximity to military facilities the Ministry of Defence has also advised that it is potentially reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime. It would wish to be consulted should proposals come forward given the potential impact and possible mitigations on Danger Area EG D406.

Assessment

- 5.7.22 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:
- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment.
 - the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out. It appears that the impact of restricted airspace on Ministry of Defence Danger Area EG D406 can be mitigated without compromising the Ministry of Defence facility or a potential nuclear power station. However, given the concerns about historic munitions at Silecroft Range, the IPC are instructed to seek evidence of further assessments below. The Nuclear Installations Inspectorate will assess the risks posed by external hazards to the installation at a more detailed level during licensing.
 - any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The risk to the station from military activities appears to be low, but the Nuclear Installations Inspectorate will assess the risks to the installation at a more detailed level during licensing.
- 5.7.23 It is potentially reasonable to conclude that the development of a new nuclear power station at the site would not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime. Potential mitigations appear to be possible but should any proposals come forward the applicant in conjunction with the Ministry of Defence and Nuclear Installations Inspectorate should consider this point further.
- 5.7.24 This site therefore passes these criteria.

Guidance to the IPC

- 5.7.25 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.
- 5.7.26 Given the concerns raised on historic munitions at this and the Kirksanton site, the IPC should ensure that the applicant's documentation demonstrates that it has conducted an on and off site survey of hazards including any arising from the previous use of Silecroft Range or any other relevant site, and that the Nuclear Installations Inspectorate are satisfied with this.

D1: Flooding, tsunami and storm surge

Analysis

- 5.7.27 The entire site is within flood zone 1, low probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)¹⁵². The Environment Agency has advised that there appear to be no watercourses across the site.
- 5.7.28 The Appraisal of Sustainability for Braystones¹⁵³ has identified a relatively low risk of flooding risk arising from predicted rising sea levels caused by climate change. The Appraisal of Sustainability has found that it is likely that this can be mitigated in the long-term through the provision of further defences with appropriate design and construction, taking account of coastal processes, hydrodynamics and sediment transport.
- 5.7.29 The Environment Agency has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against flood risk throughout its operational lifetime¹⁵⁴, including the potential effects of climate change, storm surge and tsunami, taking into account potential countermeasures. It has advised that flood defences may be needed but there is no apparent technical reason that would prevent this.
- 5.7.30 The Environment Agency has identified a flood risk from the River Ehen to the west of the site boundary. There are areas of flood zone 2, medium probability and flood zone 3, high probability adjacent to the eastern boundary of the site but noted that this is not likely to prevent the site being protected from the causes of flooding.

¹⁵² See PPS25 for a full definition of the flood zones and what they cover: *Planning Policy Statement 25: Development and Flood Risk*, December 2006, Annex D pp.22-25.
<http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf>

¹⁵³ *Appraisal of Sustainability: Site report for Braystones*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

¹⁵⁴ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.7.31 Concerns were raised in the opportunity for public comments about flood plains in the area that can lead to road closures and how this could affect evacuation routes. The Environment Agency has advised that access to the site is via minor unclassified roads which cross flood risk areas. At the development consent stage these would need to be assessed for suitability and the need for protection considered.
- 5.7.32 The village of Braystones has a history of flooding and the Environment Agency maintains raised defences to protect the village. The Environment Agency has advised that run-off from this site could increase flood risk to this village if not designed correctly.

Assessment

- 5.7.33 Based on, in particular, the advice of the Environment Agency and the findings of the Appraisal of Sustainability, it is reasonable to conclude that a nuclear power station within the nominated site could potentially be protected against flood risks throughout its lifetime, including the potential effects of climate change, storm surge and tsunami. This takes into account in particular the low risk of flooding and the ability to defend the site. This site therefore passes this criterion.
- 5.7.34 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.7.35 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation.
- 5.7.36 As part of this guidance, amongst other things the applicant must conduct a flood risk assessment which considers the risk of flooding arising from the project in addition to the risk of flooding to the project. The IPC should seek consideration as to whether the risks to Braystones village have been increased.
- 5.7.37 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.7.38 Some respondents to the opportunity for public comments described the historical nature of the coastline and said that it was changing, and others said that storm surge had had an effect on the coastline. Some questioned whether the necessary flood defences or marine offloading facilities could prevent this natural development or even exacerbate it.

- 5.7.39 The Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and Estuary from changing and adapting naturally.
- 5.7.40 The Environment Agency has advised that that development at the site could avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime¹⁵⁵, including the potential effects of climate change.
- 5.7.41 The Appraisal of Sustainability has assessed that the threat to the nominated site of rising sea levels is considered to be of low strategic significance due to the current coastal features and defences. It is likely that risks can be mitigated through the appropriate provision of further defences during the latter stages of the operational and decommissioning phases of the development.
- 5.7.42 Whilst the Appraisal of Sustainability identified that the risk to the site from coastal erosion is low, it has also considered potential infrastructure at the site which is identified in the nomination, including a marine landing station and possible cooling inlet and outfall pipe work extending up to 3km. The Appraisal of Sustainability identified that this could impact on coastal processes including in marine protected areas in the vicinity of the site.

Assessment

- 5.7.43 The site passes this criterion. Based on the advice above it is reasonable to conclude that a new nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences.

Guidance to the IPC

- 5.7.44 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.
- 5.7.45 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal geomorphology and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations

Analysis

- 5.7.46 Some responses during the opportunity for public comment raised the proximity of the Sellafield nuclear installation to the nominated site at Braystones.

¹⁵⁵ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.7.47 The Health and Safety Executive has advised that the adjacent Sellafield nuclear licensed site is designated a 'Lower tier' COMAH establishment. There are no formal planning consultation zones, but the Health and Safety Executive has advised that they will utilise a conservative interim planning advice zone set at 1km radius from the COMAH establishment.
- 5.7.48 The Sellafield site holds hazardous substances consent under the Planning Hazardous Substances Act 1990 and the Planning (Hazardous Substances) Regulations 1992 as amended by the planning (Control of Major – Accident Hazards) Regulations 1999. This legislation is administered by Copeland Borough Council who will be consulted and provide advice during the more detailed planning stages, and if necessary consult the Health and Safety Executive further about the location of certain buildings within the nominated site, and where necessary the scope for the licence applicant to revise their building layouts accordingly.
- 5.7.49 However, the Government notes that the existence of a lower tier COMAH establishment on the Sellafield licensed nuclear site is not judged by the regulators to be an unacceptable risk to the many operating nuclear plants on that site. Any nuclear power station on the nominated site would be at a much greater distance and thus at an even lower risk.
- 5.7.50 The Health and Safety Executive has advised that any new nuclear power station development can be protected against risk arising from proximity to hazardous facilities throughout its lifetime. No other hazardous facilities were highlighted in the vicinity of the site.
- 5.7.51 The Health and Safety Executive has also advised that at that stage of site specific assessment the licence applicant will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

Assessment

- 5.7.52 Given the likely level of risk from the Sellafield site and the opportunities to mitigate any risk which is felt to be relevant following advice from the Health and Safety Executive and local authority at site licensing, this site passes this criterion. It is reasonable to conclude that a new nuclear power station at the nominated site could be protected against risk arising from proximity to hazardous facilities throughout its lifetime.

Guidance to the IPC

- 5.7.53 The IPC should satisfy itself that the Health and Safety Executive have reviewed the safety implications of any hazardous facilities which have the potential to pose a risk to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.7.54 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement and that the effects on air traffic can potentially be mitigated. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.7.55 Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation¹⁵⁶. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.
- 5.7.56 The Civil Aviation Authority has advised that the site would necessitate a Restricted Area. Such a Restricted Area would partially overlap with the existing Restricted Area associated with the Sellafield nuclear installation. The Civil Aviation Authority has advised that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) as described above could provide a similar level of protection from civil aircraft movements.
- 5.7.57 Some respondents commented that Braystones also lies almost directly underneath the international flight path for commercial passenger aircraft, and there is concern, post 9/11, that an aircraft could be diverted into the site. This is discussed further under “other issues” below.
- 5.7.58 Some respondents to the opportunity for public comments raised that there is already a no-fly zone around the Sellafield site and while construction of a new nuclear site at Braystones would minimise the need to extend this, it could still, according to one respondent, affect flights run by the NDA from the Westlakes site. It is assumed that this refers to helicopter flights in and out of Westlakes Science Park. This is some distance from the site at Braystones and as such impact is as yet unclear. However, the operators of the Westlakes park should be consulted should specific proposals come forward. The Civil Aviation Authority has advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. No civil aerodrome safeguarding issue has been identified and there are no known

¹⁵⁶ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

(i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new Restricted Area at the Braystones site would have a material impact on associated operations.

Assessment

5.7.59 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

Guidance to the IPC

5.7.60 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.

5.7.61 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

5.7.62 Some responses during the opportunity for public comment drew attention to a number of designated areas, such as the River Ehen, and species, such as the Natterjack toad. These issues have been considered by the Appraisal of Sustainability¹⁵⁷ and Habitats Regulations Assessment for Braystones which has identified that there is the potential for adverse effects on the sites and species considered to be of European nature conservation importance. This means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.

5.7.63 The Appraisal of Sustainability findings on sites of international importance are taken from the Habitats Regulations Assessment¹⁵⁸. The Habitats Regulations Assessment for Braystones on sites of European importance cannot rule out the potential for adverse effects on four European sites¹⁵⁹ (Drigg Coast SAC, River Ehen SAC, West Water SAC, River Derwent and Bassenthwaite Lake SAC) through identified potential impacts on water resources and quality, habitat /species loss and fragmentation, coastal squeeze and air quality (not all the impacts are identified at every site- please see the Habitats Regulations Assessment for more details).

¹⁵⁷ *Appraisal of Sustainability: Site report for Braystones*, November 2009, <http://www.energyngpsconsultation.decc.gov.uk>

¹⁵⁸ *Habitats Regulations Assessment: Site report for Braystones*, November 2009, <http://www.energyngpsconsultation.decc.gov.uk>

¹⁵⁹ See entry D6 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details of European sites and what they cover.

5.7.64 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of the project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

Assessment

5.7.65 The Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment for sites of international importance, and the need for more detailed studies should an application for development consent come forward.

5.7.66 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in the NPS.

5.7.67 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in this NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

5.7.68 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment, and biodiversity and geological conservation). It should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.

5.7.69 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Braystones and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: nationally designated sites of ecological importance

Analysis

5.7.70 The Appraisal of Sustainability for Braystones which has identified that there is the potential for adverse effects on the sites and species considered to be of UK nature conservation importance. This means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.

5.7.71 The Appraisal of Sustainability identifies the following SSSIs of particular concern (within 5km of the site) for which significant effects may occur: Silver Tarn, Hollas and Harnsey Mosses SSSI; Low Church Moss SSSI; St. Bees Head SSSI; Drigg Coast SSSI; River Ehen (Ennerdale Water to Keekle Confluence) SSSI; Haile Great Wood SSSI; Black Moss SSSI; Hallsenna Moor SSSI.

- 5.7.72 The Appraisal of Sustainability site report has identified that there is, however, potential for the mitigation of biodiversity effects on sites of UK wide conservation importance, including the minimisation of indirect impacts to Silver Tarn, Hollas and Harnsey Mosses SSSI, for instance through the careful siting of the development and construction activities within the nomination site boundary.

Assessment

- 5.7.73 The Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.
- 5.7.74 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.
- 5.7.75 This site passes this criterion.

Guidance to the IPC

- 5.7.76 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment, and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.7.77 The IPC should also refer to the Appraisal of Sustainability for Braystones and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

- 5.7.78 There were many comments on this criterion during the public comments window, focussing in particular on the visual effects of any new development when taken in combination with the existing site at Sellafield and the effect on the Lake District National Park (a response was also received from the Lake District National Park Authority).

- 5.7.79 The Braystones site is approximately 3km from the Lake District National Park. The nominator of the site believes that the site offers various opportunities for visual screening and landscaping, while plant layout may be sympathetically aligned, in order to minimise the effect on views from the Lake District National Park¹⁶⁰.
- 5.7.80 The Appraisal of Sustainability has identified potential adverse effects on landscape. These include lasting direct and indirect adverse landscape and visual impacts on the surrounding area, including the Lake District National Park. The Appraisal of Sustainability has also noted that there are likely to be cumulative effects associated with other onshore and offshore energy projects (see “cumulative effects” section at the end of this summary).
- 5.7.81 The Appraisal of Sustainability has noted that overall, the new power station would be seen in the context of the existing large scale nuclear complex. However, the Appraisal of Sustainability finds that further development is still likely to lead to a perceptible deterioration in some views, which would not be able to be fully mitigated, given the scale of possible new buildings and infrastructure.
- 5.7.82 Concerns were also identified in the opportunity for public comments about the effect that transmission infrastructure would have on the Lake District National Park. The requirements for new transmission and distribution infrastructure will be important from the perspective of the impact on areas surrounding a site. Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.
- 5.7.83 The Appraisal of Sustainability has noted the potential strategic environmental and sustainability implications at a high level.
- 5.7.84 The Appraisal of Sustainability identified potential adverse effects on the settings of cultural heritage features of regional and national importance, as well as on buried archaeology of potentially high importance.
- 5.7.85 The impacts on cultural heritage features could arise because depending on the distance and sight lines, a new nuclear power station could detrimentally impact the setting of any scheduled monuments, conservation areas, and listed buildings that are identified in the region. The Appraisal of Sustainability¹⁶¹ lists the cultural heritage features in the area including the nearest scheduled monument of two high cross shafts in St. Bridget’s Churchyard which lies approximately 750m from the nominated site; a further four Scheduled Ancient Monuments (SAMs) lie within 2.5km and 5km of the site ; the closest listed building, Braystones Tower (also called Diamond Jubilee Tower), a Grade II Listed Building, located approx 500m from the site; the

¹⁶⁰ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Braystones, and in particular the nomination form for information on landscape and cultural heritage.

¹⁶¹ See the Appendices to *Appraisal of Sustainability: Site report for Braystones*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

closest Grade I Listed Building of Egremont Castle, located over 3km to the north of the nominated site. Further Grade II listed buildings are present within approximate 5km distance of the nominated site and Conservation Areas exist at Beckermest and Egremont¹⁶².

- 5.7.86 The Appraisal of Sustainability notes that Prehistoric or Roman flints have been found within the nominated site. The presence of these features indicates prehistoric activity within and close to the nominated site. As such the area is likely to be considered of at least local to regional archaeological importance.
- 5.7.87 However, the Appraisal of Sustainability finds that there is a probability that these effects can be mitigated. Further detailed assessment at project level will be required.

Assessment

- 5.7.88 In making this assessment the Government has had regard to the purposes of the designation of the National Park in conserving and enhancing the natural beauty, wildlife and cultural heritage of the park and of promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public.
- 5.7.89 The nominator of the site has proposed potential mitigations to minimise impacts on the National Park. However, the Appraisal of Sustainability has assessed that visual impacts will be highly likely given the existing undeveloped nature of the nominated site, the scale of new development and the potential need for associated off-site grid connection infrastructure.
- 5.7.90 Whilst scope for total avoidance and mitigation of impacts on the National Park is limited, this site passes this criterion. This takes into account the fact that the nature, scope, and scale of any effect is currently uncertain and is dependent on the exact form of development proposed; that there is some scope for a developer and the IPC to explore, in detail, minimisation, avoidance and mitigation of adverse effects.
- 5.7.91 The Government recognises that whilst there is some potential for partial minimisation and mitigation of the effects, there could be remaining effects on the National Park. However, as explained in Part 2 of this NPS, there is a need to ensure sufficient sites are available for development to meet the Government's energy policy objectives. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify (against this criterion) not including the site in the NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site should any application for development consent come forward.

¹⁶² Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See www.english-heritage.org.uk

- 5.7.92 The IPC will have to examine any future application for development consent at the site in accordance with EN-1, Part 4 of this NPS and in light of the full assessment of the project at that time. The potential for remaining effects can only be fully assessed when detailed plans come forward. This is because they depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed and location of transmission infrastructure, and the relevant other development in the area to be factored when considering cumulative effects.
- 5.7.93 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.
- 5.7.94 The Government also notes that there may be some visual impacts on the setting of other cultural heritage features in the area. Impact and mitigation will need to be considered by the IPC but at this stage, the potential effects are not felt sufficient to outweigh the need for sites as set out in Part 2 of this NPS, particularly given the need for further investigation and the scope for some mitigation that has been identified.

Guidance to the IPC

- 5.7.95 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Braystones and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.
- 5.7.96 The IPC's assessment will also need to consider the cumulative visual effect of Braystones and the existing facilities at Sellafield (and any other plans or programmes that are identified as relevant, including any other nuclear power stations).
- 5.7.97 It should also be noted that whilst the Appraisal of Sustainability has noted the potential strategic environmental and sustainability implications of transmission infrastructure, detailed environmental assessment should be made by the applicant at the IPC stage, and the IPC should consider this in conjunction with EN-6 which is the Electricity Networks NPS.

D9: Size of site to accommodate operation

Analysis

- 5.7.98 The nominated site is approximately 75 hectares. The Nuclear Installations Inspectorate and Office for Civil Nuclear Security has advised that this is of sufficient size and shape for the safe and secure operation of a new nuclear power station.
- 5.7.99 The nominated land has a public road and track bisecting it. It is a security requirement that the licence applicant has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.

- 5.7.100 The Office for Civil Nuclear Security has advised that if the public road is not realigned there is insufficient land to the south-west of it to provide effective defence-in-depth for a nuclear reactor (including its associated turbine hall), spent fuel and intermediate level waste stores. This part of the nominated site could still be used for locating supporting infrastructure that has no potential directly to cause a radiological hazard.
- 5.7.101 Whilst this particular area has insufficient land to provide defence in depth, the Office for Civil Nuclear Security has confirmed that there is sufficient land area within the nominated boundary to provide sufficient defence in depth for essential infrastructure.

Assessment

- 5.7.102 Although there is an area which has been identified by the Office for Civil Nuclear Security as having insufficient land for the effective defence in depth for a nuclear reactor (including its associated turbine hall) spent fuel and intermediate level waste stores (unless public roads are realigned), based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility. This site passes this criterion.

Guidance to the IPC

- 5.7.103 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.
- 5.7.104 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimise hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

- 5.7.105 The nominator of the site details cooling water options, expressing a preference for direct cooling from the sea¹⁶³.
- 5.7.106 Some concerns were expressed during the opportunity for public comment that the River Ehen could be used for cooling water intake. However, the nominator of the site has stated that “While indirect cooling could use either water from either the Irish Sea or freshwater, it is unlikely that flows within the River Ehen would be sufficient to provide top-up water without significant ecological impact, and abstraction from the Irish Sea would be utilised.”

¹⁶³ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Braystones, and in particular the nomination form for information on cooling.

- 5.7.107 The Environment Agency has advised that it is potentially reasonable to conclude that there is access to potentially suitable sources of cooling at the site, taking into account mitigations of potential impacts.
- 5.7.108 The Appraisal of Sustainability has identified indirect effects, of potentially wider significance, on nationally and internationally designated habitats including from the thermal impacts of cooling water discharges. The Appraisal of Sustainability has noted that cooling water would be required to be discharged at a suitable location and temperature to ensure the dispersion of cooling water plumes without significant effect on marine ecology and to avoid entrainment and recirculation of discharged cooling water via the abstraction intake.
- 5.7.109 The Environment Agency has noted that there are important nursery grounds for both bass and sole on this coast as well as large populations of migratory salmonids. Detailed modelling of thermal effects (in combination with other potential sites) will be necessary to assess the potential impacts on fish migration routes and shallow inshore areas.
- 5.7.110 Concerns were expressed in the opportunity for public comment about whether cooling technology (or building activity) would disturb radioactive particles on the sea bed that may have been previously emitted by the existing nuclear facility at Sellafield. The Environment Agency has advised that any potential impacts would be assessed during detailed design and considered in any application for consent to make discharges.

Assessment

- 5.7.111 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion.

Guidance to the IPC

- 5.7.112 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.7.113 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.7.114 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

Appraisal of Sustainability and Habitats Regulations Assessment for Braystones

- 5.7.115 The Planning Act 2008¹⁶⁴ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Braystones is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any possibilities for mitigation.
- 5.7.116 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the Habitats Regulations Assessment) tests whether a plan or project could have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Braystones site.
- 5.7.117 The key findings of the Braystones Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance including, amongst other things:
- i) effects on four protected nature conservation sites including Drigg Coast, and Hollas and Harnsey Mosses;
 - ii) visual impacts on the landscape from the power station and new power lines that could be seen from locations including the Lake District;
 - iii) effects on water quality and migratory fish in nearby coastal waters due to the abstraction and release of sea water for cooling;
 - iv) potential effects on erosion and visual appearance of the coastline due to the need for new flood defences and a marine landing station. These effects are significant at a local and sub-regional level, but mitigation opportunities are likely to be available following further study;
 - v) cumulative effects of potential stations in the Cumbria region (these are considered below); and
 - vi) significant potential positive effects associated with long term employment and enhanced prosperity for communities locally.
- 5.7.118 The outputs of the Appraisal of Sustainability and Habitats Regulations Assessment on significant effects i) to iv) are taken into account in the summaries against the SSA criteria. Cumulative effects and potential positive effects (as part of cumulative effects) are discussed below.

¹⁶⁴ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

Cumulative effects

- 5.7.119 The Appraisal of Sustainability for Braystones notes that the site forms one of a cluster of four nominated sites in the North West region (Braystones, Kirksanton, Sellafield and Heysham), that have the potential to produce cumulative effects if more than one power station were developed in this region.
- 5.7.120 The Appraisal of Sustainability notes that potential cumulative effects arise as a result of interactions between the sites due to their relative proximity and the way in which effects may act together. The cumulative effects that are assessed by the Appraisal of Sustainability to be of potentially strategic significance are explained below.

Biodiversity and ecosystems

- 5.7.121 The Appraisal of Sustainability site report for Braystones identifies that the potential for significant effects on sites and species of national and European nature conservation importance cannot be ruled out. The Appraisal of Sustainability notes that development of nuclear power stations at other nominated sites in the region may increase the significance of the adverse impacts, either by adding to the pressures on a particular site of nature conservation importance, or by adversely affecting other nearby sites so that the cumulative effects in the region are increased. For Braystones, the European sites that are at most risk from interactions are the Drigg Coast SAC, River Ehen SAC, West Water SAC and the River Derwent and Bassenthwaite SAC sites, which have also been identified as potentially being significantly adversely affected by the nominated site at Sellafield. The potential effects on the European sites from both the Braystones and Sellafield developments are due to adverse effects on water quality and resources, habitat loss and coastal squeeze, disturbance and air quality.

Effects on communities: population, employment and viability

- 5.7.122 Development at the Braystones site is appraised as having positive effects of regional economic significance on employment and community viability. The cumulative positive effects of employment, community viability and health/well-being could be more significant if more than one new nuclear power station is built and the opportunities for upskilling, education, and supporting industries to the nuclear sector are developed at the local and regional levels. The site Appraisal of Sustainability report notes that there may be negative effects, during the construction of any new power stations, if the development produces a local shortage of specialist construction labour. This negative effect could be increased if more than one power station is developed in the region. However, these effects may be mitigated if the education and upskilling opportunities noted above are taken and by appropriate phasing of construction.

Effects on communities: supporting infrastructure

- 5.7.123 Development at the Braystones site is assessed by the Appraisal of Sustainability as having the potential for minor negative effects on local infrastructure such as transport (roads), non-radioactive waste management facilities and services such as schools and hospitals. These negative effects may become more significant if more than one nuclear power station is developed in the region. Transmission infrastructure

is considered separately in the Electricity Networks NPS but is another aspect of regional and possibly national infrastructure that the Appraisal of Sustainability notes could be affected by a regional concentration of nuclear power stations in the North West. Development of the necessary transmission infrastructure might lead to indirect cumulative effects, for example as a result of the visual impact from multiple transmission lines.

Landscape and visual impact

- 5.7.124 Development at the Braystones site is assessed as having potentially adverse effects of significance on landscape and visual impacts in the surrounding area. The significance of this is increased by the proximity of the nominated site to the nearby Lake District National Park and the indirect effects that landscape and visual impacts may have on the recreation and tourism potential of the area. Development of more than one nuclear power station in the region has the potential to increase the significance of this adverse effect and might begin to change the visual character of the region due to the grouping of major infrastructure in the region.

Conclusion on cumulative effects

- 5.7.125 The Appraisal of Sustainability notes that it is possible to avoid or reduce the potential cumulative adverse effects that are typical of major infrastructure projects, such as nuisance noise and dust and impacts on local transport network, through timing and phasing, if more than one power station in the region is developed. For example, this could be achieved by ensuring that peak levels of construction activity do not coincide and that mitigation commitments are implemented through adherence to an agreed Environmental/Sustainability Management Plan.
- 5.7.126 Given the uncertainty about the cumulative effects identified by the Appraisal of Sustainability and given the scope for mitigation, the Government does not, at this stage, think those effects are sufficient in themselves to justify excluding Braystones or the other West Cumbrian sites from the Nuclear NPS.
- 5.7.127 Interactions between potential sites can be complex and require detailed consideration at project level. It will be important to identify the relevant interactions, and this will partly depend on whether one or more of the other sites in this region also come forward for development, and on what timescales. This can only be properly assessed at the point at which an application for development consent is made.
- 5.7.128 However, the findings of the Appraisal of Sustainability clearly highlight the need for the IPC to consider cumulative effects in making their assessment. EN-1 contains guidance for the IPC on the consideration of cumulative effects. For instance Part 4.2 says that “the IPC should consider how the accumulation of effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place”.

5.7.129 As set out under D8, the IPC's assessment of any application for development consent at Braystones will also need to consider the cumulative visual effect of Braystones and the existing facilities at Sellafield (and any other plans or programmes that are identified as relevant, including any other nuclear power stations).

Health

5.7.130 The Appraisal of Sustainability for Braystones has also considered strategic effects on human health and well-being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in-depth assessment.

5.7.131 One of these factors of particular interest to the public is the incidence of cancer. The Appraisal of Sustainability notes that there has been, since 1956, a nuclear power station operating on the nearby Sellafield site, located approximately 2 km to the south-east. There is, therefore, historical data which the Appraisal of Sustainability has analysed to correlate the incidence of cancer reported around this site so that it can be compared to the average prevalence of the same disease in the British population as a whole.

5.7.132 The Appraisal of Sustainability considers studies of childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancer in populations living near nuclear power stations in the UK.

5.7.133 COMARE's tenth report¹⁶⁵ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer.

5.7.134 COMARE's tenth report did however state that for other nuclear sites the situation was more complicated. The study demonstrated corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield, in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.

¹⁶⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE) (2005). Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

- 5.7.135 In its eleventh report¹⁶⁶ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.
- 5.7.136 The Appraisal of Sustainability also reports that radioactive monitoring carried out in 2007¹⁶⁷ found generally low concentrations of artificial radionuclides attributable to the former Calder Hall nuclear power station at Sellafield in water, sediment and beach samples and in meat and seafood samples taken from around the site. However, the presence in the area of other nuclear activities (two fuel reprocessing plants, decommissioning and clean-up, manufacture of mixed oxide fuel and waste treatment and storage) make the apportioning of radiological effects in the area very difficult. Nevertheless, from this sampling, the estimated total dosage levels to the public from all sources within the area were assessed as being less than 38% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.7.137 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station at Braystones should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally. The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.7.138 Part 4 of this NPS (Human health and well-being) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Other issues raised during the assessment

- 5.7.139 This section deals with other common issues that were raised during the opportunity for public comment for this site. All of the comments can be viewed at <http://www.energygpsconsultation.decc.gov.uk>

¹⁶⁶ Committee on Medical Aspects of Radiation in the Environment (COMARE) (2006). Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

¹⁶⁷ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13) Report*, 2007.

Proximity to Sellafield

- 5.7.140 Some respondents to the opportunity for public comments said that the nominated site next to the existing nuclear installation at Sellafield would be a more appropriate site given that it would cluster nuclear development in the area.
- 5.7.141 The Government is seeking to identify all the potential sites for the deployment of new nuclear power stations, and is not ranking the sites in order of preference for development. The Government also currently believes that the need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS, is such that both Braystones and Sellafield should be in the NPS, particularly in view of the limited number of potentially suitable sites.
- 5.7.142 The visual impact of the site, in particular, will be considered by the IPC in accordance with the Part 4 of this NPS and the guidance in EN-1.

Terrorism and emergency planning

- 5.7.143 A concern was raised that the proximity of the nominated site at Braystones to the existing nuclear installation at Sellafield could make the area susceptible to targetting by terrorists, and concern that if both sites were targeted, there would be a lack of clear evacuation routes.
- 5.7.144 In *The White Paper on Nuclear Power* the Government reviewed the arguments and evidence put forward about the risks posed to new nuclear power stations by terrorist attack and concluded that "the Government continues to believe that new nuclear power stations would pose very small risks to safety, security, health and proliferation, and that the Government believes that the UK has an effective regulatory framework that ensures that these risks are minimised and sensibly managed by the industry"¹⁶⁸.
- 5.7.145 Under that regulatory framework, nuclear power stations must have their security arrangements approved by the Office for Civil Nuclear Security and arrangements must include consideration of terrorist threat. In addition, as part of the Generic Design Assessment (GDA), threats to the new reactor designs from a wide range of hazards are being considered. This includes consideration of the ability to withstand accidental aircraft crash or malicious activity. Demonstration of compliance with UK expectations is required to allow the designs to be considered suitable for deployment in the UK.
- 5.7.146 Given the measures in place to protect against risk of terrorist threat, this is not considered to affect the potential suitability of the site. The Office for Civil Nuclear Security will seek protection from terrorist threat as part of the licensing process should an application for development consent come forward.

¹⁶⁸ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>, Section 2.

- 5.7.147 As set out in Part 4 of this NPS, in complying with the conditions of the nuclear site licence and legal obligations¹⁶⁹, all nuclear operators are required to specify and implement adequate arrangements for dealing with an incident or emergency arising on the site and its effects. The emergency plan is to ensure that members of the public are properly informed and prepared, in advance, about what to do in the unlikely event of a radiation emergency occurring, and provided with information if a radiation emergency actually occurs. This would include an up to date assessment of evacuation routes for the areas which are considered relevant. Delineation of a new emergency plan is ultimately a decision for a local emergency planning authority on the advice of the Nuclear Installations Inspectorate, the site operator and others with roles in implementing the off-site emergency plan.
- 5.7.148 Development of appropriate emergency plans requires a detailed understanding of the nature of the local residential and working population, capability and redundancy of local infrastructure and capability of local emergency services. The potential of a site to meet emergency planning requirements cannot, in general, be assessed at a strategic level and has not been assessed in this case as part of the SSA. It is, however, flagged as a consideration should an application for development consent come forward, and guidance on this is given to the ICP in Part 4 of this NPS.

Conclusion on the nominated site at Braystones

- 5.7.149 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations reports, the Government has concluded that the site is potentially suitable.
- 5.7.150 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things the impact of this proposal in combination with any other relevant nuclear power stations in the region, and in particular the effect of this on the Lake District National Park. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable.

¹⁶⁹ Under the *Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPiR)*.

5.8 Hartlepool

Description of the site

5.8.1 The nominated site at Hartlepool surrounds the existing Hartlepool nuclear power station and is located at the mouth of the River Tees on the north side of Greatham Creek, opposite Seal Sands. The site is in the Seaton Ward of the Borough of Hartlepool in the Tees Valley. The grid reference of the approximate centre of the nominated site is 452900,527350. A map is included at Annex B to this NPS.

Deployability by the end of 2025

- 5.8.2 The SSA is limited to considering sites which are credible for deployment by the end of 2025¹⁷⁰. This is because the Government believes it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security.
- 5.8.3 Whilst the nominator of the site has not commenced detailed site investigations for an Environmental Impact Assessment at Hartlepool, the operation of the adjacent power station means that there is already a great deal of knowledge about the site. However, there is no grid connection agreement currently in place for the Hartlepool site. The Government believes that the site has the potential to be deployed by the end of 2025 but that this may require the site to be prioritised by a developer to bring it forward in the required timeframe, for instance by securing a timely grid connection agreement.
- 5.8.4 The Government is satisfied from the information provided by nominators and an independent assessment that Hartlepool is credible for deployment by the end of 2025.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.8.5 The public commented about the proximity of Seaton Carew and Greatham and the general demographics of Teeside.
- 5.8.6 The Health and Safety Executive has advised that the site does not exceed the semi-urban criterion. The northern boundary of the site ranges from 200m to 600m from an area which exceeds the semi-urban criterion.

Assessment

- 5.8.7 The Nuclear Installations Inspectorate has advised that none of the site exceeds the semi-urban criterion. This site passes the demographics criterion.

¹⁷⁰ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

Guidance to the IPC

- 5.8.8 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.
- 5.8.9 Given the proximity to an area which exceeds the semi-urban criterion, the IPC should ensure that the applicant has taken the advice of the Health and Safety Executive on demographic risk, in particular to ensure that the detailed plans do not include any changes that result in radiological hazard being sited in an area which exceeds the semi-urban criterion.

C2 and D5: Proximity to military activities

Analysis

- 5.8.10 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas. No military firing activity occurs in the marine or landward areas adjoining the site. There are no military explosive or military nuclear facilities within 1000 metres of the site.
- 5.8.11 The Ministry of Defence has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.8.12 The Ministry of Defence has also advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime.

Assessment

- 5.8.13 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:
- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from the assessment.
 - the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out. Mitigations of impacts have not had to be considered.
 - the development of a new nuclear power station at the site will not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime.

- any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime.

5.8.14 This site passes therefore passes this criterion.

Guidance to the IPC

5.8.15 IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.

D1: Flooding, tsunami and storm surge

Analysis

- 5.8.16 Some responses during the opportunity for public comment raised concerns about the vulnerability of the site to inundation caused by sea level rise.
- 5.8.17 The nominated site is within flood zone 3, high probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year¹⁷¹.
- 5.8.18 The Appraisal of Sustainability¹⁷² identified potential adverse effects relating to flood risk arising from predicted rising sea levels caused by climate change, especially during the later stages of operation and decommissioning of any new nuclear power station.
- 5.8.19 However, the Environment Agency has advised that it is potentially reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against flood risk throughout its operational lifetime¹⁷³, including the potential effects of climate change, storm surge and tsunami, taking into account relevant countermeasures. The Environment Agency has noted that flood defences would need to be substantial but that there is no apparent technical reason that would prevent this.
- 5.8.20 The Environment Agency has noted that flooding could impede access and egress, however, this could be mitigated in the design of routes to ensure that access remains open. The Environment Agency has advised that any flood mitigation measures constructed within the site area are unlikely to have an impact on flooding elsewhere.

¹⁷¹ See PPS25 for a full definition of the flood zones and what they cover: *Planning Policy Statement 25: Development and Flood Risk*, December 2006, Annex D pp.22-25.

¹⁷² *Appraisal of Sustainability: Site report for Hartlepool*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

¹⁷³ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.8.21 The Appraisal of Sustainability has noted that any increase in the height or extent of sea defences (and the incorporation of a new marine landing platform) could also give rise to adverse impacts on the appearance of the existing shoreline. Given the scale of the nominated site the Appraisal of Sustainability finds that it is unlikely that the above effects could be mitigated entirely.

Assessment

- 5.8.22 This site passes this criterion. This is because, based on the advice of the Environment Agency and the findings of the Appraisal of Sustainability, it is reasonable to conclude that any new nuclear power station on the site could be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunamis. In particular, this takes into account the Environment Agency's advice that mitigation could adequately protect the site.
- 5.8.23 The visual impact on the coastline of increased flood defences is not considered to be of a significance that would outweigh the need to ensure sufficient sites are available for development to meet the Government's energy policy objectives, as described in Part 2 of this NPS.
- 5.8.24 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunamis and storm surge) for more detail.

Guidance to the IPC

- 5.8.25 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation, and on landscape and visual impact where necessary.
- 5.8.26 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunamis and storm surge).

D2: Coastal processes

Analysis

- 5.8.27 The Environment Agency has advised that development at the site could potentially avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime¹⁷⁴, including the potential effects of climate change.

¹⁷⁴ See entry D2 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

5.8.28 Possible impacts on coastal processes, hydrodynamics and sediment transport from any necessary new or upgraded coastal defences have also been identified. Mitigation may be possible through appropriate design and construction of defences, but the Appraisal of Sustainability notes that mitigation measures will need to recognise any effects on nearby ecologically designated areas.

Assessment

5.8.29 This site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site can be protected against coastal erosion, including climate change, for the lifetime of the station. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences.

Guidance to the IPC

5.8.30 The IPC should refer to the relevant guidance in EN-1, in particular that on climate change adaptation and coastal change.

5.8.31 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations

Analysis

5.8.32 Some responses during the opportunity for public comment pointed out a number of nearby industrial facilities, but not all of these are considered significant for the purposes of this assessment¹⁷⁵. Based on Health and Safety Executive records, there are two neighbouring ‘upper Tier’ COMAH establishments whose land use planning consultation zones interact with the nominated site (see map at Annex B), namely:

- Huntsman Pigments at Greatham Works, Tees Road Hartlepool. All of the nominated site is within the Consultation Distance, known as the Outer Zone which is coterminous with the Public Information Zone.
- Norse Pipeline Ltd (c/o Conoco Phillips) at Seals Sands Middlesborough. All three Land Use Planning Zones (Inner, Middle and Outer) transect the nominated site. The Inner Zone transects the existing power station and the adjacent, eastern area of the nominated site.

5.8.33 The Health and Safety Executive (HSE) has noted that the significance of hazards and associated risks from these COMAH establishments, and their mitigation within the nominated site would need to be assessed in detail by the licence applicant as part of a site licence application. However, the HSE has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary could be protected against risk arising from proximity to such hazardous facilities throughout its lifetime, taking into account possible mitigations including consideration of individual building design, layout and operation.

¹⁷⁵ See entry D3 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of how the assessment against this criterion was carried out.

- 5.8.34 In addition, HSE has advised that as with any proposed nuclear power station, during licensing the licence applicant will need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and the fluids being conveyed.
- 5.8.35 During licensing the licence applicant will also need to take account of the potential hazards and associated risks identified from the Port Authorities details about hazardous ship cargo movements given the proximity of the port.

Assessment

- 5.8.36 Given the scope for potential mitigation this site passes this criterion. It is reasonable to conclude that a new nuclear power station at the nominated site could be protected against the risk arising from proximity to hazardous facilities throughout its lifetime taking into account possible countermeasures and mitigations.

Guidance to the IPC

- 5.8.37 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.8.38 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation¹⁷⁶. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation. The existing Hartlepool facility has an associated Restricted Area. The Civil Aviation Authority has advised that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements.
- 5.8.39 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. It has noted that the Restricted Area around Hartlepool has the potential to impact upon operations associated with Durham Tees Valley Airport. Such impact is mitigated by the related legislation allowing flights to cross the Restricted Area at a height of not less

¹⁷⁶ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

than 1800 feet above mean sea level, whilst conducting Durham Tees Valley Airport-related instrument flight procedures (IFP).

- 5.8.40 It follows that any new (or amended) Restricted Area established in association with the proposed nuclear installation would have a potential to impact upon Durham Tees Valley Airport. Any Government amendment of the legislation which introduced a new Restricted Area (or adaptation of the existing one), would need to similarly mitigate the impact. The legislation would also need to consider power station associated helicopter activity.
- 5.8.41 No other civil aerodrome safeguarding issue was identified. The Civil Aviation Authority has identified that there are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations. It has also advised that the current establishment of the existing Hartlepool Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.

Assessment

- 5.8.42 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

Guidance to the IPC

- 5.8.43 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests. This sets out, amongst other things, that the applicant should consult the Ministry of Defence, Civil Aviation Authority, National Air Traffic Services and any aerodrome – licensed or otherwise – where they are likely to be affected by the proposed development in preparing an aviation assessment. This should include consultation with Durham Tees Valley Airport.
- 5.8.44 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.8.45 The opportunity for public comment highlighted a number of designated sites and bird species using these sites. The Appraisal of Sustainability has considered the local ecology around the site¹⁷⁷. The Appraisal of Sustainability has concluded that the

¹⁷⁷ *Appraisal of Sustainability: Site report for Hartlepool*, November 2009, <http://www.energy-nps-consultation.decc.gov.uk>

potential for adverse effects on sites and species considered to be of European nature conservation importance means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.

- 5.8.46 The Appraisal of Sustainability has identified that the land at the northern end of the site is included within the Teesmouth and Cleveland SPA/Ramsar Site (and the Seaton Dunes and Commons SSSI). The Appraisal of Sustainability notes that this land is likely to support the cooling structure and pipework which may lead to direct loss and fragmentation of habitat.
- 5.8.47 The findings of the Appraisal of Sustainability on sites of international importance are taken from the Habitats Regulations Assessment¹⁷⁸. The Habitats Regulations Assessment has concluded that at this stage, it cannot rule out the potential for adverse effects on four European sites¹⁷⁹ (Northumbria Coast SPA, Northumbria Coast Ramsar, Teesmouth and Cleveland Coast SPA, Teesmouth and Cleveland Coast Ramsar) through potential impacts on water resources and quality, air quality, habitat and species loss and fragmentation and disturbance (noise, light and visual).
- 5.8.48 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of any project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

Assessment

- 5.8.49 The Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment for sites of international importance, and the need for more detailed studies should an application for development consent come forward.
- 5.8.50 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in this NPS.
- 5.8.51 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in this NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

¹⁷⁸ *Habitats Regulations Assessment: Site report for Hartlepool*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

¹⁷⁹ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

Guidance to the IPC

- 5.8.52 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.8.53 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Hartlepool and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

- 5.8.54 The Appraisal of Sustainability has concluded that the potential for adverse effects on sites and species considered to be of national nature conservation importance (Seal Sands and the Seaton Dunes and Common SSSI/NNR and Teesmouth NNR sites) means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.8.55 The Appraisal of Sustainability identifies the following SSSIs of particular concern (within 5km of the site) for which significant effects may occur: Seal Sands SSSI; Seaton Dunes and Coatham Sands SSSI; Cowpen Marsh SSSI.
- 5.8.56 The Appraisal of Sustainability has identified that the land at the northern end of the site is included within the Teesmouth and Cleveland SPA/Ramsar Site and the Seaton Dunes and Commons SSSI and that this land is likely to support the cooling structure and pipework which may lead to direct loss and fragmentation of habitat.
- 5.8.57 However, the Appraisal of Sustainability identified that potential exists for the mitigation of biodiversity effects on sites of UK wide importance, including the creation of replacement habitat. Detailed baseline studies will be required to inform the ecological assessment of the proposal.

Assessment

- 5.8.58 The Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers to be of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.
- 5.8.59 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet the Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government

does not think the issues in relation to this criterion are sufficient to justify not including the site in the NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.

5.8.60 This site passes this criterion.

Guidance to the IPC

5.8.61 The IPC should refer to the relevant guidance in EN-1 including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.

5.8.62 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Hartlepool and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

5.8.63 The Appraisal of Sustainability has identified potential adverse visual effects and some localised impacts on landscape and the seascape character. These include some potentially adverse indirect landscape and visual impacts on the surrounding area, including from parts of the North York Moors National Park, Durham and the North Yorkshire and Cleveland Heritage Coast and designated Conservation Areas. The nominated site is located approximately 20km to the north of the North York Moors National Park, 16km south of the Durham Heritage Coast and 18km north west of the North Yorkshire and Cleveland Heritage Coast.

5.8.64 The Appraisal of Sustainability notes that overall, the new power station would be seen in the context of existing power station facilities and in an industrial setting, prior to any decommissioning. However, the Appraisal of Sustainability finds that further development is still likely to lead to a perceptible deterioration in some views, which would not be able to be fully mitigated, given the scale of possible new buildings.

5.8.65 At a local level, the Appraisal of Sustainability also finds that there is the potential for long-term adverse effects on existing wet grassland, field hedgerows, trees, saltmarsh and/or mudflat. Any increase in the height or extent of sea defences and the incorporation of a new marine landing platform could also give rise to adverse impacts on the appearance of the existing shoreline. Given the scale of the nominated site the Appraisal of Sustainability notes that it is unlikely that the above effects could be mitigated entirely. However, further detailed design at project level will be required to ensure that attempts are made to avoid and reduce any adverse effects.

- 5.8.66 On cultural heritage, the Appraisal of Sustainability identified that the main effects of the development of a new nuclear power station at the nominated site would be local and within the nominated site boundary. The Appraisal of Sustainability states that a new nuclear power station could adversely impact the setting of scheduled monuments or other cultural heritage sites of regional or national importance, however, this depends on distance and sight lines. The Appraisal of Sustainability¹⁸⁰ lists cultural heritage features in the area which could be affected depending on distance, sight lines and mitigation. These include the nearest scheduled monument of Claxton Medieval Moated site which lies c.5km to the west; three Grade II* listed buildings present within 5km of the existing nuclear power station and nominated site; 51 Grade II listed buildings within approximately 5km¹⁸¹; the nearest Conservation Areas are Seaton Carew approximately 1.9km to the north, Greatham approximately 3km to the west and another in Hartlepool, approximately 5km to the north; and an area of historic landscape lies immediately north of the existing power station and there may be a physical impact if the nomination site is proposed for this area. There is likely to be a setting impact.
- 5.8.67 The Appraisal of Sustainability finds that archaeological sites in the form of 20th century military buildings are located adjacent to the existing power station. Layers of palaeo-environmental¹⁸² potential may also be present. The presence of these features indicates historic activity, spanning at least the 20th century, in the area immediately surrounding the existing facility. As such, the Appraisal of Sustainability finds that the area is likely to be considered of at least local to regional archaeological importance.
- 5.8.68 The Appraisal of Sustainability finds that further detailed assessment at project level will be required.

Assessment

- 5.8.69 In making this assessment regard has been given to the purposes of the designation of the National Park in conserving and enhancing the natural beauty, wildlife and cultural heritage of the Park and of promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public.
- 5.8.70 The site is some distance to the north of the North York Moors National Park, the Durham Heritage Coast and the North Yorkshire and Cleveland Heritage Coast. Whilst visual impacts on these sites are possible, given the distance of the National Park and Heritage Coasts from the facility, the immediate context of the nominated site that would be visible from that distance, and the potentially low significance of effects, this site passes this criterion.

¹⁸⁰ See the Appendices to *Appraisal of Sustainability: Site report for Hartlepool*, November 2009, <http://www.energyngpsconsultation.decc.gov.uk>

¹⁸¹ Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See www.english-heritage.org.uk.

¹⁸² Information about past climates and environments can be deduced from rocks and fossils.

- 5.8.71 The potential and extent of remaining effects can only be fully assessed when detailed plans come forward. This is because the effects depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed, the location of transmission infrastructure, and the other relevant projects in the area which could cause in combination cumulative effects.
- 5.8.72 The Government notes that some visual impacts may remain on the local landscape and settings of cultural heritage features depending on distances and sight lines. Impact and mitigation will need to be considered by the IPC but at this stage, these potential effects do not outweigh the need to ensure sufficient sites are available for development to meet the Government's energy policy objectives, as described in Part 2 of this NPS, particularly as the scope for some mitigation that has been identified.

Guidance to the IPC

- 5.8.73 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts.
- 5.8.74 The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Hartlepool and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.

D9: Size of site to accommodate operation

Analysis

- 5.8.75 The nominated site is approximately 140 hectares. The Nuclear Installations Inspectorate and Office for Civil Nuclear Security have advised that this is of sufficient size and shape for the safe and secure operation of a new nuclear power station.
- 5.8.76 The nominated land is bisected by two publicly accessible roads and a number of footpaths. It is a security requirement that the licence applicant has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public right of way.
- 5.8.77 The Office for Civil Nuclear Security has advised that there appears to be insufficient land to provide effective defence-in-depth for a nuclear reactor (including the associated turbine hall), spent fuel and intermediate level waste stores in the following areas (see map at Annex B):
- north of a line drawn between grid references 45332.52797 and 45366.52755, as the land is of inadequate width; and
 - south of a line drawn between grid references 45248.52723 and 45273.52718, as the land area is of inadequate size.
- 5.8.78 These parts of the nominated site could still be used for locating supporting infrastructure that has no potential to directly cause a radiological hazard.

- 5.8.79 Whilst these particular areas have insufficient land to provide defence in depth, the Office for Civil Nuclear Security has confirmed that there is sufficient land area within the nominated boundary to provide sufficient defence in depth for essential infrastructure.

Assessment

- 5.8.80 Although areas have been identified by the Office for Civil Nuclear Security as having insufficient land for the effective defence in depth for a nuclear reactor (including its associated turbine hall) spent fuel and intermediate level waste stores, based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station. This includes the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and decommissioning, until it can be sent for disposal in a geological disposal facility.

Guidance to the IPC

- 5.8.81 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.
- 5.8.82 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimise hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

- 5.8.83 The nomination of the site details a number of cooling technologies, but expresses a preference for direct cooling¹⁸³. The advice of the Environment Agency indicates that there appears to be access to potentially suitable sources of cooling at the site.
- 5.8.84 The Appraisal of Sustainability for Hartlepool notes that discharge of heated water and cooling water abstraction processes can lead to negative impacts on aquatic ecosystems, such as mortality of fish and invertebrates and alteration of habitats. Any impacts to habitats and associated species within the Teesmouth and Cleveland Coast SPA and Ramsar complex would be of particular concern.
- 5.8.85 The Environment Agency has advised that the Tees Estuary is a recovering industrial Estuary which now contains substantial numbers of juvenile marine fish and increasing numbers of migratory salmonids.

¹⁸³ See <http://www.energy-nps-consultation.decc.gov.uk> for the nomination documents for Hartlepool, and in particular the nomination report for information on cooling.

Assessment

- 5.8.86 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion.

Guidance to the IPC

- 5.8.87 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.8.88 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.8.89 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.
- 5.8.90 The Ekofisk pipeline comes ashore close to that part of the nominated area likely to be used for the cooling water outfall. The IPC should ensure that the impact (if any) of the proximity to the pipeline has been considered by the applicant with reference to the Local Planning Authority.

Appraisal of Sustainability and Habitats Regulations Assessment for Hartlepool

- 5.8.91 The Planning Act 2008¹⁸⁴ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Hartlepool is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any possibilities for mitigation.
- 5.8.92 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the "Habitats Regulations Assessment") tests whether a plan or project **could** have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Hartlepool site.

¹⁸⁴ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

- 5.8.93 The key findings of the Hartlepool Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance including, amongst other things:
- i) potential negative effects on four national and internationally protected conservation sites including Teesmouth and Cleveland Coast SPA, and the Seaton Dunes;
 - ii) effects on water quality and migratory fish in the region due to the abstraction and release of sea water for cooling;
 - iii) potential effects on coastal erosion and visual appearance principally as a result of new coastal flood defences that would be required to protect against sea level rise during the lifetime of the site. Potential negative visual impact on the landscape that could potentially be seen from parts of the North York Moors National Park and Cleveland Heritage Coast; and
 - iv) likely positive local effects from employment generated by the development although the regional and national effects are considered to be marginal.
- 5.8.94 Hartlepool is not close to any other nominated site and therefore does not form part of a cluster. This means that regional cumulative effects are not considered relevant by the Appraisal of Sustainability for this site.
- 5.8.95 Issues i) to iii) are discussed against the SSA criteria above. Please refer to the Appraisal of Sustainability containing more information on iv).

Other issues raised during the assessment

- 5.8.96 This section deals with other common issues that were raised during the opportunity for public comment for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk> .

Health

- 5.8.97 The Appraisal of Sustainability for Hartlepool has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.
- 5.8.98 One of these factors of particular interest to the public is the incidence of cancer. There has been, since 1983, a nuclear power station operating on the Hartlepool site. There is, therefore, historical data which can be analysed to correlate the incidence of cancer reported around this nominated site so that it can be compared to the average prevalence of the same disease in the British population as a whole. The Committee on Medical Aspects of Radiation in the Environment (COMARE), is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around

nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.

- 5.8.99 COMARE's tenth report¹⁸⁵ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.8.100 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.8.101 In its eleventh report¹⁸⁶ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.
- 5.8.102 Radioactive monitoring carried out in 2007¹⁸⁷ found generally low concentrations of artificial radionuclides in water, sediment and beach samples and in meat and seafood samples taken around the existing Hartlepool nuclear power stations. From this sampling, the estimated total dosage levels to the public from all sources within the Hartlepool area were assessed as being less than 3% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.8.103 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally.

¹⁸⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE). *Tenth Report. The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

¹⁸⁶ Committee on Medical Aspects of Radiation in the Environment (COMARE). *Eleventh Report. The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*. Health Protection Agency, July 2006.

¹⁸⁷ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13) Report*, 2007.

- 5.8.104 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a nuclear power plant may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.8.105 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Seismic risk

- 5.8.106 One respondent commented on the presence of a geological fault in the vicinity of the nominated site.
- 5.8.107 As outlined in the Government response to the SSA Criteria consultation¹⁸⁸ the Nuclear Installations Inspectorate has advised that seismic risk is more appropriately assessed at site licensing stage when detailed site specific and reactor design information is available. Seismic hazard was therefore identified as an SSA criteria which is flagged for local consideration. This will be done by the Nuclear Installations Inspectorate as part of licensing. In order to satisfy the regulators that site licence conditions will be met, the designers of the plant will need to demonstrate that the installed plant is able to withstand all site-specific natural hazards including earthquake, flooding or meteorological conditions. The reactor designs being considered under the Generic Design Assessment process are intended for worldwide application, with baseline seismic resistance designs in the area of 0.25g-0.5g peak ground acceleration.
- 5.8.108 This does not therefore affect the potential suitability of the site for the purposes of the SSA.

Existing land use

- 5.8.109 Comments were also received about the impact of the proposals on existing land-use at and around the site, including that at Able Seaton Port.
- 5.8.110 The Government notes that, without detailed proposals, it is not wholly clear what the impact would be. Should an application for development consent come forward that impacts on existing land use, the IPC should consider this aspect in accordance with part 3 of EN-1 on land use including open space, green infrastructure and green belt.

¹⁸⁸ BERR, *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581, p38.

Conclusion on the nominated site at Hartlepool

- 5.8.111 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable for deployment of new nuclear power stations by the end of 2025.
- 5.8.112 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things the effects of any proposals on biodiversity including on the Tees Estuary, and consideration of existing land use. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

5.9 Heysham

Description of the site

- 5.9.1 The nominated site is located to the east of the existing Heysham nuclear power stations on the Lancashire coast at the south of Morecambe Bay, 8km west of Lancaster. The site is to the south of Heysham Harbour in the civil parish of Heysham within the District of the City of Lancaster and the County of Lancashire. The grid reference of the approximate centre of the nominated site is 340800, 459500.
- 5.9.2 Of the existing Heysham nuclear power stations Heysham 1 is a twin-reactor Advanced Gas-Cooled (AGR) power station which commenced operation in 1983 and is expected to operate until at least 2014. Heysham 2 is also a twin-reactor AGR power station which commenced operation in 1988 and is expected to operate until at least 2023.
- 5.9.3 The nominated site occupies an area of drained marsh at the western side of a generally low-lying area of land between the River Lune and Morecambe Bay. The site is adjacent to residential and industrial areas with grazing land to the east. The nominated area includes Heysham Golf Course and Ocean Edge Leisure Park.

Deployability by the end of 2025

- 5.9.4 The SSA is limited to considering sites which are credible for deployment by the end of 2025¹⁸⁹. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security. Whilst the nominator of the site has not commenced detailed site investigations for an Environmental Impact Assessment at Heysham, the operation of the adjacent power station means that there is already a great deal of knowledge about the site. A grid connection agreement for a transmission capacity of 1650 MW is in place with National Grid, with a connection date of 2022 (although this does not automatically mean that a site would be deployed by that date).
- 5.9.5 The Government is satisfied from the information provided by nominators and an independent assessment that Heysham is credible for deployment by the end of 2025.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.9.6 There were a number of comments during the public comments window about the proximity of the site to areas of high population density.

¹⁸⁹ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

- 5.9.7 The Health and Safety Executive has advised that 32 hectares to the south of the nominated site does not exceed the semi-urban criterion. The remainder of the site exceeds the semi-urban criterion as indicated in the map at Annex B.
- 5.9.8 The purpose of the Government policy on demographics is to limit the consequences to the public in the unlikely event of an airborne radiological release. In the Consultation on the on the SSA Criteria and Process the Government proposed to assess sites against the semi-urban demographic criterion and to exclude from consideration in the SSA areas where the local population density exceeds the semi-urban criterion.
- 5.9.9 The Health and Safety Executive, including the Office for Civil Nuclear Security , has confirmed that they are satisfied that the elements of a nuclear power station which do have the direct potential to cause radiological hazard could be sited in the 32 hectares which do not exceed the semi-urban criterion (see also D9: Size of site) at Heysham.
- 5.9.10 The Health and Safety Executive has advised that the area of the Heysham site which exceeds the semi-urban criterion could be used for siting of elements of a power station that don't have a direct potential to cause radiological release. For example, administrative offices, staff canteens and car parks do not contribute to any radiological risk to the public and could be located in areas which exceed the semi-urban criterion.
- 5.9.11 The Health and Safety Executive has also advised that they consider that the site is potentially suitable for the deployment of a new nuclear power station against the demographics criterion. In the event that the Nuclear Installations Inspectorate received a licence application for the construction of a reactor within the nominated site, as part of the licensing process the Nuclear Installations Inspectorate would require the licence applicant to demonstrate that the proposed disposition of the nuclear facilities within the site ensured that the semi-urban siting criterion was not exceeded.
- 5.9.12 In addition, the Health and Safety Executive has commented that the robust and routinely tested emergency arrangements for the existing nuclear licensed sites give them confidence that such arrangements can be adapted to encompass new developments on the nominated site.

Assessment

- 5.9.13 The Government has carefully considered whether the nominated site is potentially suitable against this criterion given that part of the nominated site exceeds the semi-urban criterion.
- 5.9.14 The objective of the demographics criterion is to limit the radiological consequences to the public in the unlikely event of an accident involving the spread of radioactive materials beyond the site boundary. The siting of elements of a power station which do not have the direct potential to cause radiological hazard, such as offices and car parks, in the areas which exceed the semi-urban criterion does not add to the risk of radiological consequences for the public.

- 5.9.15 However, to limit the risk to the public, those areas that do have the potential to cause radiological hazard should be sited within areas which do not exceed the semi-urban criterion.
- 5.9.16 The Government also notes that the Health and Safety Executive (including the Office for Civil Nuclear Security) have advised that there is sufficient space within the nominated site to place those areas that have the direct potential to cause radiological hazard in the area which does not exceed the semi-urban criterion. Against criterion D9 the Office for Civil Nuclear Security has noted that taken as a whole the site provides sufficient space to allow for the implementation of adequate security arrangements for such a new nuclear site.
- 5.9.17 The Government has therefore concluded that the nominated site is potentially suitable subject to the siting of the elements of a nuclear power station which have the direct potential to cause radiological hazard in the area which does not exceed the semi-urban criterion.

Guidance to the IPC

- 5.9.18 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.
- 5.9.19 An application at the nominated site should only be approved if the elements which have the direct potential to cause radiological hazard are sited in the area which does not exceed the semi-urban criterion, subject to the Health and Safety Executive's advice.

C2 and D5: Proximity to military activities

Analysis

- 5.9.20 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas. No military firing activity occurs in the marine or landward areas adjoining the site. There are no military explosive or military nuclear facilities within 1000 metres of the site.
- 5.9.21 The Ministry of Defence has found that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.9.22 Given the proximity to military facilities the Ministry of Defence has also advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime.

Assessment

5.9.23 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:

- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment;
- the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out. However, given the concerns about historic munitions, the IPC are instructed to seek evidence of further assessments below. The Nuclear Installations Inspectorate will assess the risks posed by external hazards to the installation at a more detailed level during licensing;
- the development of a new nuclear power station at the site will not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime;
- any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime.

5.9.24 This site therefore passes these criteria.

Guidance to the IPC

5.9.25 The IPC should refer to the relevant guidance in EN-1, including that on Civil and Military Aviation and Defence Interests.

D1: Flooding, tsunami and storm surge

Analysis

5.9.26 The site is located in Flood Zone 1, low probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)¹⁹⁰.

5.9.27 Some concerns were voiced in the opportunity for public comments about climate change and rising sea levels. The Appraisal of Sustainability¹⁹¹ has also identified potential adverse effects relating to flood risk due to rising sea levels, especially during the later stages of operation and decommissioning of any new nuclear power station. There are existing flood defences, but the Appraisal of Sustainability considers that these may need improvement or upgrading and that this could have possible impacts on coastal processes, hydrodynamics and sediment transport. It notes that mitigation may be possible through appropriate design and construction of defences.

¹⁹⁰ See PPS25 for a full definition of the flood zones and what they cover <http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf>, pp22-25

¹⁹¹ *Appraisal of Sustainability: Site report for Heysham, November 2009*, <http://www.energyngpsconsultation.decc.gov.uk>

- 5.9.28 The Environment Agency has advised that it is potentially reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against flood risk throughout its operational lifetime¹⁹², including the potential effects of climate change, storm surge and tsunami, taking into account relevant countermeasures. The Agency has also advised that any flood mitigation measures are unlikely to have any impact elsewhere.
- 5.9.29 The Environment Agency has noted that access and egress to and within the power station site is possible during extreme flood events, even up to the 0.1% annual event, although the preferred route once off site may be compromised.
- 5.9.30 The Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and estuary from changing and adapting naturally.

Assessment

- 5.9.31 This site passes this criterion. This takes into account in particular that there is a low risk of flooding at this site and based on the advice of the Environment Agency and the findings of the Appraisal of Sustainability, it is reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunami.
- 5.9.32 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.9.33 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation, and on landscape and visual impact where necessary.
- 5.9.34 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

¹⁹² See entry D1 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

D2: Coastal processes

Analysis

- 5.9.35 The Environment Agency has advised that that development at the site could avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime¹⁹³, including the potential effects of climate change.
- 5.9.36 The Appraisal of Sustainability for Heysham has identified possible impacts on coastal processes, hydrodynamics and sediment transport from any necessary new or upgraded coastal defences. The Appraisal of Sustainability finds that mitigation may be possible through appropriate design and construction of defences, but note that the Morecambe Bay shoreline, inter-tidal sand flats and mud flats and salt marshes are in delicate balance with the prevailing current, wave and tide regime, and any alteration to the dynamics will change the configuration of the current coastal form.

Assessment

- 5.9.37 This site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences.

Guidance to the IPC

- 5.9.38 The IPC should refer to the relevant guidance in EN-1, in particular that on climate change adaptation and coastal change.
- 5.9.39 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous installations

Analysis

- 5.9.40 The Health and Safety Executive has advised that an Upper Tier COMAH establishment at Solvent Resource Management Limited (SRML), Middleton Road, Morecambe is located on the Eastern Boundary of the nominated site. The Public Information Zone (PIZ) for the SRML site extends 500m into the nominated site.
- 5.9.41 As shown on the map at Annex B, the Eastern boundary of the nominated site is crossed by all 3 planning zones, Inner, Middle and Outer (the latter being coterminous with the PIZ).
- 5.9.42 HSE has noted that the significance and mitigation of hazards and associated risks from SRML's activities on any new nuclear facilities within the nominated site would need to be assessed by a nuclear site licence applicant during the licensing phase. The HSE has advised that it is reasonable to conclude that a new nuclear power

¹⁹³ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

station at the nominated site could be protected against risk arising from proximity to these adjacent hazardous facilities throughout its lifetime, taking into account possible mitigatory actions including individual building design and layout.

5.9.43 Assessment at licensing stage will also need to take into account the hazards and associated risks from:

- all notified major hazard pipelines. The licence applicant will need to obtain information from the Local Planning Authority and the relevant pipeline operators, about their routes and properties of fluids being conveyed and if necessary;
- hazardous ship cargo movements through Heysham Port, given its proximity.

5.9.44 There is also a Licensed Explosive installation at Heysham Harbour, and although the proposed nuclear site is beyond the safeguarding zones used for planning purposes around that installation, the Health and Safety Executive advises that it would expect the licence applicant's safety case would confirm that any explosion at that installation would not have unacceptable consequences for nuclear operations.

Assessment

5.9.45 This site passes against this criterion. However, given the proximity to hazardous facilities a developer of any nuclear power station within the nominated site boundary would need to demonstrate to the HSE that the facility could be protected against risk arising from adjacent hazardous facilities throughout its lifetime.

Guidance to the IPC

5.9.46 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

5.9.47 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation¹⁹⁴. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.

¹⁹⁴ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

- 5.9.48 The Civil Aviation Authority has advised that the existing Heysham nuclear installation has an associated Restricted Area and that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements.
- 5.9.49 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. Middleton Sands, a microlight focused aerodrome, is situated on the southern boundary of the existing Heysham-associated Restricted Area. Any expansion of the Restricted Area to the south would impact upon Middleton Sands-related aviation activity.
- 5.9.50 The Civil Aviation Authority has advised that there are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations and that the current establishment of the existing Heysham Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.

Assessment

- 5.9.51 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

Guidance to the IPC

- 5.9.52 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests. This sets out, amongst other things, that the applicant should consult the Ministry of Defence, Civil Aviation Authority, National Air Traffic Services and any aerodrome – licensed or otherwise – where likely to be affected by the proposed development in preparing an aviation assessment. This should include Middleton Sands aerodrome.
- 5.9.53 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on aviation.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.9.54 Public comments were particularly focussed on the potential for effects on Morecambe Bay.
- 5.9.55 The Appraisal of Sustainability site report¹⁹⁵ has identified that the potential for adverse effects on sites and species considered to be of European nature conservation importance means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal. The Appraisal of Sustainability finds that of greatest concern are activities which might lead to detrimental effects on coastal, intertidal and marine habitats within the Morecambe Bay SAC, part of which overlaps with the nominated site, and species which utilise these habitats, such as Great Crested Newts.
- 5.9.56 The findings of the Appraisal of Sustainability on sites of international importance are taken from the Habitats Regulations Assessment¹⁹⁶. Taking into account the strategic nature of the plan and the information available, the Habitats Regulations Assessment at this strategic level cannot rule out likely adverse effects on five European sites¹⁹⁷: Leighton Moss SPA and Ramsar, and Morecambe Bay SAC/SPA/ Ramsar, through potential impacts on water resources and quality, habitat and species loss and fragmentation/coastal squeeze, disturbance (noise, light and visual), and air quality. This includes, in particular, effects arising from the development of areas of the Morecambe Bay SPA, SAC and Ramsar site within the nominated site and from essential off-site infrastructure.
- 5.9.57 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of any project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

Assessment

- 5.9.58 Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment for sites of international importance, and the need for more detailed studies should an application for development consent come forward.
- 5.9.59 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in the NPS.

¹⁹⁵ *Appraisal of Sustainability: Site report for Heysham*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

¹⁹⁶ *Habitats Regulations Assessment: Site report for Heysham*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

¹⁹⁷ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

- 5.9.60 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest (IROPI) that favours the inclusion of this site in this NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

- 5.9.61 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.9.62 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Heysham and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.9.63 The Appraisal of Sustainability site report has identified that the potential for adverse effects on sites and species considered to be of UK nature conservation importance, which the Appraisal of Sustainability finds could be indirectly impacted, means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.9.64 The Appraisal of Sustainability identifies the SSSIs within 5km of the site for which significant effects may occur as Lune Estuary SSSI, Morecombe Bay SSSI and Heysham Moss SSSI.
- 5.9.65 On sites of UK wide nature conservation importance the Appraisal of Sustainability identified that the potential exists for the mitigation of biodiversity effects including the creation of replacement habitat. The Appraisal of Sustainability has found that detailed baseline studies would be required to inform the ecological assessment of the proposal if an application for development consent came forward.

Assessment

- 5.9.66 Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.

- 5.9.67 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.
- 5.9.68 This site passes this criterion.

Guidance to the IPC

- 5.9.69 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.9.70 The IPC should also refer to the Appraisal of Sustainability for Heysham and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

- 5.9.71 The Appraisal of Sustainability identified potential adverse visual effects on landscape. These include lasting adverse indirect landscape and visual impacts on the surrounding area, the Lake District National Park and two AONB designations – the Arnside and Silverdale and the Forest of Bowland Areas of Outstanding Natural Beauty. The Lake District National Park is approximately 18.45km from the nominated site. The Arnside and Silverdale AONB is approximately 10.7km from the nominated site. The Bowland Forest AONB is approximately 10km from the nominated site.
- 5.9.72 The Appraisal of Sustainability has found that whilst the impact on the Lake District National Park and AONBs could not be entirely mitigated, the nominated site is adjacent to an existing nuclear power station, in an area that is already heavily industrialised, and so the additional impact on the landscape would be less significant at a regional level.
- 5.9.73 The Appraisal of Sustainability also finds the potential for long term potential adverse effects on the sandstone cliffs adjacent to the nominated site. Given the scale of the nominated site it is unlikely that these effects could be mitigated entirely. Further detailed assessment at project level would be required to ensure that attempts be made to minimise any adverse effects.

- 5.9.74 The Appraisal of Sustainability has not identified any amenity, cultural heritage, or landscape designations within the nominated site boundary, though a prehistoric artefact was found in the area.
- 5.9.75 The Appraisal of Sustainability finds that there is the potential for adverse effects on local cultural heritage features, but these are unlikely to be considered as being of national strategic significance and further detailed assessment at project level would be required¹⁹⁸.
- 5.9.76 These impacts arise because depending on the distance and sight lines (and mitigation applied) a new nuclear power station could detrimentally impact the setting of any scheduled monuments, conservation areas, and listed buildings that are identified in the region. The Appendices of the Appraisal of Sustainability for Heysham¹⁹⁹ lists those sites that could be affected depending on distance, sight lines and potential for mitigation including the nearest scheduled monuments of the High Cross in St. Peter's Churchyard in Heysham and St. Patrick's Early Christian Chapel which both lie within an approximate distance of 2km of the site; Grade I and 3 Grade II* listed buildings within an approximate distance of 5km of the site; 6 conservation areas within an approximate distance of 5km of the site; no listed buildings within or adjacent to the site, but 82 Grade II listed buildings within an approximate distance of 5km²⁰⁰.

Assessment

- 5.9.77 In making this assessment Government has had regard to the purposes of the designation of the National Park in conserving and enhancing the natural beauty, wildlife and cultural heritage of the park and of promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public. It has also had regard to the purposes of the AONBs, which is of conserving and enhancing the natural beauty of the area of outstanding natural beauty.
- 5.9.78 The nominator of the site has proposed potential mitigations to minimise impacts on the National Park. However, the Appraisal of Sustainability has assessed that visual impacts will be highly likely given the existing undeveloped nature of the nominated site, the scale of new development and the potential need for associated off-site grid connection infrastructure.
- 5.9.79 The potential for remaining effects can only be fully assessed when detailed plans come forward. This is because they depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed and location of transmission infrastructure, and the relevant other development in the area to be factored when considering cumulative effects at the development consent stage.

¹⁹⁸ See *Appendices to the Appraisal of Sustainability report for Heysham* for a list of the sites in the vicinity

¹⁹⁹ See the *Appendices to Appraisal of Sustainability: Site report for Heysham*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁰⁰ Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See <http://www.english-heritage.org.uk>

- 5.9.80 The Government believes that in relation to this criterion, the site is potentially suitable despite the potential impacts. This takes into account the fact that the nature, scope, and scale of any effect is currently uncertain and is dependent on the exact form of development proposed; that there is some scope for a developer and the IPC to explore in detail minimisation, avoidance and mitigation of adverse effects; there is a need for sites to be available for potential new nuclear power stations as outlined in Part 2 of this NPS; and in particular the distance to the designated sites and the context of the site (next to existing facilities).
- 5.9.81 The Government notes that some visual impacts may remain on the settings of cultural heritage features in the area depending on distances and sight lines. Impact and mitigation will need to be considered by the IPC but at this stage, the potential effects are not felt sufficient to outweigh the need for sites as set out in Part 2 of this NPS, particularly given the need for further investigation and the scope for some mitigation that has been identified by the Appraisal of Sustainability.

Guidance to the IPC

- 5.9.82 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Heysham and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.

D9: Size of site to accommodate operation

Analysis

- 5.9.83 The Government has stipulated against criterion C1: Demographics that the nominated site is only suitable on the proviso that the elements of a power station which have the direct potential to cause radiological hazard are housed in the area which does not exceed the semi-urban criterion, which comprises of 32 hectares. Because the remainder of the site could be used for other purposes, such as ancillary buildings, it could also be used to provide defence-in-depth for the nuclear facility. The Office for Civil Nuclear Security have therefore considered the full nominated boundary when making their assessment on defence-in-depth.
- 5.9.84 The nominated area is approx 115 hectares. It has a public road and a number of tracks/footpaths bisecting it. It is a security requirement that the licence applicant has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.
- 5.9.85 The Office for Civil Nuclear Security has advised that there appears to be insufficient land to provide effective defence-in-depth for a nuclear reactor (including the associated turbine hall), spent fuel and intermediate level waste stores (see map at Annex B):
- east of a line drawn between grid references 304045.45983 and 34052.46002, as the land is of inadequate width; and

- west of the public road, as the land is of inadequate width unless the road is realigned or closed.

5.9.86 The Office for Civil Nuclear Security advised that this land could be used for locating supporting infrastructure that has no potential to directly cause a radiological hazard.

5.9.87 Whilst these particular areas have insufficient land to provide defence in depth, the Office for Civil Nuclear Security and the Nuclear Installations Inspectorate have confirmed that there is sufficient land area within the nominated boundary to provide sufficient defence in depth for essential infrastructure.

Assessment

5.9.88 Although there is an area which has been identified by the Office for Civil Nuclear Security as having insufficient land for the effective defence in depth for a nuclear reactor (including its associated turbine hall) spent fuel and intermediate level waste stores, based on the advice of the Office for Civil Nuclear Security and the Nuclear Installations Inspectorate, it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility.

5.9.89 Given the size of the site it is reasonable to conclude that there may be scope for mitigation of any concerns over tracks and footpaths crossing the site, such as siting the station away from these areas or realigning them where necessary.

Guidance to the IPC

5.9.90 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.

5.9.91 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimised hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

5.9.92 The nomination outlines a number of potential cooling technologies. It expresses a preference for direct cooling from the sea. The advice of the Environment Agency indicates that there appears to be access to potentially suitable sources of cooling at the site.²⁰¹

²⁰¹ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Heysham, and in particular the nomination report for information on cooling.

- 5.9.93 Although there are currently discharges from the existing Heysham power stations, the Appraisal of Sustainability for Heysham notes that the return of cooling water from a new power station to the coastal waters at Morecambe Bay at elevated temperatures has the potential to cause failures to existing water quality standards.
- 5.9.94 The Environment Agency has also advised that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges. This would require the discharges to meet regulatory standards for the protection of the quality of estuarine or coastal waters in line with future requirements of the Water Framework Directive²⁰².
- 5.9.95 The Environment Agency has noted that there are important nursery grounds for both bass and sole on this coast as well as large populations of migratory salmonids. Morecambe Bay is large, inter-tidal and for the most part shallow. The opportunity for public comments reflected a concern that it could be adversely affected by thermal discharge. The Environment Agency has also advised that this area is particularly sensitive to elevated temperatures associated with climate change. The Bay carries important nature conservation designations. Migratory cold water fish species such as salmon and sea trout are particularly vulnerable. Any development in this area would need to take into account the existing power station cooling discharges and any potential overlap with new development.

Assessment

- 5.9.96 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion. Detailed modelling as part of the licensing process will give greater clarity about the acceptability of impacts in the light of the cooling technology that is proposed.

Guidance to the IPC

- 5.9.97 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.9.98 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.
- 5.9.99 The IPC should also see the relevant guidance in Part 4 of this NPS, including that on water quality and resources.

²⁰² The Water Framework Directive 2000/60/EC.

Appraisal of Sustainability and Habitats Regulations Assessment for Heysham

- 5.9.100 The Planning Act 2008²⁰³ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Heysham is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.
- 5.9.101 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the “Habitats Regulations Assessment”) tests whether a plan or project **could** have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Heysham site.
- 5.9.102 The key findings of the Heysham Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) potential negative effects on two national and internationally protected conservation sites, namely Morecambe Bay SAC/SPA/Ramsar and the Lune Estuary;
 - ii) effects on water quality in the region due to the abstraction and release of sea water for cooling.
 - iii) the potential need to upgrade river and coastal flood defence schemes that already exist in the area of the site
 - iv) negative visual impacts on the landscape which could potentially be seen from parts of the Lake District National Park.
 - v) positive effects of regional economic significance may occur when the project is considered cumulatively with other energy projects in the North West. The Heysham site is adjacent to an existing rail link and sea port, which presents opportunities for sustainable transport, particularly during construction.
 - vi) Heysham is approximately 30km south east of a cluster of 3 nominated sites in the Cumbria area. The Appraisal of Sustainability finds that the positive and negative impacts discussed above would lead to cumulative impacts at a regional level if all the nominated sites were developed.
- 5.9.103 Impacts i) – iv) are discussed in the assessment against criteria above. Please refer to the Appraisal of Sustainability for Heysham for further detail on the finding v). Cumulative effects are discussed below.

²⁰³ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

Cumulative effects

5.9.104 The Appraisal of Sustainability for Heysham notes that the site forms one of a cluster of four nominated sites in the North West region, three of them in Cumbria, that have the potential to produce cumulative effects if more than one power station were developed in this region. The interactions and potential cumulative effects of the this NPS that have been identified in relation to Heysham are summarised below. The Appraisal of Sustainability notes that the potential cumulative effects arise as a result of interactions between the sites due to their relative proximity and the way in which effects may act together. The cumulative effects that are assessed to be of potentially strategic significance are discussed in the following sections.

Biodiversity and ecosystems

5.9.105 The Appraisal of Sustainability report for Heysham identifies that strategic significant effects on biodiversity cannot be ruled out. The development of nuclear power stations at other nominated sites in the region may increase the significance of the adverse impacts either by adding to the pressures on a particular site of nature conservation importance or by adversely affecting other nearby sites so that the cumulative effects in the region are increased. For Heysham, the European sites that are at most risk from interactions are the Morecambe Bay SAC, SPA and Ramsar sites which have also been identified as potentially being significantly adversely affected by the nominated site at Kirksanton. The potential effects on the European sites from both the Heysham and Kirksanton developments are due to adverse effects on water quality and resources, habitat loss and coastal squeeze, disturbance and air quality.

Effects on communities: population, employment and viability.

5.9.106 The Appraisal of Sustainability appraises the Heysham site as having positive effects of regional economic significance on employment and community viability. The cumulative positive effects of employment, community viability and health/well-being could be more significant if more than one new nuclear power station is built and the opportunities for upskilling, education, and supporting industries to the nuclear sector are developed at the local and regional levels. The site Appraisal of Sustainability report notes that there may be negative effects, during the construction of any new power stations, if the development produces a local shortage of specialist construction labour. This negative effect could be increased if more than one power station is developed in the region. However, these effects may be mitigated if the education and upskilling opportunities noted above are taken and by appropriate phasing of construction.

Effects on communities: supporting infrastructure

5.9.107 Development at the Heysham site is assessed by the Appraisal of Sustainability as having the potential for minor negative effects on local infrastructure such as transport (roads), non-radioactive waste management facilities and basic services e.g. schools, hospitals. The Appraisal of Sustainability believes that these negative effects may become more significant if more than one nuclear power station is developed in

the region. The Appraisal of Sustainability notes that transmission infrastructure is considered in the separate Electricity Networks NPS (EN-5) but is another aspect of regional and possibly national infrastructure that could be affected by a regional concentration of nuclear power stations in the North West. Development of the necessary transmission infrastructure might lead to indirect cumulative effects, for example as a result of the visual impact from multiple transmission lines.

- 5.9.108 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.

Landscape and visual impact

- 5.9.109 Development at the Heysham site is assessed by the Appraisal of Sustainability as having adverse effects of minor significance on landscape and visual impacts in the surrounding area. Development of more than one nuclear power station in the region has the potential to increase the significance of this adverse effect and might begin to change the visual character of the region due to the grouping of major infrastructure in the region. The significance of this effect may be increased for the region if there are indirect effects on recreation and tourism in the Lake District National Park.

Conclusion on cumulative effects

- 5.9.110 If nuclear power stations are developed at more than one site in the region, the cumulative radiological effects should be addressed by risk assessments as part of the site licensing process.
- 5.9.111 The Appraisal of Sustainability finds that there are beneficial cumulative effects on climate change from the draft Nuclear NPS and these are likely to contribute to emission targets at the international and national scales but are unlikely to be significant at the regional scale.
- 5.9.112 The Appraisal of Sustainability notes that it is possible to avoid or reduce the potential cumulative adverse effects that are typical of major infrastructure projects, such as nuisance noise and dust and impacts on local transport network through the timing and phasing if more than one power station in the region is developed. For example by arranging that peak levels of construction activity do not coincide and that mitigation commitments are implemented through adherence to an agreed Environmental/ Sustainability Management Plan.
- 5.9.113 Given the uncertainty about the cumulative effects identified by the Appraisal of Sustainability and given the scope for mitigation, we do not, at this stage, think those effects are sufficient in themselves to justify excluding Heysham or the other sites in the north west from this NPS.

- 5.9.114 Interactions between potential sites can be complex and require detailed consideration at project level. It will be important to identify the relevant interactions, and this will partly depend on whether one or more of the other sites in this region also come forward for development, and on what timescales. This can only be properly assessed at the point at which an application for development consent is made.
- 5.9.115 However, the findings of the Appraisal of Sustainability clearly highlight the need for the IPC to consider cumulative effects in making their assessment. Guidance on the assessment of cumulative effects is in EN-1. For instance Part 4.2 says that “the IPC should consider how the accumulation of effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place”.

Other issues raised during the assessment

- 5.9.116 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk>.

Health

- 5.9.117 Local access to medical services is reasonably good with two general practitioner (GP) practices within 5km of the site. There are also twelve GP practices within 10km of the site and a local hospital (Queen Victoria Hospital), though without an accident and emergency department, some 6.3 kilometres distant. The nearest accident and emergency department is the Royal Lancaster in Ashton Road, Lancaster (8 km), whilst the nearest mental health hospital is Parkwood (24.3 km).
- 5.9.118 There has been, since 1983, a nuclear power station operating on the Heysham site. There is, therefore, historical data which can be analysed to correlate the incidence of cancer reported around this site so that it can be compared to the average prevalence of the same disease in the British population as a whole. The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.

- 5.9.119 COMARE's tenth report²⁰⁴ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.9.120 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.9.121 In its eleventh report²⁰⁵ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.
- 5.9.122 Radioactive monitoring carried out in 2007²⁰⁶ found generally low concentrations of artificial radionuclides in water, sediment and beach samples and in meat and seafood samples taken around the existing Heysham nuclear power stations. From this sampling, the estimated total dosage levels to the public from all sources within the Heysham area were assessed as being less than 4% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.9.123 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station at Heysham should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally.
- 5.9.124 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.

²⁰⁴ Committee on Medical Aspects of Radiation in the Environment (COMARE) (2005). Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*. June 2005.

²⁰⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE) (2006). Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*. July 2006.

²⁰⁶ Food Standards Agency. *Radioactivity in Food and the Environment (RIFE 13) Report*, 2007.

- 5.9.125 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Seismic risk

- 5.9.126 A concern was raised in the opportunity for public comments about the seismic risk to the nominated site at Heysham.
- 5.9.127 As outlined in the Government response to the SSA Criteria consultation²⁰⁷ the Nuclear Installations Inspectorate has advised that seismic risk is more appropriately assessed at site licensing stage when detailed site specific and reactor design information is available. Seismic hazard was therefore identified as an SSA criteria which is flagged for local consideration. This will be done by the Nuclear Installations Inspectorate as part of licensing. In order to satisfy the regulators that site licence conditions will be met, the designers of the plant will need to demonstrate that the installed plant is able to withstand all site-specific natural hazards including earthquake, flooding or meteorological conditions. The reactor designs being considered under the Generic Design Assessment process are intended for worldwide application, with baseline seismic resistance designs in the area of 0.25g-0.5g peak ground acceleration.
- 5.9.128 This does not therefore affect the potential suitability of the site as part of the SSA.

Existing land use

- 5.9.129 The nominated area includes Ocean Edge Leisure Park and Heysham Golf Course, potentially leading to loss of local amenities. The Government notes that, without detailed proposals, for instance for mitigations, it is not wholly clear what the impact would be. Should an application for development consent come forward that impacts on existing land use, the IPC should consider this aspect in accordance with part 3 of EN-1 on Land Use including Open Space, Green infrastructure and Green belt.

Conclusion on the nominated site at Heysham

- 5.9.130 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable and should be in this NPS.

²⁰⁷ BERR, *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581, p38.

5.9.131 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC or the regulators, should an application for development consent come forward, including amongst other things the impact of this proposal in combination with any other relevant nuclear power stations in the region, including the cumulative effects with other nominated sites as relevant, the demographic profile of the area and the effects on biodiversity including the impact of cooling. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

5.10 Hinkley Point

Description of the site

- 5.10.1 The nominated site is located adjacent and to the west of the Hinkley Point A nuclear power station on a rocky headland on the Somerset coast. The site is within the civil parish of Stogursey, the District of West Somerset and the County of Somerset. The grid reference of the approximate centre of the nominated site is 320300,145850. A map is provided at Annex B.
- 5.10.2 The nominated site includes land to the south of Hinkley Point A power station which the nominator has indicated may be needed to accommodate ancillary features to meet operational requirements.

Deployability by the end of 2025

- 5.10.3 The SSA is limited to considering sites which are credible for deployment by the end of 2025²⁰⁸. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's goals on climate change and energy security. Deployment means commencing operation of one or more new nuclear power stations on the site. Detailed site investigation works are being undertaken at the site, offshore in the Bristol Channel/Bridgwater Bay and in the local area. A grid connection agreement is in place for a transmission capacity of 1670 MW from 2017, increasing to 3340 MW from 2018. National Grid has announced that they will be undertaking a consultation on route options for transmission network reinforcement to enable this connection to be made.
- 5.10.4 The Government is satisfied from the information provided by nominators and an independent assessment that Hinkley Point is credible for deployment by the end of 2025.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.10.5 During the opportunity for public comment some responses said that the area is more densely populated than when the original station was built. However, the Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.

Assessment

- 5.10.6 Based on the advice of the HSE this site passes the demographics criterion.

²⁰⁸ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

Guidance to the IPC

5.10.7 The IPC should refer to part 4 for further guidance on demographics and emergency planning.

C2 and D5: Proximity to military activities

Analysis

- 5.10.8 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas. No military firing activity occurs in the marine or landward areas adjoining the site. There are no military explosive or military nuclear facilities within 1000 metres of the site.
- 5.10.9 The Ministry of Defence has found that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.10.10 Given the proximity to military facilities the Ministry of Defence has also advised that it is potentially reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime. The Restricted Area that encompasses the existing Hinkley Point nuclear power station (EG R153) overlaps with the Ministry of Defence Danger Area Restricted Area that contains the Bridgwater Bay Firing Area (EG D119). The site identified for a new nuclear power station is west of the existing facility and as such a new Restricted Area (or expansion of EG R153) would extend further across EG D119. This could inhibit access for aircraft using the Ministry of Defence Danger Area.
- 5.10.11 The Ministry of Defence has advised that with respect to the existing EG R153 an exception is in place permitting helicopters flying to or from EG D119 to pass through EG R153 subject to the permission of the person in charge at Hinkley, with all aircraft movements remaining 1 nautical mile from the centre point of the exclusion zone. There is potential for a similar exemption for the nominated site.
- 5.10.12 The opportunity for public comments highlighted the proximity of Lillstock, which is part of the Bridgwater Bay Firing Area, and that military aircraft fly in this area. The Ministry of Defence has advised that whilst military aircraft conduct air to surface gunnery practise offshore in Bridgwater Bay to the north west of the site identified, the offshore area in which firing is contained is remote from the shore and as such there is no direct hazard from this military activity.

5.10.13 It is anticipated that any new Restricted Area established to protect this facility has the potential to afford sufficient separation of such aircraft movements from any tall structures that may be built at the site. However, the Ministry of Defence would wish to be consulted on the siting and design of a power station at this location to verify whether air navigation warning lights are considered necessary.

Assessment

5.10.14 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:

- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment;
- the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out;
- any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime.

5.10.15 Based on the advice of the Ministry of Defence it is reasonable to conclude that the development of a new nuclear power station at the site will not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime. It appears possible that the impacts on Ministry of Defence Danger Area Restricted Area that contains the Bridgwater Bay Firing Area (EG D119) could be mitigated without compromising the safety of any new installation, as is currently the case with the existing station. The Ministry of Defence and Nuclear Installations Inspectorate would both need to consider this issue in greater detail should an application for development consent come forward.

5.10.16 This site passes these criteria.

Guidance to the IPC

5.10.17 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.

D1: Flooding, tsunami and storm surge

Analysis

5.10.18 Some responses during the opportunity for public comment were about the tidal range of the Bristol Channel, and the threat posed by climate change and storm surge.

5.10.19 A significant part of the site is in flood zone 1, although part of the site is within Flood Zone 3. Flood zone 1 comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). Flood zone 3 comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or

a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year²⁰⁹. The Environment Agency have advised that part of the site is within a designated fluvial flood risk area and any possible adverse impacts would need to be addressed in the Flood Risk Assessment for site.

- 5.10.20 The Appraisal of Sustainability²¹⁰ identified potential adverse effects on flood risk, due to rising sea levels, especially during the later stages of operation and decommissioning of any new nuclear power station. The Appraisal of Sustainability finds that mitigation against flooding may be possible through appropriate design and construction of defences and sustainable management.
- 5.10.21 The Environment Agency has advised that it is potentially reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime²¹¹, including the potential effects of climate change, storm surge and tsunami, taking into account possible countermeasures. The Environment Agency has advised that any new defences may need to link with existing defences to ensure the defence system cannot be circumvented by tidal flooding.
- 5.10.22 The Environment Agency has advised that fluvial flooding could impede access and egress to the site, but that this hazard could be mitigated in the design of such routes to ensure the access remains open.
- 5.10.23 The Environment Agency has advised that any new tidal flood mitigation measures are unlikely to have a detrimental effect on the flood risk to the surrounding area.
- 5.10.24 The Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and Estuary from changing and adapting naturally.

Assessment

- 5.10.25 This site passes this criterion. This takes into account in particular that there is a low risk of flooding at this site (although parts of the site are in flood zone 3), and based on the advice of the Environment Agency and the findings of the Appraisal of Sustainability, it is reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunami. Should any application be forthcoming, the Flood Risk Assessment would need to consider the risk of fluvial flooding to the site.

²⁰⁹ See PPS25 for a definition of the flood zones and what they cover: <http://www.communities.gov.uk/documents/planningandbuilding/pdf/planningpolicystatement25.pdf>, pp22-25.

²¹⁰ *Appraisal of Sustainability: Site report for Hinkley Point*, November 2009, <http://www.energyngpsconsultation.decc.gov.uk>

²¹¹ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.10.26 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.10.27 The IPC should refer to the relevant guidance in EN-1 including that on flood risk and climate change adaptation.
- 5.10.28 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.10.29 The Environment Agency has advised that the site could potentially be developed in a manner that could avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime²¹², including the potential effects of climate change.
- 5.10.30 Comments were received in the opportunity for public comments expressing concern about coastal erosion in the local area. However, the Environment Agency has advised that, based on the current understanding of coastal erosion in this area there is no technical reason that would prevent the site being protected or mitigated from the effects of coastal erosion.
- 5.10.31 The Appraisal of Sustainability identified potential adverse effects on water quality including on coastal processes, hydrodynamics and sediment transport. The Appraisal of Sustainability notes that these could arise from upgraded flood defences likely to be required to counteract coastal retreat at the nominated site. The Appraisal of Sustainability finds that these defences have the potential to modify existing estuarine hydrodynamics and associated sediment movement, which may have secondary effects on estuarine and marine ecosystem structure and functioning. However, the Appraisal of Sustainability finds that the use of an appropriate design and a full understanding of the hydrodynamics and sediment transport within the Estuary could minimise the potential effects.

²¹² See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.10.32 The Appraisal of Sustainability also identifies that there are potential cumulative effects with other proposed projects, including a site for a new nuclear power station at Oldbury in the Severn Estuary area. Options being considered for the Severn Tidal Power feasibility study²¹³ could impact on estuarine hydrodynamics and associated sediment movement.

Assessment

- 5.10.33 This site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of effects of coastal erosion may be possible through appropriate design and construction of defences.
- 5.10.34 Please see the section on “cumulative effects” for discussion of the potential combined effects with other development in the region.

Guidance to the IPC

- 5.10.35 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.
- 5.10.36 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations

Analysis

- 5.10.37 Based on Health and Safety Executive records the nominated site is not in the vicinity of any COMAH establishments.
- 5.10.38 The Health and Safety Executive has advised that as with all sites, during licensing the applicant to the Health and Safety Executive will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

Assessment

- 5.10.39 The site passes this criterion. It is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

²¹³ The Government is carrying out a two-year feasibility study to determine whether the Government could support a tidal power project in the Severn Estuary. The Government is assessing a range of different schemes and the scope and scale of environmental effects is likely to vary widely between them. The Government is conducting separate environmental studies into these impacts and whether they could be mitigated. These environmental studies are not yet complete so the assessment in this report is based upon the potential effects outlined in the preliminary habitats screening report for Severn Tidal Power. This preliminary habitats screening report is not final and will be reviewed in the light of the feasibility study's findings. It covers all five options but does not distinguish between the individual options where environmental impacts will vary. There will be a further consultation on the Feasibility's study findings, likely in 2010.

Guidance to the IPC

5.10.40 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.10.41 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation²¹⁴. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.
- 5.10.42 The existing Hinkley Point nuclear installation has an associated Restricted Area. The Civil Aviation Authority has advised that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements.
- 5.10.43 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. It is not anticipated that any new Restricted Area established in association with the proposed nuclear installation would impact upon local aerodrome operations.
- 5.10.44 The Civil Aviation Authority has advised that there are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations. The current establishment of the existing Hinkley Point Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.

²¹⁴ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

Assessment

- 5.10.45 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

Guidance to the IPC

- 5.10.46 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.
- 5.10.47 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.10.48 Some responses during the opportunity for public comment raised the potential effects on the Severn Estuary.
- 5.10.49 The Appraisal of Sustainability site report²¹⁵ has identified that the potential for adverse effects on sites and species considered to be of European nature conservation importance (the Severn Estuary SAC, SPA, Ramsar) means that significant strategic effects on biodiversity cannot be ruled out at this stage of appraisal. The findings on European sites are taken from the Habitats Regulations Assessment²¹⁶.
- 5.10.50 The Habitats Regulations Assessment concludes that at this strategic level it cannot rule out the potential for adverse effects on the integrity of five European sites²¹⁷, the Severn Estuary cSAC, SPA, Ramsar and the River Wye SAC and the River Usk SAC through potential impacts on water resources and quality, habitat and species loss and fragmentation/ coastal squeeze and disturbance (noise, light and visual).
- 5.10.51 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of any project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

²¹⁵ *Appraisal of Sustainability: Site report for Hinkley Point*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²¹⁶ *Habitats Regulations Assessment: Site report for Hinkley Point*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²¹⁷ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

5.10.52 The Appraisal of Sustainability has also identified potential cumulative effects with other projects in the Severn Estuary area, including the Severn tidal power feasibility study. These are considered below under “cumulative effects”.

Assessment

5.10.53 The Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment, and the need for more detailed studies should an application for development consent come forward.

5.10.54 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in this NPS.

5.10.55 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in the Nuclear NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

5.10.56 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.

5.10.57 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Hinkley Point and consider whether the applicant’s proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

5.10.58 The Appraisal of Sustainability site report has identified that the potential for adverse effects on sites and species considered to be of UK nature conservation importance (including the Bridgwater Bay NNR) means that significant strategic effects on biodiversity cannot be ruled out at this stage of appraisal.

5.10.59 The Appraisal of Sustainability identifies the following SSSIs of particular concern (within 5km of the site) for which significant effects may occur: Bridgwater Bay SSSI; Severn Estuary SSSI; River Wye (Lower Wye) SSSI, River Usk (Lower Usk) SSSI.

5.10.60 The Appraisal of Sustainability has found that there is, however, potential for the mitigation of biodiversity effects on sites of UK wide conservation importance, including the creation of replacement habitat. Detailed baseline studies will be required to inform the ecological assessment of the proposal.

Assessment

- 5.10.61 The Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.
- 5.10.62 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.
- 5.10.63 This site passes this criterion.

Guidance to the IPC

- 5.10.64 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.10.65 The IPC should also refer to the Appraisal of Sustainability for Hinkley Point and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

- 5.10.66 Some responses during the opportunity for public comment were focussed on the visual impact of any new nuclear development, and effects on specific sites such as Pixies Mound. The Appraisal of Sustainability identified potential adverse effects on the Wick Barrow Pixies' Mound Scheduled Ancient Monument (SAM), which is of national heritage significance, however, the Appraisal of Sustainability identifies that there is a likelihood this can be mitigated or impacts can be restricted, although concern is expressed about the setting of the monument. The Appraisal of Sustainability finds that further detailed assessment at project level to consider this and the setting of other above ground cultural assets will be required. Effects arise depending on the distance and sight lines to any new nuclear power station, and any mitigation applied. Please see the Appendices to the Appraisal of Sustainability for Hinkley Point²¹⁸ for details of the cultural heritage assets within the area.

²¹⁸ *Appendices to Appraisal of Sustainability: Site report for Hinkley Point*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

- 5.10.67 The Appraisal of Sustainability has identified potential adverse effects on the surrounding elevated local landscape and associated distant views. These include potentially some lasting adverse effects on the setting and views from within the Quantock Area of Outstanding Natural Beauty (AONB) to the west (the AONB is within 5km of the nominated site).
- 5.10.68 The nominator has set out that the design of new nuclear power station would seek to avoid, reduce or mitigate any adverse effects on the landscape setting of the AONB, stating that “at a strategic level, new nuclear development within the nominated site is considered unlikely to have a significant impact on the AONB designation owing to their physical separation. A number of measures could be taken to ensure landscape and visual impacts are avoided, reduced or mitigated, including locating the new plant near to the existing stations and implementing an architectural and landscape scheme to help ensure the new plant blends into the landscape as much as possible.”²¹⁹
- 5.10.69 The Appraisal of Sustainability considers that the main form of mitigation potential is the clustering of new and proposed reactor buildings to avoid broadening of the potential visual impact, but even so the Appraisal of Sustainability notes that a new nuclear power station on the nominated site is still likely to lead to perceptible deterioration in some of these views.
- 5.10.70 The Appraisal of Sustainability finds that there appears to be opportunities for mitigation the impacts arising from the new power station on near views given the “potential for strengthening the positive wooded characteristics of the lowland”.
- 5.10.71 However, it finds that a new power station would have additional adverse visual impact on views from the Quantock Hills Area of Natural Beauty (AONB) at a sub-regional level, which could not be fully mitigated.

Assessment

- 5.10.72 In assessing this site, the Government has considered the purpose of the AONB, which is of conserving and enhancing the natural beauty of the area of outstanding natural beauty.
- 5.10.73 Whilst the Appraisal of Sustainability identifies that some effects on the AONB may remain, this site passes this criterion. This takes into account the fact that the nature, scope, and scale of any effect on the AONB is currently uncertain and is dependent on the exact form of development proposed; that there is scope for a developer and the IPC to explore, in detail, minimisation, avoidance and mitigation of adverse effects; and there is a need for sites to be available for potential new nuclear power stations as outlined in Part 2 of this NPS, and a limited pool of potentially suitable sites for such developments.

²¹⁹ See <http://www.energyngpsconsultation.decc.gov.uk> for the nomination documents for Hinkley Point, and in particular the nomination report for information on landscape and cultural heritage.

- 5.10.74 However, the IPC will have to examine any future application for development consent at the site in accordance with the guidance in Part 4 of this NPS and EN-1, and in light of the full assessment of the project at that time. The potential for remaining effects can only be fully assessed when detailed plans come forward. This is because they depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed and location of transmission infrastructure, and the relevant other development in the area to be factored when considering cumulative effects.
- 5.10.75 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC²²⁰.
- 5.10.76 The Government also notes that there may be some visual impacts on the setting of other cultural heritage features in the area. Impact and mitigation will need to be considered by the IPC but at this stage, the potential effects are not felt sufficient to outweigh the need for sites as set out in Part 2 of this NPS, particularly given the need for further investigation and the scope for some mitigation that has been identified.

Guidance to the IPC

- 5.10.77 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Hinkley Point and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.

D9: Size of site to accommodate operation

Analysis

- 5.10.78 The nominated site is approximately 203 hectares.
- 5.10.79 Office for Civil Nuclear Security has advised that there appears to be insufficient land to provide effective defence-in-depth for a nuclear reactor (including its associated turbine hall), spent fuel and intermediate level waste stores east of longitude grid reference 321280, as the land area is of inadequate size.
- 5.10.80 The Office for Civil Nuclear Security has advised that this part of the nominated site could still be used for locating supporting infrastructure that has no potential to directly cause a radiological hazard.
- 5.10.81 Whilst this particular area has insufficient land to provide defence in depth, the Office for Civil Nuclear Security and Nuclear Installations Inspectorate has confirmed that there is sufficient land area within the nominated boundary to house and provide sufficient defence in depth for essential infrastructure.

²²⁰ Government notes that National Grid has announced that they will be undertaking a consultation on route options for transmission network reinforcement to enable this connection to be made.

Assessment

5.10.82 Although there is an area which has been identified by the Office for Civil Nuclear Security as having insufficient land for the effective defence in depth for a nuclear reactor (including its associated turbine hall) spent fuel and intermediate level waste stores, based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility.

Guidance to the IPC

5.10.83 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.

D10: Access to suitable sources of cooling

Analysis

5.10.84 The advice of the Environment Agency indicates that there appears to be access to potentially suitable sources of cooling at the site. The nominator has proposed a range of potential cooling technologies and stated a preference for direct cooling from the sea²²¹.

5.10.85 The Appraisal of Sustainability for Hinkley Point notes that during operation, cooling water abstraction may impact on important fish species (for example, species that are qualifying features of the Severn Estuary cSAC). The Appraisal of Sustainability finds it may be possible to mitigate this by including fish deterrent schemes within cooling water intake and adapting system design accordingly. However, further detailed study is required to determine the significance of impacts and mitigation options.

5.10.86 The Environment Agency has advised that fish populations in the Severn Estuary have been extensively studied. Sea lamprey, river lamprey, twaite and allis shad are designated features of the Severn Estuary SAC. The Atlantic salmon is a designated feature in the Wye and Usk SACs. The Severn Estuary supports the single UK spawning stock of the twaite shad and a substantial part of the total population of salmon in England and Wales. The Estuary acts as a major nursery ground for bass and a range of flatfish species as far upstream as Gloucester.

²²¹ See <http://www.energy-nps-consultation.decc.gov.uk> for the nomination documents for Hinkley Point, and in particular the nomination report for information on cooling.

Assessment

5.10.87 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion. Detailed modelling as part of the licensing process will give greater clarity about the acceptability of impacts in the light of the cooling technology that is proposed.

Guidance to the IPC

5.10.88 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.

5.10.89 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.

5.10.90 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

Appraisal of Sustainability and Habitats Regulations Assessment for Hinkley Point

5.10.91 The Planning Act 2008²²² requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Hinkley Point is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.

5.10.92 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the "Habitats Regulations Assessment") tests whether a plan or project could have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Hinkley Point site.

²²² Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

- 5.10.93 The key findings of the Hinkley Point Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) potential negative effects on protected conservation sites, including the Severn Estuary and the Bridgwater Bay.
 - ii) potential for adverse effects on water quality and migratory fish populations caused by the abstraction and release of cooling water
 - iii) risk from coastal flooding
 - iv) adverse visual impact on views from the Quantock Hills AONB
 - v) potential for significant negative cumulative effects if two new nuclear power stations (Hinkley Point and Oldbury) and any of the Severn tidal power schemes are developed; and the effects of the latter project are likely to be more significant than two new nuclear power stations. These include the potential loss of nationally and internationally important estuarine habitats, where it may not be possible to mitigate fully.
 - vi) potential for positive cumulative effects associated with long term employment and enhanced prosperity for communities at the sub-regional level if both power stations are built in the Severn Estuary.
- 5.10.94 Issues i) – iv) are considered in the assessment of the SSA criteria above. Cumulative effects are discussed below.

Cumulative effects

- 5.10.95 Hinkley Point and Oldbury form a cluster of two nominated sites in the Severn Estuary area. The Appraisal of Sustainability has found that there is the potential for cumulative effects if more than one nuclear power station site were developed in this area. The potential cumulative effects arise as a result of interactions between the sites due to their relative proximity and the way in which effects may act together.

Biodiversity and ecosystems

- 5.10.96 The Appraisal of Sustainability report for Hinkley Point identifies the potential for significant strategic effects on sites and species considered of national and European nature conservation importance. The development of nuclear power stations at the other nominated site in the region may increase the significance of the adverse impacts either by adding to the pressures on a particular site of nature conservation importance or by adversely affecting other nearby sites so that the cumulative effects in the region are increased. For Hinkley Point, the European sites that are at most risk from interactions are the Severn Estuary SAC, SPA and Ramsar sites and the River Wye SAC which have also been identified as potentially being significantly adversely affected by the nominated site at Oldbury. The potential effects on the European sites from both the Hinkley Point and Oldbury developments are due to adverse effects on water quality and resources, habitat loss and coastal squeeze and disturbance.

- 5.10.97 The Appraisal of Sustainability identifies that there is the potential for significant negative cumulative effects if two new nuclear power stations (Hinkley Point and Oldbury) and any of the Severn tidal power schemes are developed; and the effects of the latter project are likely to be more significant than two new nuclear power stations. These include the potential loss of nationally and internationally important estuarine habitats, where it may not be possible to mitigate fully.
- 5.10.98 The Government is carrying out a two-year feasibility study to determine whether the Government could support a tidal power project in the Severn Estuary. The Government is assessing a range of different schemes and the scope and scale of environmental effects is likely to vary widely between them. The Government is conducting separate environmental studies into these impacts and whether they could be mitigated. These environmental studies are not yet complete so the assessment in this report is based upon the potential effects outlined in the preliminary habitats screening report for Severn Tidal Power²²³. This preliminary habitats screening report is not final and will be reviewed in the light of the feasibility study's findings. It covers all five options but does not distinguish between the individual options where environmental impacts will vary. There will be a further consultation on the Feasibility's study findings, likely in 2010.

Effects on communities: population, employment and viability

- 5.10.99 The Appraisal of Sustainability report notes that development at the Hinkley Point site is appraised as having positive effects of regional economic significance on employment and community viability. The cumulative positive effects of employment, community viability and health/well-being could be more significant if more than one new nuclear power station is built and the opportunities for upskilling, education, and supporting industries to the nuclear sector are developed at the local and regional levels. The site Appraisal of Sustainability report notes that there may be negative effects, during the construction of any new power stations, if the development produces a local shortage of specialist construction labour. The Appraisal of Sustainability finds that this negative effect could be increased if more than one power station is developed in the region. However, these effects may be mitigated if the education and upskilling opportunities noted above are taken and by appropriate phasing of construction.

Effects on communities: supporting infrastructure.

- 5.10.100 Development at the Hinkley Point site is assessed by the Appraisal of Sustainability as having the potential for negative effects on infrastructure such as transport (including the nationally important M5 motorway), non-radioactive waste management facilities and basic services e.g. schools, hospitals. These negative effects may become more significant if more than one nuclear power station is developed in the region. Transmission infrastructure is considered in the separate Electricity Networks NPS but is another aspect of regional and possibly national infrastructure that could be affected by a regional concentration of nuclear power stations in the Severn Estuary

²²³ This was published in January 2009. For more details see http://severntidalpowerconsultation.decc.gov.uk/supporting_documents

area. Development of the necessary transmission infrastructure might lead to indirect cumulative effects, for example as a result of the visual impact from multiple transmission lines.

Water quality and resources

5.10.101 The Appraisal of Sustainability for Hinkley Point identifies potential adverse effects on water quality including on coastal processes, hydrodynamics and sediment transport. Interactions with development at Hinkley Point could lead to cumulative effects due, for example, to the combined effect of two cooling water discharges. However, the significance of these effects will depend on the type of cooling arrangements adopted and may be modified by interactions with any potential Severn Tidal Power scheme. Furthermore, when the remaining operational power stations at Hinkley Point and Oldbury shut down and all the stations are decommissioned, this will reduce thermal and other water quality impacts in the Severn Estuary. Potential cumulative effects on water quality may have indirect effects on biodiversity and ecosystems.

Conclusion on cumulative effects

5.10.102 The Appraisal of Sustainability finds that it is possible to avoid or reduce the potential cumulative adverse effects that are typical of major infrastructure projects, such as nuisance noise and dust, impacts on local transport network through the timing and phasing if more than one power station in the region is developed, for example by arranging that peak levels of construction activity do not coincide and that mitigation commitments are implemented through adherence to an agreed Environmental/Sustainability Management Plan.

5.10.103 Given the uncertainty about the cumulative effects identified by the Appraisal of Sustainability and given the scope for mitigation, Government does not at this stage, bearing in mind that this is a strategic assessment, think those effects are sufficient in themselves to justify excluding Hinkley Point or Oldbury from this NPS.

5.10.104 Interactions between potential sites can be complex. A full assessment will be able to identify the relevant interactions, and this will partly depend on whether one or more of the other sites in this region also come forward for development, and on what timescales. This can only be properly assessed at the point at which an application for development consent is made.

5.10.105 The opportunity for public comments received a number of responses relating to the potential cumulative impacts of development of a Severn Tidal Power project and the building of a new nuclear power station at Hinkley Point. As noted above the Government is carrying out a two-year feasibility study to determine whether the Government could support a tidal power project in the Severn Estuary, and the scope and scale of environmental effects is likely to vary widely between the differing schemes that are being assessed. There will be a further consultation on the Feasibility's study findings, likely in 2010.

- 5.10.106 Whilst it is not yet possible to determine the precise potential cumulative impact of development of any Severn Tidal Power scheme and a new nuclear power station at Hinkley Point would be, the Appraisal of Sustainability site level investigations of both Hinkley Point and Oldbury (the two nominated sites that are located on the Severn Estuary) have highlighted both potential positive and negative potential impacts which are discussed above.
- 5.10.107 The findings of the Appraisal of Sustainability clearly highlight the need for the IPC to consider cumulative effects in making their assessment. Guidance on the assessment of cumulative effects is in EN-1. For instance Part 4.2 says that “the IPC should consider how the accumulation of effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place”. The Appraisal of Sustainability for Hinkley Point indicates that this will need to consider the effect on the biodiversity of the region including the River Severn cSAC/SPA/Ramsar. This will need to be considered in combination with existing stations and the Severn Tidal Power Scheme if relevant at the point at which any application for this site comes forward, and these aspects would also be considered at the point at which any application for a Severn Tidal Power project came forward.

Other issues raised during the assessment

- 5.10.108 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energyngpsconsultation.decc.gov.uk>.

Health

- 5.10.109 The Appraisal of Sustainability for Hinkley Point has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.
- 5.10.110 One of these factors of particular interest to the public is the incidence of cancer. A nuclear power station at Hinkley Point has been in operation since 1965 and Hinkley Point B power station remains in operation. Therefore the necessary data exist to enable a comparative study between the incidence of cancer in the area and the average incidence of cancer in the UK population as a whole.
- 5.10.111 The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.

- 5.10.112 COMARE's tenth report²²⁴ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.10.113 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.10.114 In its eleventh report²²⁵ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.
- 5.10.115 Radioactive monitoring carried out in 2007²²⁶ found low concentrations of artificial radionuclides in water, sediment and beach samples and in meat and seafood samples taken around the existing Hinkley Point nuclear power stations. From this sampling, the estimated total dosage levels to the public from all sources within the Hinkley area were assessed as being less than 4% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.10.116 The Appraisal of Sustainability has noted that local concerns regarding the effects on public health of radioactive discharges into the Severn Estuary from the existing nuclear power stations at Hinkley Point have prompted a number of studies since the 1990s. A study by the South West Cancer Intelligence Service²²⁷ found no evidence of increased risk of cancer linked to radiation exposure in the areas investigated. These findings were later endorsed by the Committee on Medical Aspects of Radiation in the Environment (COMARE), who concluded there was no evidence of a general excess risk of cancer in the vicinity of Hinkley Point. The analysis in COMARE's tenth report (2005) included Hinkley Point and found that there was no indication of any effect on the incidence of cancer by the nuclear power station within 25km of the site. A later

²²⁴ Committee on Medical Aspects of Radiation in the Environment (COMARE). Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

²²⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE). Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

²²⁶ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13)* Report, 2007.

²²⁷ South West Cancer Intelligence Service (SWCIS), *Cancer Incidence in Burnham North, Burnham South, Highbridge and Berrow 1990-99*, 2003, <http://www.swpho.nhs.uk/resource/>

study by Green Audit in 2007²²⁸ referenced an apparent excess in infant mortality in areas downwind of the power station. This report was subsequently reviewed by the South West Public Health Observatory²²⁹, which found no increase in the risk of infant mortality in this area. There is no clear, widely accepted evidence that local residents have more physical ill health or higher levels of risk to their health from existing doses of radiation arising from radioactive substances released into the environment from the existing power stations, although there remains concern amongst some local groups.

- 5.10.117 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally.
- 5.10.118 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.10.119 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Meteorological conditions

- 5.10.120 A comment was raised about the ability to effect an emergency plan in this area in adverse weather conditions, and how operation of the site would be maintained if nearby roads flooded. As set out in Part 4 of this NPS emergency planning is assessed as part of the site licensing process in conjunction with the advice of the Nuclear Installations Inspectorate. The Nuclear Installations Inspectorate has advised that there are acceptable procedures in place at the site for the existing nuclear power station, so it was not foreseen that this would be an issue which would affect the suitability of the site subject to the applicant putting adequate plans in place.

²²⁸ Busby C, de Messieres Mireille, and Morgan S., *Infant and Perinatal Mortality and Stillbirths near Hinkley Point Power Station in Somerset 1993-2005*.

²²⁹ South West Public Health Observatory, *Infant and Perinatal Mortality in Somerset*
<http://www.swpho.nhs.uk/resource/browse.aspx?RID=35852>

Detailed proposals and local effects

5.10.121 Some comments were received about the detailed effects of proposed development on local infrastructure given the rural location of Hinkley Point, and the burden that this may place on local towns. Whilst effects on infrastructure have been considered at a strategic level by the Appraisal of Sustainability, these considerations should be made by the Infrastructure Planning Commission, particularly in conjunction with the Local Authority or Authorities. Local authorities have an important role in ensuring that national decision makers, including the Infrastructure Planning Commission, take full and proper account of relevant local and regional factors and considerations, and are a statutory consultee at the project development stage.

Conclusion on the site at Hinkley Point

5.10.122 Having reviewed the nominated site against the SSA criteria and considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable.

5.10.123 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things the impact of this proposal in combination with any other relevant nuclear power stations in the region (and where relevant, any potential Severn Tidal Power Scheme), and in particular the effect of this on the biodiversity of the area including the Severn Estuary. However, none of these factors suggest that the site should not be considered as potentially suitable as part of the SSA.

5.11 Kirksanton

Description of the site

5.11.1 The Kirksanton site comprises approximately 131 hectares of land in Cumbria, located north-west of Haverigg Wind Farm (and overlapping parts of the wind farm), south and west of the settlement of land at Kirksanton Haws. The northern boundary of the site abuts the Lake District National Park. The grid reference of the approximate centre of the site is 313400,479800. A map of the nominated area is at Annex B.

Deployability by the end of 2025

- 5.11.2 The SSA is limited to considering sites which are credible for deployment by the end of 2025²³⁰. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security.
- 5.11.3 The Government has carefully considered whether Kirksanton is credible for deployment by the end of 2025. Deployment means commencing operation of one or more new nuclear power stations on the site. The Government has given careful consideration to the deployability of this site given that, whilst 16 miles from the nuclear facility at Sellafield, this is a site which has not hosted a nuclear power station before.
- 5.11.4 There are general complicating factors when developing at locations which have not hosted nuclear facilities before including lack of pre-existing infrastructure; no history of operation at the site and consequently much less qualified information about site characteristics in relation to nuclear; and lack of qualified workforce.
- 5.11.5 Whilst these factors are not SSA criteria, they may have a bearing on whether a site can be deployed by the end of 2025.
- 5.11.6 The nominator has undertaken a series of studies to further characterise the site, and bought land at the site thereby showing some confidence in its potential. It has also commenced engagement with relevant parties including the local authority.
- 5.11.7 The most significant necessary new infrastructure for this site and those at Sellafield and Braystones is grid infrastructure. A transmission agreement is in place between National Grid Electricity Transmission plc to provide a three stage connection for RWE Cumbria Coast (South) power station to the transmission system at Kirksanton. This gives a final transmission entry capacity of 3600MW by 31st October 2025. First connection will be for 1200MW in late 2023 (although this does not automatically mean that the site would be deployed by that date).

²³⁰ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

- 5.11.8 Government is mindful that the last operating nuclear power station in the area at Calder Hall ceased operating in 2003. Nonetheless, West Cumbria is host to the largest concentration of nuclear facilities in the UK, representing some 60% of the total industry, with a continuing focus on developing skills and education. It is therefore possible that the proximity of Kirksanton to Sellafield and its location in West Cumbria may give some access to qualified workforce. There is strategic support for energy infrastructure in the region. The sub-regional regeneration plan supports new nuclear generation²³¹ in West Cumbria as well as the building of a low-carbon economy in areas such as renewable energy, although it is noted that this report pre-dates the SSA and the nomination of Kirksanton, Braystones and Sellafield.
- 5.11.9 Government is also mindful of whether the likelihood of deploying all three sites in this region (Sellafield, Braystones and Kirksanton) before 2025 is realistic. However, from the information provided by nominators and an independent assessment there are, on balance, reasonable grounds to conclude that the Kirksanton site, on its own merits, is credible for deployment by the end of 2025. This takes into account that there is some level of strategic support for development in the region, the characterisation being undertaken on the site, the interest of the nominator in the site and the grid connection agreement in place.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.11.10 The Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.
- 5.11.11 Concerns were raised during the opportunity for public comments about emergency planning in the context of the increased seasonal population in the area, and the proximity of HM Prison Haverigg and nearby residential care homes.
- 5.11.12 The demographics assessment covers permanent night time residents, as identified on census data. Transient holiday populations would be assessed by the Nuclear Installations Inspectorate before any licence was granted should an application come forward. They would also be factored into consideration of emergency planning if they were in an area considered relevant.
- 5.11.13 The prison population has not been covered by the demographic assessment conducted for the SSA. However, should an application to build at Kirksanton come forward, the prison population would be factored in as part of a site and design specific assessment to assist decisions about the site's viability.

²³¹ The West Cumbria regeneration plan *Britain's Energy Coast*, <http://www.britainsenergycoast.com/nuclearnewbuild/page1.php>

- 5.11.14 As set out in Part 4 of this NPS, in complying with the conditions of the nuclear site licence and legal obligations²³², all nuclear operators are required to specify and implement adequate arrangements for dealing with an incident or emergency arising on the site and its effects. The emergency plan is to ensure that members of the public are properly informed and prepared, in advance, about what to do in the unlikely event of a radiation emergency occurring, and provided with information if a radiation emergency actually occurs. This would include an up to date assessment of evacuation routes for the areas which are considered relevant. Delineation of a new emergency plan is ultimately a decision for a local emergency planning authority on the advice of the Nuclear Installations Inspectorate, the site operator and others with roles in implementing the off-site emergency plan.
- 5.11.15 Development of appropriate emergency plans requires a detailed understanding of the nature of the local residential and working population, capability and redundancy of local infrastructure and capability of local emergency services. The potential of a site to meet emergency planning requirements cannot, in general, be assessed at a strategic level and has not been assessed in this case as part of the SSA.

Assessment

- 5.11.16 This site passes the demographics criterion.

Guidance to the IPC

- 5.11.17 The IPC should refer to Part 4 for guidance on demographics and emergency planning.

C2 and D5: Proximity to military activities

Analysis

- 5.11.18 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas. No military firing activity occurs in the marine or landward areas adjoining the site. There are no military explosive or military nuclear facilities within 1000 metres of the site.
- 5.11.19 The Ministry of Defence has found that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.

²³² under the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPiR).

- 5.11.20 Responses were received during the opportunity for public comment about the proximity of Eskmeals firing range. Eskmeals Firing Range is located approximately 3500 metres west of the site. The offshore area in which firing is contained is remote from the shore and as such the Ministry of Defence has advised that there is no direct hazard from this military activity.
- 5.11.21 Comments were also received about the possibility of munitions left over from military training (possibly at Silecroft Range) posing a risk to the facility. The Ministry of Defence has confirmed that the nominated site is not in proximity to any historic munitions disposal site or Danger Area. The Ministry of Defence has noted that the coastline next to the Kirksanton site (to the south and west of the nominated site) forms the edge of the seaward Silecroft area. Whilst the Ministry of Defence were not able to confirm the type of firing activities conducted at Silecroft Range from historical records, it has advised that if any munitions washed up on the coast they would be made safe and removed by the Ministry of Defence.
- 5.11.22 Given the proximity to military facilities the Ministry of Defence has also advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime.

Assessment

- 5.11.23 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:
- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment;
 - the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out. However, given the concerns about historic munitions, the IPC are instructed to seek evidence of further assessments below. The Nuclear Installations Inspectorate will assess the risks posed by external hazards to the installation at a more detailed level during licensing;
 - the development of a new nuclear power station at the site will not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime;
 - any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime.
- 5.11.24 This site therefore passes these criteria.

Guidance to the IPC

- 5.11.25 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.
- 5.11.26 Given the concerns raised on historic munitions, the IPC should ensure that the applicant's documentation demonstrates that it has conducted an on and off site survey of hazards including any arising from the previous use of Silecroft Range or any other relevant site, and that the Nuclear Installations Inspectorate is satisfied with this.

D1: Flood risk, storm surge and tsunami

Analysis

- 5.11.27 The Environment Agency has confirmed that the majority of the site is within Flood Zone 1 (low probability). There is a small area in flood zone 2 (medium probability), and a smaller area in flood zone 3 (high probability). Flood zone 1 comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). Flood zone 2 comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year. Flood zone 3 comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year²³³.
- 5.11.28 The Appraisal of Sustainability²³⁴ identified potential adverse effects relating to flood risk due to rising sea levels, especially during the later stages of the development. However, the Appraisal of Sustainability has found that mitigation may be possible through appropriate design and construction of defences, taking account of coastal processes, hydrodynamics and sediment transport.
- 5.11.29 Whilst concerns were raised about sea level rise during the opportunity for public comment, responses also focussed on the risk of flooding from rain fall and increased inland water levels. Some respondents were concerned about the accuracy of information in the nomination, particularly as to whether flood zones were adequately represented.
- 5.11.30 The Environment Agency has advised that it is potentially reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime²³⁵, including the potential effects of climate change, storm surge and tsunami taking into account possible countermeasures.

²³³ See PPS25 for a full definition of the flood zones and what they cover:

Planning Policy Statement 25: Development and Flood Risk, December 2006, Annex D pp.22-25

²³⁴ *Appraisal of Sustainability: Site report for Kirksanton*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²³⁵ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.11.31 The Environment Agency has also noted that current access to the site is via minor unclassified roads which cross flood risk areas. The IPC should ensure that the applicant has considered whether these need to be protected against flooding.
- 5.11.32 The Environment Agency has advised that there is the potential for any defences required to protect the site to affect downstream communities in particular Haverigg where there is a history of flooding. Run-off from this site could increase flood risk to this village if not designed correctly.

Assessment

- 5.11.33 This site passes this criterion. This takes into account in particular that there is a low risk of flooding at this site and based on the advice of the Environment Agency and the findings of the Appraisal of Sustainability, it is reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunامي.
- 5.11.34 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.11.35 The IPC should refer to the relevant guidance in EN-1 including that on flood risk and climate change adaptation
- 5.11.36 As part of this guidance, amongst other things the applicant must conduct a flood risk assessment which considers the risk of flooding arising from the project in addition to the risk of flooding to the project. The IPC should seek consideration as to whether the risks to Haverigg village have been increased and take this into account in making their assessment.
- 5.11.37 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.11.38 The Environment Agency has advised that that the site could potentially be developed in a manner that could avoid or mitigate the effects of coastal erosion throughout its operational lifetime²³⁶, including the potential effects of climate change.

²³⁶ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.11.39 The Appraisal of Sustainability for Kirksanton has found that a coastal flood defence scheme already exists in the area of the site, but undefended areas in the vicinity show signs of coastal erosion. The Appraisal of Sustainability finds that the existing defences may need to be upgraded to protect against sea level rise and coastal erosion during the lifetime of the facility. The Environment Agency has advised that, based on the current understanding of coastal erosion in this area there is no technical reason that would prevent the site being protected or mitigated from the effects of coastal erosion.
- 5.11.40 The EA notes that the current Shoreline Management Plan policy for this management unit is “do nothing.” If the coastline is protected against erosion and flood risk to the site this would be contrary to be the existing policy which would need to be updated to take any new facility into account.

Assessment

- 5.11.41 This site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences.

Guidance to the IPC

- 5.11.42 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.
- 5.11.43 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal change and flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations

Analysis

- 5.11.44 Although respondents to the opportunity for public comment identified different facilities (including BAE Nuclear Astute Submarine Dock at Barrow, the proposed Port Meridian Liquefied Natural Gas facility, and Walney wind farm), based on Health and Safety Executive records the nominated site is not in the vicinity of any COMAH establishments. The Health and Safety Executive has advised that as part of the licensing process the potential risks from adjacent industrial activity will be taken into account, but at a strategic level none of the facilities mentioned threaten the viability of the site.
- 5.11.45 The Health and Safety Executive has also advised that as with all sites during licensing the applicant to the Health and Safety Executive will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

- 5.11.46 One respondent reported that there is an underground gas pipeline within 100 metres of the nominated site. Information about the location and type of pipe is maintained by the local planning authority. Whilst a pipeline in proximity to the site would be a consideration in licensing, the Health and Safety Executive has advised that the extent of the significance would depend on factors including the construction of the pipes and the size of the consultation zones (i.e. the distance in which certain levels of development can take place). Mitigations could include changing the detailed layout of the site plan, or reinforcing the pipeline itself.
- 5.11.47 The Health and Safety Executive has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

Assessment

- 5.11.48 This site passes this criterion. Noting in particular the advice of the Health and Safety Executive, it is reasonable to conclude that any likely new nuclear power station development within the nominated site boundary could be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures. If the pipeline that was noted during the opportunity for public comment should be considered to cause a hazard, based on the advice of the Health and Safety Executive, it is reasonable to conclude that there are potential mitigations that could be carried out.

Guidance to the IPC

- 5.11.49 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate, including on the consideration of the hazard posed by the gas pipeline near the site, if relevant.

D4: Proximity to civil aircraft movements

Analysis

- 5.11.50 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation²³⁷. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.

²³⁷ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

- 5.11.51 Unlike the majority of the nomination locations, the Kirksanton site is not adjacent to an existing nuclear installation that is currently protected by a Restricted Area. The Civil Aviation Authority has advised that the establishment of a Restricted Area related with the proposed Kirksanton development would impact upon aviation activity associated with Barrow/Walney Island Aerodrome²³⁸.
- 5.11.52 The aerodrome is approximately 7-8km from the nominated site. There may be the potential to mitigate the impact, for instance through arrangements which allow related air traffic to transit through the Restricted Area under set circumstances. However, this would need to be considered in detail should any application come forward including discussion with the operators of the aerodrome and the nuclear regulators.
- 5.11.53 Because there is not a Restricted Area in place at present a new Restricted Area at the Kirksanton site would replace airspace that is currently available for aircraft in transit, so the Civil Aviation Authority has advised that potential impacts on air transit are possible.
- 5.11.54 The Civil Aviation Authority has advised that it does not believe there to be any other civil aerodrome safeguarding issue. There are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new Restricted Area at the Kirksanton site would have a material impact on associated operations. It was raised in the opportunity for public comments that the airfield that is partially included in the nomination is used to fly microlights. This land is not formally documented as being an active aerodrome and therefore not covered by Civil Aviation Authority advice. However, the IPC should ensure that local planning authorities have been consulted to identify any further local sites and ensure that impacts are considered.

Assessment

- 5.11.55 Because there is not a Restricted Area in place around this site at present it is possible that the establishment of a new area could impact on existing operations.
- 5.11.56 There is also a risk that the operations of Barrow Walney Island aerodrome are affected. However, the Civil Aviation Authority has advised that there is the potential to institute a restricted area at this site that could mitigate impacts. This would require further exploration should proposals for this site come forward. The potential for an impact on the aerodrome is not considered, at this stage, to outweigh the need for the site to be in this NPS (as articulated in Part 2 of this NPS).
- 5.11.57 Although any Restricted Area would need to also meet the requirements of the Nuclear Installations Inspectorate, given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The site therefore passes this criterion.

²³⁸ The airfield operates private communication flights and is also used by the Lakes Gliding Club.

Guidance to the IPC

- 5.11.58 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests. This sets out, amongst other things, that the applicant should consult the Ministry of Defence, Civil Aviation Authority, National Air Traffic Services and any aerodrome – licensed or otherwise – where likely to be affected by the proposed development in preparing an aviation assessment. This should include the Barrow/Walney Island Aerodrome.
- 5.11.59 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.11.60 Some responses during the opportunity for public comment focussed on the potential for adverse effects on designated sites including Morecambe Bay SAC/SPA/Ramsar and the Duddon Estuary SPA/Ramsar, and on different species that use those sites.
- 5.11.61 The Appraisal of Sustainability²³⁹ identified that the potential for adverse effects on sites and species considered to be of European nature conservation importance (the Duddon Estuary SPA/Ramsar site and the Morecambe Bay SAC/SPA/Ramsar site) means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.11.62 The findings of the Appraisal of Sustainability on European sites are taken from the Habitats Regulations Assessment for this site²⁴⁰. The Habitats Regulations Assessment at this strategic level cannot rule out the potential for adverse effects on the integrity of any of the five European sites²⁴¹ identified through the screening stage through impacts on water resources and quality, habitat and species loss and fragmentation (including coastal squeeze), disturbance (noise, light and visual) and air quality.
- 5.11.63 The Habitats Regulations Assessment on sites of international importance has proposed a suite of avoidance and mitigation measures to be considered as part of the project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of the proposed suite of avoidance and mitigation measures may help to address the identified adverse effects on European site integrity, but that more detailed project level Habitats Regulations Assessment is required to reach conclusions that are in accordance with the requirements of the Habitats Directive.

²³⁹ *Appraisal of Sustainability: Site report for Kirksanton*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁴⁰ *Habitats Regulations Assessment: Site report for Kirksanton*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁴¹ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

Assessment

- 5.11.64 Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment, and the need for more detailed studies should an application for development consent come forward.
- 5.11.65 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in the NPS.
- 5.11.66 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site (against this criterion) in this NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

- 5.11.67 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.11.68 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Kirksanton and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.11.69 Comments were also made about RSPB Hodbarrow. This is not a designated site so is not considered against this criteria but has been considered by the Appraisal of Sustainability for Kirksanton given its local significance. The reserve is approximately 3.5 km from the site and the Appraisal of Sustainability finds that impacts on biodiversity may also arise at Hodbarrow RSPB reserve. These would need to be considered further should an application for development consent come forward and the applicant should ensure that RSPB are informed of their proposals.
- 5.11.70 The Appraisal of Sustainability identified that the potential for adverse effects on sites and species considered to be of national nature conservation importance means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.11.71 The Appraisal of Sustainability has identified the following SSSIs within 5km of the nominated site where it finds that significant effects may occur: Duddon Estuary SSSI; Shaw Meadow and Sea Pasture SSSI.

5.11.72 However, the Appraisal of Sustainability site report has identified that there is the potential for the mitigation of biodiversity effects on sites of national conservation importance including the creation of replacement habitat.

Assessment

5.11.73 Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.

5.11.74 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.

5.11.75 This site passes this criterion.

Guidance to the IPC

5.11.76 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.

5.11.77 The IPC should ensure that the applicant's documentation demonstrates that they have made RSPB are aware of proposals given the potential for effects on RSPB Hodbarrow.

5.11.78 The IPC should also refer to the Appraisal of Sustainability for Kirksanton and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

5.11.79 A large number of responses during the opportunity for public comment focussed on the visual impact of a potential development, including the potential impact on views from the Lake District National Park, to which the nominated site is adjacent. A response was also received from the Lake District Park National Authority.

- 5.11.80 The Appraisal of Sustainability identified potential adverse effects on landscape including lasting direct and indirect adverse landscape and visual impacts on the surrounding area and coastline, including the Lake District National Park which is of national landscape importance.
- 5.11.81 The nomination for Kirksanton and the Appraisal of Sustainability site report notes that there may be some scope for landscaping which could reduce potential visual effects on above ground cultural heritage assets.
- 5.11.82 The nominator has said that while development will not directly affect the National Park and the site boundary lies exclusively beyond the National Park boundary, the potential effects on the setting of the Lake District National Park and views from the National Park will be afforded due consideration during scheme design, and that the site offers local opportunities for screening through the use of landscaping, vegetation and tree planting and through choice of type, scale, orientation and surface treatment of plant employed at the site. It has also noted that use of direct sea-water cooling would reduce potential visual intrusion from cooling towers, and cooling tower dispersion plumes would not occur²⁴².
- 5.11.83 The Appraisal of Sustainability notes that depending on the available land area including off-site land, there could be opportunity for the development to sit within a strong new landscape framework with the creation of tree belts, lakes and replacement public rights of way. It has noted that careful design and consideration of alternatives is needed to avoid or reduce landscape impacts, for example using tunnelling techniques to reduce the impact of cooling infrastructure.
- 5.11.84 However, whilst the Appraisal of Sustainability notes that overall, the new power station would be assessed in the context of the existing wind farm, prison and disused airfield, it believes that development of the nominated site is still likely to lead to a perceptible deterioration in views, which would not be able to be fully mitigated, given the scale of possible new buildings, transport links and the necessary upgrades to electricity transmission infrastructure to connect the facility to the UK electricity grid.
- 5.11.85 At a local level, the Appraisal of Sustainability has found that there is the potential for long term adverse effects on the coast adjacent to the nominated site, if cooling culverts cannot be incorporated using tunnelling techniques. The construction of sea defences and the incorporation of a new marine landing platform could also give rise to adverse impacts on the appearance of the existing shoreline.

²⁴² See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Kirksanton, and in particular the nomination form for information on landscape and cultural heritage.

5.11.86 The Appraisal of Sustainability has also identified potential adverse effects on the settings of cultural heritage features of regional and national importance (in particular the Appraisal of Sustainability also notes that the site of RAF Millom, a World War II airfield, also lies partially within the nominated site), as well as on buried archaeology that may be present on the site. These impacts arise on settings depending on distance, sight lines and mitigation applied. The Appraisal of Sustainability finds that there is a possibility that impacts can be mitigated. The Appendices to the Appraisal of Sustainability for Kirksanton²⁴³ list the cultural heritage assets within the area the setting of which, depending on distance, sight lines and mitigation, could be affected.

Assessment

- 5.11.87 In making this assessment the Government has had regard to the purposes of the designation of the National Park in conserving and enhancing the natural beauty, wildlife and cultural heritage of the park and of promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public.
- 5.11.88 Existing development at Kirksanton is very limited. The development of a new nuclear power station will have a negative visual impact on the landscape which could be seen from parts of the Lake District National Park. The nominator and the Appraisal of Sustainability have identified that there is some potential for some of the effects of a new nuclear power station on the Lake District National Park to be avoided, minimised or mitigated, but this is limited given the proximity of the site to National Park. Fully effective mitigation of adverse visual effects during the construction and operational phases is highly unlikely.
- 5.11.89 The potential for precise effects and mitigation can only be fully assessed when detailed plans come forward. This is because they depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed, location of transmission infrastructure, and the relevant other development in the region which could have cumulative effects (see “cumulative effects” below for more detail). Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.
- 5.11.90 The Government has carefully considered whether the site should be regarded as potentially suitable against this criterion given the potential for adverse effects on the National Park and the doubt that full mitigation and avoidance of all of these effects is possible given that the site is adjacent to the National Park.

²⁴³ See the *Appendices to Appraisal of Sustainability: Site report for Kirksanton*, November 2009, <http://www.energy-nps-consultation.decc.gov.uk>

5.11.91 After careful consideration, this site passes this criterion. This takes into account that there is some scope for a developer and the IPC to explore in detail minimisation, avoidance and mitigation of adverse effects (although scope is very limited); because the nature, scope, and scale of any effect is currently uncertain and is dependent on the exact form of development proposed; and that there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.

Guidance to the IPC

5.11.92 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Kirksanton and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.

5.11.93 If relevant, the IPC's assessment will also need to consider the cumulative visual effect of any new nuclear power station at Braystones and Sellafield and the existing facilities at Sellafield (and any other plans or programmes that are identified as relevant).

5.11.94 It should also be noted that whilst the Appraisal of Sustainability has noted the potential strategic environmental and sustainability implications of transmission infrastructure within the information available, detailed environmental assessment should be made by the applicant at the IPC stage, and the IPC should consider this in conjunction with EN-5 which is the Electricity Networks NPS.

D9: Size of site to accommodate operation

Analysis

5.11.95 The Kirksanton site comprises of approximately 131 hectares.

5.11.96 The nominated land has a number of public tracks/footpaths bisecting it. It is a security requirement that the licensee has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.

5.11.97 The Office for Civil Nuclear Security and Nuclear Installations Inspectorate has advised that this is of sufficient size and shape for the safe and secure operation of a new nuclear power station.

Assessment

5.11.98 Based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility. An applicant would need to consider mitigations such as siting elements of a station away from public footpaths, or realignments, to meet the requirements of a nuclear site licence. Given the size of the site it is reasonable to conclude that there is the potential to mitigate these concerns.

Guidance to the IPC

5.11.99 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.

5.11.100 Part 4 (Socio-economic) of EN-1 advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimised hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

5.11.101 The nominator has detailed a range of potential cooling technologies and stated a preference for direct cooling from the sea²⁴⁴. The Environment Agency has advised that it is potentially reasonable to conclude that there is access to suitable sources of cooling at the nominated site.

5.11.102 Some responses during the opportunity for public comment raised concerns about the potential effects on designated areas. The Appraisal of Sustainability for Kirksanton has identified indirect effects, of potentially wider significance on nationally and internationally designated habitats, from the thermal impacts of cooling water discharges. These arise from abstracting water for cooling and returning it to the sea at elevated temperatures.

5.11.103 The Environment Agency has also advised that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges. This would require the discharges to meet regulatory standards for the protection of the quality of estuarine or coastal waters in line with future requirements of the Water Framework Directive²⁴⁵.

²⁴⁴ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Kirksanton, and in particular the nomination form for information on cooling.

²⁴⁵ The Water Framework Directive 2000/60/EC.

5.11.104 The Environment Agency has also advised that there are important nursery grounds for both bass and sole on this coast as well as large populations of migratory salmonids.

Assessment

5.11.105 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion. Detailed modelling as part of the licensing process will give greater clarity about the acceptability of impacts in the light of the cooling technology that is proposed.

Guidance to the IPC

5.11.106 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.

5.11.107 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.

5.11.108 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

Appraisal of Sustainability and Habitats Regulations Assessment for Kirksanton

5.11.109 The Planning Act 2008²⁴⁶ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Kirksanton is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.

5.11.110 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the "Habitats Regulations Assessment") tests whether a plan or project **could** have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Kirksanton site.

²⁴⁶ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

- 5.11.111 The key findings of the Kirksanton Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) nationally and internationally protected sites of ecological importance;
 - ii) potential for coastal erosion and possible need to upgrade some defences;
 - iii) visual impacts on surrounding landscape and the Lake District National park, including the potential impact of power lines and transport links;
 - iv) effects on water quality in the region due to the abstraction and release of sea water for cooling;
 - v) cumulative effects with other potential new nuclear power stations in the area (these are considered below);
 - vi) positive effects on long term employment and prosperity, including cumulatively.
- 5.11.112 The outputs of the Appraisal of Sustainability and Habitats Regulations Assessment on significant effects i) to iv) are taken into account in the summaries against the SSA criteria above. Cumulative effects are discussed below.

Cumulative effects

- 5.11.113 The Appraisal of Sustainability for Kirksanton notes that the site forms one of a cluster of four nominated sites in the North West region (Braystones, Kirksanton, Sellafield and Heysham), three of them in Cumbria, that have the potential to produce cumulative effects if more than one power station were developed in this region.
- 5.11.114 The cumulative effects that are assessed by the Appraisal of Sustainability to be of potentially strategic significance are below.

Biodiversity and ecosystems

- 5.11.115 The site Appraisal of Sustainability report for Kirksanton identifies that strategic significant effects on sites and species considered of national and European nature conservation importance cannot be ruled out. The development of nuclear power stations at other nominated sites in the region may increase the significance of the adverse impacts either by adding to the pressures on a particular site of nature conservation importance or by adversely affecting other nearby sites so that the cumulative effects in the region are increased. The European sites that are at most risk from interactions are the Morecambe Bay SAC, SPA and Ramsar sites which have also been identified as potentially being significantly adversely affected by the nominated site at Heysham. The potential effects on the European sites from both the Kirksanton and Heysham developments are due to adverse effects on water quality and resources, habitat loss and coastal squeeze, disturbance and air quality.

Effects on communities: population, employment and viability.

5.11.116 Development at the Kirksanton site is appraised as having positive effects of regional economic significance on employment and community viability. The cumulative positive effects of employment, community viability and health/well-being could be more significant if more than one new nuclear power station is built and the opportunities for up-skilling, education, and supporting industries to the nuclear sector are developed at the local and regional levels. The site Appraisal of Sustainability report notes that there may be negative effects, during the construction of any new power stations, if the development produces a local shortage of specialist construction labour. This negative effect could be increased if more than one power station is developed in the region. However, these effects may be mitigated if the education and up-skilling opportunities noted above are taken and by appropriate phasing of construction.

Effects on communities: supporting infrastructure.

5.11.117 The Appraisal of Sustainability assesses that development at the Kirksanton site could have the potential for minor negative effects on local infrastructure such as transport (roads), non-radioactive waste management facilities and basic services e.g. schools, hospitals. These negative effects may become more significant if more than one nuclear power station is developed in the region. Transmission infrastructure is considered in the separate Electricity Networks NPS but is another aspect of regional and possibly national infrastructure that could be affected by a regional concentration of nuclear power stations in the North West. The Appraisal of Sustainability notes that development of the necessary transmission infrastructure might lead to indirect cumulative effects, for example as a result of the visual impact from multiple transmission lines.

Landscape and visual impact

5.11.118 Development at the Kirksanton site is assessed as having the potential for adverse effects of strategic significance on landscape and visual impacts in the surrounding area. These effects are discussed under criterion D8 above. The significance of this is increased by the fact that the nominated site borders the Lake District National Park and the indirect effects that landscape and visual impacts may have on the recreation and tourism potential of the area. Development of more than one nuclear power station in the region has the potential to increase the significance of this adverse effect and might begin to change the visual character of the region due to the grouping of major infrastructure in the region.

Conclusion on cumulative effects

5.11.119 The Appraisal of Sustainability finds that it is possible to avoid or reduce the potential cumulative adverse effects that are typical of major infrastructure projects, such as nuisance noise and dust/mud, impacts on local transport network through the timing and phasing if more than one power station in the region is developed, for example by arranging that peak levels of construction activity do not coincide and that mitigation commitments are implemented through adherence to an agreed Environmental/Sustainability Management Plan.

- 5.11.120 Given the uncertainty about the cumulative effects identified by the Appraisal of Sustainability and given the scope for mitigation, Government does not at this stage, bearing in mind that this is a strategic assessment, think those effects are sufficient in themselves to justify excluding Kirksanton or the other West Cumbrian sites from this NPS.
- 5.11.121 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.
- 5.11.122 A full assessment will be able to identify the relevant interactions, and this will partly depend on whether one or more of the other sites in this region also come forward for development, and on what timescales. This can only be properly assessed at the point at which an application for development consent is made.
- 5.11.123 However, the findings of the Appraisal of Sustainability clearly highlight the need for the IPC to consider cumulative effects in making their assessment. Guidance to the IPC on the assessment of cumulative effects is in EN-1. For instance Part 4.2 says that “the IPC should consider how the accumulation of effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place”. As set out under D8, the IPC would need to consider the effect on the Lake District National Park in conjunction with any other relevant development.

Other issues raised during the assessment

- 5.11.124 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk>.

Health

- 5.11.125 The Appraisal of Sustainability for Kirksanton has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.
- 5.11.126 One of these factors of particular interest to the public is the incidence of cancer. As there is no existing power station at Kirksanton, no specifically targeted radiological monitoring has been carried out in the immediate vicinity. However, as the site is close to the former Calder Hall nuclear power station at Sellafield, conclusions drawn from this site are also relevant to Kirksanton. Therefore it can be said that radioactive monitoring carried out in 2007 around Sellafield²⁴⁷ found generally low concentrations of artificial radionuclides attributable to the former Calder Hall nuclear power station in water, sediment and beach samples and in meat and seafood samples taken from around the site. However, the presence in the area of other nuclear activities (two fuel

²⁴⁷ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13) Report*, 2007.

reprocessing plants, decommissioning and clean-up, manufacture of mixed oxide fuel and waste treatment and storage) make the apportioning of radiological effects in the area very difficult. Nevertheless, from this sampling, the estimated total dosage levels to the public from all sources within the Sellafield area were assessed as being less than 38% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.

- 5.11.127 There is also no historical analysis of childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours exist at this site. However, as discussed above, the Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.
- 5.11.128 COMARE's tenth report²⁴⁸ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.11.129 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.11.130 In its eleventh report²⁴⁹ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report. The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station should ensure that

²⁴⁸ Committee on Medical Aspects of Radiation in the Environment (COMARE), Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

²⁴⁹ Committee on Medical Aspects of Radiation in the Environment (COMARE), Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

there are no unacceptable risks to the health of the local population when the station is operating normally.

- 5.11.131 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.11.132 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Haverigg wind farm

- 5.11.133 Six of the eight turbines that comprise the Haverigg II and Haverigg III wind farm are located within the nominated site at Kirksanton.
- 5.11.134 Should an application for development consent come forward, turbines could be affected both by wind flow changes and by regulatory considerations around co-siting the facilities²⁵⁰. Bearing in mind that this is a strategic assessment conducted at an early stage in the planning process, it is too early at this stage to say how many of the turbines would be directly affected as this would depend on the final layout of the facility. Any potential impact may not be felt for some years as it is possible that co-existence of the wind turbines and the nuclear station could continue into the construction and commissioning period.
- 5.11.135 Should an application for development consent come forward that impacts on the turbines, the IPC should consider existing land use in accordance with EN-1, including the guidance on land-use including open space, green infrastructure and green belt.

Mining

- 5.11.136 One response to the opportunity for public comments said that substantial iron ore mining was undertaken within the nominated site boundary in the past, which could affect the stability of the site.

²⁵⁰ The Nuclear Installations Inspectorate would treat the presence of a wind farm in the same way as any industrial hazard in the vicinity of a nuclear installation as part of the licensing process and would expect the potential licensee to examine potential risks to the installation. Risks posed by wind turbines include toppling, blade shedding, ice throw, electrical disruption and radio signal interference. It is likely that prior to the introduction of nuclear material onto a site, cessation of operations or removal of any turbines which pose a credible hazard to the new nuclear power station would be required to ensure the radiological risk remains acceptable.

5.11.137 Mining, drilling and other underground activities can pose risks to nearby nuclear power stations. However, full and proper assessment of these risks and whether there are appropriate engineering solutions will require site and design specific investigations. Consultation on the SSA Process and Criteria²⁵¹ therefore outlined that whilst this is not an SSA criterion, it is important to the viability of the site and flagged for local consideration. The IPC and regulators as appropriate should ensure that this issue is considered in line with Part 4 of this NPS.

Conclusion on the nominated site at Kirksanton

5.11.138 Given that the Government, after careful consideration, has concluded that the Kirksanton site is credible for deployment by 2025, and that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable.

5.11.139 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things existing land use, the impact of this proposal in combination with any other relevant nuclear power stations in the region, and in particular the effect of this on the Lake District National Park. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

²⁵¹ See Towards a nuclear national policy statement: Consultation on the Strategic Siting Assessment process and criteria URN 08/295 <http://www.berr.gov.uk/files/file47136.pdf> p55 for a list of mining, drilling and underground activities that pose a particular risk

5.12 Oldbury

Description of the site

5.12.1 The nominated site consists of approximately 150 hectares of land to the north of Oldbury Nuclear Power Station. Oldbury Nuclear Power Station is itself located close to the village of Oldbury-on-Severn in South Gloucestershire, approximately 15 miles to the north east of Bristol. The approximate centre of the nomination area is at Ordnance Survey reference 361300,195300. The south western part of the site comprises silt lagoons 1 and 2 (part of the existing power station site). The remainder is agricultural land which is bounded by Shepperdine Road although there is a small area to the north east of this road. To the west, the site is bounded by the existing flood defences of the Severn Estuary.

Deployability by the end of 2025

5.12.2 The SSA is limited to considering sites which are credible for deployment by the end of 2025²⁵². This is because it is important to focus on sites which can come on stream in good time to contribute to the Government’s objectives on climate change and energy security.

5.12.3 Deployment means commencing operation of one or more new nuclear power stations on the site. At Oldbury, the Government in particular notes that detailed studies have commenced at the site and that there are a series of grid agreements in place, the first being to support a connection in 2020 (although this does not mean that the site would be deployed at that date).

5.12.4 The Government is satisfied from the information provided by nominators and an independent assessment that Oldbury is credible for deployment by the end of 2025.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

5.12.5 The Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.

Assessment

5.12.6 This site passes the demographics criterion.

²⁵² For the purposes of this document, “deployment of new nuclear power stations” means commencing operation of one or more new nuclear power stations on the site.

Guidance to the IPC

5.12.7 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.

C2 AND D5: Proximity to military activity

Analysis

5.12.8 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges.

5.12.9 The Ministry of Defence has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice. The Ministry of Defence has advised that no military firing activity occurs in the marine or landward areas adjoining the site. There are no military or explosive nuclear facilities within 1000 metres of the site.

5.12.10 Given the proximity to military activities the Ministry of Defence has also advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime.

Assessment

5.12.11 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:

- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment;
- the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out;
- any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime;
- the development of a new nuclear power station at the site would not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime.

5.12.12 This site therefore passes these criteria.

Guidance to the IPC

5.12.13 The IPC should refer to the relevant guidance in EN-1 on Civil and Military Aviation and Defence Interests.

D1: Flooding, storm surge and tsunami

Analysis

- 5.12.14 The nominated site is in flood zone 3, high probability. This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year²⁵³.
- 5.12.15 Flooding from the River Severn was raised in the opportunity for public comments. Some respondents cited the flooding events of 1607 which are described as a “tsunami”. The 2005 Defra report *The threat posed by tsunami to the UK* examined this event and stated that “in this case, the combination of a high tide and a storm surge at the time provides a likely explanation for the flooding.”²⁵⁴
- 5.12.16 The Appraisal of Sustainability²⁵⁵ identified potential adverse effects relating to flood risk arising from predicted rising sea levels caused by climate change, especially during the later stages of operation and decommissioning of any new nuclear power station.
- 5.12.17 The Environment Agency has advised that it is potentially reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime²⁵⁶, including the potential effects of climate change, storm surge and tsunami. This takes into account possible countermeasures. The Environment Agency has also advised that mitigation of flood risk to the site could have an adverse impact on flood risk in the surrounding area by reducing the capability of area to absorb and disperse flood water. However the Environment Agency has advised that a suitable approach could be developed at Oldbury that would improve the protection of the surrounding area such as a strategic ‘tidal cell’ flood mitigation approach which could reduce tidal flood risk to the whole area.
- 5.12.18 The Environment Agency has also noted that current access to the site is via minor roads which cross extensive flood risk areas and that any access will need to be assessed for suitability, and possibly protected against flooding.

²⁵³ See PPS25 for a full definition of the flood zones and what they cover: *Planning Policy Statement 25: Development and Flood Risk*, December 2006, Annex D pp.22-25.

²⁵⁴ <http://www.defra.gov.uk/Environ/Fcd/emergencyplanning/tsurpes.pdf> p1

²⁵⁵ *Appraisal of Sustainability: Site report for Oldbury*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁵⁶ See entry D1 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.12.19 The Appraisal of Sustainability has also identified possible impacts on coastal processes, hydrodynamics and sediment transport from any necessary new or upgraded coastal defences and the Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and estuary from changing and adapting naturally.
- 5.12.20 Whilst the Appraisal of Sustainability has found that mitigation may be possible through appropriate design and construction of defences, it is recommended that hydrodynamic and sediment transport surveying and modelling should be conducted as part of the detailed appraisal to determine baseline conditions. This data can then be used to determine an appropriate management strategy for combating the long-term effects of climate change on the coastline.

Assessment

- 5.12.21 This site passes this criterion. This takes into account in particular the advice of the Environment Agency that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunami. The advice of the Appraisal of Sustainability and the Environment Agency is that countermeasures would be possible, but would have to be carefully designed to avoid adverse impacts.
- 5.12.22 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.12.23 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation.
- 5.12.24 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.12.25 The Environment Agency has advised that development at the site could potentially avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime²⁵⁷, including the potential effects of climate change.

²⁵⁷ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.12.26 The opportunity for public comment included a response that the current site at Oldbury has already altered the shoreline on the opposite side of the river, with Plusterwyne farm losing land.
- 5.12.27 Based on the current understanding of coastal erosion in this area the Environment Agency has advised that there is no technical reason that would prevent the site being protected or mitigated from the effects of coastal erosion. Whilst the Environment Agency is aware of erosion and accretion on the shoreline it is not aware of any studies of effects at Plusterwyne caused by the existing Oldbury nuclear power station.

Assessment

- 5.12.28 The site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal erosion may be possible through appropriate design and construction of defences.

Guidance to the IPC

- 5.12.29 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.
- 5.12.30 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations

Analysis

- 5.12.31 Based on Health and Safety Executive records the nominated site is not in the vicinity of any COMAH establishments. The Health and Safety Executive has advised that as with all sites during licensing the applicant to the Health and Safety Executive will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and the fluids being conveyed.

Assessment

- 5.12.32 The site passes this criterion. Given that the site is not in proximity to hazardous facilities, it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

Guidance to the IPC

- 5.12.33 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a

threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.12.34 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation²⁵⁸. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.
- 5.12.35 The existing Oldbury nuclear power station has an associated Restricted Area. The Civil Aviation Authority has advised that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements.
- 5.12.36 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. The current establishment of the existing Oldbury Restricted Area and that related to the nearby Berkeley Power Station is such that the impact of a new Restricted Area (as described above) upon aircraft in transit through local airspace is likely to be negligible.
- 5.12.37 Responses were received during the opportunity for public comments about the proximity of Bristol Filton Aerodrome. It is not anticipated that any new Restricted Area established in association with the proposed nuclear installation would impact upon local aerodrome operations.
- 5.12.38 There are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations.

Assessment

- 5.12.39 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can potentially be mitigated.

²⁵⁸ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

Guidance to the IPC

- 5.12.40 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.
- 5.12.41 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.12.42 Some responses during the opportunity for public comment focussed on the potential impacts on the Severn Estuary which is a designated cSAC/SPA/Ramsar site. The Appraisal of Sustainability²⁵⁹ identified that the potential for adverse effects on sites and species of European nature conservation importance (the Severn Estuary SAC/SPA/Ramsar site and the River Wye SAC site) means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal. The Appraisal of Sustainability notes that some of these designations fall immediately adjacent to the nominated site and development activities may encroach into these designated areas. For example the potential for a marine landing facility, cooling water infrastructure, the tidal lagoon and upgraded flood protection measures could all have adverse impacts.
- 5.12.43 The Appraisal of Sustainability also highlights the potential for cumulative effects with any potential new nuclear power station at Hinkley Point, and any potential Severn Tidal power scheme. These are discussed further under “Cumulative effects”, below.
- 5.12.44 The findings of the Appraisal of Sustainability are drawn from the Habitats Regulations Assessment for Oldbury²⁶⁰. The conclusions of the Habitats Regulations Assessment are limited by the strategic nature of the assessment process and the information available, which does not generally allow for a definitive prediction of effects on the European sites²⁶¹ considered. It notes that a precautionary approach suggests that the assessment at this strategic level cannot rule out the potential for adverse effects on site integrity at four European sites – the Severn Estuary cSAC, SPA and Ramsar site and the River Wye SAC – through impacts on water resources and quality, habitat and species loss and fragmentation/coastal squeeze and disturbance (noise/vibration, light and visual).

²⁵⁹ *Appraisal of Sustainability: Site report for Oldbury*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁶⁰ *Habitats Regulations Assessment: Site report for Oldbury*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁶¹ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

- 5.12.45 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of any project level Habitats Regulations Assessment. At this stage, it finds that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

Assessment

- 5.12.46 The Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment, and the need for more detailed studies should an application for development consent come forward.
- 5.12.47 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in this NPS.
- 5.12.48 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in this NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

- 5.12.49 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.12.50 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Oldbury and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.12.51 The Appraisal of Sustainability has identified that the potential for adverse effects on sites and species considered to be of national nature conservation importance means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.12.52 The Appraisal of Sustainability has identified the following SSSIs within 5km of the nominated site where it finds that significant effects may occur: Severn Estuary SSSI; Upper Severn Estuary SSSI; and River Wye (Lower Wye) SSSI.

- 5.12.53 The Appraisal of Sustainability notes that some of the designations (the River Severn) lie immediately adjacent to the nominated site and development activities may encroach into these designated areas. For example the potential for a marine landing facility, cooling water infrastructure, the tidal lagoon and upgraded flood protection measures could all have adverse impacts.
- 5.12.54 The Appraisal of Sustainability site report has identified that there is the potential for the mitigation of biodiversity effects on sites of national conservation importance including the creation of replacement habitat.

Assessment

- 5.12.55 The Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.
- 5.12.56 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.
- 5.12.57 This site passes this criterion.

Guidance to the IPC

- 5.12.58 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.12.59 The IPC should also refer to the Appraisal of Sustainability for Oldbury and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

- 5.12.60 The Appraisal of Sustainability has identified potential adverse effects on Scheduled Ancient Monuments (SAM), conservation areas, a registered park and garden and listed buildings, which may be of regional or national heritage significance, as well as on medieval agricultural earthworks and buried archaeology of potentially high importance. Whether settings are affected depends on the distance and sight lines to

the proposed facility, and the mitigation applied. The Appendices of the Appraisal of Sustainability²⁶² detail the cultural heritage assets in the area including the Thornbury Conservation Area and Registered Park and Garden of Thornbury Castle lying c.4.2km to the south-east, and 228 Grade II listed buildings within c.5km (although there are no listed buildings within or adjacent to the existing nuclear power stations)²⁶³. The Appraisal of Sustainability finds that there is a possibility that impacts can be mitigated.

- 5.12.61 The Appraisal of Sustainability identified potential adverse effects on the local landscape and indirect effects on the wider landscape. These include lasting adverse indirect landscape and visual impacts from the proposed development on parts of the Wye Valley and the Cotswolds Areas of Outstanding Natural Beauty (AONBs), which are 7km to the north west and 13km to the east of the nominated site respectively. The Appraisal of Sustainability finds that in combination effects (potentially) could also arise from new offsite grid connectivity.
- 5.12.62 The Appraisal of Sustainability notes that overall the new power station would be seen in the context of existing power station facilities, prior to any decommissioning. However, the Appraisal of Sustainability finds that further development is still likely to lead to a perceptible deterioration in some views, which would not be able to be fully mitigated given the scale of the possible new buildings, and these potential adverse effects could be increased further by the inclusion of cooling towers as part of the proposed development. The Appraisal of Sustainability notes that although the towers would be adjacent to the existing power station, the nomination reflects that they could be from 70m to 200m high.
- 5.12.63 The nominator of the site concurs that given the height of the reactor buildings and the assumed highest cooling towers (with associated plumes) methods of mitigation are limited, and not all effects will be mitigated fully²⁶⁴. However, potential mitigations are listed including the final choice of the cooling tower heights, the alignment of the towers within the site and the relationship with the existing power station, the colour of the materials from which key buildings and structures are constructed, and the type of lighting used around the site and at a more local level, earth shaping and the planting of new copses, hedgerows and tree belts.

Assessment

- 5.12.64 In assessing this site, the Government has considered the purpose of the AONBs, which is of conserving and enhancing the natural beauty of the area of outstanding natural beauty.

²⁶² See the *Appendices to Appraisal of Sustainability: Site report for Oldbury*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁶³ Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See www.english-heritage.org.uk

²⁶⁴ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Oldbury, and in particular Supplementary Information D8 : Further information on nationally designated areas and features of amenity, cultural heritage and landscape value.

- 5.12.65 Whilst it appears that visual impacts on the Wye Valley and Cotswolds AONBs may remain, the extent and significance of these effects will partly depend on the technology choices made by the nominator of the site including both the choice of cooling towers and the location of transmission infrastructure, and the mitigations proposed. However, it is likely that some effects will remain.
- 5.12.66 Notwithstanding the potential for adverse effects on the AONBs and the uncertainty about whether full mitigation and avoidance of all of these effects is possible, after careful consideration the Government believes that in relation to this criterion, the site is potentially suitable. This is because: 1) the nature, scope, and scale of any effect is currently uncertain and is dependent on the exact form of development proposed; 2) there is scope for a developer and the IPC to explore in detail minimisation, avoidance and mitigation of adverse effects; and 3) there is a need for sites to be available for potential new nuclear power stations as outlined in Part 2 of this NPS.

Guidance to the IPC

- 5.12.67 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Oldbury and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.
- 5.12.68 Regarding other landscape and cultural effects, the IPC should refer to the Appraisal of Sustainability and the applicant's proposals for Oldbury and consider whether the applicant's proposals sufficiently avoid or mitigate these potential effects.

D9: Size of site to accommodate operation

Analysis

- 5.12.69 The nominated area is approximately 150 hectares.
- 5.12.70 The nominated land has a public road, track and footpaths bisecting it. It is a security requirement that the licensee has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.
- 5.12.71 The Office for Civil Nuclear Security and the Nuclear Installations Inspectorate have advised that this is of sufficient size and shape for the safe and secure operation of a new nuclear power station.

Assessment

5.12.72 Based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility. An applicant would need to consider mitigations such as siting elements of a station away from public footpaths, or realignments, to meet the requirements of a nuclear site licence. Given the size of the site it is reasonable to conclude that there is the potential to mitigate these concerns.

Guidance to the IPC

- 5.12.73 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.
- 5.12.74 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimised hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

- 5.12.75 The nominator has detailed a range of potential cooling technologies but noted that “direct cooling for the proposed station is not felt to be appropriate at this site as the required water amounts would be considerably larger than those required for the existing Magnox power station and would be expected to give rise to unacceptable environmental impacts by virtue of the size of thermal plume discharged in the Severn Estuary. Therefore, the adoption of a wet cooling tower arrangement for the site is considered the most likely solution”²⁶⁵. The Environment Agency agrees with this assessment and has advised that it is potentially reasonable to conclude that there is access to suitable sources of cooling at this site.
- 5.12.76 The Appraisal of Sustainability has noted that water abstraction could potentially cause an adverse effect on a major fish migration route, as well as mortality from fish entrapment in the cooling water intake. This could be to a certain extent be mitigated by the installation of fish protection measures in cooling water intake/outfall systems.

²⁶⁵ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Oldbury, and in particular Supplementary Information – D10 – Further Information on Access to Suitable Sources of Cooling.

- 5.12.77 Although there are existing discharges from the current Oldbury power station, the Appraisal of Sustainability has found that return of cooling water to the Severn Estuary (via a tidal reservoir) at elevated temperatures may cause failures to existing water quality standards and could also impact on coastal processes, including sediment transport. Any future thermal discharge would therefore be subject to discharge consent from the Environment Agency and would require the discharge to meet existing water quality standards.
- 5.12.78 The Appraisal of Sustainability has assessed that given that the thermal plume discharged through direct cooling could be expected to give rise to unacceptable environmental impacts (because of its size), the adoption of a wet cooling tower arrangement for the site is considered the most likely solution.
- 5.12.79 The Appraisal of Sustainability notes that this will reduce or negate the need to abstract cooling water from the existing tidal reservoir on the River Severn. This would reduce impact on the fish populations in the Estuary. The Environment Agency has advised that sea lamprey, river lamprey, twaite and allis shad are designated features of the Severn Estuary SAC. The Atlantic salmon is a designated feature in the Wye and USK SACs. The Severn Estuary supports the single UK spawning stock of the twaite shad and a substantial part of the total population of salmon in England and Wales. The Estuary acts as a major nursery ground for bass and a range of flatfish species as far upstream as Gloucester.
- 5.12.80 Whilst wet cooling towers would minimise impacts on marine ecology and biodiversity in the Estuary, they would have visual impact, which is discussed in detail against criterion D8 above.
- 5.12.81 A concern was raised during the opportunity for public comments that active liquid discharges would be made from the site and would have a much greater effect at Oldbury where lower dilutions would be achieved. The Environment Agency has considered the impact of discharges from the existing station. Their authorisations require the operator to use the best practicable means to minimise the impact of radioactive discharges, and the Environment Agency expect the operator's procedures to define conditions for discharges such as the state of the tide. This would also need to be addressed in any application to the Environment Agency regarding a new site.

Assessment

- 5.12.82 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion.
- 5.12.83 Detailed modelling as part of the licensing process will give greater clarity about the acceptability of impacts in the light of the cooling technology that is proposed. Any proposals for cooling towers may have less impact on designated habitats in the River Severn but will have to be carefully considered in the light of visual impacts on the surrounding area.

Guidance to the IPC

- 5.12.84 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.12.85 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.12.86 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.
- 5.12.87 The visual impacts of any new cooling towers will need to be considered by the IPC in conjunction with the guidance in EN-1 on landscape and visual impact.

Appraisal of Sustainability and Habitats Regulations Assessment for Oldbury

- 5.12.88 The Planning Act 2008²⁶⁶ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Oldbury is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.
- 5.12.89 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the "Habitats Regulations Assessment") tests whether a plan or project **could** have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Oldbury site.
- 5.12.90 The key findings of the Oldbury Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) potential negative effects on two national and internationally protected conservation sites, namely the Severn Estuary cSAC/SPA/Ramsar and the River Wye SAC;
 - ii) potential flood risk;
 - iii) potential impact of cooling towers including on two AONBs;

²⁶⁶ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

- iv) potential for significant negative cumulative effects if two new nuclear power stations (Hinkley Point and Oldbury) and any potential Severn tidal power scheme is are developed;
- v) potential for positive cumulative effects associated with long term employment and enhanced prosperity for communities at the sub-regional level if both power stations are built in the Severn Estuary.

5.12.91 The outputs of the Appraisal of Sustainability and Habitats Regulations Assessment on significant effects i) to iii) are taken into account in the summaries against the SSA criteria above. Cumulative effects are discussed below.

Cumulative effects

5.12.92 Hinkley Point and Oldbury form a cluster of two nominated sites in the Severn Estuary area. The Appraisal of Sustainability has found that there is the potential for cumulative effects if more than one nuclear power station site were developed in this area. The potential cumulative effects arise as a result of interactions between the sites due to their relative proximity and the way in which effects may act together.

Biodiversity and ecosystems

- 5.12.93 The site Appraisal of Sustainability report for Hinkley Point identifies that the potential for strategic significant effects on sites and species considered of national and European nature conservation importance. The development of nuclear power stations at the other nominated site in the region may increase the significance of the adverse impacts either by adding to the pressures on a particular site of nature conservation importance or by adversely affecting other nearby sites so that the cumulative effects in the region are increased. For Oldbury, the European sites that are at most risk from interactions are the Severn Estuary SAC, SPA and Ramsar sites and the River Wye SAC which have also been identified as potentially being significantly adversely affected by the nominated site at Hinkley Point. The potential effects on the European sites from both the Oldbury and Hinkley Point developments are due to adverse effects on water quality and resources, habitat loss and coastal squeeze and disturbance.
- 5.12.94 The Appraisal of Sustainability also finds that there is the potential for significant negative cumulative effects if two new nuclear power stations (Hinkley Point and Oldbury) and any of the Severn tidal power schemes are developed; and the effects of the latter project are likely to be more significant than two new nuclear power stations. These include the potential loss of nationally and internationally important estuarine habitats, where it may not be possible to mitigate fully.
- 5.12.95 The Government is carrying out a two-year feasibility study to determine whether the Government could support a tidal power project in the Severn Estuary. The Government is assessing a range of different schemes and the scope and scale of environmental effects is likely to vary widely between them. The Government is conducting separate environmental studies into these impacts and whether they could

be mitigated. These environmental studies are not yet complete so the assessment in this report is based upon the potential effects outlined in the preliminary habitats screening report for Severn Tidal Power²⁶⁷. This preliminary habitats screening report is not final and will be reviewed in the light of the feasibility study's findings. It covers all five options but does not distinguish between the individual options where environmental impacts will vary. There will be a further consultation on the Feasibility's study findings, likely in 2010.

Effects on communities: population, employment and viability.

5.12.96 The Appraisal of Sustainability report notes that development at the Oldbury site is appraised as having positive effects of regional economic significance on employment and community viability. The cumulative positive effects of employment, community viability and health/well-being could be more significant if more than one new nuclear power station is built and the opportunities for upskilling, education, and supporting industries to the nuclear sector are developed at the local and regional levels. The site Appraisal of Sustainability report notes that there may be negative effects, during the construction of any new power stations, if the development produces a local shortage of specialist construction labour. This negative effect could be increased if more than one power station is developed in the region. However, these effects may be mitigated if the education and upskilling opportunities noted above are taken and by appropriate phasing of construction.

Effects on communities: supporting infrastructure.

5.12.97 Development at the Oldbury site is assessed by the Appraisal of Sustainability as having the potential for minor negative effects on infrastructure such as transport (including the nationally important M5 motorway), non-radioactive waste management facilities and basic services e.g. schools, hospitals. These negative effects may become more significant if more than one nuclear power station is developed in the region. Transmission infrastructure is considered in the separate Electricity Networks NPS but is another aspect of regional and possibly national infrastructure that could be affected by a regional concentration of nuclear power stations in the Severn Estuary area. Development of the necessary transmission infrastructure might lead to indirect cumulative effects, for example as a result of the visual impact from multiple transmission lines.

Water quality and resources

5.12.98 The Appraisal of Sustainability for Oldbury identifies potential adverse effects on water including on coastal processes, hydrodynamics and sediment transport. Interactions with development at Hinkley Point could lead to cumulative effects due, for example, to the combined effect of two cooling water discharges. However, the significance of these effects will depend on the type of cooling arrangements adopted and may be modified by interactions with any Severn Tidal Power scheme. Furthermore, when

²⁶⁷ This was published in January 2009. For more details see http://severntidalpowerconsultation.decc.gov.uk/supporting_documents

the remaining operational power stations at Hinkley Point and Oldbury shut down and all the stations are decommissioned, this will reduce thermal and other water quality impacts in the Severn Estuary. Potential cumulative effects on water quality may have indirect effects on biodiversity and ecosystems.

Conclusion on cumulative effects

- 5.12.99 The Appraisal of Sustainability notes that it is possible to avoid or reduce the potential cumulative adverse effects that are typical of major infrastructure projects, such as nuisance noise and dust, impacts on local transport network through the timing and phasing if more than one power station in the region is developed. For example by arranging that peak levels of construction activity do not coincide and that mitigation commitments are implemented through adherence to an agreed Environmental/Sustainability Management Plan.
- 5.12.100 Given the uncertainty about the cumulative effects identified by the Appraisal of Sustainability and given the scope for mitigation, Government does not at this stage, bearing in mind that this is a strategic assessment, think those effects are sufficient in themselves to justify excluding Oldbury or Hinkley Point from this NPS. Interactions between potential sites can be complex. A full assessment will be able to identify the relevant interactions, and this will partly depend on whether one or more of the other sites in this region also come forward for development, and on what timescales. This can only be properly assessed at the point at which an application for development consent is made.
- 5.12.101 The opportunity for public comments received a number of responses relating to the potential cumulative impacts of development of a Severn Tidal Power scheme and the building of a new nuclear power station at Oldbury. As noted above the Government is carrying out a two-year feasibility study to determine whether the Government could support a tidal power project in the Severn Estuary, and the scope and scale of environmental effects is likely to vary widely between the differing schemes that are being assessed. There will be a further consultation on the Feasibility's study findings, likely in 2010.
- 5.12.102 Whilst it is not yet possible to determine exactly what the potential cumulative impact of development of a Severn Tidal Power scheme and a new nuclear power station at Oldbury would be, the Appraisal of Sustainability site level investigations of both Hinkley Point and Oldbury (the two nominated sites that are located on the Severn Estuary) have highlighted potential positive and negative potential impacts.
- 5.12.103 The findings of the Appraisal of Sustainability clearly highlight the need for the IPC to consider cumulative effects in making their assessment. The IPC are guided to consider cumulative effects by EN-1. For instance Part 4.2 says that "the IPC should consider how the accumulation of effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place". The Appraisal of Sustainability

for Oldbury indicates that this will need to consider the effect on the biodiversity of the region including the River Severn cSAC/SPA/RAMSAR. This will need to be considered in combination with existing stations and any potential Severn Tidal Power Scheme if relevant at the point at which any application for this site comes forward.

- 5.12.104 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.

Other issues raised during the assessment

- 5.12.105 This section deals with other common issues that were raised during the opportunity for public comments at this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk>

Health

- 5.12.106 The Appraisal of Sustainability for Oldbury has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.
- 5.12.107 One of these factors of particular interest to the public is the incidence of cancer. There has been, since 1967, a nuclear power station operating on the Oldbury site. There is, therefore, historical data which can be analysed to correlate the incidence of cancer reported around this site so that it can be compared to the average prevalence of the same disease in the British population as a whole. The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.
- 5.12.108 COMARE's tenth report²⁶⁸ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.

²⁶⁸ Committee on Medical Aspects of Radiation in the Environment (COMARE), Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

- 5.12.109 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield, in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.12.110 In its eleventh report²⁶⁹ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that ‘the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations’. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.
- 5.12.111 Radioactive monitoring, carried out in 2007²⁷⁰, of environmental radioactivity attributable to discharges from Oldbury Power Station found low concentrations of artificial radionuclides in water, sediment and beach samples and in meat and seafood samples. However, the presence in the area of other nuclear activities (unconnected with nuclear power stations) make the apportioning of radiological effects in the area difficult. Nevertheless, from this sampling, the estimated total dosage levels to the public from all sources within the Oldbury area were assessed as being less than 7% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.12.112 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally.
- 5.12.113 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.12.114 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK’s strict regulatory regime. Part 4 should be referred to for further guidance.

²⁶⁹ Committee on Medical Aspects of Radiation in the Environment (COMARE), Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

²⁷⁰ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13) Report*, 2007.

Conclusion on the nominated site at Oldbury

- 5.12.115 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable.
- 5.12.116 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things the mitigation of flood risk, the visual impact of any new cooling towers, the impact of this proposal in combination with any other relevant nuclear power stations in the region, and in particular the effect of this on the biodiversity of the Severn Estuary (also including a consideration of any potential Severn Tidal Power Scheme if relevant). However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

5.13 Sellafield

Description of the site

5.13.1 The nominated site is located on the West Cumbria coast in the Borough of Copeland, approximately 15km and 30km south of Whitehaven and Workington respectively and 45km north of Barrow in Furness, centred on grid reference 302007, 504271. The site is located to the north, west and north west of the existing Sellafield Nuclear Licensed Site, and comprises approximately 250 hectares of tenanted farm land owned by the NDA.

Deployability by the end of 2025

5.13.2 The SSA is limited to considering sites which are credible for deployment by the end of 2025²⁷¹. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security.

5.13.3 Deployment means commencing operation of one or more new nuclear power stations on the site. The Government has given careful consideration to the deployability of this site given that, whilst adjacent to the nuclear facility at Sellafield, this is a site which has not hosted a nuclear power station before. However, it is close to Calder Hall nuclear power station, which ceased operating in 2003 and is adjacent to the extensive existing nuclear facilities at Sellafield.

5.13.4 There are general complicating factors when developing at locations which have not hosted nuclear facilities before including lack of pre-existing infrastructure; no history of operation at the site and consequently much less qualified information about site characteristics in relation to nuclear; and a potential lack of qualified workforce.

5.13.5 Whilst these factors are not SSA criteria, they may have a bearing on whether a site can be deployed by the end of 2025.

5.13.6 The proximity to the existing Sellafield nuclear facility gives some synergies at a strategic level when examining the potential of the site to host a nuclear facility. In addition, the nominator of the site has undertaken a series of studies to further characterise the site. It has also undertaken extensive engagement with relevant parties including the local authority.

5.13.7 The most significant necessary new infrastructure for this site and those at Kirksanton and Braystones is grid infrastructure. A connection offer has been made to the nominator by the National Grid. The offer is for 1600MW from 31 October 2023 and a further 1600MW by 31 October 2025, enabling transmission of 3200MW by October 2025 (this does not mean a station will be deployed by that date).

²⁷¹ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

- 5.13.8 Government is mindful that the last operating nuclear power station in the area at Calder Hall ceased operating in 2003. Nonetheless, West Cumbria is host to the largest concentration of nuclear facilities in the UK, representing some 60% of the total industry, with a continuing focus on developing skills and education. It is therefore likely that the fact that this site is adjacent to the existing Sellafield facilities and its location in West Cumbria will give access to qualified workforce and technical support. There is also strategic support for energy infrastructure in the region. The sub-regional regeneration plan supports new nuclear generation²⁷² in West Cumbria as well as the building of a low-carbon economy in areas such as renewable energy, although it is noted that this report pre-dates the SSA and the nomination of Kirksanton, Braystones and Sellafield.
- 5.13.9 Government is also mindful of whether the likelihood of deploying all three sites in this region (Sellafield, Braystones and Kirksanton) before 2025 is realistic. However, from the information provided by nominators and an independent assessment there are, on balance, reasonable grounds to conclude that the Sellafield site, on its own merits, is credible for deployment by the end of 2025. This takes into account the existing bank of knowledge about the site, that there is a level of strategic support for development in the region, the interest of potential developers and the grid connection agreement in place.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.13.10 The Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.

Assessment

- 5.13.11 This site passes the demographics criterion.

Guidance to the IPC

- 5.13.12 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.

C2 and D5: Proximity to military activities

Analysis

- 5.13.13 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas.

²⁷² The West Cumbria regeneration plan Britain's Energy Coast:
<http://www.britainsenergycoast.com/nuclearnewbuild/page1.php>

- 5.13.14 No military firing activity occurs in the marine or landward areas adjoining the site. There are no military or explosive nuclear facilities within 1000 metres of the site. An offshore Danger Area (D406) containing Eskmeals Firing Range is located approximately 3500 metres west of the site. The offshore area in which firing is contained is remote from the shore and as such there is no direct hazard from this military activity.
- 5.13.15 The Ministry of Defence has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.13.16 The Ministry of Defence has also advised that, given the proximity to military activities, it is potentially reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime. However, the Restricted Area that encompasses the existing Sellafield nuclear facility (EG R413) overlaps with the Danger Area that contains the Eskmeals Firing Range (EG D406). The site identified for a new nuclear power station is northwest of the existing facility and as such a new Restricted Area (or expansion of EG R413) may extend across Ministry of Defence Danger Area EG D406 or otherwise inhibit access to the Danger Area by aircraft.
- 5.13.17 The Ministry of Defence has noted that the application of an exception to any new or revised Restricted Area established permitting aircraft using the Danger Area to fly through it should adequately address this concern. The Ministry of Defence would wish to be consulted further on any such arrangements should development of this site proceed. The Ministry of Defence has also noted that military low flying training is conducted throughout the UK. It is anticipated that any new Restricted Area established to protect this facility would afford sufficient separation of such aircraft movements from any tall structures that may be built at the site. Consultation with the Ministry of Defence would also therefore cover whether air navigation warning lights are considered necessary.
- 5.13.18 Responses were received in the opportunity for public comment for Kirksanton about the possibility of munitions left over from military training (possibly at Silecroft Range) posing a risk to any nuclear power station on the nominated site at Kirksanton. The Ministry of Defence has confirmed that the nominated site is not in proximity to any historic munitions disposal site or Danger Area. The Ministry of Defence has noted that the Sellafield site is approximately 20km from the northern boundary of what was the Silecroft range. Whilst the Ministry of Defence were not able to confirm the type of firing activities conducted at Silecroft Range from historical records, it has advised that extensive weapon testing was along the coast adjacent to Sellafield. It has advised that if any munitions washed up on the coast they would be made safe and removed by the Ministry of Defence.

Assessment

- 5.13.19 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:
- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment;
 - the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out;
 - any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. However, given the concerns about historic munitions, the IPC are instructed to seek evidence of further assessments below. The Nuclear Installations Inspectorate will assess the risks posed by external hazards to the installation at a more detailed level during licensing.
- 5.13.20 Based on the advice of the Ministry of Defence, it is potentially reasonable to conclude that the development of a new nuclear power station at the site would not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime. Potential mitigations to area EG D406 appear possible, but the Ministry of Defence and Nuclear Installations Inspectorate should be consulted by the applicant to consider this further during licensing.
- 5.13.21 This site therefore passes these criteria.

Guidance to the IPC

- 5.13.22 The IPC should refer to the relevant guidance in EN-1 on Civil and Military Aviation and Defence Interests.
- 5.13.23 Given the concerns raised on historic munitions, the IPC should ensure that the applicant's documentation demonstrates that it has conducted an on and off site survey of hazards including any arising from the previous use of Silecroft Range or any other relevant site, and that the Nuclear Installations Inspectorate are satisfied with this.

D1: Flooding, tsunami and storm surge

Analysis

- 5.13.24 The entire site is located in flood zone 1, low probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)²⁷³.

²⁷³ See PPS25 for a full definition of the flood zones and what they cover:
Planning Policy Statement 25: Development and Flood Risk, December 2006, Annex D pp.22-25.

- 5.13.25 The Appraisal of Sustainability identified a relatively low risk of flooding due to rising sea levels. Mitigation may be possible through appropriate design and construction of defences, taking account of coastal processes, hydrodynamics and sediment transport.
- 5.13.26 The Environment Agency has advised that, based on the current understanding of the flood risk in this area it is reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime²⁷⁴, including the potential effects of climate change, storm surge and tsunami. This takes into account possible countermeasures.
- 5.13.27 Some responses during the opportunity for public comment were concerned about the proximity of the site to a floodplain. The Environment Agency has noted that there is flood risk from the River Ehen SAC to the east of the site boundary. There are areas of Flood Zone 2, medium probability, and flood zone 3, high probability, adjacent to the eastern boundary of the site.
- 5.13.28 However, the Environment Agency has advised that the site could potentially be protected. It has also advised that access to the site could be maintained in an extreme flood, and that any flood mitigation measures are unlikely to have any impact elsewhere.
- 5.13.29 The Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and Estuary from changing and adapting naturally.

Assessment

- 5.13.30 Given the low risk of flooding and the potential to protect the site, this site passes this criterion. This takes into account in particular the Environment Agency advice that it is reasonable to conclude at a strategic level, that any likely power station development within the site boundary can be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunami, taking into account possible countermeasures and mitigations.
- 5.13.31 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.13.32 The IPC should refer to the relevant guidance in EN-1 including that on flood risk and climate change adaptation. Any potential flood risk assessment should include consideration of fluvial flood risk from the River Ehen.

²⁷⁴ See entry D1 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.13.33 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.13.34 The Environment Agency has advised that development at the site could avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime²⁷⁵, including the potential effects of climate change.
- 5.13.35 The Environment Agency has advised that, based on current understanding of coastal erosion in this area there is no technical reason that would prevent the site being protected or mitigated from the effects of coastal erosion.
- 5.13.36 The Appraisal of Sustainability has noted that the nominated site is not currently situated in an area that the Environment Agency considers to be at risk from coastal flooding, but finds that upgraded defences may be required to counteract coastal retreat as a result of longer term climate change impacts on sea-level rise. The Appraisal of Sustainability finds that these defences have the potential to modify existing coastal hydrodynamics and associated movement of sediment, which may have secondary effects on marine ecosystem structure and functioning. However, it also finds that the use of an appropriate design, construction and management techniques and a full understanding of the hydrodynamics and sediment transport within the coastal zone could minimise the potential effects.
- 5.13.37 The Appraisal of Sustainability also finds that any new engineering works on the coastline will interfere the stability of the coastline and the sediment transport regime and could cause accelerated erosion at the sites, cause erosion up or down drift of the site and possibly impact on the marine protected areas.

Assessment

- 5.13.38 This site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences. However, the IPC should ensure that the applicant has considered the issues raised in the Appraisal of Sustainability, particularly on the impact of cooling and other engineering on coastal processes and sediment transport.

Guidance to the IPC

- 5.13.39 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.

²⁷⁵ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.13.40 The IPC should also refer to the relevant guidance in Part 4 of this NPS including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous installations

Analysis

- 5.13.41 The Health and Safety Executive has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.
- 5.13.42 The Health and Safety Executive has advised that the adjacent Sellafield nuclear licensed site is designated a 'Lower tier' COMAH establishment. There are no formal planning consultation zones, but Health and Safety Executive has advised that it will utilise a conservative interim planning advice zone set at 1km radius from the COMAH establishment.
- 5.13.43 The Sellafield site holds hazardous substances consent under the Planning Hazardous Substances Act 1990 and the Planning (Hazardous Substances) Regulations 1992 as amended by the planning (Control of Major – Accident Hazards) Regulations 1999. This legislation is administered by Copeland Borough Council who will be consulted and provide advice during the more detailed planning stages, and if necessary may consult the Health and Safety Executive further about the location of certain buildings within the nominated site, and where necessary the scope for the licence applicant to revise their building layouts accordingly.
- 5.13.44 The Government notes that the existence of a lower tier COMAH establishment on the adjacent Sellafield licensed nuclear site is not judged by the HSE to be an unacceptable risk to the many operating nuclear facilities on that site. Any nuclear power station on the nominated site would be at a greater distance and thus at an even lower risk.
- 5.13.45 The Health and Safety Executive has advised that at that stage of site specific assessment the licence applicant will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

Assessment

- 5.13.46 This site passes this criterion. Given the likely low level of the risk posed by the existing installation at Sellafield, the Government does not believe that these considerations affect the potential strategic suitability of the site. It is therefore reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

Guidance to the IPC

- 5.13.47 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.13.48 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely nuclear power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation²⁷⁶. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.
- 5.13.49 The existing Sellafield nuclear installation has an associated Restricted Area. The Civil Aviation Authority has advised that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements. Such a Restricted Area would partially overlap the existing Restricted Area associated with the Sellafield nuclear installation. The current Statutory Instrument allows for helicopter activity associated with the nuclear installation. Any amended Statutory Instrument will need to consider such activity.
- 5.13.50 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. In doing so the Civil Aviation Authority has noted that it is not anticipated that any new or amended Restricted Area established in association with the proposed nuclear installation would impact upon local aerodrome operations; there are no known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations; the current establishment of the existing Sellafield Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.

²⁷⁶ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

Assessment

5.13.51 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely nuclear power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

Guidance to the IPC

5.13.52 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.

5.13.53 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

5.13.54 Some responses during the opportunity for public comment focussed on a number of sites including the River Ehen. The Appraisal of Sustainability²⁷⁷ identified that the potential for adverse effects on the sites and species considered to be of European nature conservation importance (Drigg Coast and River Ehen SACs) means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.

5.13.55 The findings of the Appraisal of Sustainability on European sites are drawn from the Habitats Regulations Assessment for Sellafield²⁷⁸. The Habitats Regulations Assessment notes that its conclusions are limited by the strategic nature of the assessment process and the information available, which does not generally allow for a definitive prediction of effects on the European sites considered. The Habitats Regulations Assessment has concluded that at this strategic level it cannot rule out the potential for adverse effects on four European sites²⁷⁹ (Drigg Coast SAC, River Ehen SAC, Wast Water SAC, River Derwent and Bassenthwaite Lake SAC) through potential impacts on water resources and quality, habitat/species loss and fragmentation, coastal squeeze and air quality.

5.13.56 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of the project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of this proposed suite of measures may address the identified effects, but that it cannot be concluded with certainty that adverse effects on European Site Integrity will be mitigated as project level work is required to determine the outcomes.

²⁷⁷ *Appraisal of Sustainability: Site report for Sellafield*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁷⁸ *Habitats Regulations Assessment: Site report for Sellafield*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁷⁹ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

Assessment

- 5.13.57 Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment, and the need for more detailed studies should an application for development consent come forward.
- 5.13.58 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered against this criterion whether it is appropriate to include this site in this NPS.
- 5.13.59 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in the Nuclear NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

- 5.13.60 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.13.61 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Sellafield and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.13.62 The Appraisal of Sustainability identified that the potential for adverse effects on the sites and species considered to be of national nature conservation importance means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.13.63 The Appraisal of Sustainability has identified the following SSSIs within 5km of the nominated site where it finds that significant effects may occur: Drigg Coast SSSI; River Ehen (Ennerdale Water to Keekle Confluence) SSSI; Low Church Moss SSSI; Hallsenna Moor SSSI; St. Bees Head SSSI.
- 5.13.64 The Appraisal of Sustainability has also identified potential for the mitigation of biodiversity effects on sites of national conservation importance, including the avoidance of Low Church Moss SSSI, and careful siting of the development.

Assessment

- 5.13.65 Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts.
- 5.13.66 The Government recognises that whilst it is reasonable to reach this conclusion, there is a risk that there could be remaining effects on nationally designated sites. However there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site at project level.
- 5.13.67 This site passes this criterion.

Guidance to the IPC

- 5.13.68 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.13.69 The IPC should also refer to the Appraisal of Sustainability for Sellafield and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

- 5.13.70 Responses to the opportunity for public comment raised visual impacts on the Lake District National Park (a response was also received from the Lake District National Park Authority). Some of these responses were concerned that a new development would exacerbate the visual impact of the existing Sellafield facility.
- 5.13.71 The nominator notes that the existing Sellafield nuclear complex is the dominant physical feature in the surrounding area, and is likely to remain so for several decades. The nominator states that the 'new build' site would be "read" as part of this single complex. The complex constitutes a relatively confined, densely developed area, surrounded by largely undeveloped land, and this would continue. They go on to note that "within the receiving landscape and the local surrounding area there is limited opportunity for the existing landscape to offer screening either through topography or vegetation. Mitigation measures to reduce visual effects could be achieved through sensitive development, increasing local tree cover where possible, the use of colour schemes that blend with the background, and creation of new habitat areas."²⁸⁰

²⁸⁰ See <http://www.energy-nps-consultation.decc.gov.uk> for the nomination documents for Sellafield, and in particular information on amenity, cultural heritage and landscape value.

- 5.13.72 The Appraisal of Sustainability has considered the potential impact on landscape and identified potential adverse effects. These include lasting direct and indirect adverse landscape and visual impacts on the surrounding area, including the Lake District National Park.
- 5.13.73 The Appraisal of Sustainability notes that overall, the new power station would be seen in the context of the existing large scale nuclear complex, prior to any decommissioning. However, the Appraisal of Sustainability has found that further development is still likely to lead to a perceptible deterioration in some views, which would not be able to be fully mitigated, given the scale of possible new buildings and infrastructure. However, it finds that the direct effects (with the exception of potential additional grid connectivity) will be felt primarily at the local level.
- 5.13.74 The Appraisal of Sustainability has also identified potential adverse effects on the settings of cultural heritage features of regional and national importance, as well as on buried archaeology of potentially high importance. The effects on cultural heritage features arise from potential impacts on settings of the features, depending on the distance and sight lines and any mitigation. The Appendices of the Appraisal of Sustainability²⁸¹ list the cultural features in the area including the nearest scheduled monument consisting of two high cross shafts in St. Bridget's Churchyard which lies within 1km; 2 Grade I and 9 Grade II* listed buildings within an approximate distance of 5km of the nominated site; Conservation Areas exist at Beckermest and Egremont; 33 further Grade II listed buildings within an approximate 5km distance of the nominated site.²⁸²
- 5.13.75 The Appraisal of Sustainability Prehistoric or Roman flints have been found within the nominated site and a Roman occupation site is known within close vicinity. The presence of these features indicates prehistoric and historic activity within and close to the nominated site. As such the Appraisal of Sustainability concludes that the area is likely to be considered of at least local to regional archaeological importance.
- 5.13.76 However, the Appraisal of Sustainability finds that there is a likelihood that these effects can be mitigated and that further detailed assessment at project level will be required²⁸³.
- 5.13.77 The Appraisal of Sustainability has also identified that there are likely to be cumulative effects associated with other onshore and offshore energy projects.

²⁸¹ See the *Appendices to Appraisal of Sustainability: Site report for Sellafield*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁸² Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See <http://www.english-heritage.org.uk>

²⁸³ See the *Appendices to Appraisal of Sustainability: Site report for Sellafield*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

Assessment

- 5.13.78 In making this assessment Government has had regard to the purposes of the designation of the National Park in conserving and enhancing the natural beauty, wildlife and cultural heritage of the park and of promoting opportunities for the understanding and enjoyment of the special qualities of those areas by the public.
- 5.13.79 The nominator has proposed potential mitigations to minimise impacts on the National Park. However, the Appraisal of Sustainability has assessed that visual impacts will be highly likely given the existing undeveloped nature of the nominated site, the scale of new development and the potential need for associated off-site grid connection infrastructure.
- 5.13.80 Whilst scope for total avoidance and mitigation of impacts on the National Park is relatively limited, this site passes this criterion. This takes into account the context of the existing Sellafield site and the significance of the effects, the fact that the nature, scope, and scale of any effect is currently uncertain and is dependent on the exact form of development proposed; that there is some scope for a developer and the IPC to explore in detail minimisation, avoidance and mitigation of adverse effects; and there is a need for sites to be available for potential new nuclear power stations as outlined in Part 2 of this NPS.
- 5.13.81 The potential for remaining effects can only be fully assessed when detailed plans come forward. This is because they depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed and location of transmission infrastructure, and the relevant other development in the area to be factored when considering cumulative effects (see “cumulative effects” below for more detail).
- 5.13.82 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.

Guidance to the IPC

- 5.13.83 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant’s proposals for Sellafield and consider whether the applicant’s proposals sufficiently avoid or mitigate potential impacts where they are still relevant.
- 5.13.84 Amongst other things, EN-1 sets out that the nature and magnitude of effects on the Lake District National Park will need to be assessed fully as part of the landscape and visual impact assessment (LVIA) that would accompany an Environmental Statement.

- 5.13.85 The IPC's assessment will also need to consider the cumulative visual effect of any new development at Braystones and Kirksanton and the existing facilities at Sellafield (and any other plans or programmes that are identified as relevant, including any other nuclear power stations).
- 5.13.86 It should also be noted that whilst the Appraisal of Sustainability has noted the potential strategic environmental and sustainability implications of transmission infrastructure as far as possible within the information available, detailed environmental assessment should be made by the applicant at the IPC stage, and the IPC should consider this in conjunction with the Electricity Networks NPS (EN-6).

D9: Size of site to accommodate operation

Analysis

- 5.13.87 The nominated site is approximately 250 hectares.
- 5.13.88 The nominated land has a number of roads/footpaths bisecting it including two roads that provide access to the existing Sellafield site. It is a security requirement that the licence applicant has exclusive rights of access to and control of a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.
- 5.13.89 The Office for Civil Nuclear Security has advised that, unless the roads bisecting the nominated sites are substantially realigned, there appears to be insufficient land to provide effective defence-in-depth for a nuclear reactor (including its associated turbine hall), spent fuel and intermediate level waste stores, in the area defined by grid references 302270,504400, 302520,505550 (roundabout), and 303050,505300 back along the existing Sellafield Site perimeter running south and west (see map at Annex B).
- 5.13.90 Whilst these particular areas have insufficient land to provide defence in depth, the Office for Civil Nuclear Security and Nuclear Installations Inspectorate has confirmed that there is sufficient land area within the nominated boundary to house and provide sufficient defence in depth for essential infrastructure.

Assessment

- 5.13.91 Although the Office for Civil Nuclear Security has identified areas of the nominated site cannot provide sufficient defence in depth (unless roads are realigned), based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility.

Guidance to the IPC

- 5.13.92 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.
- 5.13.93 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimised hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

- 5.13.94 The nominator considers that sufficient cooling is available at the site both for direct or indirect cooling, using sea or fresh water, or a combination of both types of water and has concluded that either seaward or inland cooling is feasible. However, based on work so far, their initial assessment is that direct cooling, using seawater at a seaward site is likely to be the more viable option²⁸⁴.
- 5.13.95 The Environment Agency has advised that it is potentially reasonable to conclude that there is access to potentially suitable sources of cooling at the site. However, it has advised that any proposal for freshwater indirect cooling would need to be carefully considered. The Environment Agency feel that the demand is likely to be large, the rivers concerned are highly rainfall dependent, and some carry high nature conservation designations. The Environment Agency has also noted that the needs of migratory salmonids and pearl mussels would need to be fully assessed, and in addition there could be in-combination effects as surface water abstraction already takes place from these systems for other purposes such as public supply.
- 5.13.96 The Appraisal of Sustainability for Sellafield has noted that returning cooling water off the Cumbria Coast at elevated temperatures could potentially bring significant environmental and ecological impacts, particularly on aquatic biodiversity. The Environment Agency has noted that there are important nursery grounds for both bass and sole on this coast as well as large populations of migratory salmonids which would need to be considered in any application for seawater cooling.
- 5.13.97 Concerns were expressed (in relation to the Braystones site) in the opportunity for public comments about whether cooling technology (or building activity) would disturb radioactive particles on the sea bed that may have been previously emitted by the existing nuclear facility at Sellafield. The Environment Agency has advised that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges.

²⁸⁴ See <http://www.energy-nps-consultation.decc.gov.uk> for the nomination documents for Sellafield, and in particular the nomination form for information on cooling.

Assessment

- 5.13.98 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site although any proposal for freshwater cooling from the River Ehen would clearly need to be carefully considered.
- 5.13.99 The site passes this criterion. Detailed modelling as part of the licensing process will give greater clarity about the acceptability of impacts in the light of the cooling technology that is proposed.

Guidance to the IPC

- 5.13.100 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.13.101 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.13.102 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

Appraisal of Sustainability and Habitats Regulations Assessment for Sellafield

- 5.13.103 The Planning Act 2008²⁸⁵ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Sellafield is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.
- 5.13.104 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the "Habitats Regulations Assessment") tests whether a plan or project could have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Sellafield site. The key findings of the Sellafield Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) potential negative effects on three protected nature conservation sites, including the Drigg Coast and River Ehen SACs;

²⁸⁵ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

- ii) potential effects on water quality and migratory fish in nearby coastal waters due to the abstraction and release of sea water for cooling;
- iii) the risk of flooding due to rising sea levels is considered relatively low at Sellafield and existing hard flood defences are in place, which the Appraisal of Sustainability finds may require upgrading;
- iv) visibility from parts of the Lake District National Park- the Appraisal of Sustainability considers that the impact could not be fully mitigated;
- v) potential cumulative effects being one of 3 nominated sites in the Cumbria area (these are considered below);
- vi) potential significant positive effects associated with long term employment and enhanced prosperity for communities locally, thought likely to be significant at the sub regional level if three power stations are built locally.

5.13.105 Issues i – iv are discussed against the SSA criteria above. Cumulative effects including positive effects are discussed below.

Cumulative effects

5.13.106 The Appraisal of Sustainability for Sellafield notes the site forms one of a cluster of four nominated sites in the North West region (Braystones, Kirksanton, Sellafield and Heysham), three of them in Cumbria, that have the potential to produce cumulative effects if more than one power station were developed in this region. The Appraisal of Sustainability finds that potential cumulative effects of the impacts identified in the Appraisal of Sustainability could increase if more than one power station was developed in the Cumbria area. The potential cumulative effects arise as a result of interactions between the sites due to their relative proximity and the way in which effects may act together.

5.13.107 The cumulative effects that are assessed by the Appraisal of Sustainability to be of potentially strategic significance are

Biodiversity and ecosystems

5.13.108 The site Appraisal of Sustainability report for Sellafield identifies that the potential for significant strategic effects on sites and species considered of national and European nature conservation importance means that strategic significant effects on biodiversity cannot be ruled out. The development of nuclear power stations at other nominated sites in the region may increase the significance of the adverse impacts either by adding to the pressures on a particular site of nature conservation importance or by adversely affecting other nearby sites so that the cumulative effects in the region are increased. For Sellafield, the European sites that are at most risk from interactions are the Drigg Coast SAC, River Ehen SAC, West Water SAC and the River Derwent and Bassenthwaite SAC sites which have also been identified as potentially being significantly adversely affected by the nominated site at Braystones. The potential effects on the European sites from both the Sellafield and Braystones developments are due to adverse effects on water quality and resources, habitat loss and coastal squeeze, disturbance and air quality.

Effects on communities: population, employment and viability.

5.13.109 Development at the Sellafield site is appraised by the Appraisal of Sustainability as having positive effects of regional economic significance on employment and community viability. The cumulative positive effects of employment, community viability and health/well-being could be more significant if more than one new nuclear power station is built and the opportunities for upskilling, education, and supporting industries to the nuclear sector are developed at the local and regional levels. The site Appraisal of Sustainability report notes that there may be negative effects, during the construction of any new power stations, if the development produces a local shortage of specialist construction labour. This negative effect could be increased if more than one nuclear power station is developed in the region. However, the Appraisal of Sustainability finds that these effects may be mitigated if the education and upskilling opportunities noted above are taken and by appropriate phasing of construction.

Effects on communities: supporting infrastructure.

5.13.110 Development at the Sellafield site is assessed by the Appraisal of Sustainability as having the potential for minor negative effects on local infrastructure such as transport (roads), non-radioactive waste management facilities and basic services e.g. schools, hospitals. These negative effects may become more significant if more than one nuclear power station is developed in the region. Transmission infrastructure is considered in the separate Electricity Networks NPS (EN-5) but is another aspect of regional and possibly national infrastructure that could be affected by a regional concentration of nuclear power stations in the north west of England. The Appraisal of Sustainability finds that development of the necessary transmission infrastructure might lead to indirect cumulative effects, for example as a result of the visual impact from multiple transmission lines.

Landscape and visual impact (see also D8 above)

5.13.111 Development at the Sellafield site is assessed as having adverse effects of significance on landscape and visual impacts in the surrounding area. The significance of this is increased by the proximity of the nominated site to the nearby Lake District National Park and the indirect effects that landscape and visual impacts may have on the recreation and tourism potential of the area. The Appraisal of Sustainability finds that development of more than one nuclear power station in the region has the potential to increase the significance of this adverse effect and might begin to change the visual character of the region due to the grouping of major infrastructure in the region.

Conclusion on cumulative effects

- 5.13.112 The Appraisal of Sustainability notes that it is possible to avoid or reduce the potential cumulative adverse effects that are typical of major infrastructure projects, such as nuisance noise and dust, impacts on local transport network through the timing and phasing if more than one power station in the region is developed. For example by arranging that peak levels of construction activity do not coincide and that mitigation commitments are implemented through adherence to an agreed Environmental/ Sustainability Management Plan.
- 5.13.113 Given the uncertainty about the cumulative effects identified by the Appraisal of Sustainability and given the scope for mitigation, the Government does not at this stage, bearing in mind that this is a strategic assessment, think those effects are sufficient in themselves to justify excluding Sellafield or the other West Cumbrian sites from this NPS.
- 5.13.114 A full assessment should identify the relevant interactions, and this will partly depend on whether one or more of the other sites in this region also come forward for development, and on what timescales. This can only be properly assessed at the point at which an application for development consent is made.
- 5.13.115 However, the findings of the Appraisal of Sustainability clearly highlight the need for the IPC to consider cumulative effects in making their assessment. Guidance on the assessment of cumulative effects is set out in EN-1. For instance Part 4.2 says that “the IPC should consider how the accumulation of effects might affect the environment, economy or community as a whole, even though they may be acceptable when considered on an individual basis with mitigation measures in place”. As noted under criterion D8 this should include a consideration of the effects on the Lake District National Park.
- 5.13.116 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.

Other issues raised during the assessment

- 5.13.117 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk> .

Health

- 5.13.118 The Appraisal of Sustainability for Sellafield has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.

- 5.13.119 A factor of particular interest to the public is the incidence of cancer. The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.
- 5.13.120 COMARE's tenth report²⁸⁶ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.13.121 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield, in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.13.122 In its eleventh report²⁸⁷ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review.
- 5.13.123 COMARE is undertaking this work with the aim of producing an update report. Radioactive monitoring carried out in 2007²⁸⁸ found generally low concentrations of artificial radionuclides attributable to the former Calder Hall nuclear power station in water, sediment and beach samples and in meat and seafood samples taken from around the site. However, the presence in the area of other nuclear activities (two fuel reprocessing plants, decommissioning and clean-up, manufacture of mixed oxide fuel and waste treatment and storage) make the apportioning of radiological effects in the area very difficult. Nevertheless, from this sampling, the estimated total dosage levels

²⁸⁶ Committee on Medical Aspects of Radiation in the Environment (COMARE), Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

²⁸⁷ Committee on Medical Aspects of Radiation in the Environment (COMARE), Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

²⁸⁸ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13) Report*, 2007.

to the public from all sources within the Sellafield area were assessed as being less than 38% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.

- 5.13.124 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station should ensure that there are no unacceptable risks to the health of the local population when the plant is operating normally.
- 5.13.125 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.13.126 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Proximity to existing facilities at Sellafield

- 5.13.127 Some respondents to the opportunity for public comments raised that the siting of a station close to the existing site at Sellafield could constitute an increased terrorist threat to the Cumbria coast.
- 5.13.128 In *The White Paper on Nuclear Power* the Government reviewed the arguments and evidence put forward about the risks posed to new nuclear power stations by terrorist attack, amongst other things.
- 5.13.129 The Government set out that “having reviewed the arguments and evidence put forward, and based on the advice of the independent regulators, and the advances in the designs of power stations that might be proposed by energy companies, the Government continues to believe that new nuclear power stations would pose very small risks to safety, security, health and proliferation, and that the Government believes that the UK has an effective regulatory framework that ensures that these risks are minimised and sensibly managed by the industry”²⁸⁹.

²⁸⁹ *Meeting the Energy Challenge: A White Paper on Nuclear Power*, January 2008, CM 7296, URN 08/525
<http://www.berr.gov.uk/files/file43006.pdf>, Section 2

- 5.13.130 *The White Paper on Nuclear Power* sets out the role of the Office for Civil Nuclear Security in this area. In particular, nuclear power stations must have their security arrangements approved by the Office for Civil Nuclear Security. These arrangements must include consideration of terrorist threat. Additional measures include every civil licensed nuclear site being required to hold counter terrorist response exercises at regular intervals.
- 5.13.131 In addition, as part of the Generic Design Assessment (GDA), threats to the new reactor designs from a wide range of hazards is being considered. This includes consideration of the ability to withstand accidental aircraft crash or malicious activity. Demonstration of compliance with UK expectations is required to allow the designs to be considered suitable for deployment in the UK.

Conclusion on the nominated site at Sellafield

- 5.13.132 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable and should be in the Nuclear NPS.
- 5.13.133 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things the impact of this proposal in combination with any other relevant nuclear power stations in the region, and in particular the effect of this on the Lake District National Park. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

5.14 Sizewell

Description of the location

- 5.14.1 The nominated site is located adjacent and to the north of Sizewell B nuclear power station near Leiston in Suffolk. It is in the civil parish of Leiston within the Suffolk Coastal District in the County of Suffolk. The grid reference of the approximate centre of the nominated site is 647300,264100.
- 5.14.2 The boundary of the nominated site includes land in the Goose and Kenton Hills and a further area to the south of Sizewell A and B power stations, between Sizewell Wents and the hamlet of Sizewell.
- 5.14.3 The site is within the Suffolk Coast and Heaths AONB and includes land from the Sizewell Marshes SSSI.

Deployability by the end of 2025

- 5.14.4 The SSA is limited to considering sites which are credible for deployment by the end of 2025²⁹⁰. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security.
- 5.14.5 Deployment means commencing operation of one or more new nuclear power stations on the site. At Sizewell, the Government in particular notes that detailed site investigation is ongoing. The Government also notes that a grid connection agreement for a transmission capacity of 3300 MW is in place with National Grid, with connection dates of 2016 for the first unit and 2021 for the second unit, although this does not mean that the site would be deployed at that date, and modification to this agreement is being negotiated to align the connection dates with the current programme requirements. National Grid has announced that it will be carrying out consultation on route options for network reinforcements in South Suffolk and Essex, starting in October 2009. This work is to support the connection of a number of new generators to the system in East Anglia, including Sizewell C, and potential offshore wind farm development.
- 5.14.6 The Government is satisfied from the information provided by nominators and an independent assessment that Sizewell is credible for deployment by the end of 2025.

²⁹⁰ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.14.7 The Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.
- 5.14.8 The furthest western edge of the boundary is adjacent to an area which exceeds the semi-urban criterion. This area is thought to be planned for an access road. It does not have sufficient defence in depth to house facilities which have potential to directly cause a radiological hazard.

Assessment

- 5.14.9 This site passes the demographics criterion.

Guidance to the IPC

- 5.14.10 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.
- 5.14.11 Given the proximity to an area which exceeds the semi-urban criterion, the IPC should ensure that applicant has taken the advice of the Nuclear Installations Inspectorate on demographic risk, in particular to ensure that the detailed plans do not include any changes that result in elements which have the potential to directly cause radiological hazard being sited in an area which exceeds the semi-urban criterion.

C2 and D5: Proximity to military activities

Analysis

- 5.14.12 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges. It is not within 1000 metres of any Ministry of Defence Danger Areas.
- 5.14.13 The Ministry of Defence has advised that no military firing activity occurs in the marine or landward areas adjoining the site. There are no military or explosive nuclear facilities within 1000 metres of the site. The Ministry of Defence has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.14.14 The Ministry of Defence has also advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime.

Assessment

5.14.15 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:

- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment.
- the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out.
- any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. It is potentially reasonable to conclude that the development of a new nuclear power station at the site would not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime. Potential mitigations appear possible.

5.14.16 This site therefore passes these criteria.

Guidance to the IPC

5.14.17 The IPC should refer to the relevant guidance in EN-1 on Civil and Military Aviation and Defence Interests.

D1: Flooding, tsunami and storm surge

Analysis

- 5.14.18 The site is in flood zones 1 and 3. Flood zone 1 comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%). Flood zone 3 comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year²⁹¹.
- 5.14.19 Concerns were expressed in the opportunity for public comments about the potential impacts of climate change and the ability of the site to withstand these. The Appraisal of Sustainability²⁹² identified potential adverse effects relating to flood risk arising from predicted rising sea levels caused by climate change, especially during the later stages of operation and decommissioning of any new nuclear power station.
- 5.14.20 However, the Environment Agency has advised that, based on the current understanding of the flood risk in this area it is reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime²⁹³, including the potential effects of climate change, storm surge and tsunami, taking into account possible countermeasures.

²⁹¹ See PPS25 for a full definition of the flood zones and what they cover:

Planning Policy Statement 25: Development and Flood Risk, December 2006, Annex D, pp.22-25

²⁹² *Appraisal of Sustainability: Site report for Sizewell*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁹³ See entry D1 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.14.21 The Environment Agency has also noted that there is a fluvial risk to part of the site not covered in the nomination. This is from drainage channels connected to Minsmere Sluice, and this fluvial risk does not affect the Environment Agency overall conclusion. It has also noted that flooding could impede access and egress, however, this could be mitigated for in the design of such routes to ensure the access remains open. The routes will need to be designed to ensure they do not increase the flooding risk impact elsewhere.
- 5.14.22 The Environment Agency has also noted that sea level rise and land raising of the development will need to be taken into account when considering flood storage loss due to the development, because mitigation of flood risk to the site could have an adverse impact on flood risk in the surrounding area by reducing the capability of area to absorb and disperse flood water. The Environment Agency has noted that at this strategic stage it is not possible to assess the impact on flood risk in the surrounding area from development and that this will need to be considered as part of the flood risk assessment submitted to the IPC as part of the application for development consent.

Assessment

- 5.14.23 This site passes this criterion. This takes into account in particular the advice of the Environment Agency that it is potentially reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunami and considering possible countermeasures. The impacts of possible countermeasures will need to be considered should an application come forward.
- 5.14.24 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.14.25 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation.
- 5.14.26 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.14.27 The Environment Agency has advised that that development at the site could avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime²⁹⁴, including the potential effects of climate change. The Environment Agency has advised that, based on the current understanding of coastal erosion in this area there is no technical reason that would prevent the site being protected/mitigated from the effects of coastal erosion, although there are potential difficulties.
- 5.14.28 The Environment Agency has noted that whilst erosion in front of the existing Sizewell station has not yet become a significant issue, in the last few years there have been signs that the shoreline adjacent to the site has come under a greater degree of stress. The adjacent coastline primarily consists of sandy cliffs that are characterised by erosion. Historically this has averaged around 1m a year.
- 5.14.29 The Environment Agency considers that the effects of this erosion and potential outflanking need to be assessed along with the development of the near shore banks (Dunwich and Sizewell) as these banks are believed to be changing in form in a way which is adding to the erosion pressure north of the site, and as these banks mitigate the severity of change to the inner shore during major storms.
- 5.14.30 Comments were received about the surrounding shoreline and in particular about the role played by Minsmere Sluice. Future shoreline developments to the north of the site must also be considered in relation to Minsmere Sluice outfall and the effect that it has on the current position of the shore. The expected life of this existing structure is around 20 years. If the outfall pipe were no longer present this could potentially increase erosion towards the power station site.
- 5.14.31 The Environment Agency has also advised that the positioning of the site is important. In considering precise location the Environment Agency consider that the applicant should consider the long term effects of coastal erosion need to be fully understood before fixing on a specific location.
- 5.14.32 The Appraisal of Sustainability has noted that there are existing sand and shingle flood defences in place, which may require upgrading to protect the site for the full life time of a new power station. It considers that this may have potential effects on erosion and visual appearance of the coastline. Whilst the Appraisal of Sustainability considers these effects are significant, it also thinks mitigation opportunities are likely to be available following further study. The Environment Agency has also advised that there is a lack of sizeable quantities of sediment moving along the shoreline, so the future impacts on the current banks needs to be assessed with a plan necessary to undertake more substantial coastal defences should the need arise.

²⁹⁴ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

Assessment

- 5.14.33 This site passes this criterion. Based on the advice above it is reasonable to conclude that a nuclear power station at the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site. Mitigation of the effects of coastal processes may be possible through appropriate design and construction of defences or the positioning of elements of the infrastructure on the site.
- 5.14.34 However, coastal processes around the site are complex and further guidance is given to the IPC below.

Guidance to the IPC

- 5.14.35 The IPC should ensure that applicant's proposals reflect consideration of the issues outlined above. In particular, the IPC should ensure that applicants have reflected how the site would be protected should the Minsmere Sluice outfall pipe no longer be present and should also carefully consider the effects on surrounding areas which may be more susceptible. The applicant should also demonstrate a consideration of the impact of siting outfalls on adjacent areas and documentation should reflect that the Environment Agency is satisfied with this assessment.
- 5.14.36 The IPC should refer to the relevant guidance in EN-1, in particular that on climate change adaptation and coastal change.
- 5.14.37 The IPC should also refer to the relevant guidance in Part 4 of this NPS including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous industrial facilities and operations**Analysis**

- 5.14.38 Based on Health and Safety Executive records the nominated site is not in the vicinity of any COMAH establishments. The Health and Safety Executive has advised that as with all sites during licensing the licence applicant to the Health and Safety Executive will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

Assessment

- 5.14.39 This site passes against this criterion. Given the proximity to hazardous facilities it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

Guidance to the IPC

- 5.14.40 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat

to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.14.41 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement.
- 5.14.42 Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation²⁹⁵. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.
- 5.14.43 The Civil Aviation Authority has advised that the existing Sizewell nuclear installation has an associated Restricted Area and that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements. The current Statutory Instrument allows for helicopter activity associated with the nuclear installation. Any amended Statutory Instrument will need to consider such activity.
- 5.14.44 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. In reaching this conclusion it has noted that it is not anticipated that any new or amended Restricted Area established in association with the proposed nuclear installation would impact upon local aerodrome operations; there are no known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations; and that the current establishment of the existing Sizewell Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.

Assessment

- 5.14.45 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

²⁹⁵ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

Guidance to the IPC

- 5.14.46 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.
- 5.14.47 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance Analysis

Analysis

- 5.14.48 Some responses during the opportunity for public comment some respondents focussed on potential impacts on designated sites including the surrounding SPA, SAC and Ramsar sites. The Appraisal of Sustainability²⁹⁶ identified the potential for adverse effects on sites and species considered to be of European nature conservation importance (the Minsmere to Walberswick Heaths and Marshes SAC and the Minsmere to Walberswick SPA/Ramsar site) means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.14.49 The findings of the Appraisal of Sustainability on European sites are drawn from the Habitats Regulations Assessment for Sizewell²⁹⁷. The Habitats Regulations Assessment notes that its key findings are limited by the strategic nature of the assessment process and the information available, which does not generally allow for a definitive prediction of effects on the European sites considered. A precautionary approach suggests that at this strategic level cannot rule out the potential for adverse effects on the integrity of eight European sites²⁹⁸ (Alde-Ore and Butley Estuaries SAC, Alde-Ore Estuary SPA/Ramsar, Minsmere to Walberswick Heaths and Marshes SAC, Minsmere to Walberswick SPA/ Ramsar, Orfordness-Shingle Street SAC, Sandlings SPA) through potential impacts on water resources and quality, habitat and species loss and fragmentation and disturbance (noise, light and visual).
- 5.14.50 The Habitats Regulations Assessment on sites of international importance has proposed a suite of avoidance and mitigation measures to be considered as part of the project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of the proposed suite of avoidance and mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required to reach conclusions that are in accordance with the requirements of the Habitats Directive.

Assessment

- 5.14.51 Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment, and the need for more detailed studies should an application for development consent come forward.

²⁹⁶ *Appraisal of Sustainability: Site report for Sizewell*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁹⁷ *Habitats Regulations Assessment: Site report for Sizewell*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

²⁹⁸ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

- 5.14.52 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered whether it is appropriate to include this site in the NPS.
- 5.14.53 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in the Nuclear NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

- 5.14.54 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.14.55 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Sizewell and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.14.56 Some responses during the opportunity for public comment focussed on designated sites including the Sizewell Belts SSSI and the Leiston-Aldeburgh SSSI.
- 5.14.57 The Appraisal of Sustainability identified the potential for adverse effects on sites and species considered to be of national nature conservation importance means that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.14.58 The Appraisal of Sustainability identifies that there could be potential significant effects at the following SSSIs which are within 5km of the nominated site : Sizewell Marshes SSSI; Minsmere-Walberswick Heaths and Marshes SSSI; Leiston-Aldeburgh SSSI; Alde-Ore Estuary SSSI.
- 5.14.59 The site boundary also indicates a small land-take from Sizewell Marshes SSSI. The Appraisal of Sustainability finds that construction and the presence of development are likely to lead to direct loss and fragmentation of habitats within the Sizewell Marshes SSSI.
- 5.14.60 The Appraisal of Sustainability identified the potential for the mitigation of biodiversity effects on sites of UK wide conservation importance (Sizewell Marshes SSSI sites), including the creation of replacement habitat.

Assessment

- 5.14.61 Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts to an extent, however, the Appraisal of Sustainability has highlighted that the nominated site includes land take from Sizewell Marshes SSSI that could lead to direct impacts.
- 5.14.62 The Government has carefully considered whether this site meets this criterion. However, given the need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS, the Government believes that it does. In view of the need for sites set out in Part 2 and the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted that there will be further assessment of any proposal for the site at project level and that EN-1 sets out detailed consideration that must be given to such issues related to nationally designated sites, should an application for development consent come forward.
- 5.14.63 This site passes this criterion.

Guidance to the IPC

- 5.14.64 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.14.65 The IPC should also refer to the Appraisal of Sustainability for Sizewell and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

- 5.14.66 The nominated site is entirely within the Suffolk Coast and Heaths AONB. The nominator has proposed that the visual and landscape impact of the development will be mitigated, in part, by locating the principal structures along the same visual axis of the existing stations.

- 5.14.67 The nominator has also noted that there is established plantation woodland to the north-west of the site and it would be the intention to retain some of this woodland to help screen the development. The nominator has also proposed that mitigation is also likely to be achieved by minimising ancillary land use in those areas away from the main power station site, although this would depend on consultation with local planning authorities.
- 5.14.68 Finally, the nominator of the site has noted that there is some potential for landscape and nature conservation benefits through the creation of habitats such as heath land on land surrounding the site, which it believes could help offset the impacts of additional development in the AONB and provide landscape continuity with those heath land areas adjoining the Sizewell Estate to the north and south²⁹⁹.
- 5.14.69 The Appraisal of Sustainability has noted that the existing power station structures are already prominent features within the AONB from local viewpoints and are visible from some longer-distance viewpoints, including from higher ground inland and from Southwold on the coast to the north.
- 5.14.70 Whilst the new power station will be seen within the context of the existing power stations, before decommissioning, given the likely scale of the development, there are likely to be some long lasting adverse direct and indirect effects on landscape character and visual impacts on the AONB.
- 5.14.71 The Appraisal of Sustainability considers that some impacts could be potentially mitigated for over time, for example by new planting and potentially through compensatory planting in the surrounding area. The decommissioning of the facilities may allow some landscape restoration of previously developed areas in the long term, however, the Appraisal of Sustainability notes that long term land uses for the restored areas are difficult to predict at this stage.
- 5.14.72 Therefore the Appraisal of Sustainability has found that there is the potential for some long lasting adverse direct and indirect effects on landscape character and visual impacts on the Suffolk Coast and Heaths AONB, with limited potential for mitigation.
- 5.14.73 The impact of transmission infrastructure on the local area was also raised as a potential issue in the opportunity for public comments, and the Appraisal of Sustainability notes that in-combination adverse effects on landscape are likely to arise from new raised roadways and access connections to the rail head and potentially new associated transmission lines/grid connectivity.

²⁹⁹ See <http://www.energyngpsconsultation.decc.gov.uk> for the nomination documents for Sizewell, and in particular the nomination report.

- 5.14.74 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC³⁰⁰.
- 5.14.75 The Appraisal of Sustainability has also identified potential for adverse impacts on the setting of Scheduled Monuments, Conservation Areas and Listed Buildings in the area. These impacts could arise depending on the distance and sight lines from any potential new nuclear power station, and the mitigation that may be applied. The Appraisal of Sustainability identifies cultural heritage features in the area including the nearest scheduled monument of the original site of Leiston Abbey with a later chapel and pillbox which lies within approximately 2km of the nominated site; the nearest Conservation Areas of Leiston and Thorpeness which are located within an approximate 3km distance of the nominated site; there are no listed buildings within or adjacent to the nominated site. However, there are around 90 Grade II listed buildings within an approximate 5km distance and there may be an effect on their settings³⁰¹.
- 5.14.76 The Appraisal of Sustainability also notes that there is also potential for adverse physical impacts upon significant buried archaeology (Prehistoric, Roman and Medieval activity is evident from an earlier investigation within the existing nuclear power station site boundary indicating that an unknown archaeological buried resource is potentially present). However, the Appraisal of Sustainability finds that these impacts may be mitigated to some degree by appropriate facility location.

Assessment

- 5.14.77 In assessing this site, the Government has considered the purpose of the AONB, which is of conserving and enhancing the natural beauty of the area of outstanding natural beauty.
- 5.14.78 The Appraisal of Sustainability identified that there is the potential for some long lasting adverse direct and indirect effects on landscape character and visual impacts on the Suffolk Coast and Heaths AONB, with limited potential for mitigation given that the nominated site is wholly within the AONB.

³⁰⁰ Government notes that National Grid has announced that it will be carrying out consultation on route options for network reinforcements in South Suffolk and Essex, starting in October 2009.

³⁰¹ Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See <http://www.english-heritage.org.uk>

- 5.14.79 This could have an effect on the purpose of the designation. To further understand these effects and the effectiveness of the mitigations proposed by the nominator of the site, further detailed assessment at project level is required – the Appraisal of Sustainability suggests through the provision an integrated landscape, heritage and architectural plan. The potential for remaining effects can best be fully assessed when detailed plans come forward because they depend on a range of factors including the detailed proposals for minimisation and mitigation, the cooling technology proposed and location of transmission infrastructure. However, given the limited scope for mitigation, a level of impact is likely to remain.
- 5.14.80 The Government recognises that whilst there is some potential for partial minimisation and mitigation of the effects, there could be remaining effects on the AONB. However, as explained in Part 2 of this NPS, there is a need to ensure sufficient sites are available for development to meet Government’s energy policy objectives. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify (against this criterion) not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site should any application for development consent come forward.
- 5.14.81 The Government also notes that there may be some visual impacts on the setting of other cultural heritage features in the area. Impact and mitigation will need to be considered by the IPC but at this stage, the potential effects are not felt sufficient to outweigh the need for sites as set out in Part 2 of this NPS, particularly given the need for further investigation and the scope for some mitigation that has been identified.

Guidance to the IPC

- 5.14.82 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant’s proposals for Sizewell and consider whether the applicant’s proposals sufficiently avoid or mitigate potential impacts where they are still relevant.
- 5.14.83 It should also be noted that whilst the Appraisal of Sustainability has noted the potential strategic environmental and sustainability implications of transmission infrastructure, detailed environmental assessment should be made by the applicant at the IPC stage, and the IPC should consider this in conjunction with EN-6 which is the Electricity Networks NPS.

D9: Size of site to accommodate operation**Analysis**

- 5.14.84 The nominated area is approximately 117 hectares.
- 5.14.85 Based on the advice of the Office for Civil Nuclear Security and the Nuclear Installations Inspectorate there is sufficient land area within the nominated boundary to house and provide sufficient defence in depth for essential infrastructure. However, the areas to the south of the existing Sizewell A and B Stations and to the west of longitude grid reference 64702 do not provide sufficient space for effective defence-in-depth for a nuclear reactor (including the associated turbine hall), spent fuel and intermediate level waste stores. Similarly, siting such activities into the land north of latitude grid reference 26453 could present security challenges because of the narrowing width of the nominated land.
- 5.14.86 These parts of the nominated site could still be used for locating supporting infrastructure that has no potential to directly cause a radiological hazard.

Assessment

- 5.14.87 Although the Office for Civil Nuclear Security has identified areas of the site which may not provide sufficient defence in depth for a nuclear reactor, based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility.

Guidance to the IPC

- 5.14.88 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.

D10: Access to suitable sources of cooling**Analysis**

- 5.14.89 The nominator details a range of potential cooling technologies but expresses a preference for direct cooling from the sea. The Environment Agency has advised that it is reasonable to conclude that there is access to potentially suitable sources of cooling at the site³⁰².

³⁰² See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Sizewell, and in particular the nomination report for information on cooling.

- 5.14.90 The Environment Agency has also advised that there are important local marine nursery grounds for mackerel, herring, sprat and plaice. There are populations of migratory trout on this coast, and there are local populations of twaite shad.
- 5.14.91 The Appraisal of Sustainability notes that a potentially significant effect could occur as a result of the return of cooling water to the sea at elevated temperatures. This could result in adverse impacts on both sediment transport and water quality. It has identified potential indirect effects on nationally and internationally designated habitats, including from the thermal impact of cooling water discharges although it notes that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges. The Environment Agency has also advised that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges. This would require the discharges to meet regulatory standards for the protection of the quality of estuarine or coastal waters in line with future requirements of the Water Framework Directive³⁰³.

Assessment

- 5.14.92 Based on the findings of the Appraisal of Sustainability and the Environment Agency it is reasonable to conclude that there is access to suitable sources of cooling at the site. The site passes this criterion. Detailed modelling as part of the licensing process will give greater clarity about the acceptability of impacts in the light of the cooling technology that is proposed.

Guidance to the IPC

- 5.14.93 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.
- 5.14.94 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.14.95 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

³⁰³ The Water Framework Directive 2000/60/EC.

Appraisal of Sustainability and Habitats Regulations Assessment for Sizewell

- 5.14.96 The Planning Act 2008³⁰⁴ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Sizewell is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.
- 5.14.97 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the “Habitats Regulations Assessment”) tests whether a plan or project could have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Sizewell site.
- 5.14.98 The key findings of the Sizewell Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) the nominated site lies on the Suffolk Heritage Coast and is wholly within the Suffolk Coast and Heaths AONB;
 - ii) potential adverse effects on three nature conservation sites, including Minsmere to Walberswick Heaths, and Sizewell Marshes;
 - iii) effects on water quality and fish/shellfish populations in nearby coastal waters due to the abstraction and release of sea water for cooling;
 - iv) there are existing sand and shingle flood defences in place, which the Appraisal of Sustainability considers may require upgrading to protect the site for the full life time of a new power station, which may have potential effects on erosion and visual appearance of the coastline. The Appraisal of Sustainability finds these effects significant, but mitigation opportunities are likely to be available following further study.
- 5.14.99 The Appraisal of Sustainability has not identified any potential cumulative effects in conjunction with any other proposed new nuclear sites.
- 5.14.100 The outputs of the Appraisal of Sustainability and Habitats Regulations Assessment on their key findings are discussed against the SSA criteria above.

Other issues raised during the assessment

- 5.14.101 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk>.

³⁰⁴ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

Health

- 5.14.102 The Appraisal of Sustainability for Sizewell has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.
- 5.14.103 One of these factors of particular interest to the public is the incidence of cancer. There has been, since 1966, a nuclear power station operating at Sizewell, with Sizewell A (operation until 2006), and then Sizewell B (operating since 1995). There is, therefore, historical data which can be analysed to correlate the incidence of cancer reported around Sizewell so that it can be compared to the average prevalence of the same disease in the British population as a whole. The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.
- 5.14.104 COMARE's tenth report³⁰⁵ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the conclusion that 'there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer'.
- 5.14.105 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.14.106 In its eleventh report³⁰⁶ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that 'the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations'. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.

³⁰⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE), Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

³⁰⁶ Committee on Medical Aspects of Radiation in the Environment (COMARE), Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

- 5.14.107 The Appraisal of Sustainability notes that radioactive monitoring carried out in 2007³⁰⁷ found low concentrations of artificial radionuclides in water, sediment and beach samples and in meat and seafood samples taken around the existing Sizewell nuclear power stations. From this sampling, the estimated total dosage levels to the public from all sources within the Sizewell area were assessed as being less than 0.5% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.14.108 The Appraisal of Sustainability has found that the rigorous system of regulation of routine discharges from any new nuclear power station at should ensure that there are no unacceptable risks to the health of the local population when the station is operating normally.
- 5.14.109 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.14.110 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK's strict regulatory regime. Part 4 should be referred to for further guidance.

Detailed planning proposals for Sizewell

- 5.14.111 Responses were received in the opportunity for public comments about the detailed proposals that may come forward for the site, and in particular the possibility of the application including a road to access the site (in the area nominated in the Goose and Kenton Hills); the precise land take; and what marine landing facilities may be used. These issues cannot be adequately assessed as part of the SSA due to the lack of developed detailed plans and proposed mitigations, and consequent understanding of effects. However, they will be important concerns when the application for development consent comes forward.
- 5.14.112 The IPC should seek in particular seek evidence that the applicant has consulted the Local Authority and the AONB on the proposals for a road. The effects of certain associated works such as an access road have not been considered in detail and there is no presumption that development should take place in that area. The IPC will need to consider detailed plans in conjunction with Part 4 of this NPS. The Government recognises that, as with all sites, detailed consideration of the proposals could result in changes to the nominated boundary area.

³⁰⁷ Food Standards Agency, *Radioactivity In Food and the Environment (RIFE 13) Report*, 2007.

Conclusion on the nominated site at Sizewell

- 5.14.113 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable.
- 5.14.114 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things effects and mitigations of coastal erosion, effects on biodiversity including the SSSI that is included in the site boundary, and the visual impact on the AONB. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

5.15 Wylfa

Description of the site

- 5.15.1 The nomination site is located at Wylfa Head which extends into the Irish Sea from the north coast of Anglesey, some 15 km north east of Holyhead, between Cemaes and Cemlyn Bays. It includes the headland south of Mynydd y Wylfa local nature reserve and extends eastwards to the western outskirts of the villages of Cemaes and Cemaes Bay, south to the A5025 and the village of Tregele and west to the Porth-y-pistyll inlet.
- 5.15.2 The grid reference of the approximate centre of the nomination site is 235260, 393350. A map is included at Annex B.

Deployability by the end of 2025

- 5.15.3 The SSA is limited to considering sites which are credible for deployment by the end of 2025³⁰⁸. This is because it is important to focus on sites which can come on stream in good time to contribute to the Government's objectives on climate change and energy security.
- 5.15.4 Deployment means commencing operation of one or more new nuclear power stations on the site. At Wylfa, the Government in particular notes that there is already a great deal of knowledge about the site developed through the construction and operation of the adjacent power station and the ongoing detailed work on the nominated site. The Government also notes that a grid connection agreement is in place for a three stage connection at the Wylfa 400kV substation, giving a final transmission entry capacity of 3600MW by 31st October 2022. The first connection will be for 1200MW in late 2020 (although this does not automatically mean that a site will be deployed by that date).
- 5.15.5 The Government is satisfied from the information provided by nominators and an independent assessment that the Wylfa site is credible for deployment by the end of 2025.

Assessment of suitability against SSA criteria

C1: Demographics

Analysis

- 5.15.6 The Health and Safety Executive has advised that the site does not exceed the semi-urban criterion.
- 5.15.7 Although comments were made that the area around Wylfa is sparsely populated, concerns were expressed during the opportunity for public comments about the ability to institute an effective emergency plan to evacuate the required area.

³⁰⁸ For the purposes of this document, "deployment of new nuclear power stations" means commencing operation of one or more new nuclear power stations on the site.

- 5.15.8 As set out in Part 4 of this NPS, in complying with the conditions of the Nuclear Site Licence and legal obligations³⁰⁹, all nuclear operators are required to specify and implement adequate arrangements for dealing with an incident or emergency arising on the site and its effects. The emergency plan is to ensure that members of the public are properly informed and prepared, in advance, about what to do in the unlikely event of a radiation emergency occurring, and provided with information if a radiation emergency actually occurs. This would include an up to date assessment of evacuation routes for the areas which are considered relevant. Delineation of a new emergency plan is ultimately a decision for a local emergency planning authority on the advice of the Nuclear Installations Inspectorate, the site operator and others with roles in implementing the off-site emergency plan.
- 5.15.9 Development of appropriate emergency plans requires a detailed understanding of the nature of the local residential and working population, capability and redundancy of local infrastructure and capability of local emergency services. The potential of a site to meet emergency planning requirements cannot, in general, be assessed at a strategic level and has not been assessed in this case as part of the SSA.

Assessment

- 5.15.10 This site passes the demographics criterion.
- 5.15.11 Whilst for the purposes of the SSA, the Government does not in general believe it is possible to determine, at a national level, the suitability of a site to meet emergency planning obligations is flagged as a consideration should an application for development consent come forward, and guidance is given to the ICP in Part 4.

Guidance to the IPC

- 5.15.12 The IPC should refer to Part 4 of this NPS for guidance on demographics and emergency planning.

C2 and D5: Proximity to military activities

Analysis

- 5.15.13 The Ministry of Defence has advised that the site identified does not occupy any Ministry of Defence statutory safeguarding zones protecting aerodromes, explosive storage sites, technical sites or ranges and it is not within 1000 metres of any Ministry of Defence Danger Areas.
- 5.15.14 The Ministry of Defence has advised that no military firing activity occurs in the marine or landward areas adjoining the site. There are no military or explosive nuclear facilities within 1000 metres of the site.

³⁰⁹ Under the *Radiation (Emergency Preparedness and Public Information Regulations 2001 (REPPiR)*.

- 5.15.15 The opportunity for public comments highlighted concerns about the proximity of the site to civil aircraft movements, and the Valley Area of Intense Aerial Activity that extends over North Wales and the Irish Sea, and in particular activity associated with RAF Mona and RAF Valley. The Ministry of Defence have confirmed that the site identified does not occupy the Military Air Traffic Zones that surround RAF Mona and RAF Valley or other types of air space managed by the Ministry of Defence. More generally, any new nuclear power station built on the site would be afforded protection from any aviation activity by the establishment of a new or amended Restricted Area (see proximity to Civil Aviation).
- 5.15.16 The Ministry of Defence has advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime. The Nuclear Installations Inspectorate has agreed with this advice.
- 5.15.17 The Ministry of Defence has also advised that it is reasonable to conclude, at a strategic level, that any likely power station development within the nominated site boundary will not adversely affect the capabilities of the armed forces to carry out essential training and operations, throughout its lifetime

Assessment

- 5.15.18 Based on the advice of the Nuclear Installations Inspectorate and the Ministry of Defence it is reasonable to conclude that:
- the site does not occupy any Ministry of Defence areas which would give rise to the site being excluded from assessment
 - the site is not in proximity to any Ministry of Defence assets or activities that would suggest that it should be ruled out
 - any likely power station development within the site boundary can be protected against the risk of external hazards created by neighbouring military activities, throughout its lifetime
 - the development of a new nuclear power station at the site would not affect the capabilities of the armed forces to carry out essential training and operations throughout its lifetime.
- 5.15.19 This site therefore passes these criteria.

Guidance to the IPC

- 5.15.20 The IPC should refer to the relevant guidance in EN-1, including that on Civil and Military Aviation and Defence Interests.

D1: Flooding, tsunami and storm surge

Analysis

- 5.15.21 The nominated site is in flood zone 1, low probability. This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%)³¹⁰. The site levels are sufficiently higher than the Extreme Sea Level.
- 5.15.22 The Environment Agency has advised that, based on the current understanding of the flood risk in this area it is reasonable to conclude that any potential new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime³¹¹, including the potential effects of climate change, storm surge and tsunami, and considering potential countermeasures.
- 5.15.23 The Environment Agency has advised that access and egress to and within the power station site is possible during extreme flood events, even up to the 0.1% annual event, although the route once off site may be compromised by localised fluvial flooding.
- 5.15.24 The Environment Agency has advised that it is very unlikely that any development would have any adverse impact with respect to flooding on the surrounding area.
- 5.15.25 The Environment Agency has noted for all nominated sites that protecting the site from flood risk now and in the future prevents the coastline and Estuary from changing and adapting naturally.
- 5.15.26 The Appraisal of Sustainability³¹² has identified small potential, adverse effects relating to flood risk due to rising sea levels, especially during the later stages of operation and decommissioning. This is considered a wider national issue, because of the potential impact on national energy supply and infrastructure. However, it is considered that the hard cliff geology and elevated nature of the nominated site will afford adequate protection and that there is no need for coastal protection measures.

Assessment

- 5.15.27 This site passes this criterion. This takes into account in particular the low risk of flooding at the site and that the Environment Agency and Appraisal of Sustainability has advised that it is reasonable to conclude that any new nuclear power station on the site could potentially be protected against flood risk throughout its operational lifetime, including the potential effects of climate change, storm surge and tsunami, taking into account possible countermeasures.

³¹⁰ See PPS25 for a full definition of the flood zones and what they cover:

Planning Policy Statement 25: Development and Flood Risk, December 2006, Annex D, pp.22-25.

³¹¹ See entry D1 in the table "The SSA criteria and how the sites were assessed" at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

³¹² *Appraisal of Sustainability: Site report for Wylfa*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

- 5.15.28 PPS25 sets out a sequential approach which aims to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas of highest risk. The Government has taken a sequential approach in the SSA and concluded that this site has demonstrated and passed the sequential test as there are no reasonably available alternatives to this site in a lower flood zone or at a lower flood risk. Please see Part 4 of this NPS (Flood risk including tsunami and storm surge) for more detail.

Guidance to the IPC

- 5.15.29 The IPC should refer to the relevant guidance in EN-1, including that on flood risk and climate change adaptation.
- 5.15.30 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on flood risk (including tsunami and storm surge).

D2: Coastal processes

Analysis

- 5.15.31 The Appraisal of Sustainability has noted that the site is predominantly located on higher ground with hard bedrock. The risks from coastal flooding, sea level rise and erosion are therefore considered to be low. However, further assessment is required to determine the need for additional defences over the lifetime of a new power station.
- 5.15.32 The Environment Agency has advised that that development at the site could avoid or mitigate the effects of coastal erosion or other landscape change scenarios throughout its operational lifetime³¹³, including the potential effects of climate change.
- 5.15.33 The Environment Agency has advised that, based on the current understanding of coastal erosion in the area, the site could potentially be protected from the effects of coastal erosion. The *Shoreline Management Plan* (SMP) (May 2001) describes the area around Wylfa Head as “Hard Rock Shore” and it is therefore at minimal risk of erosion.

Assessment

- 5.15.34 Given the low level of risk, the site passes this criterion. It is reasonable to conclude that the site could be protected against coastal erosion, including the effects of climate change, for the lifetime of the site.

Guidance to the IPC

- 5.15.35 The IPC should refer to the relevant guidance in EN-1, including that on climate change adaptation and coastal change.

³¹³ See entry D2 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details on the potential lifetime of the site and the period this assessment covers.

- 5.15.36 The IPC should also refer to the relevant guidance in Part 4 of this NPS including that on coastal change and on flood risk (including tsunami and storm surge).

D3: Proximity to hazardous facilities

Analysis

- 5.15.37 The Health and Safety Executive has advised that it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

Assessment

- 5.15.38 The opportunity for public comment highlighted that there are plans for a Liquefied Natural Gas (LNG) facility at Amlwch.
- 5.15.39 The Health and Safety Executive has advised that the nominated site is located beyond the Land Use planning outer zone proposed for the shore based Canatx LNG Ltd facility at Amlwch. Whilst there are proposals for an offshore offload facility and further redevelopment, given the distance of the development from the Wylfa site, this does not appear to affect the suitability of the site against this criterion.
- 5.15.40 Based on Health and Safety Executive records the nominated site is not in the vicinity of any COMAH establishments. The Health and Safety Executive has advised that, as with all sites during licensing, the applicant to the Health and Safety Executive will also need to take account of the need for countermeasures to protect nuclear operations from any hazards and risks from any nearby notified major hazard pipelines, based on information from the relevant pipeline operators about their routes and fluids being conveyed.

Assessment

- 5.15.41 This site passes against this criterion. Given the proximity to hazardous facilities it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risk arising from proximity to hazardous facilities throughout its lifetime, taking into account possible countermeasures.

Guidance to the IPC

- 5.15.42 The IPC should satisfy itself that the Health and Safety Executive has reviewed the safety implications of any hazardous facilities which have the potential to pose a threat to the site and confirmed the acceptability of any ongoing co-existent operations. The IPC should ensure that the local authority has been consulted by the applicant where appropriate.

D4: Proximity to civil aircraft movements

Analysis

- 5.15.43 The opportunity for public comments highlighted concerns about the proximity of the site to civil aircraft movements, and the Valley Area of Intense Aerial Activity that extends over North Wales and the Irish Sea.
- 5.15.44 The Civil Aviation Authority has advised that it is potentially reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement. The Nuclear Installations Inspectorate has agreed with this advice. Nuclear power stations in the UK receive some protection from aviation activity through the establishment of a Restricted Area at each individual station. This is established by legislation³¹⁴. Typically, such Restricted Areas have a radius of 2 nautical miles and extend vertically to 2000 feet above the surface. Any aviation activity within a Restricted Area is limited to that specifically permitted by the legislation.
- 5.15.45 The existing Wylfa nuclear installation has an associated Restricted Area. The Civil Aviation Authority has advised that a Restricted Area around the nominated site (or an amendment to the existing Restricted Area) could provide a similar level of protection from civil aircraft movements.
- 5.15.46 The Civil Aviation Authority has also advised that it is potentially reasonable to conclude that neighbouring aerodromes and air traffic control areas can mitigate any effects arising from the Restricted Area around the nominated nuclear power site. In reaching this conclusion it has advised that it is not anticipated that any new Restricted Area established in association with the proposed nuclear installation would impact upon local aerodrome operations; there are no other known (i.e. marked on Civil Aviation Authority approved charts or promulgated in the UK Aeronautical Information Publication) civilian landing sites in such proximity to the proposed nuclear installation such that a new or amended Restricted Area would have a material impact on associated operations; and that the current establishment of the existing Wylfa Restricted Area is such that the impact of a new or amended Restricted Area (as described above) upon civil aircraft in transit through local airspace is likely to be negligible.

Assessment

- 5.15.47 This site meets this criterion. Given the advice above it is reasonable to conclude that any likely power station development within the nominated site boundary can be protected against risks from civil aircraft movement, and that the effects on air traffic and aerodromes can be potentially mitigated.

³¹⁴ In accordance with Statutory Instrument 2007 No 1929 (The Air Navigation (Restriction of Flying) (Nuclear Installations) Regulations 2007).

Guidance to the IPC

- 5.15.48 The IPC should refer to the relevant guidance in EN-1, including that on civil and military aviation and defence interests.
- 5.15.49 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on proximity to aircraft movements.

For D5 see C2

D6: Internationally designated sites of ecological importance

Analysis

- 5.15.50 The opportunity for public comments highlighted both designated and non designated sites.
- 5.15.51 The Appraisal of Sustainability³¹⁵ identified that the potential for adverse effects on sites and species considered to be of European nature conservation importance (the Cemlyn Bay SAC, the Yns Feurig, Cemlyn Bay and the Skerries SPA. The Appraisal of Sustainability has found that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal.
- 5.15.52 The Appraisal of Sustainability findings on sites of European nature conservation importance are drawn from the Habitats Regulations Assessment for Wylfa³¹⁶. The key findings of the Habitats Regulations Assessment are limited by the strategic nature of the assessment process and the information available, which does not generally allow for a definitive prediction of effects on the European sites³¹⁷ considered. However, a precautionary approach suggests that at this strategic level the assessment cannot rule out the potential for adverse effects on site integrity at six European sites (Cemlyn Bay SAC, Ynys Feurig, Cemlyn Bay and The Skerries SPA, Menai Strait and Conwy Bay SAC, Liverpool Bay pSPA, Lavan Sands SPA and Puffin Island SPA) through potential impacts on water resources and quality, habitat (and species) loss and fragmentation/ coastal squeeze, disturbance (noise, light and visual), and air quality.
- 5.15.53 The Habitats Regulations Assessment has proposed a suite of avoidance and mitigation measures to be considered as part of any project level Habitats Regulations Assessment. At this stage, it is assessed that the effective implementation of these mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level Habitats Regulations Assessment is required in order to draw conclusions on their effectiveness.

³¹⁵ *Appraisal of Sustainability: Site report for Wylfa*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

³¹⁶ *Habitats Regulations Assessment: Site report for Wylfa*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

³¹⁷ See entry D6 in the table “The SSA criteria and how the sites were assessed” at the beginning of this section for details of European sites and what they cover.

Assessment

- 5.15.54 Government notes the scope for avoidance and mitigation identified in the Habitats Regulations Assessment, and the need for more detailed studies should an application for development consent come forward.
- 5.15.55 Given that the Habitats Regulations Assessment has not been able to rule out adverse impacts on sites of European nature conservation importance, the Government has carefully considered against this criterion whether it is appropriate to include this site in this NPS.
- 5.15.56 Annex A of this NPS sets out that the Government has concluded that there is an Imperative Reason of Overriding Public Interest that favours the inclusion of this site in the draft Nuclear NPS despite the inability to rule out adverse effects on European sites at this stage. This takes into account the need for sites to be available for potential deployment by the end of 2025, the lack of alternatives, and the consideration given to compensatory measures. This site therefore passes this criterion.

Guidance to the IPC

- 5.15.57 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement, Habitats Regulations Assessment and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.
- 5.15.58 The IPC should also refer to the Appraisal of Sustainability and Habitats Regulations Assessments for Wyfla and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D7: Nationally designated sites of ecological importance

Analysis

- 5.15.59 The Appraisal of Sustainability identified that the potential for adverse effects on sites and species considered to be of national nature conservation importance. Significant strategic effects on biodiversity cannot therefore be ruled out at this stage of the appraisal.
- 5.15.60 The Appraisal of Sustainability has identified that there could be potential significant effects at the following SSSIs which are within 5km of the nominated site: Tre'r Gof SSSI; Cemlyn Bay SSSI; Cae Gwyn SSSI.
- 5.15.61 Tre'r Gof SSSI is located within the site boundary and the Appraisal of Sustainability finds that this rich-fen habitat could suffer direct or indirect effects associated with changes to water quality or quantity.

5.15.62 The Appraisal of Sustainability has found that significant strategic effects on biodiversity cannot be ruled out at this stage of the appraisal. However, the Appraisal of Sustainability site report has identified that there is the potential for the mitigation of biodiversity effects on sites of national conservation importance, including the creation of replacement habitat.

Assessment

5.15.63 Government notes that the Appraisal of Sustainability has identified potential impacts on nationally designated sites of ecological importance which it considers of strategic significance. Given the scope for mitigation of biodiversity effects identified in the Appraisal of Sustainability for sites of national importance it is reasonable to conclude that it may be possible to avoid or mitigate impacts to an extent- however, the Appraisal of Sustainability has highlighted that the proximity of Tre'r Goff SSSI (within the site boundary) means that it is possible that there could be direct or indirect effects at this site.

5.15.64 The Government has carefully considered whether this site meets this criterion. However, given the need to ensure sufficient sites are available for development to meet Government's energy policy objectives, as described in Part 2 of this NPS, the Government believes that it does. In view of the need for sites set out in Part 2 and the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify not including the site in this NPS. The Government has also noted that there will be further assessment of any proposal for the site at project level and that EN-1 sets out the detailed consideration that must be given to such issues relating to nationally designated sites should an application for development consent come forward.

5.15.65 This site passes this criterion.

Guidance to the IPC

5.15.66 The IPC should refer to the relevant guidance in EN-1, including that on the Environmental Statement and biodiversity and geological conservation. The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on biodiversity and geological conservation.

5.15.67 The IPC should also refer to the Appraisal of Sustainability for Wylfa and consider whether the applicant's proposals have sufficiently taken into account the issues identified, where they are still relevant.

D8: Areas of amenity, cultural heritage and landscape value

Analysis

5.15.68 The Appraisal of Sustainability identified potential adverse effects on Scheduled Monuments, a registered garden and listed buildings, which may be of regional or national heritage significance.

- 5.15.69 These potential impacts arise because the setting of cultural or historic features may be affected by a new nuclear power station, depending on the distance to any new nuclear power station, the sight lines, and any mitigation applied. The Appraisal of Sustainability³¹⁸ identifies the cultural and historic features in the area including the registered Cestyll Garden, which lies immediately to the west of the nominated site boundary, the Bronze Age standing stones Scheduled Monument 1km to the south, three Grade II listed buildings in Cafnan to the west of the nominated site, and listed buildings around Cemaes³¹⁹. The Appraisal of Sustainability finds that it should be possible to mitigate against the potential adverse effects on scheduled monuments although further detailed assessment at project level will be required.
- 5.15.70 The Appraisal of Sustainability has also identified potential adverse effects on landscape. These include lasting adverse indirect landscape and visual impacts on the surrounding area, including on parts of Anglesey Area of Outstanding Natural Beauty (small parts of which are within the nominated site boundary) and North Anglesey Heritage Coast (which extends to within 125m of the nominated site). This is of potential wider significance due to the national designation of the AONB, which was also flagged during the opportunity for public comments .
- 5.15.71 The nominator notes that “pragmatically it would not be possible to completely avoid all visual impacts on the Heritage Coast and the AONB and it is possible that a sea wall may be required at Porth y Pistyl. However the intention would be to maintain some distance between the nuclear power plant facility and the perimeter of the nomination site near the designated coastline.” The nominator envisages that mitigation measures may include the arranging the layout of the site to minimise loss of visual amenity from sensitive viewpoints as far as practical; use of colour schemes which blend the structures with the background; use of on-site and if necessary off-site landscaping and planting to help screen the site especially from the more sensitive viewpoints: designing any indirect cooling system which requires cooling towers to give acceptable visual impacts³²⁰.
- 5.15.72 The Appraisal of Sustainability considers that, whilst currently the exact placing of a new nuclear power station is unknown as a large site has been nominated, some adverse impact, which may not be fully mitigatable, is anticipated.

Assessment

- 5.15.73 In assessing this site, the Government has considered the purpose of the AONB, which is of conserving and enhancing the natural beauty of the area of outstanding natural beauty.

³¹⁸ See the *Appendices to Appraisal of Sustainability: Site report for Wylfa*, November 2009, <http://www.energynpsconsultation.decc.gov.uk>

³¹⁹ Grade I buildings are of exceptional interest, sometimes considered to be internationally important. Grade II* buildings are particularly important buildings of more than special interest. Grade II buildings are nationally important and of special interest. See <http://www.english-heritage.org.uk>

³²⁰ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Wylfa, and in particular the nomination form.

- 5.15.74 Whilst the new power station will be seen within the context of the existing power station before decommissioning, given the likely scale of the development and the fact that a small part of the AONB is included in the nominated boundary, the Appraisal of Sustainability finds that there are likely to be some long lasting adverse direct and indirect effects on landscape character and visual impacts on the AONB. Whilst there is the potential for mitigation, it is possible that some impact may remain.
- 5.15.75 This could have an effect on the purpose of the designation. To further understand these effects and the effectiveness of the mitigations proposed by the nominator of the site, further detailed assessment at project level is required, possibly through the provision an integrated landscape, heritage and architectural plan.
- 5.15.76 Whilst scope for total avoidance and mitigation of impacts on the National Park is limited, this site passes this criterion. This takes into account the fact that the nature, scope, and scale of any effect is currently uncertain and is dependent on the exact form of development proposed; that there is some scope for a developer and the IPC to explore, in detail, minimisation, avoidance and mitigation of adverse effects.
- 5.15.77 The Government recognises that whilst there is some potential for partial minimisation and mitigation of the effects, there could be remaining effects on the AONB. However, as explained in Part 2 of this NPS, there is a need to ensure sufficient sites are available for development to meet Government's energy policy objectives. In view of this and in view of the limited number of potentially suitable sites, the Government does not think the issues in relation to this criterion are sufficient to justify (against this criterion) not including the site in this NPS. The Government has also noted the fact that there will be further detailed assessment of any proposal for the site should any application for development consent come forward.
- 5.15.78 However, the IPC will have to examine any future application for development consent at the site in accordance with EN-1, Part 4 of this NPS and in light of the full assessment of the project at that time. The potential for remaining effects can only be fully assessed when detailed plans come forward. This is because they depend on a range of factors including the proposals for minimisation and mitigation, the cooling technology proposed and location of transmission infrastructure, and the relevant other development in the area to be factored when considering cumulative effects.
- 5.15.79 Applications for development consent for nationally significant grid infrastructure will be considered by the IPC within the framework of the Electricity Networks NPS (EN-5). Applicants are required to consult local communities about their plans before submitting them to the IPC.
- 5.15.80 The Government also notes that there may be some visual impacts on the setting of other cultural heritage features in the area. Impact and mitigation will need to be considered by the IPC but at this stage, the potential effects are not felt sufficient to outweigh the need for sites as set out in Part 2 of this NPS, particularly given the need for further investigation and the scope for some mitigation that has been identified.

Guidance to the IPC

- 5.15.81 The IPC should refer to the relevant guidance in EN-1 and Part 4 of this NPS, including that on landscape and visual impacts. The IPC should also refer to the Appraisal of Sustainability and the applicant's proposals for Wylfa and consider whether the applicant's proposals sufficiently avoid or mitigate potential impacts where they are still relevant.
- 5.15.82 It should also be noted that whilst the Appraisal of Sustainability has noted the potential strategic environmental and sustainability implications of transmission infrastructure, detailed environmental assessment should be made by the applicant at the IPC stage, and the IPC should consider this in conjunction with EN-6, the Electricity Networks NPS.

D9: Size of site to accommodate operation

Analysis

- 5.15.83 The nominated area is around 232 hectares. Based on the advice of the Nuclear Installations Inspectorate and Office for Civil Nuclear Security there is enough land within the boundary of the nominated site for the safe and secure operation of at least one new nuclear power station.
- 5.15.84 The nominated land has a public road and a number of tracks and footpaths bisecting it. It is a security requirement that the licence applicant has exclusive rights of access to, and control of, a civil licensed nuclear site and that it is not therefore bisected by any public rights of way.

Assessment

- 5.15.85 Based on the advice of the Office for Civil Nuclear Security and Nuclear Installations Inspectorate it is reasonable to conclude that there is enough land within the boundary nominated to safely and securely operate at least one new nuclear power station, including the safe and secure storage of all the spent fuel and intermediate level waste produced through operation, and from decommissioning, on the site of the station until it can be sent for disposal in a geological disposal facility. An applicant would need to consider mitigations such as siting elements of a station away from public footpaths, or realignments, to meet the requirements of a nuclear site licence. Given the size of the site it is reasonable to conclude that there is the potential to mitigate these concerns.

Guidance to the IPC

- 5.15.86 The safety and security of a nuclear power station is considered by the Nuclear Installations Inspectorate and the Office for Civil Nuclear Security as part of the licensing regime. The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime.

- 5.15.87 Part 4 of EN-1 (Socio-economic) advises that an application should have taken into account the location of public rights of way, including footpaths, bridleways and byways and minimised hindrance to them where possible.

D10: Access to suitable sources of cooling

Analysis

- 5.15.88 The Environment Agency has advised that it is potentially reasonable to conclude that there is access to suitable sources of cooling at the site. The nominator expresses a preference for direct cooling from the sea³²¹.
- 5.15.89 The Environment Agency has advised that this coastline provides important nursery grounds for bass and flatfish species, and there are important local populations of migratory salmonids. The siting of intakes and outfalls of cooling water should be carefully considered to minimise impacts where appropriate.
- 5.15.90 The Appraisal of Sustainability has noted that although there are existing discharges from the current Wylfa nuclear power station, the return of cooling water to the sea at elevated temperatures could have adverse effects on coastal processes, including sediment transport, and water quality. Discharges could cause failures to existing water quality standards and indirectly affect nationally and internationally designated habitats. The Environment Agency has also advised that any potential impacts would be assessed during detailed design and considered in any application for a consent to make discharges. This would require the discharges to meet regulatory standards for the protection of the quality of estuarine or coastal waters in line with future requirements of the Water Framework Directive³²².
- 5.15.91 However, the Appraisal of Sustainability has also noted that in siting the cooling water facilities, the high velocity current regime offshore of the nominated site is ideal for diluting and dissipating the environmental impacts of discharged heated water. A dispersion and dilution model should be used to determine the fate of the effluent plume.

Assessment

- 5.15.92 Given the advice above, it is reasonable to conclude that there is access to suitable sources of cooling at this site. This site passes this criterion. The detailed modelling requested below will give greater certainty on the potential effects and mitigations.

Guidance to the IPC

- 5.15.93 The IPC should refer to the relevant guidance in EN-1, including that on coastal change, given that a new development may require offshore infrastructure for intake and outfalls, and the guidance on biodiversity.

³²¹ See <http://www.energynpsconsultation.decc.gov.uk> for the nomination documents for Wylfa, and in particular the nomination form for information on cooling.

³²² The Water Framework Directive 2000/60/EC.

- 5.15.94 The IPC should also refer to the relevant guidance in Part 4 of this NPS, including that on water quality and resources.
- 5.15.95 The IPC should see Part 3 of this NPS for guidance on the relationship between the regulatory framework and the planning regime. The IPC may wish to be satisfied from the documentation supplied with the application that the Environment Agency is content with the applicant's assessment.

Appraisal of Sustainability and Habitats Regulations Assessment for Wylfa

- 5.15.96 The Planning Act 2008³²³ requires an Appraisal of Sustainability to be carried out for all National Policy Statements. The purpose of an Appraisal of Sustainability is to consider the social, economic and environmental impacts of the policy and to suggest possibilities for improving the sustainability of the NPS. The purpose of the Appraisal of Sustainability for Wylfa is to examine the potential positive and negative effects of the nominated site, identify the significance of these effects, and suggest any mitigation possibilities.
- 5.15.97 The draft Nuclear NPS has also been assessed in accordance with the European Habitats Directive. That assessment (the "Habitats Regulations Assessment") tests whether a plan or project could have an adverse effect on the integrity of European sites of nature conservation importance. A Habitats Regulations Assessment was carried out on the Wylfa site.
- 5.15.98 The key findings of the Wylfa Appraisal of Sustainability and Habitats Regulations Assessment highlight areas of significance on, amongst other things:
- i) potential negative effects on four national and internationally protected nature conservation sites, namely Cemlyn Bay SAC, the Yns Feurig, Cemlyn Bay and the Skerries SPA;
 - ii) erosion and flooding. The site is predominantly located on higher ground with hard bedrock and the risks are therefore considered to be low although further assessment is required to determine the need for additional defences over the lifetime of a new power station;
 - iii) cooling: Coastal water conditions at the site are considered generally favourable for the dispersion of the heated water that would be released after cooling;

³²³ Planning Act 2008 http://www.opsi.gov.uk/acts/acts2008/ukpga_20080029_en_1

- iv) development of a new nuclear power station will have a negative visual impact on the local and sub-regional landscape, particularly the Anglesey AONB (part of which lies within the nominated site boundary) and North Anglesey Heritage Coast. Currently the exact placing of a new nuclear power station is unknown as a large site has been nominated, but some adverse impact, which may not be fully mitigatable, is anticipated by the Appraisal of Sustainability;
- v) potential for long term positive effects associated with enhanced employment and long term prosperity for communities at the local level.

5.15.99 Outputs i – iv) are taken into account in the summaries against the SSA criteria above. For further detail on v) please see the Appraisal of Sustainability for Wylfa. Wylfa is not close to any other nominated site and therefore does not form part of a cluster. The Appraisal of Sustainability considered that this means that regional or sub-regional cumulative effects are not considered relevant for this site.

Other issues raised during the assessment

5.15.100 This section deals with other common issues that were raised during the opportunity for public comments for this site. All the comments can be viewed at <http://www.energynpsconsultation.decc.gov.uk> .

Health

5.15.101 The Appraisal of Sustainability for Wylfa has also considered strategic effects on human health and well being. The Appraisal of Sustainability looks at a range of different factors and should be referred to for a more in depth assessment.

5.15.102 One of these factors of particular interest to the public is the incidence of cancer. There has been, since 1971, a nuclear power station operating on the Wylfa site. There is, therefore, historical data which can be analysed to correlate the incidence of cancer reported around this site so that it can be compared to the average prevalence of the same disease in the British population as a whole. The Appraisal of Sustainability considers comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE). COMARE is a scientific advisory committee providing independent authoritative expert advice on all aspects of health risk to humans exposed to natural and man-made radiation. It has, for over twenty years, investigated the incidence of childhood cancer and other cancers around nuclear sites. COMARE has published eleven reports on topics related to exposure to radiation. Its view is that there is no evidence for unusual aggregations of childhood cancers in populations living near nuclear power stations in the UK.

5.15.103 COMARE's tenth report³²⁴ considered the incidence of childhood cancer around nuclear installations. These were divided into nuclear power generating stations and other nuclear installations. The results for the power generating stations supported the

³²⁴ Committee on Medical Aspects of Radiation in the Environment (COMARE), Tenth Report. *The incidence of childhood cancer around nuclear installations in Great Britain*, June 2005.

conclusion that ‘there is no evidence from this very large study that living within 25 km of a nuclear generating site in Britain is associated with an increased risk of childhood cancer’.

- 5.15.104 The tenth report did however state that for other nuclear sites the situation was more complicated. The study did demonstrate corresponding results to previously published studies that showed excesses of some types of childhood cancer. These results (excess childhood cancers in Seascale near Sellafield; in Thurso near Dounreay and around Aldermaston, Burghfield and Harwell) have been extensively discussed in previous COMARE reports.
- 5.15.105 In its eleventh report³²⁵ COMARE examined the general pattern of childhood leukaemia within Great Britain and concluded that ‘the search for increased risk levels near to nuclear power generation sites shows no pattern of excess cases of childhood cancer close to the sites of these types of nuclear installations’. Among its recommendations, the report said that the incidence of childhood leukaemia and other cancers in the vicinity of Sellafield and Dounreay was raised and should be kept under surveillance and periodic review. COMARE is undertaking this work with the aim of producing an update report.
- 5.15.106 Radioactive monitoring carried out in 2007³²⁶ found generally low concentrations of artificial radionuclides attributable to the existing Wylfa nuclear power station in water, sediment and beach samples and in meat and seafood samples taken from around the site. However, the presence in the area of radionuclides from other nuclear activities (including the Sellafield reprocessing plants and mixed oxide fuel manufacture) make the apportioning of radiological effects in this location very difficult. Nevertheless, from this sampling, the estimated total dosage levels to the public from all sources within the Wylfa area were assessed as being less than 2% of the dose limit for members of the public of 1mSv per year as specified in the Ionising Radiations Regulations 1999.
- 5.15.107 The Appraisal of Sustainability also concludes that there is a very small risk of adverse health impacts arising from an accidental release of radiation but the multiple safety features within modern nuclear plants makes such an event exceedingly unlikely. It is possible that the presence of a new nuclear power station may lead to increased stress levels in certain individuals. Overall, the likely enhancement in employment, community wealth, housing stock and other associated neighbourhood infrastructure should improve community well-being and health generally.
- 5.15.108 Part 4 of this NPS (Human health and wellbeing) sets out that the risk of an accident resulting in exposure to radiation for workers, the public and the environment is very small because of the UK’s strict regulatory regime. Part 4 should be referred to for further guidance.

³²⁵ Committee on Medical Aspects of Radiation in the Environment (COMARE), Eleventh Report. *The distribution of childhood leukaemia and other childhood cancer in Great Britain 1969-1993*, July 2006.

³²⁶ Food Standards Agency, *Radioactivity in Food and the Environment (RIFE 13) Report*, 2007.

Seismic risk

- 5.15.109 A concern was raised in the opportunity for public comments about the seismic risk to any new power station, with regard to the Dinorwic fault line, which is part of the Menai Strait fault line.
- 5.15.110 As outlined in the Government response to the SSA Criteria consultation the Nuclear Installations Inspectorate has advised that seismic risk is more appropriately assessed at site licensing stage when detailed site specific and reactor design information is available³²⁷. Seismic hazard was therefore identified as an SSA criteria which is flagged for local consideration. This will be done by the Nuclear Installations Inspectorate as part of licensing. In order to satisfy the regulators that site licence conditions will be met, the designers of the plant will need to demonstrate that the installed plant is able to withstand all site-specific natural hazards including earthquake, flooding or meteorological conditions. The reactor designs being considered under the Generic Design Assessment process are intended for worldwide application, with baseline seismic resistance designs in the area of 0.25g-0.5g peak ground acceleration.
- 5.15.111 This does not therefore affect the potential suitability of the site as part of the SSA.

Conclusion on the nominated site at Wylfa

- 5.15.112 Given that the site meets the SSA criteria, and having considered the evidence from, inter alia, the public, regulators, the Appraisal of Sustainability and Habitats Regulations Reports, the Government has concluded that the site is potentially suitable.
- 5.15.113 This assessment has outlined that there are a number of areas which will require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including amongst other things the effect of this on the AONB and Heritage Coast and on Tre'r Goff SSSI. However, the Government has concluded that none of these factors is sufficient to prevent the site from being considered as potentially suitable as part of the SSA.

³²⁷ BERR, *Towards a nuclear national policy statement: Government response to the consultation on the Strategic Siting Assessment process and criteria*, January 2009 <http://www.berr.gov.uk/files/file47136.pdf> URN09/581, p38.

ANNEX A:

Nuclear National Policy Statement – Imperative Reasons of Overriding Public Interest (IROPI)

The Habitats Directive and Habitats Regulations Assessment (Appropriate Assessment) Article 6(4)

- A1 The HRA screening exercise conducted by the Government concluded that for all sites nominated in the SSA process, likely significant effects could not be ruled out. As a result, a more detailed strategic Appropriate Assessment (AA) was undertaken on each site to determine the potential for adverse effects on the integrity of Natura 2000 sites.
- A2 The strategic level AA concluded that at 10 of the 11 nominated sites the potential for adverse effects on the integrity of Natura 2000 sites, either from the plan alone, or in combination with other plans, could not be ruled out and that further that there are priority features at Natura 2000 sites affected by four of the nominates sites. This strategic level assessment proposed avoidance and mitigation measures but, in the absence of project level detail, it has not been possible to conclude beyond reasonable scientific doubt that the identified potential adverse effects on the integrity of the Natura 2000 sites (e.g. changes to water quality, habitat and species loss and fragmentation, coastal squeeze and changes to air quality) will be effectively avoided or mitigated. At the 11th nominated site (Dungeness), the strategic level HRA/AA concluded that mitigation is unlikely to be successful in relation to the adverse effects on the Natura 2000 sites considered. This nominated site has been excluded from the plan.
- A3 In the absence of suitable alternative solutions, or in the presence of solutions potentially having more negative consequences on the Natura 2000 site(s) concerned, the Government examined the existence of IROPI to justify adopting the plan.
- A4 In demonstrating IROPI the Government acknowledges that the plan has the potential to have an adverse effect on the integrity of Natura 2000 sites, including possible impacts on priority habitats (coastal dune, heathland, dune grassland and lagoons). However, the grounds for IROPI in this case relate to the protection of human health and public safety, and to beneficial consequences of primary importance for the environment. In accordance with Article 6(4) of the Habitats Directive the Government is therefore not seeking an opinion from the Commission, despite the presence of priority habitat types within sites which may be affected.

- A5 Consistent with European Commission guidance,³²⁸ that before IROPI can be demonstrated it is necessary to analyse and demonstrate the need for the plan and the alternative of not having the plan and alternatives ways of meeting the plan, the Government considered:
- a. why new generating capacity is required;
 - b. why there is a need for nuclear power as part of the generating mix;
 - c. Why it is necessary for all of the sites assessed as potentially suitable to be listed in this NPS and why not at different locations;
 - d. why this NPS is required.

a) Why new generating capacity is needed

- A6 To meet the Government's objective to maintain energy security, and because electricity is an essential component of any modern society, there is a need to replace capacity as well as to meet possible increases in demand for electricity generation. The option of not doing so is not tenable because of the harmful impacts on human health and safety as a result of impacts to critical national infrastructure resulting from interruptions to electricity supply³²⁹. As set out in EN-1 a significant amount of existing generating capacity (about 22GW) is due to close by 2025 either because it does not meet European emission standards or because power stations are coming to the end of their natural lives.
- A7 It is UK Government energy policy to tackle climate change and ensure energy security. The Low Carbon Transition Plan sets out³³⁰ that in order to achieve this there is a need for the supply of electricity to be almost entirely decarbonised by 2050³³¹. This is a very significant undertaking and it is therefore essential that no form of low carbon generation (e.g. renewables, fossil fuels with carbon capture and storage (CCS) and nuclear power) is ruled out. EN-1 sets out how the provision of low carbon generation is to be achieved.
- A8 EN-1 considers the possible alternatives to adding new generation capacity: demand reduction; more intelligent use of electricity; and the increased interconnection of electricity systems. Government believes that although increased energy efficiency, smart demand management and opportunities for increased storage and interconnection are being actively pursued³³², their effect on the need for new large scale energy infrastructure will be limited, particularly given the prospect of increased need for electricity for heating

³²⁸ *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC: clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence opinion of the Commission*, European Commission, January 2007, paragraph 1.3.1.

³²⁹ See Part 3 of EN-1.

³³⁰ P. 9 *The UK Low Carbon Transition Plan, National Strategy for climate and energy*, July 2009.

³³¹ The 2050 target is enshrined in the Climate Change Act, 2008. The Climate Change Committee has said that the UK will need to decarbonise the electricity system by 75% by 2030 to meet the 2050 target.

³³² Measures such as channelling £3.2 billion to help households become more efficient, and rolling out smart meters in every home by 2020.

and transport³³³. Hence modelling for the Renewable Energy Strategy³³⁴ suggests that about 60GW of new capacity will be built by 2025. These other strategies are therefore complementary, rather than an alternative to new generating capacity.

- A9 The modelling³³⁵ also suggests of the 60GW, about 35GW would need to be renewables³³⁶ and about 25 GW conventional (thermal) generation capacity. This represents a very great increase on current levels of renewable generation but renewables are not capable on their own to meet our future needs for electricity generation³³⁷, and are therefore not a realistic alternative to new conventional thermal capacity.
- A10 The Government has considered its objectives of ensuring security of supply whilst combating climate change, in the face of increased demand and capacity needing to be replaced. It has considered the alternatives of relying on energy efficiency measures and the central assumption that there will be a need for 60GW of new capacity to maintain the balance of supply and demand in 2025, of which only 35GW will be met by renewables. Hence having considered the alternatives, there is IROPI in permitting new capacity from thermal generation of 25GW because security of supply is essential for the maintenance of human health and public safety and because combating climate change will have beneficial consequences of primary importance for the environment.

b) Why there is a need for nuclear power as part of the generating mix

- A11 The proportion of nuclear power in the overall mix will decline initially in the period to 2020 as current power stations reach the end of their lives. However, the Government is keen to ensure as much as possible of the 25GW of thermal generation forecast to be built by 2025 is filled by low carbon technologies to meet its climate change and energy security goals. For this to happen there is a need to maximise the contribution of nuclear as soon as possible as a proven low-carbon technology³³⁸ and to make a contribution to the delivery of even more ambitious climate change objectives for 2050.
- A12 Having nuclear power in the UK electricity mix will help to ensure a diverse mix of technology and fuel sources. This increases the resilience of the energy system as it reduces exposure to the risks of supply interruptions and of sudden and large spikes in the electricity price³³⁹. The characteristics of nuclear power are very different from those of conventional fossil fuel or renewable generation³⁴⁰. The presence of nuclear power in the mix therefore allows extra scope in managing risks. The characteristics of nuclear power that can effect energy security are explained in more detail in Part 2 of this NPS.

³³³ Measures such as channelling £3.2 billion to help households become more efficient, and rolling out smart meters in every home by 2020 Part 3 of EN-1.

³³⁴ *The UK Renewable Energy Strategy*, 2009.

³³⁵ *The UK Renewable Energy Strategy*, 2009.

³³⁶ In line with the Government's expectation that by 2020 around 30% of our electricity will come from renewables.

³³⁷ Part 3 of EN-1.

³³⁸ These characteristics of nuclear power in the overall mix, which mean that it can effect energy security and climate change goals, are explained in more detail in Part 2 of this NPS.

³³⁹ *Meeting the Energy Challenge, A White Paper on Nuclear Power*, January 2008, p 56.

³⁴⁰ *The role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, May 2007, p 14, p 55.

- A13 The overall challenges of delivering secure electricity supplies, while making the transition to a low-carbon economy, would be magnified over the long-term by the absence of a dependable low-carbon technology such as nuclear power. The alternative of CCS for power generation is not yet proven, and is unlikely to be deployed on a sufficient scale before 2025. In any event, EN-1 explains that CCS is needed to complement other forms of generation, rather than being an alternative to them ³⁴¹.
- A14 Having considered our objectives of ensuring that the balance of 25GW by 2025 that by 2025 will not be met by renewables is filled by low-carbon generation capacity, the contribution which nuclear power could make, and the alternative of CCS, the Government has concluded that there is IROPI for as much as possible of the 25GW to be filled by nuclear power. In providing for future energy security in a way which minimises carbon emissions, this contributes to the maintenance of human health and public safety and has beneficial consequences of primary importance to the environment.

c) Why it is necessary for all of the sites assessed as potentially suitable to be listed in this NPS and why not at different locations

- A15 To contribute to the delivery of the objectives in the *LCTP* and within the overall strategic framework set by the Government, the Government believes that in principle new nuclear power should be free to contribute as much as possible towards meeting the need for 25GW of new capacity. To ensure that this NPS does not act as restraint on the ability of energy companies to provide this capacity from nuclear power, it is essential that this NPS has sufficient sites to allow nuclear to contribute as much as possible towards meeting the need for 25GW of new capacity. Equally, there can be no certainty that development consent on all sites listed in the NPS will be granted as issues may emerge once they are analysed in detail by the IPC. The Government has therefore concluded that it is necessary to include all ten sites in the NPS to ensure that sufficient sites are available for development to allow energy companies to fill a significant proportion of the 25GW of new capacity even if a number of sites fail at the project level. Although it is not possible to predict whether or not there will be more than one reactor at each of the 10 sites included in this NPS, a single reactor at each of the 10 sites³⁴² would result in 12 to 17 GW of nuclear capacity, depending on the reactor technology chosen. The Government does not consider it is appropriate to include more than ten sites in this NPS at this stage when the need is balanced against the potential harm to Natura 2000 sites and other factors like planning blight.
- A16 The Government commissioned a study to identify whether there might be any alternative sites, other than those nominated through the SSA process, which are potentially suitable for the deployment of new nuclear power stations by the end of 2025 and which better respect the integrity of Natura 2000 sites. The study screened the whole of England and Wales using sophisticated modelling techniques and a methodology very similar to the criteria used to assess nominated sites. The study revealed three sites as worthy of further consideration.

³⁴¹ Part 3 of EN-1.

³⁴² It is possible, subject to the IPC, that some sites could accommodate more than one reactor.

- A17 Government considered these sites further, and determined that they were not feasible alternative sites. The full reasons for this are set out the summaries for each site in the consultation document which accompanies this NPS and the other energy NPSs³⁴³. It is therefore necessary to include all of the sites in the NPS as they need to be available to energy companies to develop and there are no alternatives to them.
- A18 Prior to finally determining that the three sites are not feasible alternatives, the Government carried out Habitats Regulations Assessments and Appraisals of Sustainability on each potential alternative site in an identical manner to those sites nominated through the SSA process. The Government found³⁴⁴ that potential adverse effects on Natura 2000 sites could not be ruled out. At a strategic level it is not possible to determine whether these effects would be better or worse than the potential effects for the ten sites that are listed in this NPS.
- A19 Development proposals will, among other things, need to show that any potential damage to Natura 2000 sites is fully mitigated, or if this is not possible then the requirements of the Habitats Directive will need to be followed, including the necessary compensatory measures taken to ensure that the overall coherence of Natura 2000 is protected.
- A20 The locations listed in the NPS are locations that have been assessed against a range of criteria developed by Government through extensive consultation with the public, statutory consultees and energy companies and have been identified as being credible for the deployment of new nuclear power stations by the end of 2025 in line with the Government's objective that a significant amount of the non-renewable build by 2025 is filled by nuclear power from the sites on the NPS³⁴⁵. The Government has stated³⁴⁶ that given the urgency of the need to tackle climate change, low carbon generation technologies should be allowed to be deployed as early as possible. The failure to take account of significantly early deployability will increase the risk that the UK is locked into higher CO₂ emissions than would otherwise be necessary³⁴⁷. In turn this will mean that meeting the Government's targets for very significant decarbonisation of the economy will become correspondingly more difficult and expensive³⁴⁸. The Government therefore believes that there is a significant public interest in sites being deployed as early as possible during the period 2017-25.
- A21 As has been demonstrated, the development of nuclear power stations on any or all of the 10 sites is a necessary element in achieving the objective of achieving security of electricity supply while minimising carbon emissions. Alternatives to new electricity generation, to thermal energy generation, to nuclear power, and to the sites listed in this NPS have been considered. None of these alternatives can be relied on to meet the objective of the plan within the necessary timescales. This constitutes IROPI for including all potentially suitable

³⁴³ www.energynpsconsultation.decc.gov.uk

³⁴⁴ www.energynpsconsultation.decc.gov.uk

³⁴⁵ Part 2 of this NPS.

³⁴⁶ Chapter 3, *The UK Low Carbon Transition Plan, National Strategy for climate and energy*, 2009.

³⁴⁷ Part 2 of this NPS.

³⁴⁸ *Meeting the Energy Challenge, A White Paper on Nuclear Power*, January 2008, p 71 and Annex A.

sites in this NPS so that they are available for development. Doing so will contribute to the maintenance of human health, and public safety and has beneficial consequences of primary importance for the environment.

d) Why this NPS is required

A22 The Planning Act does not allow the IPC to consent an application from a developer in the absence of an NPS so the existence of this NPS is a pre-requisite for full implementation of the Government's policy of the IPC being the decision maker for development consent applications for nuclear power amongst other significant energy infrastructure.

A23 This NPS enables the delivery of one of the key objectives of the new planning system; namely that the IPC should take decisions on urgently needed infrastructure in a timely fashion and without delay. The national need for the infrastructure is being set out in this NPS. When the IPC considers an individual application it will consider the national need set out in the NPS and have a list of potentially suitable sites and guidance on specific issues. It will therefore be able to focus on potential local adverse impacts, taking into account views of local people and relevant environmental and regulatory assessments and move to taking a decision (based on weighing need against impacts) much more quickly.

A24 Without this NPS, therefore it is likely that there would be significant delays in development consent decisions being made. Continuing delays in the planning process would add to uncertainty for energy companies and could result in them choosing to invest in other generation technologies or countries. This would make it more difficult for the UK Government to meet its energy policy objectives of urgently tackling climate change, ensuring security of supply, tackling fuel poverty and decarbonising the economy.

A25 The IPC is only able to grant development consent for a new nuclear power stations on sites which are listed as potentially suitable sites in this NPS. This is to ensure that sites have been:

- assessed by the Government using criteria which have been consulted upon publicly;
- subject to an Appraisal of Sustainability incorporating the requirements of the Strategic Environmental Assessment (SEA) Directive;
- subject to a strategic level Habitats Regulations Assessment (HRA);
- been the subject of public consultation and Parliamentary scrutiny.

A26 In the light of the Government's objective of having an NPS setting out the need for nuclear power and a list of potentially suitable sites, and having considered that the alternative of not having one would cause delay and uncertainty in the planning system, there is IROPI for a Nuclear NPS which make sufficient sites available for development, to allow energy companies to generate up to 25GW from nuclear power on them.

Imperative Reasons of Overriding Public Interest (IROPI)

- A27 Government considered whether nuclear power should be allowed to be part of the UK's future electricity generating mix and set out its preliminary view, and the supporting evidence and analysis, for public consultation³⁴⁹. Following this consultation, Government confirmed³⁵⁰ its preliminary view that it would be in the public interest to allow energy companies the option of investing in new nuclear power stations; and that the Government should take active steps to facilitate this.
- A28 Because of the urgent need to reduce carbon dioxide emissions in order to avoid significant, long-term adverse environmental, social and economic consequences, whilst maintaining security of energy supply and preserving public safety and public health, the Government has said³⁵¹ nuclear would need to be part of the future low carbon electricity generation mix.
- A29 Paragraphs 6 to 14 of this analysis have demonstrated the reasons why new nuclear power stations are needed in order for the Government to meet its climate change and energy security objectives. There is therefore a need to allow energy companies to build new nuclear power stations because alternative technologies or approaches will not be sufficiently effective.
- A30 Paragraphs 15 to 21 of the analysis explain how Government has considered the 11 nominated sites against strategic criteria and a Habitats Regulations Assessment, and concluded that 10 are potentially suitable for new nuclear power stations. It has considered whether alternative, non-nominated sites might be available which would be in line with the strategic criteria and both consistent with Government objectives, including being credible for deployment by the end of 2025 or sooner, and less potentially harmful to Natura 2000 sites. It has concluded that there are none. Given the scale of the capacity that is likely to be built by the end of 2025, and which Government wishes energy companies to fill with low-carbon generation, and given the likely nuclear electricity generation capacity that could be constructed on a site, Government has concluded that all these 10 sites should be made available for development and listed in the nuclear NPS.
- A31 Paragraphs 22 to 26 of this analysis³⁵², supported by the AoS, explain why having a Nuclear NPS which lists sites is the most effective way of enabling energy companies to make the necessary investments in new nuclear power stations. The alternatives of not having an NPS, or having an NPS constructed in a different way, would not be compatible with the Government objectives, which require rapid de-carbonisation of the generation mix.

³⁴⁹ *The role of Nuclear Power in a Low Carbon UK Economy, Consultation Document*, May 2007.

³⁵⁰ *Meeting the Energy Challenge, A White Paper on Nuclear Power*, January 2008.

³⁵¹ *The UK Low Carbon Transition Plan, National strategy for climate change and energy*, p64, July 2009.

³⁵² See also the analysis in chapter 3 of the *Appraisal of Sustainability of the draft Nuclear National Policy Statement: main report*, November 2009.

A32 The Government is therefore satisfied that there are IROPI in making these 10 sites available for development and listing them in the NPS. This IROPI case is firmly based on fulfilling Government's energy policy objectives whilst contributing to wider EU goals for sustainable low-carbon sources of energy as means of reducing the effects of damaging climate change and, ensuring security of energy supplies. It further believes that on the basis of the preceding evidence and arguments which demonstrated the need for the plan, the 10 sites referred to at paragraph 2, should be listed in this NPS and made available for development, even though at this stage potential adverse impacts on Natura 2000 sites cannot be ruled out.

A33 If, at the project level, adverse impacts are confirmed in respect of development on one of the listed sites, then the developer will be required to follow the requirements set out by the Habitats Directive, including, if necessary, the development and implementation compensatory measures in line with the strategic measures set out in the HRA of this NPS.

Compensatory measures, Article 6 (4)

A34 Article 6(4) of the Habitats Directive (Reg 85E, Habitats Regulations) requires that where, in spite of a negative assessment on Natura 2000 site(s) integrity, the competent authority proceeds with the plan on the basis of IROPI, any necessary compensatory measures are taken to ensure that the overall coherence of the Natura 2000 network is protected.

A35 Given the strategic nature of the HRA process for this NPS, the inherent uncertainties of the AA conclusions, and the potential changes that may occur as the plan is implemented³⁵³, it is not possible at this stage to specify the precise nature or location of any compensation measures that might be required.

A36 The role of the plan is, therefore, to provide a robust framework through the direction it provides to the IPC that sets out the broad parameters for compensation measures, should they be required following the more detailed site level assessments undertaken for plan implementation.

A37 All project level HRAs must take account of the potential adverse effects and the proposed avoidance and mitigation measures identified through the strategic level assessment(s)³⁵⁴. Where site level assessments identify that compensation is required it must meet the following criteria and be:

- Appropriate for the area and the loss caused by the project
- Capable of protecting the overall coherence of the Natura 2000 network
- Capable of implementation

³⁵³ The HRA of the NPS has noted that avoidance and mitigation measures proposed by the assessment may minimise effects (to the point where integrity is no longer affected) or cancel out the negative impacts predicted such that the site level developments may proceed without the need to meet additional requirements under the Habitats Directive.

³⁵⁴ <http://www.energy-nps-consultation.decc.gov.uk>

- Ensure that, as a general principle, the Natura 2000 site is not irreversibly affected by the project before the compensation is in place
- Directed in measurable proportions to the habitats and species negatively affected
- Related to the same biogeographical region (within the UK) and should be as close as possible to the habitat that has been negatively affected
- Serving functions that are comparable to those that motivated the original area's submission for designation
- Clearly defined, with implementation goals and managed so that the compensatory measures can achieve the goal of maintaining or improving the overall coherence of Natura 2000.

Annex B:

Maps supporting the Strategic Siting Assessment

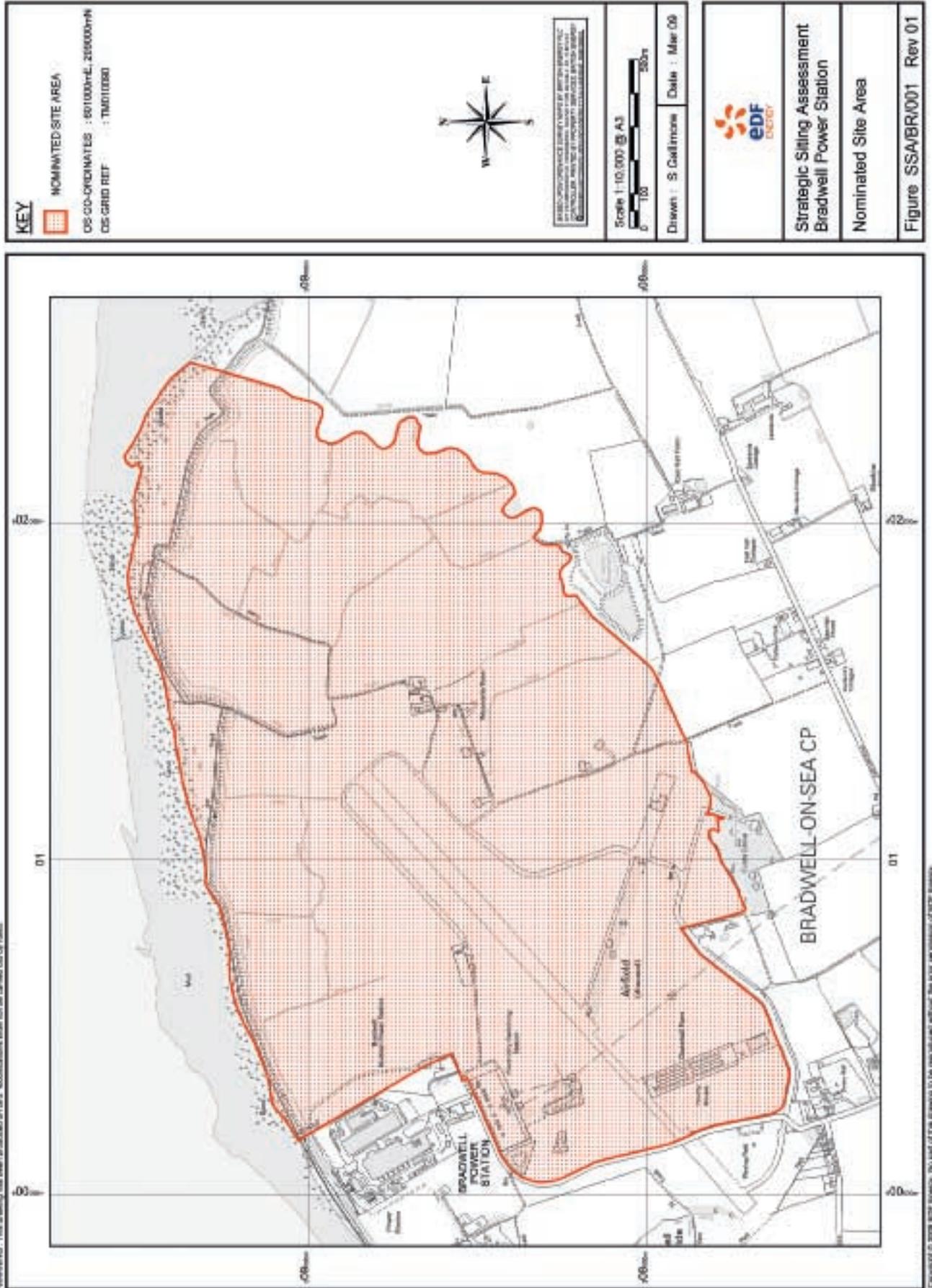
- B1 There are a number of maps that are relevant to the sites listed in the draft Nuclear National Policy Statement.
- B2 For each site there is the map provided by the nominator. This shows the area nominated by means of a boundary on an Ordnance Survey map at 1:10,000 scale.
- B3 Where relevant there are also maps that pertain to the assessment of sites against the Strategic Siting Assessment criteria. These maps relate to three criteria:
- C1 Demographics: these maps show where a nominated site, or an area near to a nominated site, exceeds the semi urban criterion.
 - D3 Proximity to hazardous industrial facilities and operations: these maps show where the land use planning consultation zones of facilities subject to the Control of Major Accidents and Hazards Regulations intersect with a nominated site.
 - D9: Size of site to accommodate operation: these maps show, where relevant, where within the nominated site boundary there is insufficient land to provide effective defence in depth for a nuclear reactor (including the associated turbine hall), spent fuel, and intermediate level waste stores.
- B7 These issues only arose at certain sites, so there is not a corresponding map for every site.

Contents

Bradwell	Nominator map of site
	D3: Proximity to Hazardous Facilities and Operations
Braystones	Nominator map of site
Hartlepool	Nominator map of site
	C2: Demographics
	D3: Proximity to hazardous facilities and operations
	D9: Size of Site to accommodate operation
Heysham	Nominator map of site
	C2: Demographics
	D3: Proximity to hazardous facilities and operations
	D9: Size of site to accommodate operation
Hinkley Point	Nominator map of site
	D9: Size of Site to accommodate operation
Kirksanton	Nominator map of site
Oldbury	Nominator map of site
Sellafield	Nominator map of site
	D9: Size of Site to accommodate operation
Sizewell	Nominator map of site
	C2: Demographics
	D9: Size of Site to accommodate operation
Wylfa	Nominator map of site

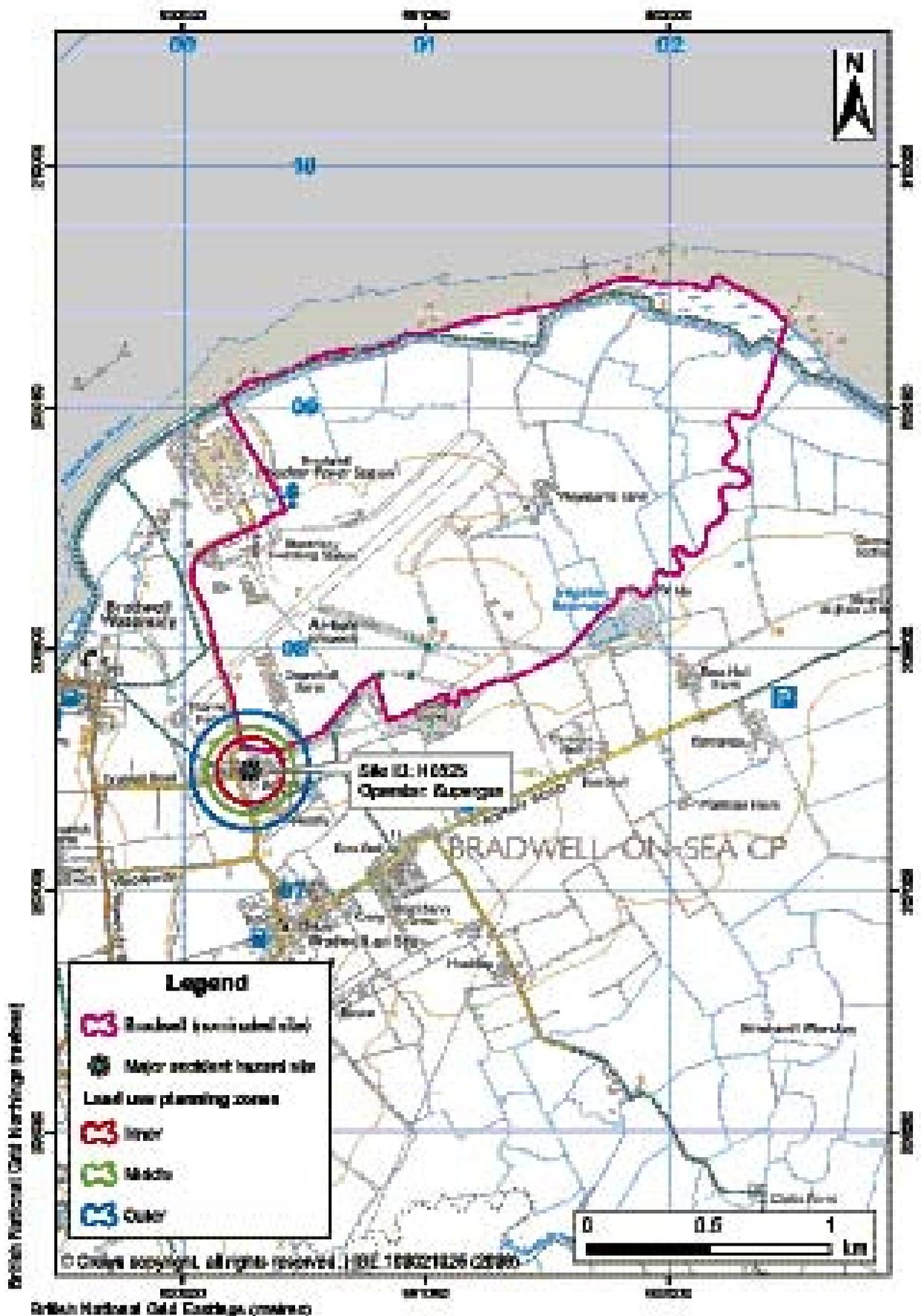
Bradwell

Nominator map of site



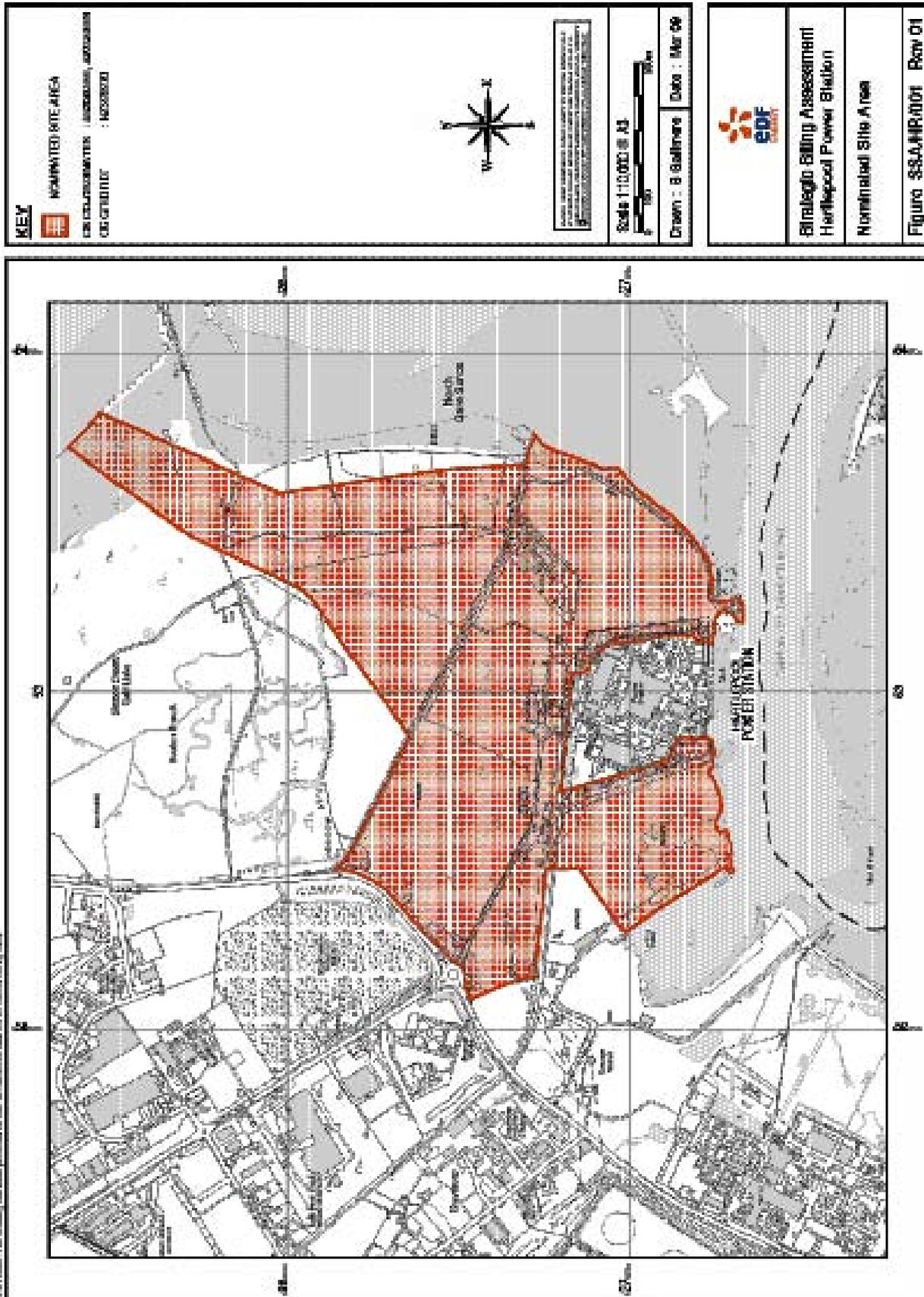
Bradwell

D3: Proximity to hazardous facilities and operations



Hartlepool

Nominator map of site



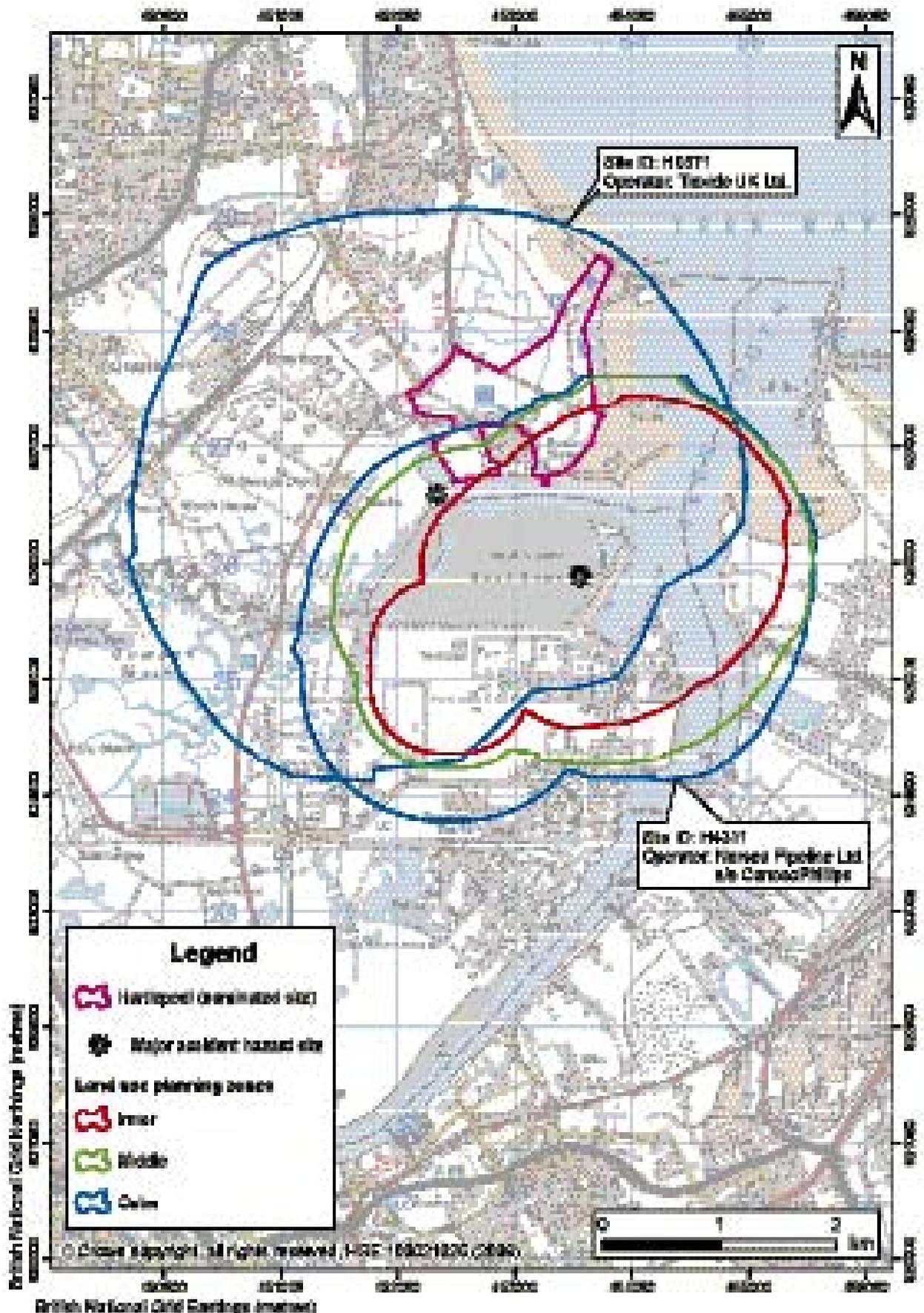
Hartlepool

C2: Demographics



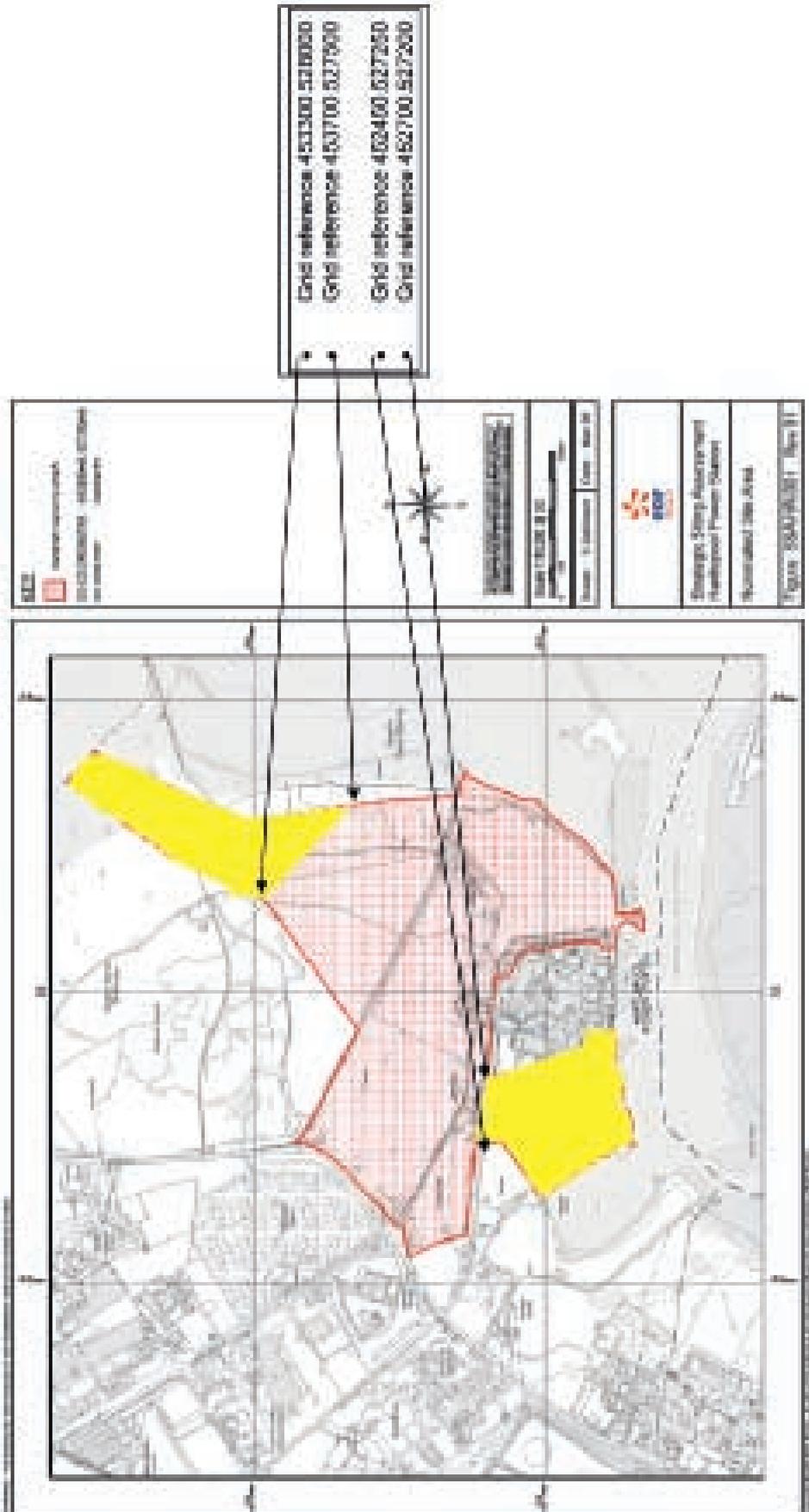
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D3: Proximity to hazardous facilities and operations



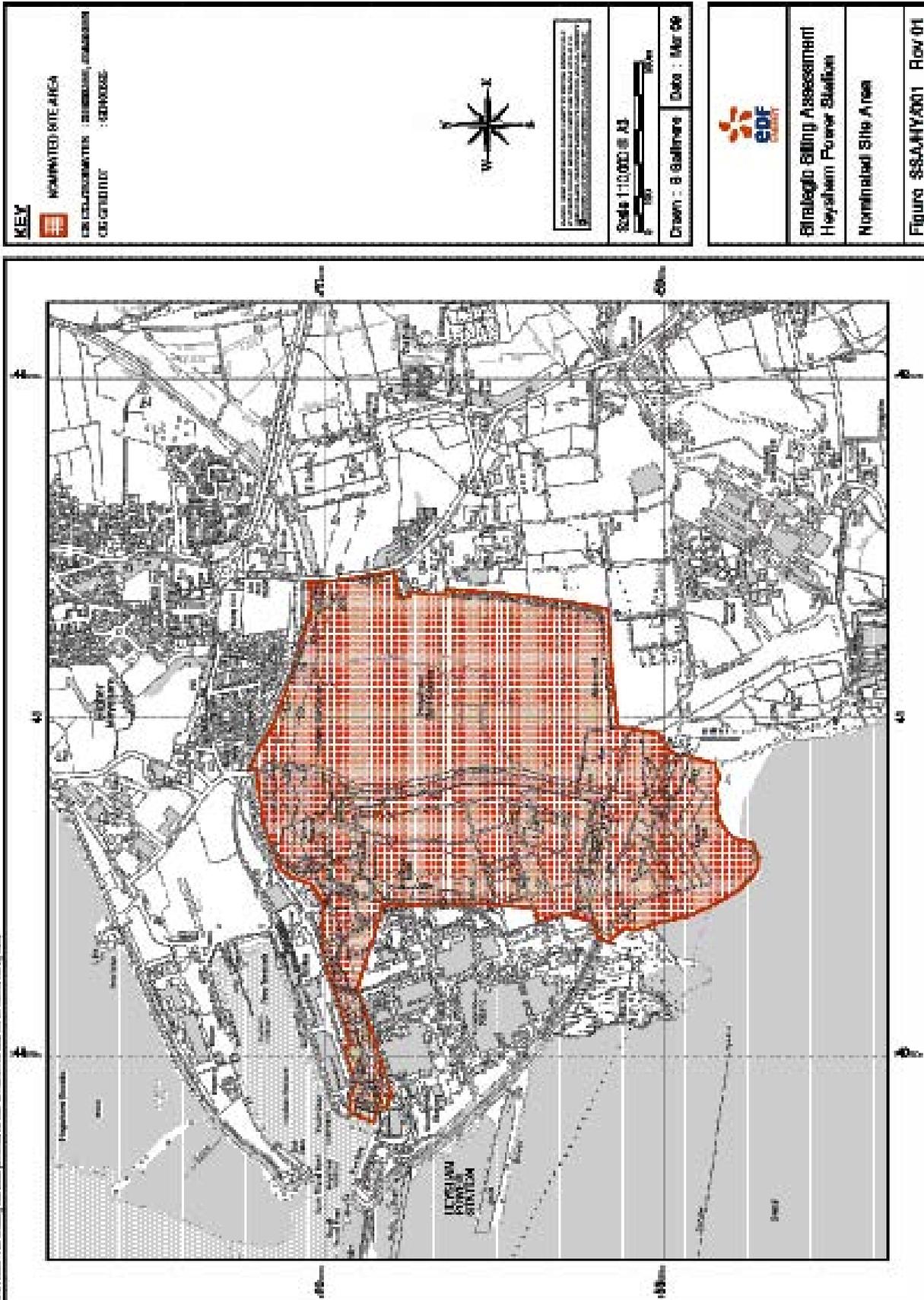
Hartlepool

D9: Size of site to accommodate operation



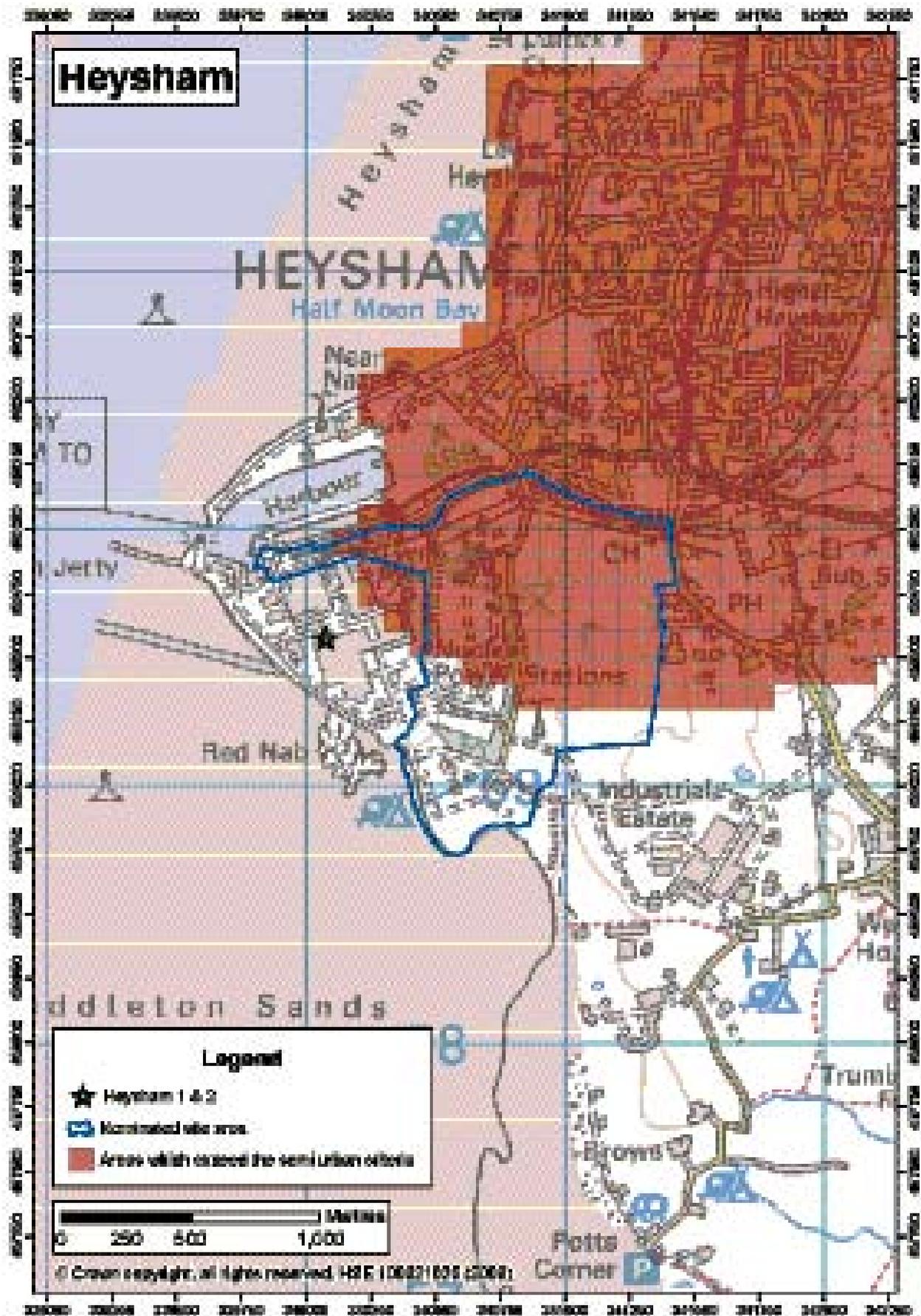
Heysham

Nominator map of site



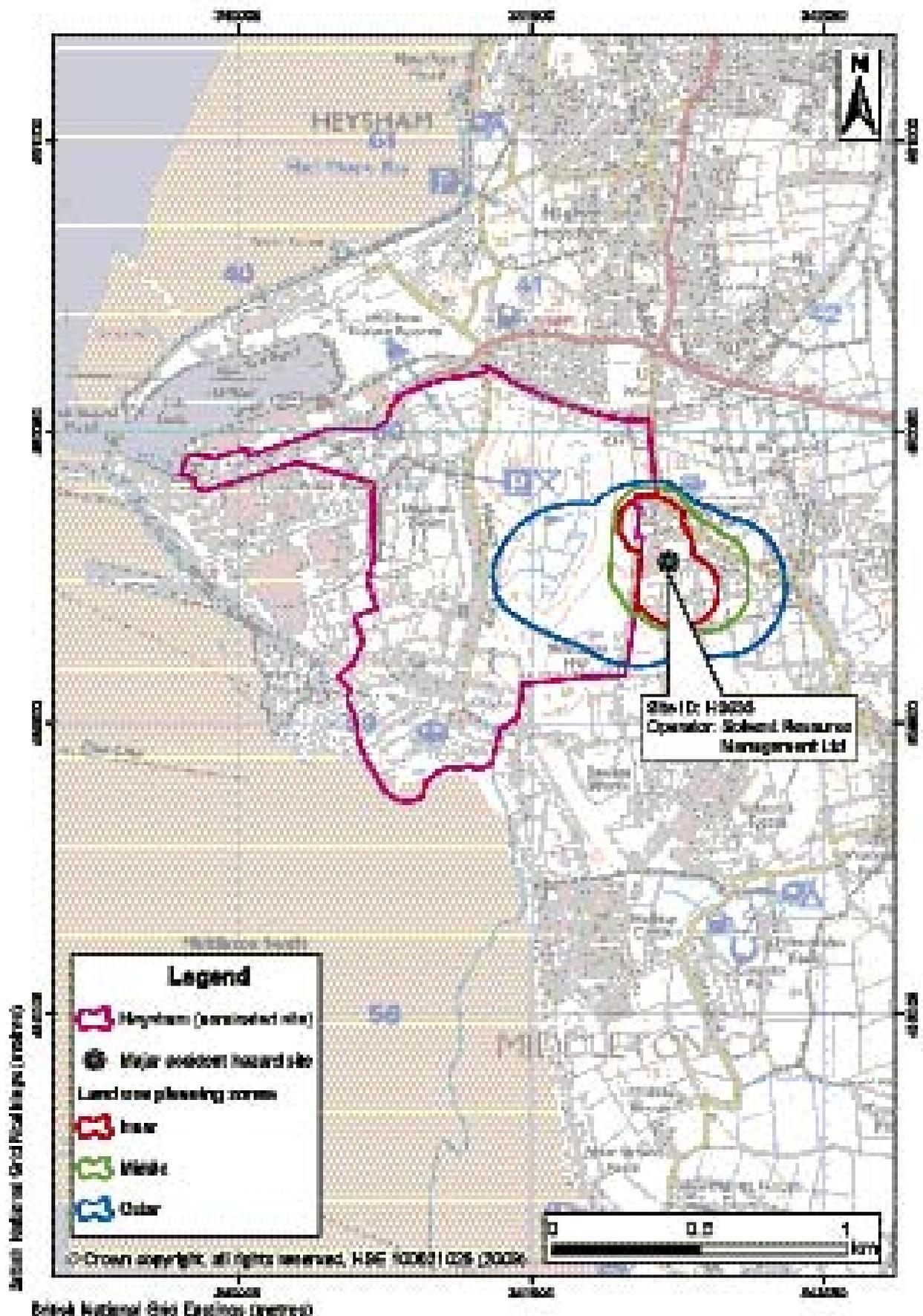
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C2: Demographics



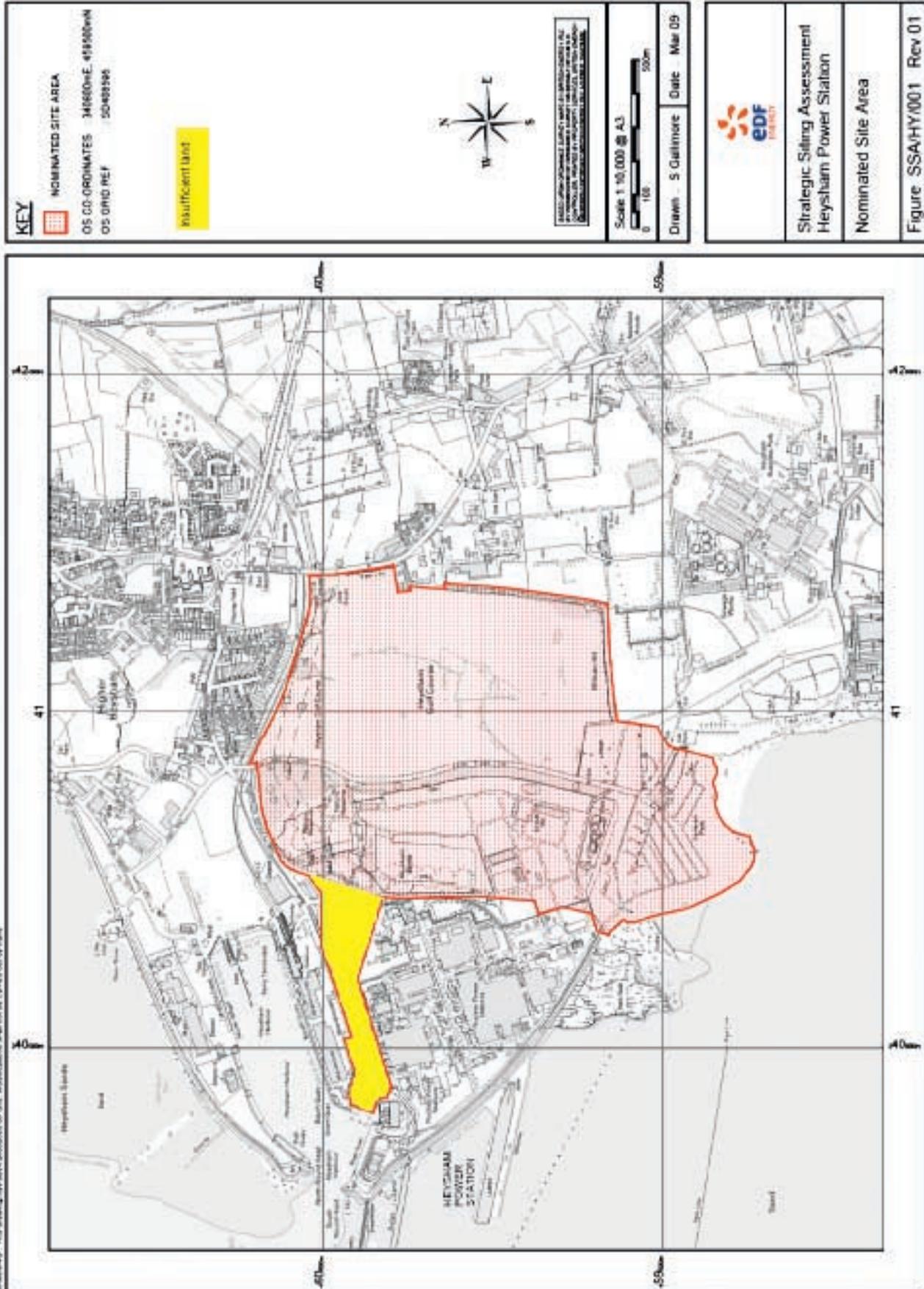
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D3: Proximity to hazardous facilities and operations



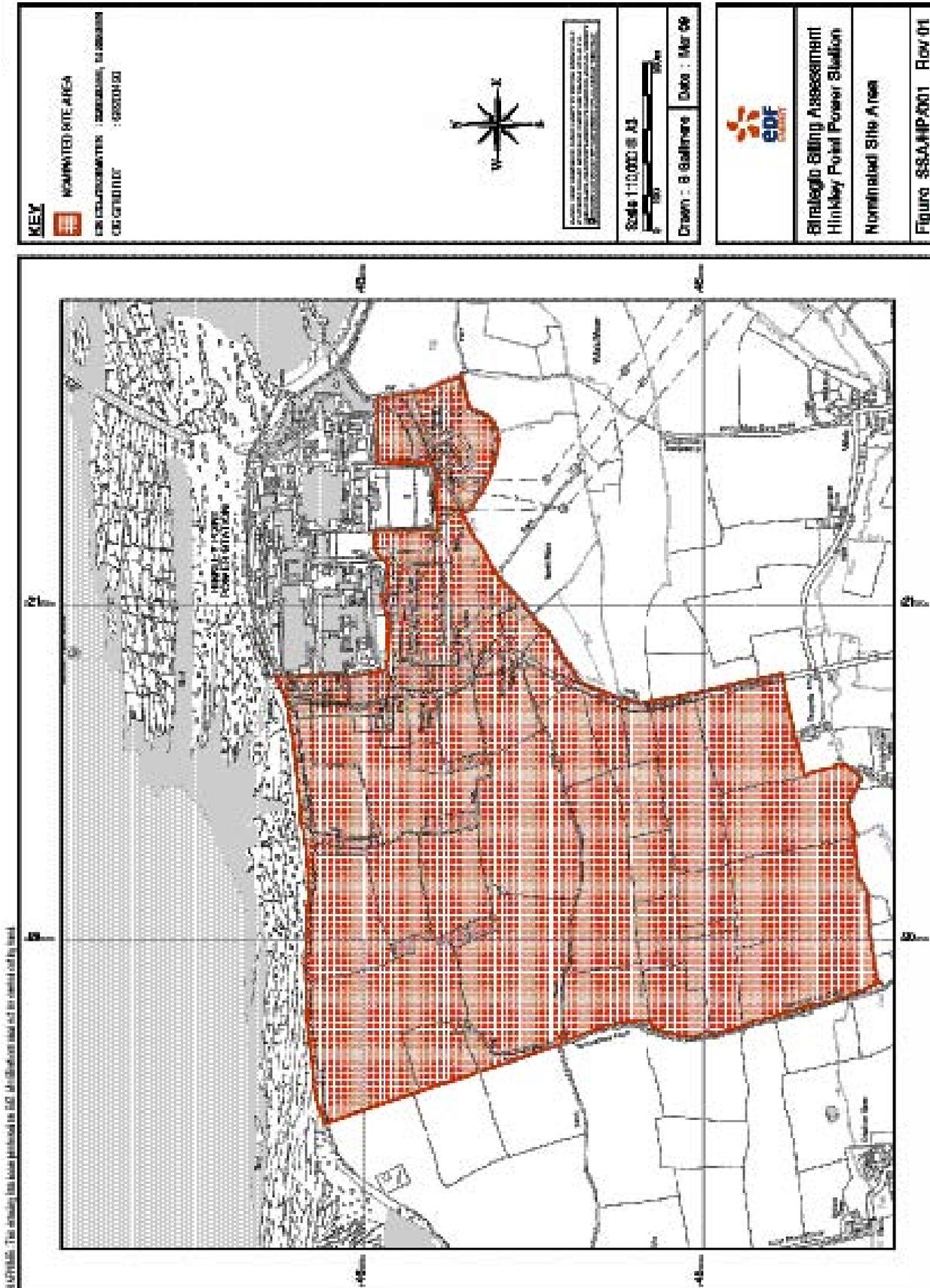
Heysham

D9: Size of site to accommodate operation



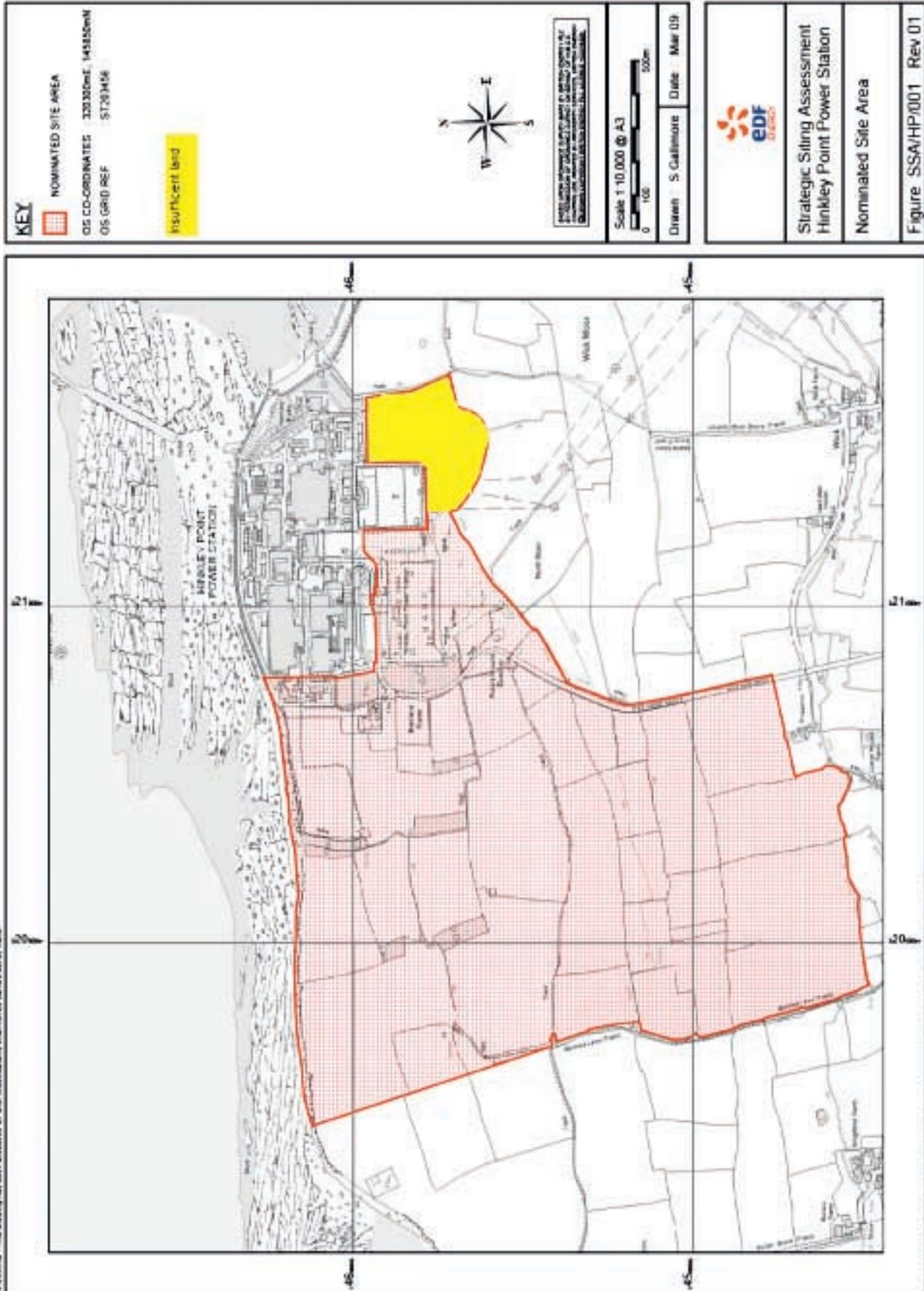
Hinkley Point

Nominator map of site



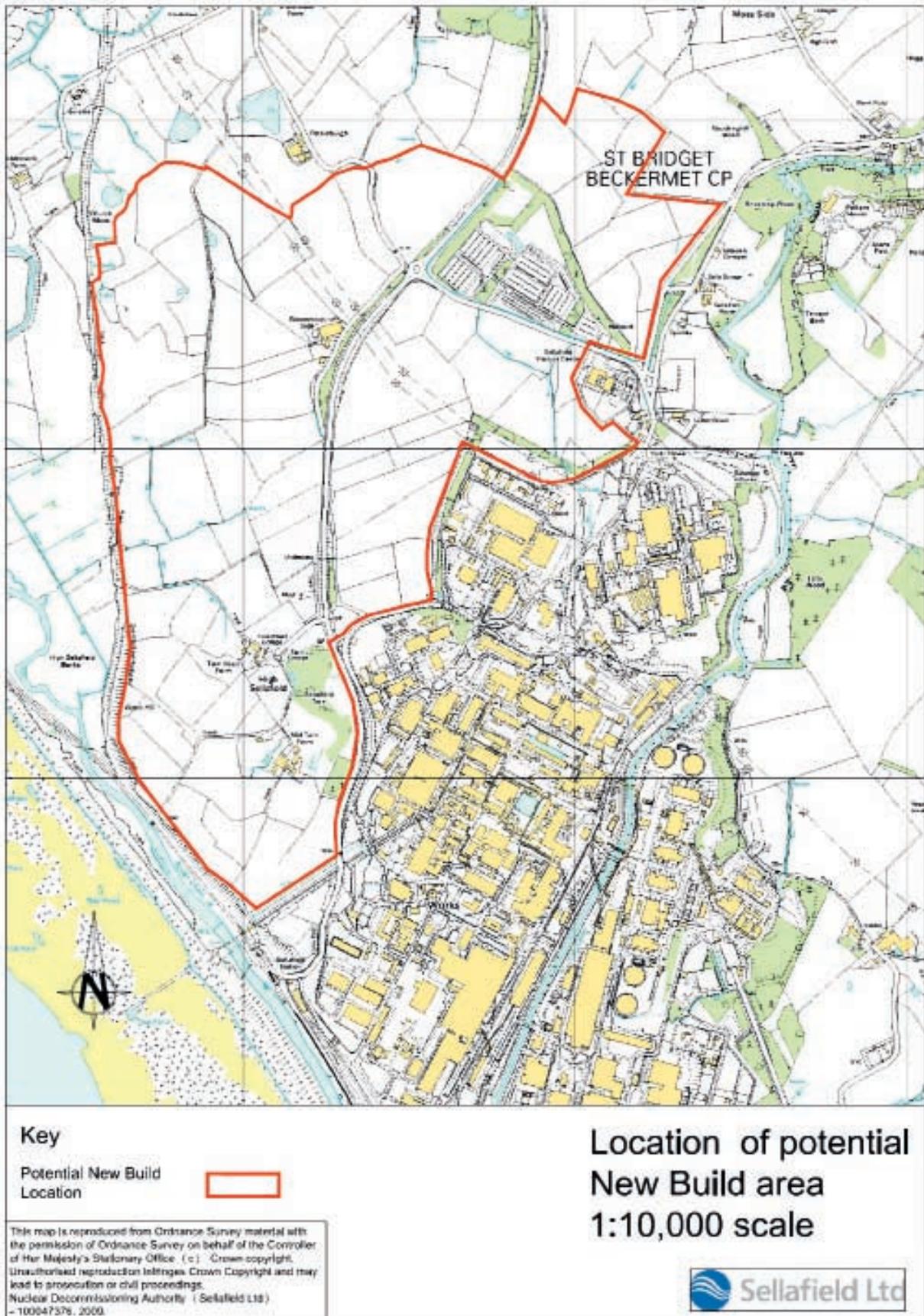
Hinkley Point

D9: Size of site to accommodate operation



Sellafield

Nominator map of site



Sellafield

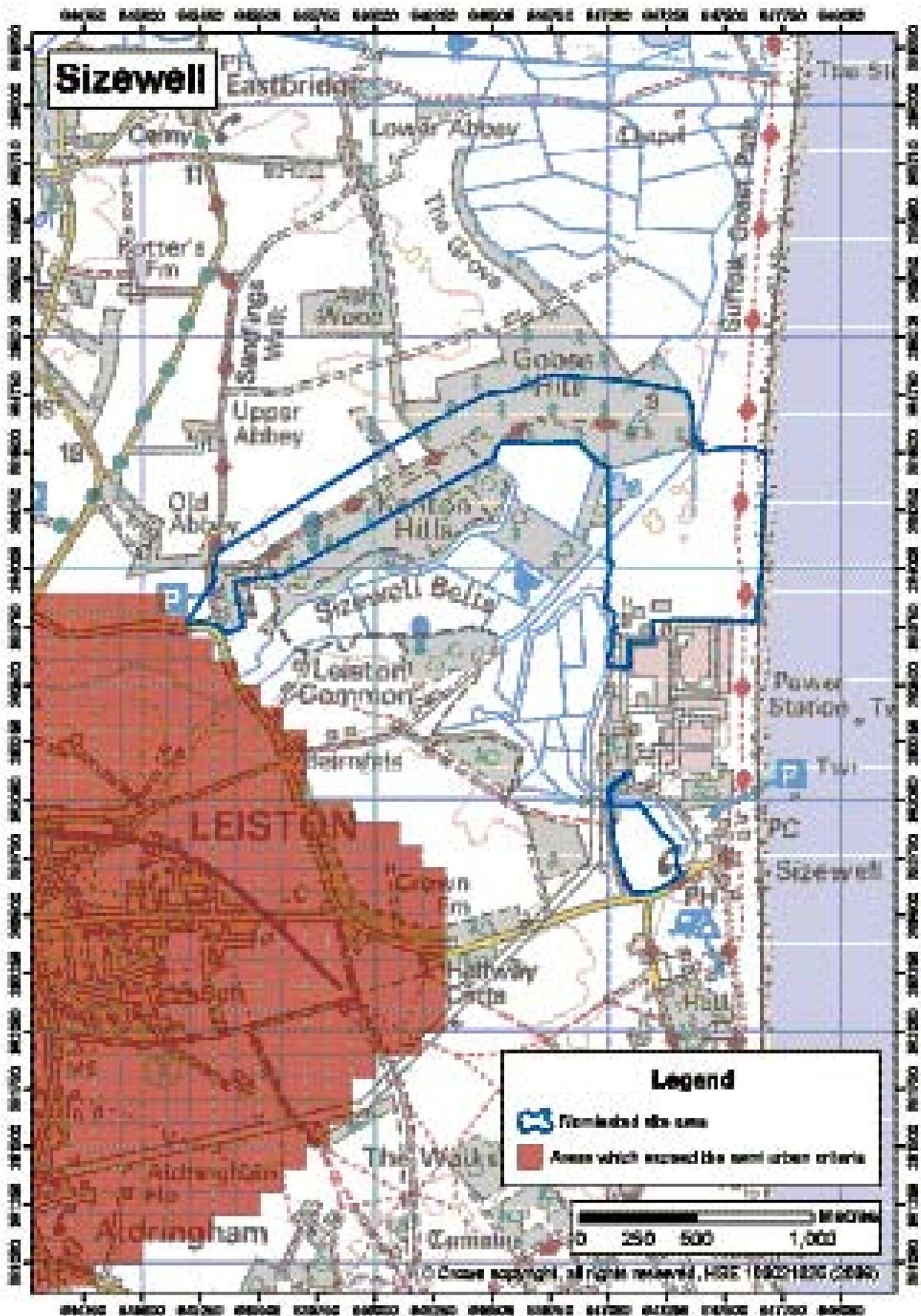
D9: Size of site to accommodate operation



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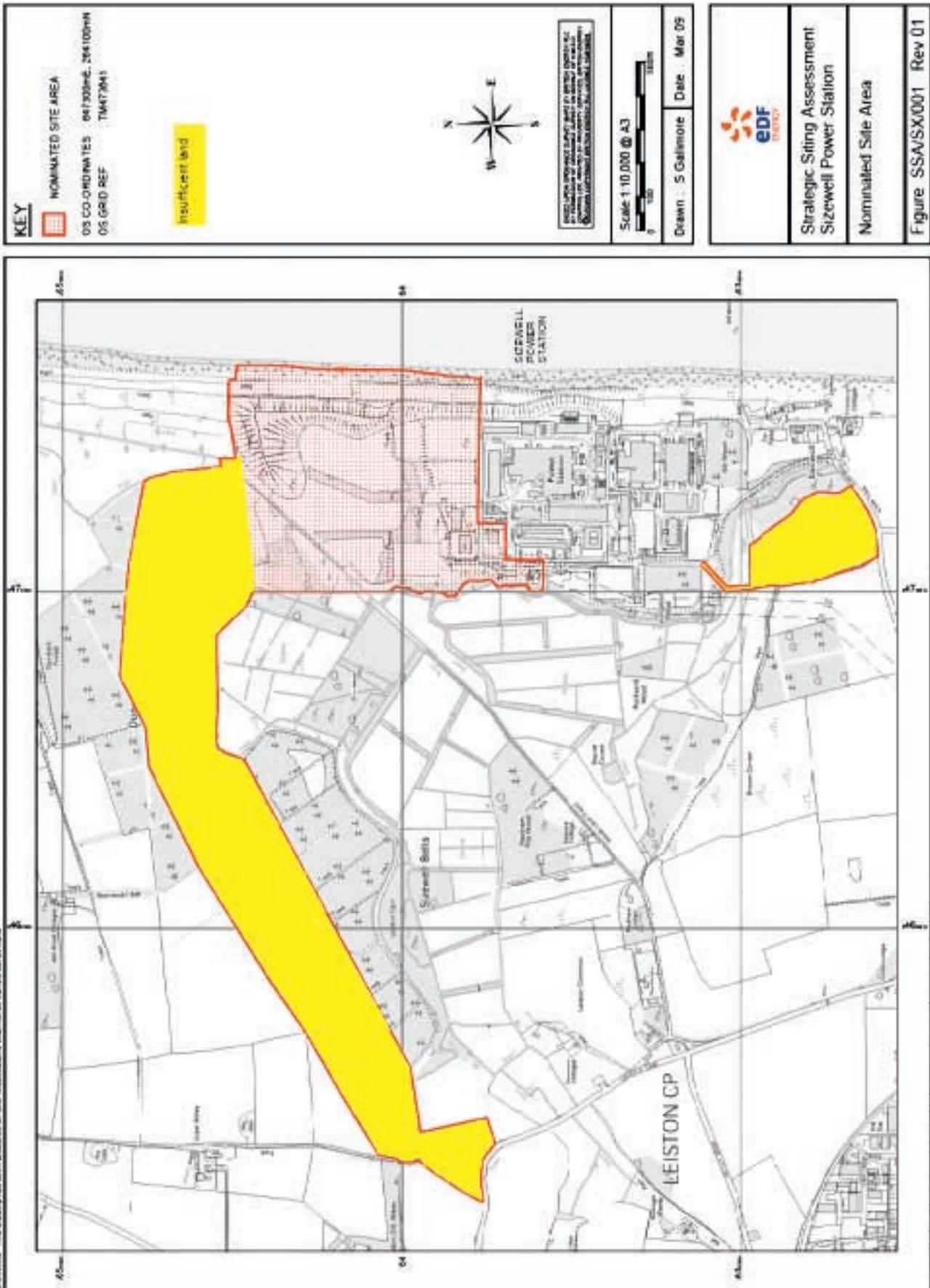
Sizewell

C2: Demographics: map of population density



Sizewell

D9: Size of site to accommodate operation



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