

## **The Governments response to the Nuclear Power National Policy consultation.**

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### **Question 20: Impacts of new nuclear power stations**

#### **Comments on safety, security, health and non-proliferation risks of new nuclear power stations**

The Government acknowledges the safety, security, health and non-proliferation concerns raised by respondents. However, taking all the evidence into account the Government believes that the risks associated with nuclear power are small and that the existing regulatory regime is such that those risks can be effectively managed. Further, the Government remains satisfied that the drafting of the revised draft Nuclear NPS appropriately covers these impacts

##### *Security*

7.205 The security of civil nuclear material and sites in the UK is regulated by the OCNS in accordance with relevant national legislation, which fully reflects international obligations and guidelines. The OCNS places strict obligations on site operators and requires site security plans to be approved and regularly reviewed.

7.206 The threat of infiltration is taken very seriously. Site operators are required to ensure that anyone accessing nuclear materials is properly vetted. OCNS provides a security vetting service for all permanent employees and all contractors working in the civil nuclear industry. Clearances are granted only after the applicant's request has been investigated and has satisfied the criteria appropriate to the level of access required.

7.207 Any new licensed nuclear sites would need to satisfy the requirements of the Nuclear Industries Security Regulations 2003, which make provision for the protection of nuclear material, both on sites and in transit, against the risks of theft and sabotage, and for the protection of sensitive nuclear information. The Government is confident that this approach will ensure that security measures will continue to be robust and effective.

##### *Generic Design Assessment and resilience to external hazards*

7.208 The HSE and the EA are currently undertaking a process of Generic Design Assessment of new nuclear reactor designs. Generic Design Assessment allows the generic safety, security and environmental implications of new nuclear reactor designs to be assessed up front. The Generic Design Assessment process takes into account all reasonably foreseeable external threats. This includes meteorological phenomena, the effects of climate and landscape change, geological disturbance, seismic activity, flooding and aircraft impact.

7.209 The Generic Design Assessment process allows the regulators to identify any potential issues at the design stage, when a solution can be identified and implemented more effectively and efficiently. As such, issues raised during the process (such as the comments quoted from the HSE's Stage 3 Report) should not be seen as matters for concern, but should provide confidence that, once approved, the reactors will be safe and fit for purpose. It is anticipated that the Generic Design Assessment process will shorten the subsequent site licensing and authorisation processes and provide greater certainty to the public and industry at an earlier stage. The regulators have stated that they expect to report their Generic Design Assessment findings in June 2011.

##### *Non-proliferation*

7.210 All civil nuclear material in the UK is subject to "Euratom Safeguards", which are designed to detect the diversion of nuclear material to weapons or any other undeclared use. Existing nuclear operators are required to provide the European Commission with design information on installations and accountancy reports for nuclear materials. The Euratom Treaty<sup>67</sup> also requires that the Commission's inspectors have access at all times to all places,

data and personnel in order to verify the safeguards information submitted and provide assurance about the non-diversion of nuclear material. Euratom Safeguards will apply to any new nuclear power station in the UK, and the stations will also be subject to International Atomic Energy Agency inspections

## Question 21a): Strategic Siting Assessment: general

### **The Government's response**

7.241 The SSA is a process to identify and assess sites which are strategically suitable for the deployment of new nuclear power stations by the end of 2025. In addition to calling for nominations, a study was commissioned to identify any alternative sites across England and Wales<sup>81</sup>. Comments on the assessment of alternative sites are considered under Question 22 a).

7.242 Establishing the SSA criteria first, after public consultation but before nominations, allowed nominators to identify sites that they thought could meet those criteria. Setting criteria after the sites had been nominated would arguably not have been a transparent or fair process and would have made it much harder for nominators to identify potentially suitable sites.

7.243 It is understandable that interest in the process of assessment has been forthcoming since the sites were nominated particularly from the vicinity of those sites. However, the Government had run a number of previous consultations to reach the SSA process and criteria, including a 22 week consultation in May 2007 on the principle and indicative criteria, which included a series of national events around the country, and a more detailed consultation in July 2008<sup>82</sup>

7.245 The SSA has assessed whether a site is potentially suitable for a new nuclear power station rather than assessing a detailed application for development consent. It is possible, in theory, that different developers could bring forward different detailed proposals which may not affect the site's overall strategic suitability, which is the remit of the SSA. The SSA criteria represent those issues which Government is capable of assessing at a national level and at an early stage in the planning process.

7.246 Detailed plans will continue to emerge for individual planning applications. A conclusion that a site is potentially suitable does not mean that an individual application for development consent at that site will be granted by the IPC. The IPC will have to carefully consider what is proposed in the application, and at a level of site specific detail which is beyond what was achievable in a national level assessment.

7.247 The SSA did not require nominators to specify how many reactors may be developed at a site. For the majority of the criteria, the assessment considered the area within the nominated boundary rather than the number of reactors that would be on it, which was less relevant at the level that the assessment was conducted. For instance, the flood risk assessment of the area within the boundary would apply regardless of the number of reactors that were on a site. For those criteria where it was more relevant at this stage, size of site (D9) and cooling (D10), a baseline of one reactor was used. The AoS has also used a base case of one reactor, apart from at Hinkley Point and Sizewell where the AoS took note of nominator statements that they plan to develop twin reactors at the site.

7.248 This does not mean that more than one reactor could not be built at any site, but it does mean that the differing impacts of a second station such as increased need for cooling water would need to be taken into account by the IPC as part of the EIA, and by the regulators as part of their consenting regime, should such an application come forward.

7.251 The draft Nuclear NPS identified potential cumulative effects of more than one nuclear development at a strategic level. It identified both potential cumulative impacts in particular regions,

for instance on biodiversity or visual impact on landscape, and opportunities, for instance on employment and supporting industries.

7.252 The assessment found that there was scope for mitigation of some impacts, but in some cases total mitigation is unlikely. However, not all cumulative impacts can be adequately assessed at this stage. For instance when assessing the cumulative impact on transport, factors such as the potential timing of the development and the number of employees will make a significant difference to the cumulative impact of more than one power station. This sort of information is not currently available. Ruling sites out now purely on the basis of cumulative effects risks prematurely precluding a site from development before an adequately detailed proposal could come forward with potential mitigating actions.

7.253 There can be no certainty that development consent on all sites listed in the revised draft Nuclear NPS will be sought or granted. This could result in removing sites now on the basis of cumulative effects which may not in practice materialise. Given this, and as it is for the private sector to build and operate new nuclear power stations, if sites are considered potentially suitable then the Government does not think it appropriate to stipulate which application should come forward first.

7.254 The IPC is best placed to consider cumulative effects, as it can do so at the point at which it is clear what other proposals have come forward and are relevant to the assessment. The IPC would not be expected to pre-empt what proposals may come forward in the future or second guess their effects - those proposals will be assessed for cumulative effects should they also apply for planning consent.

7.257 The assessment of environmental impacts was drawn from the AoS and HRA for each site. The HRAs for the sites which are in the NPS concluded that it could not rule out adverse effects on the integrity of European-designated ecological sites. However, the assessment proposed a suite of avoidance and mitigation measures which could be considered as part of a project level HRA. It was assessed that the effective implementation of these measures may help to avoid or mitigate adverse effects.

7.258 Given the scope for avoidance and mitigation, and the need for sites, the Government does not think that sites should be ruled out from the revised draft Nuclear NPS where adverse effects cannot be ruled out at this stage (Dungeness is the only nominated site which overlaps with a European protected site to such an extent that the avoidance of adverse effects is not considered possible and mitigation of the effects of direct land take is assessed as unlikely to be successful).

7.259 Section 1.7 of the revised draft Nuclear NPS stipulates that any individual consent applications will be required to be supported by more detailed project level HRA, including Appropriate Assessment where necessary<sup>83</sup>. If adverse effects on European Sites<sup>84</sup> cannot be ruled out in relation to the project at that stage, then the IPC will need to make an assessment in line with the requirements of article 6(4) of the Habitats Directive. Annex A of the revised draft NPS sets out that the finding of IROPI for this NPS does not automatically transfer to individual projects.

7.260 The assessment has considered sites, rather than specific applications, and has been undertaken at a strategic level where specific project level information is not yet available, including in some cases information about the choice of reactor, the location of the finalised boundaries of the development site, the location and extent of ancillary infrastructure (such as marine off loading facilities, transport infrastructure, housing/community facilities) and the location of flood defences. These factors will all affect the scale of impacts and affect the avoidance and mitigation measures which might be feasible. At this strategic level, detailed suggestions for mitigation have been considered in the absence of project specific detail. Mitigation measures have not therefore been stipulated for each site. This avoids the risk mitigation measures which would have been appropriate for a particular development are missed, or stipulated where they are not necessary.

7.261 A threshold of potential mitigation has not been set as this may mean ruling sites out against effects which do not arise. Methods to avoid or reduce impacts will be explored in more detail at the project level when the developer has detailed information to design a bespoke package of mitigation measures tailored to suit local conditions.

7.293 Whilst the likelihood of an accident with off-site consequences is extremely low it is important that in the event of such an accident, emergency response plans can be put into effect. The efficacy of emergency arrangements is related to the density of population around a nuclear site. The Government has applied a policy of siting new nuclear power plants in areas where the population density does not exceed certain thresholds and during the SSA an assessment has taken place to see whether a proposed site should be excluded because population density. The HSE advised that the “semi-urban criterion” is appropriate for setting this threshold. A worked example of how this scan took place is provided within the HSE’s guidance on the demographics assessment<sup>90</sup>

## **Question 21d) Hartlepool Strategic Siting Assessment Specific Sites**

### **Introduction and overall conclusion**

7.470 Given that the site meets the SSA criteria, and having considered evidence from, inter alia, the public consultation, the spring 2009 opportunity for public comments, regulators, the revised AoS and HRA, the Government has concluded that the site is potentially suitable and it is included in the revised draft Nuclear NPS.

7.471 The assessment considers that there are a number of areas which would require further consideration by the applicant, the IPC and/or the regulators should an application for development consent come forward, including the effects of any proposals on biodiversity including on the Tees Estuary, and consideration of existing land use.

7.472 Key themes identified during the consultation include on demographics, flood risk, proximity to hazardous industrial facilities and the potential impact on designated sites of ecological importance. There were also a number of comments about health impacts. Where those are site specific they are dealt with below. General comments on health are dealt with under Question 20 (“Comments on the safety, security, health and non proliferation risks of new nuclear power stations”).

### **Comments on C1: Demographics**

7.473 Several responses received during the public consultation commented on the proximity of the nominated site to population centres including Hartlepool itself, Middlesbrough, Redcar and Stockton and questioned the suitability of its location. It was questioned whether the original demographic data used to assess the suitability of the site was used as it was suggested that it was flawed.

### **The Government’s response**

7.474 In determining the site population factors for advising the Government with regard to the demographics criterion in the SSA the HSE’s generic demographic analysis was carried out to a radius of 30km from the proposed site and this would have therefore taken account of the influence of population centres out to that distance. The HSE’s assessment is based on data from the National Population Database 2, updated in 2008, and therefore takes into account changes in populations since development of the existing power station. The criterion is discussed in more detail under Question 21a) (“Comments on the assessment of demographics”).

### **Comments on D1: Flooding, storm surge and tsunami**

7.475 Some responses commented that the site would be inundated by sea level rise in the future and that the nominator (EDF) had not taken sea level rises into account in its assessment. It was also stated that it is current policy on coastal protection to let the sea engulf the land and that this could mean that sand dunes would be washed away exposing the power station to the sea. It is believed that this is a reference to the Shoreline Management Plan.

### **The Government's response**

7.476 In assessing both flooding (criterion D1) and coastal processes (criterion D2) the Government has been advised by the EA and the NII. Sea level rises have been taken into account using data looking forward to 2100. These comments are considered under Question 19 ("Comments received on the interim storage of higher activity wastes").

7.477 The EA has advised that the current policies for the site, under the Shoreline Management Plan 2, are a combination of hold the line and retreat or 'natural roll back'. The EA have also stated that if the coastline is protected against erosion to the site this would be contrary to the sections where retreat has been identified as the preferred policy. However, if as stated in the nomination report the roll back of the dunes is not expected to impact on the site within its lifetime then there may not be a conflict with the current policies.

7.478 Links to each Shoreline Management Plan 2, and details of the relevant lead authority, are available through the EA website. As referenced in EN-1, should an application for development consent come forward, the applicant will need to demonstrate that they have assessed the implications of the proposed project on strategies for managing the coast set out in the latest Shoreline Management Plan.

### **Comments on D2: Coastal processes**

7.479 There was a concern about the effects that coastal defences may have on adjacent and nearby designated sites. It was asked why there were neither projections nor modelling were presented in the AoS relating to sediment deposition or erosion on the designated sites or the estuary despite existing historical knowledge.

### **The Government's response**

7.480 The AoS Site Report for Hartlepool acknowledges that as the nominated site will likely require upgraded defences to counteract coastal retreat. It is recognised that these defences have the potential to modify existing estuarine hydrodynamics and associated movement of sediment, which may have secondary effects on estuary and marine ecosystem structures and functioning. As the nominated site is situated next to several ecologically designated areas (in particular the Teesmouth and Cleveland Coast SPA/Ramsar, Seal Sands and the Seaton Dunes and Common SSSI and the Teesmouth NNR site), mitigation measures will need to recognise these designations.

7.481 The AoS also states that a full understanding of the hydrodynamics and sediment transport within the estuary and the use of sensitively designed sea defences (for example using soft engineering designs) could minimise potential effects. However, as set out at in the SSA – general section, the assessment being carried out at this stage is at a strategic level and does not therefore go into the level of detail that would be required for an application for development consent.

7.482 As referenced in the draft Nuclear NPS, further investigation during the detailed design stage of the project will take place to inform the requirement for, and impacts of, mitigation from new or upgraded coastal defences.

### **Comments on D3: Proximity to hazardous industrial facilities and operations**

- 7.483 Several responses commented on the nominated site's proximity to a number of industrial facilities, in particular the two neighbouring 'upper tier' COMAH establishments, Huntsman Pigments and Norse Pipeline Ltd.
- 7.484 Some responses made reference to the 'ghost ships' located at the Teesside Environmental Recycling and Reclamation Centre, close to the site boundary, with concerns raised that any explosive materials associated with demolition work on these could present a hazard to the nominated site.

### **The Government's response**

- 7.485 As referenced in the draft Nuclear NPS, the site passed this criterion in the SSA, however given this proximity to neighbouring 'upper tier' COMAH establishments, the applicant would need to demonstrate to the HSE that the facility could be protected against risk from adjacent hazardous facilities throughout its lifetime. The HSE has identified a further neighbouring COMAH site, Fine Organics Ltd, which has been referenced in the revised draft NPS and accompanying maps.
- 7.486 The HSE has advised that there is no regulatory stipulation that new nuclear plants cannot be built near to any hazardous industrial processes. There is, however, a requirement that the implications of siting a new nuclear plant adjacent to any potentially hazardous industrial plants are understood, and that at the strategic siting stage it is not seen as likely that the potential threats from such a plant would preclude deployment of a new nuclear power station.
- 7.487 The HSE's assessment of the site concluded that at a strategic level there were no concerns sufficient to rule out the future use of the site for nuclear development. During any site licensing phase, external hazards would be examined in considerably more detail, and appropriate arrangements and safety justifications developed to take account of any potential threats.
- 7.488 The HSE has advised that the present enforcement activity relating to the 'ghost ships' is centred around asbestos removal. This is not considered a relevant hazardous facility that would pose a risk to a nuclear development.

### **Comments on D6: Internationally designated sites of ecological importance and D7: Nationally designated sites of ecological importance**

- 7.489 A number of responses expressed concern that despite the findings of the AoS that there was potential for adverse effects on four European Sites<sup>114</sup>, the site could progress to the application stage. This was raised across the sites and comments are discussed under Question 21a) ("Comments on the assessment against the environmental criterion D6 and D7").
- 7.490 There was a concern about whether the HRA fully appreciated the importance for SPA species of the remaining undeveloped areas adjacent to the estuary and it was felt that further consideration of the loss of functional land (used by SPA species in particular as high tide roosts) needed to be considered further. While not a nationally designated site, it was highlighted that the AoS omits mention of the Hartlepool Power Station Local Wildlife Site, located within the site boundary.

<sup>114</sup>

### **The Government's response**

- 7.491 The HRA report for Hartlepool identified that habitat loss as a result of construction of the power station and associated infrastructure (such as the cooling water intake and outfall structures and the possible construction of marine off-loading facilities) within Teesmouth and Cleveland Coast SPA/Ramsar could result in the direct loss, albeit temporarily, of designated and supporting habitats.
- 7.492 The HRA report has set out a number of suggested avoidance and mitigation measures for the IPC to consider such as avoiding or minimising losses of habitat through site layout

and design (for example using tunnelling techniques for cooling water infrastructure to minimise impacts on habitats at the surface). The HRA report also sets out that connectivity of important wildlife corridors around the nominated site should be maintained and opportunities for habitat creation, restoration and enhancement should be sought where possible.

- 7.493 Regarding Hartlepool Power Station local wildlife site, the assessment has considered impacts on internationally and nationally designated sites of ecological importance, such as SSSIs. Nature and wildlife reserves in local areas may not have statutory status but the Government recognises they can be sites of local importance. The Government considers that impacts upon local sites are more appropriately addressed by the IPC at the development consent stage when EIAs are undertaken and project level information is available as potential impacts to them will be locally rather than strategically significant.

The term European Site is used throughout and incorporates Special Areas of Conservation (SACs), SPAs (SPAs), European Offshore Marine Sites (EOMS) and Ramsar sites. Though they do not form a part of the Natura 2000 network, Ramsar sites are included within the definition of European Sites.

### **Comments on D8: Areas of amenity, cultural heritage and landscape value**

- 7.494 There was a concern that the AoS failed to mention an historic restricted wreck (UKHO-WO-58963) at Seaton Carew which is one of 63 designated wrecks under the Protection of Wrecks Act (1973) in the UK.

### **The Government's response**

- 7.495 The historic wreck was referenced in the Appendix to the AoS and within the baseline information in the AoS site report. The cultural heritage section of the revised draft AoS has been updated to reflect that there are possible effects on the wreck site from flood defence works, but these could be avoided through the appropriate siting of flood defence infrastructure. This is not considered of strategic significance at this stage.

## **Other Issues**

### **Comments on Health**

- 7.496 A number of respondents were concerned about the health impacts to the local community from radioactive discharges arising from the nuclear power station. Many of these responses expressed concern over links between nuclear power and leukaemia. A number of people referenced the KIKK study<sup>115</sup> and COMARE reports<sup>116</sup> in relation to health impacts in communities living around nuclear power stations and were concerned about the impacts on children. These comments were made across the sites and are considered under Question 20 ("Comments on the safety, security, health and non proliferation risks of new nuclear power stations"). Respondents also raised concerns that there were high incidences of thyroid cancer in the Hartlepool area which could be linked to the existing power station.

<sup>115</sup> *Epidemiological Study on Childhood Cancer in the Vicinity of Nuclear Power Plants* (KiKK Study).

[http://www.bfs.de/en/bfs/druck/Ufoplan/4334\\_KIKK.html](http://www.bfs.de/en/bfs/druck/Ufoplan/4334_KIKK.html). English translation starts after page xi of

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<sup>116</sup> See [http://www.comare.org.uk/comare\\_docs.htm](http://www.comare.org.uk/comare_docs.htm) for details of the work and reports of the Committee on Medical Aspects of Radiation in the Environment (COMARE).

### **The Government's response**

- 7.497 The HPA has advised that in COMARE's 10th report no evidence was found of excesses of childhood leukaemia or other childhood cancers around British nuclear power plants. Furthermore, in its 11th report (2006), COMARE examined the childhood cancer throughout Great Britain and concluded that many types of childhood cancers do not to

occur in a random fashion; in other words clustering is a general feature of childhood leukaemia or other childhood cancers.

- 7.498 Local primary care trusts and public health observatories currently have responsibilities for maintaining surveillance of cancer rates and investigating reports of clusters, including those of adult cancers. COMARE has advised that they are not aware of any reports from either the local primary care trusts or public health observatories that have shown evidence of cancer clusters, including thyroid cancer, in populations around Hartlepool.

### **Comments on seismic risk**

- 7.499 Some responses commented that there was a known geographical fault in the area and one respondent stated that this ran underneath the Seaton Meadows landfill site.

### **The Government's response**

- 7.500 During the establishment of the SSA criteria, the NII has advised that seismic hazard required detailed site investigation and was best assessed as part of licensing. In order to ascertain the presence and status of any capable faults on a site, there would need to be extensive geological investigations and associated laboratory testing. The Government's view is that at a strategic level it is not practical to ascertain, with a high degree of confidence, the status of faults on a site. The licensing and therefore operation of the station is still contingent on these issues being satisfactorily resolved. This issue is, however, recorded in the revised draft Nuclear NPS