Habitats Regulations Assessment: Site Report for Sellafield

EN-6: Revised Draft National Policy Statement for Nuclear Power Generation

Planning for new energy infrastructure **October 2010**

Habitats Regulations Assessment of the revised draft Nuclear National Policy Statement

Habitats Regulations Assessment (HRA) screening and Appropriate Assessment (AA) of the revised draft Nuclear NPS including potentially suitable sites, has been undertaken in parallel with the Appraisal of Sustainability (AoS). These strategic assessments are part of an ongoing assessment process that will continue with project level assessments. Applications to the IPC for development consent will need to take account of the issues identified and recommendations made in the strategic, plan level HRA/AA; and include more detailed project level HRA as necessary.

The Habitats Regulations Assessment is provided in the following documents:

HRA Non-Technical Summary

Main HRA of the revised draft Nuclear NPS

Introduction
Methods
Findings
Summary of Sites
Technical Appendices

Annexes to the Main HRA Report: Reports on Sites

Site HRA Reports
Technical Appendices

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

This document is the Habitats Regulations Assessment Site Report for Sellafield.

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

Contents

List of Tables

List of Figures

Appendices

1 Introduction

This HRA Report

1.1 This report sets out the HRA Screening and Appropriate Assessment components of the Habitats Regulations Assessment (HRA) of the proposals for Sellafield. This site was nominated into the Strategic Siting Assessment (SSA) process to be considered as a potentially suitable site for the deployment of a new nuclear power station(s) by 2025. This site report is one of the Site HRA Reports comprising Part III of the HRA Report that accompanies the revised draft Nuclear National Policy Statement (NPS). Part II of the HRA report for the revised draft Nuclear NPS sets out details of the HRA process, methods, findings and summary of the individual assessments at the nominated sites. Part I of the HRA report is a Non-Technical Summary.

1.2 This HRA has been undertaken at a strategic level and is part of an ongoing assessment process that started in July 2008 and will continue with project level assessments. Sites that are assessed to be potentially suitable for the deployment of new nuclear power stations by 2025, will be listed in the Nuclear NPS; developers will be able to apply to the Infrastructure Planning Commission for development consent to develop new nuclear power stations at those sites

1.3 Each development consent will need to be accompanied by a project level HRA report, alongside an Environmental Statement reporting the findings of a detailed Environmental Impacts Assessment (EIA). The proposals will also be subject to various other regulatory and licensing requirements.

The revised draft Nuclear National Policy Statement

1.4 The revised draft Nuclear NPS sets out a list of sites that, following the Strategic Siting Assessment, have been found to be potentially suitable for the siting of new nuclear power stations by 2025, and the framework by which development consent applications on these sites should be made by the Infrastructure Planning Commission[1].

[1] The Government announced in June 2010 its intention to amend the Planning Act 2008 and abolish the Infrastructure Planning Commission (IPC). In its place, the Government envisages that a Major Infrastructure Planning Unit (MIPU) will be established within the Planning Inspectorate. Once established, the MIPU would hear examinations for development consent and would then make a recommendation to the Secretary of State. It would not itself determine applications and decisions would be taken by the relevant Secretary of State. These proposed reforms require primary legislation. Until such time as the Planning Act 2008 is amended, the IPC will continue as set out in that Act. As a result, the NPSs will provide the framework for decisions by the IPC on applications for development consent for major infrastructure projects, and under the new arrangements will provide the framework for recommendations by the MIPU to the Secretary of State.

HRA Process

1.5 The Habitats Directive[2] protects habitats and species of European nature conservation importance. Together with the Birds Directive[3], the Habitats Directive established a network of internationally important sites designated for their ecological status. Special Protection Areas (SPAs) are designated under the Birds Directive in order to protect rare, vulnerable and migratory birds. Special Areas of Conservation (SACs), and Sites of Community Importance (SCIs) are designated under the Habitats Directive and promote the protection of flora, fauna and habitats. Internationally important wetlands are designated under the Ramsar Convention 1971. UK Government policy states that the Ramsar sites are afforded the same protection as SPAs and SACs for the purpose of considering development proposals that may affect them[4]. These sites combine to create a Europe-wide 'Natura 2000' network of European Sites, which are hereafter referred to as 'European Sites'[5] in this and other HRA reports[6].

1.6 HRA tests whether the impacts identified as arising from a proposal, plan or project are likely to have a significant effect on European Sites of nature conservation importance. Article 6(3) of the Habitats Directive requires an '*appropriate assessment'* to be undertaken on proposed plans or projects which are not necessary for the management of the European Site but which are likely to have a significant effect on one or more European Sites either individually or in combination with other plans, programmes or projects. In England and Wales this requirement is transposed into UK law by the Conservation of Habitats and Species Regulations 2010[7] (the 'Habitats Regulations'). The process of fulfilling the requirements of the Directive and the Regulations is now in practice referred to as HRA, and Appropriate Assessment (AA) if required, forms a stage within the overall HRA process.

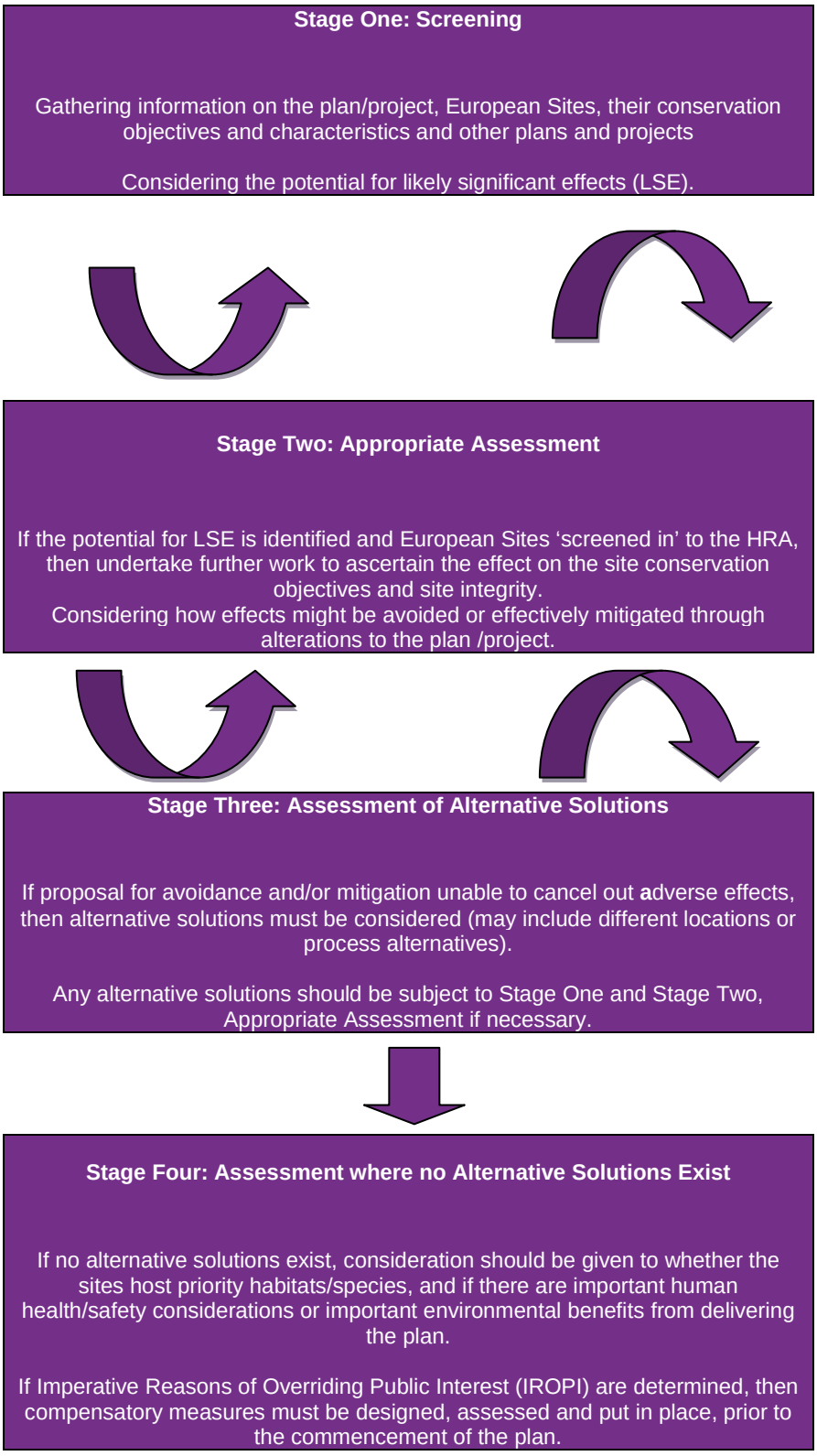
1.7 The full details of the HRA method and process, including the key principles and any assumptions made in this plan level HRA of the revised draft Nuclear NPS and nominated sites; are outlined in Part II of the HRA Report. This report covers the screening and Appropriate Assessment (AA) stages of the HRA for the nominated site at Sellafield, as outlined in Table 1. It takes into account the information contained within the site nomination submitted to Government by the nominator

2 Council Directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0043:EN:HTML
3 Council Directive 79/409/EEC on the protection of wild birds: http://eur-lex.europa.eu/LexUriServ/site/en/consleg/1979/L/01979L0409-20070101-en.pdf
4 ODPM, 2005, Planning Policy Statement 9: Biological and Geological Conservation; and ODPM Circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System
5 Though they do not form a part of the Natura 2000 network, Ramsar sites are included within the definition of 'European Sites' for the purposes of this report.
6 The term European Site is used throughout all the Site HRA Reports and in the Main HRA Report, and incorporates SACs, SPAs, SCIs and Ramsar sites.
7 Regulation 106 applies the requirements and controls in relation to plans under the regulations to National Policy Statements designated under the Planning Act 2008

(the Nuclear Decommissioning Authority) on 31 March 2009[8]. The HRA process is typically iterative and assessments have been revised on the basis of commentary from the Statutory Consultees and comments received during the public consultation which ran from November 2009 to February 2010.

8 http://www.nuclearpowersiting.decc.gov.uk/nominations/

Table 1: Habitats Regulations Assessment: Summary Overview of Key Stages [9]



9 Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article6(3) and (4) of the Habitats Directive 92/43/EEC. European Commission DG Environment (2001), http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

2 HRA Screening of Sellafield

2.1 The nominated site at Sellafield is situated on the Cumbria coast, west of Gosforth and to the north of Seascale. The location of the site is shown in Figure 1.

Screening

2.2 The screening process forms the first stage of any HRA and is focused on the 'likely significant effect' (LSE) test. The aim of the LSE test is to determine whether the plan either alone, or in-combination with other plans and projects is likely to result in a significant effect at European Site[s]. This is essentially a risk assessment process that seeks to understand whether there are any mechanisms for identified impacts arising from the plan to adversely affect the European Sites (i.e. a cause-effect pathway)[10]. The key questions asked are:

- would the effect undermine the conservation objectives for the European Site?
- can significant effects be excluded on the basis of objective information?

2.3 The tasks undertaken to complete the screening process for Sellafield are described below.

European Site Identification and Characterisation

2.4 European Sites within a 20km radius of the nominated site were scoped into the HRA screening process as set out in Table 2 and Figure 2. This area of search reflects guidance recommendations[11], but also takes into account that distance is in itself not a definitive guide to the likelihood or severity of impacts known to arise from developments (for example, inaccessibility/ remoteness is typically more relevant) and factors such as the prevailing wind directions, river and groundwater flow direction will all have a bearing on the relative distance at which an impact can occur. It should be noted that an area of land can be covered by more than one European designation.

10 Appropriate Assessment of Plans (Therivel, May 2008)
11 Communities and Local Government (2006) Planning for the Protection of European Sites: Appropriate Assessment – Guidance for Regional Spatial Strategies and Local Development Documents; http://www.communities.gov.uk/documents/planningandbuilding/pdf/160442.pdf

Table 2: European Sites within 20km of the nominated site

	Designation	Distance from nominated site[12]
Drigg Coast	**SAC**	**5.3km**
River Ehen	**SAC**	**7.7km**
Wast Water	**SAC**	**12.1km**
Lake District High Fells	**SAC**	**11km**
River Derwent and Bassenthwaite Lake	**SAC**	**17km**
Borrowdale Woodland Complex	**SAC**	**17km**

2.5 **Appendix 1** details the characteristics of the six European Sites scoped into the HRA screening assessment. The characterisations include an overview of the sites':

- ecological features;
- their qualifying features/ reasons for designation;
- conservation objectives and the condition status of their constituent Sites of Special Scientific Interest (SSSIs) where available;
- environmental conditions necessary to support site integrity; and
- site vulnerabilities, including any key pressures or trends known to be affecting the sites.

Nominated Site Review and Identification of Likely Impacts

2.6 The nomination report[13] identifies 250ha of land to the north, west and north-west of the existing Sellafield nuclear licensed site, including an estimated 30-50ha for operational requirements, additional areas for waste storage, construction and decommissioning. Offsite work relating to highway, rail and marine landing facilities is also identified as a requirement in the nomination, outside the boundary of the nominated site. The nominator was not required to provide details of the proposed development at this stage.

2.7 From the nomination documents[14], it is assumed that the nomination is for a nuclear power station development incorporating:

- at least one nuclear reactor;
- construction stage areas and facilities, including a Marine Off-Loading Facility;
- infrastructure and facilities related to the operation of a nuclear power station, including a new access road and transmission infrastructure;

12 Distance measured from nearest site boundary
13 Nomination documents submitted by the nominator (Nuclear Decommissioning Authority) at http://www.nuclearpowersiting.decc.gov.uk/nomination/sellafield/
14 Op. cit.

- coastal defences and flood protection measures;
- cooling water infrastructure (including cooling water intake and outfall structures, and possibly cooling towers (both direct and indirect cooling options are considered feasible by the nominator); and
- interim radioactive waste storage facilities.

2.8 The full range of potential impacts on environmental conditions and biodiversity arising from the development of new nuclear power stations are outline and discussed in Part II of the HRA Report. Impacts of particular relevance to this site include: direct habitat fragmentation and disturbance, and effects on the water environment. These issues are discussed in detail in the Screening Assessment task below.

Identification and Consideration of Other Plans, Programmes and Projects

2.9 It is a requirement of Article 6(3) of the Habitats Directive that HRA examines the potential for plans and projects to have a significant effect either individually or 'in combination' with other plans, programmes and projects (PPPs). The aim is that plans and projects are evaluated within the context of the prevailing environmental conditions and that account is taken of the effects of other plans.

2.10 Plan level HRA practice has shown that the in-combination assessment is most relevant where plans might otherwise be screened out because their individual contribution is inconsequential. The requirement is that the HRA process should take account of reasonably foreseeable impacts (as opposed to every conceivable effect).[15]

2.11 For the purposes of this assessment consideration was given to:

- Local Development Framework documents
- Major Development Schemes (including transport plans/ airport expansion) where relevant.

2.12 Where relevant, reference was also made to:

- Draft Coastal Habitat Management Plans
- Catchment Abstraction Management Strategies
- Shoreline Management Plans
- River Basin Management Plans
- Draft Water Resource Management Plans
- Minerals and Waste Development Frameworks.

15 Tyldesley, D. (2009) Habitats Regulations Assessment of Local Development Documents. Revised Draft Guidance for Natural England. Natural England, Sheffield.

2.13 A summary of the key plans referred in the assessment process are provided in **Appendix 2**.

Screening Assessment

2.14 The following sections outline the issues arising from the HRA screening assessment (LSE test) undertaken at **Appendix 3**, for Sellafield. The screening assessment indicated that development at Sellafield has the potential to adversely affect European Sites as a result of:

- **Water Resources and Quality Impacts**
- **Habitat (and Species) Loss and Fragmentation**
- **Coastal Squeeze**
- **Air Quality.**

2.15 Each of these issues is considered in turn below. However, it should be noted that, given the closest European Site is Drigg Coast SAC situated 5.3km to the south of the nominated site, the potential for impacts on qualifying habitats or supporting habitats for qualifying species as a result of disturbance (noise, light and visual) has been discounted during the HRA Screening Assessment and is not considered further as a topic within this report.

Water Resources and Quality Impacts

European Sites for which no significant effects are likely (see Appendix 3):

- Lake District High Fells SAC; and
- Borrowdale Woodland Complex SAC.

European Sites for which significant effects are likely (see below):

- Drigg Coast SAC;
- River Ehen SAC;
- Wast Water SAC; and
- River Derwent and Bassenthwaite Lake SAC.

2.16 The quality of fresh and/or marine water that feeds and supports the protected European Sites at the nominated Sellafield site is a key determinant in ensuring the integrity of habitats and dependant species of the protected sites. Poor water quality from the build up of heavy metals and salts and from the discharge of toxic compounds (that may also bind to sediments) can lead to mortality in aquatic life and upon those predators that feed upon them. Toxins can accumulate in animals and plants through uptake and ingestion through the food chain and can also increase the vulnerability of species to disease. Moreover changes in water quality such as through nutrient enrichment (eutrophication) which can affect the availability of oxygen can

dramatically alter habitat and species compositions, with direct and indirect detrimental impacts upon dependant species over time. Water abstraction can also impact upon habitats and species, as the removal of water from the natural cycle can affect groundwater supply to protected habitats and result in habitat loss and/or degradation.

2.17 The HRA Screening Assessment reviewed the potential for impacts on water resources and quality arising from the construction, operation and decommissioning phases of a new nuclear power station at the nominated site. Issues include:

- increased/ altered drainage from earthworks and excavations and potential sedimentation changes;
- alteration of flow through abstraction and the return of additional water volumes to the aquatic system;
- changes to water temperature creating 'thermal plumes' as a result of controlled discharges;
- the potential for toxic contamination (for example from anti-fouling agents associated with cooling water systems) from accidental leakage may interact or combine with routine non-radioactive or radioactive discharges that will be subject to discharge consents regulated by the Environment Agency.

2.18 Further screening of impacts on European Sites would also be necessary at the project level should water required for construction (or decommissioning) be derived from freshwater sources.

2.19 Natural England has raised concerns in relation to potential impacts on migratory fish species which are present as qualifying features of European Sites which have not been included within the Screening Assessment on account of their distance from the nominated site. These concerns relate to possible impacts arising on Atlantic Salmon, Sea Lamprey and River Lamprey which occur within the River Eden SAC, the River Ehen SAC, the Solway Firth SAC and the River Derwent and Bassenthwaite Lake SAC, as a result of water quality impacts associated with discharges into the Irish Sea. Natural England acknowledges that there is little information on the coastal migration routes used by these species. This information gap has been noted and would need to be addressed at the project level to inform the screening process for project level HRA.

2.20 Of the six European Sites screened, four sites are identified as possessing specific vulnerabilities relating to the water resource (Drigg Coast, River Ehen, Wast Water, and River Derwent and Bassenthwaite Lake SAC).

Drigg Coast SAC

2.21 Drigg Coast SAC is particularly vulnerable to contamination from toxic compounds[16], with the intertidal mudflats and sandflats (and associated saltmarshes) which are primary qualifying features of the SAC acting as sinks for introduced synthetic and non-synthetic compounds. This designated site is approximately 5.3km to the south of the nominated site.

River Ehen SAC

2.22 River Ehen SAC is particularly vulnerable to water pollution, nutrient enrichment and levels of suspended solids (over 10mg/l) with Freshwater Pearl Mussels and Atlantic Salmon which are primary qualifying features susceptible to these vulnerabilities. These two species are closely inter-linked and have a symbiotic relationship: the mussel spends its larval or 'glochidal' stage attached to the gills of salmonid fish and therefore is dependent on the maintenance of the salmon population during a key stage in the species life cycle[17]. This designated site lies approximately 7.7km to the north of the nominated site and the lower reaches of the river are directly adjacent to the site.

Wast Water SAC

2.23 Wast Water SAC currently has no known threats which will adversely affect water quality. British Nuclear Fuels Limited has abstracted / is abstracting water from the lake but it is not thought that present rates of abstraction affect from the lake's special interest. An increase in abstraction levels from this source could lead to vulnerability of the SAC. This designated European site lies approximately 12.1 km to the east of the nominated site.

River Derwent and Bassenthwaite Lake SAC

2.24 The River Derwent and Bassenthwaite SAC is particularly vulnerable to water pollution, nutrient enrichment, levels of suspended solids (over 10mg/l) and alteration to flow regimes which in turn can effect sedimentation patterns. Fish species including, Atlantic Salmon, Sea Lamprey, Brook Lamprey and River Lamprey are primary qualifying features of the SAC. These are particularly vulnerable to changes in both flow regimes and sedimentation patterns, key elements in providing suitable spawning grounds for these species. This designated European site lies approximately 17km to the north of the nominated site.

16 NE/CCW observations, Appendix 1: European Site Characterisations.
17 Skinner,A,Young M & Hastie L (2003). *Ecology of the Freshwater Pearl Mussel*. Conserving Natura 2000 Rivers Ecology Series No. 2 English Nature, Peterborough.*www.english-nature.org.uk/lifeinukrivers/publications/**mussel**.pdf*

2.25 **The potential for significant impacts on these European Sites should be considered further through Appropriate Assessment.**

Habitat (and Species) Loss and Fragmentation

European Sites for which no significant effects are likely (see Appendix 3):

- Lake District High Fells SAC
- Borrowdale Woodland Complex SAC
- Wast Water SAC
- River Derwent and Bassenthwaite Lake SAC

European Sites for which significant effects are likely (see below):

- Drigg Coast SAC
- River Ehen SAC

2.26 Habitat loss and fragmentation in relation to European Site integrity can occur naturally (for example tree fall, changing flow patterns in aquatic systems) or as a result of human intervention. Direct anthropogenic impacts (for example through road building, flood defences) can result in barriers to migration, remove habitats areas which are immobile and cannot easily be recreated, change nutrient flows, or remove area habitat connectivity.

Drigg Coast SAC

2.27 The HRA Screening Assessment noted the potential for indirect impacts through habitat loss and fragmentation from the construction phases of development at the nominated site at Sellafield. There is potential for habitat loss through construction of cooling water culverts, sea defences and a construction-phase marine landing facility to affect Drigg Coast SAC. These proposals could affect sediment flows along the coastline and could change erosion or depositional patterns as a result. This in turn could lead to habitat loss or modification within the SAC.

River Ehen SAC

2.28 There is potential for obstruction to the passage to migratory fish at the River Ehen. Cooling water inlets and outlets will also be required as part of cooling water process. The operation of a potential power station thus has implications for fish species, including Atlantic Salmon, a primary qualification feature of the River Ehen SAC, which could be impacted upon through the impingement of fish on cooling water intake screens and the entrainment of fish and larvae as part of the intake cycle as well as the controlled discharge of abstracted water of increased temperature. Any impact on the Atlantic Salmon, also has implications for the Freshwater Pearl Mussel. The mussel spends it's larval or 'glochidal' stage attached to the gills of salmonid fish and

therefore is dependent on the maintenance of the salmon population during a key stage in the species life cycle.

2.29 **The impacts of habitat loss and fragmentation on these European Sites conservation objectives and site integrity should be considered further through Appropriate Assessment.**

Coastal Squeeze

European Sites for which no significant effects are likely (see Appendix 3):

- Lake District High Fells SAC
- Borrowdale Woodland Complex SAC
- Wast Water SAC
- River Derwent and Bassenthwaite Lake SAC
- River Ehen SAC

European Sites for which significant effects are likely (see below):

- Drigg Coast SAC

2.30 Coastal squeeze impacts are closely related to habitat loss and fragmentation, and relate specifically to situations where the coastal margin is squeezed by the fixed landward boundary. Coastal squeeze typically arises through the development of flood and sea defences but also through the reinforcement of coastal margins using hard engineering (construction works, drainage, infrastructure provision), thereby preventing the natural transport and movement of coastal material, species and habitats.

Drigg Coast SAC

2.31 The impacts of coastal squeeze upon the Drigg Coast SAC are unclear, given its distance from the nominated site at Sellafield (5.3km). However, changes to the sediment transport regime arising from the development have the potential to be transferred down the coastline such that designated habitats within the Drigg Coast SAC could be adversely impacted. In particular, mudflat, sand flat and dune system habitats are considered particularly vulnerable to the pressures arising from development of the coastal fringes which could thus result in degradation and loss of these habitats.

2.32 **The impacts of coastal squeeze should be considered alongside habitat loss and fragmentation through further Appropriate Assessment.**

Air Quality Impacts

European Sites for which no significant effects are likely (see Appendix 3):

- Lake District High Fells SAC;
- Borrowdale Woodland Complex SAC;
- Wast Water SAC;
- River Derwent and Bassenthwaite Lake SAC; and
- River Ehen SAC.

European Sites for which significant effects are likely (see below):

- Drigg Coast SAC.

2.33 The effects of changing and poor air quality at European Sites vary according to the pollutant type (acid deposition, ammonia, nitrogen oxides, ozone and sulphur dioxide) and the nature of the receiving environment. The key pollutants that are of concern for terrestrial habitats are sulphur dioxide (SO_2), ammonia (NH_3) and nitrogen oxide (NO_x). Deposition of nitrogen can lead to soil enrichment and SO_2 to acidification, altering the species composition with impacts on associated species.

2.34 Background air quality in the UK has improved progressively and is expected to continue to improve significantly over the next 15 years with tightening emissions standards and moves towards 'cleaner' energy generation. Pollution levels for all key pollutants in the area around Sellafield provided by the Environment Agency state that emissions to air from major industrial sites in the north-west have reduced substantially (but traffic is causing air quality problems in major cities) and that air quality in the north-west is generally improving.

Drigg Coast SAC

2.35 The HRA Screening Assessment noted the potential for impacts on air quality at a local level arising from the construction, operation and decommissioning phases of the proposals for the nominated site at Sellafield. These impacts are considered to arise in particular from the construction and decommissioning processes (for example, fugitive dust and airborne particulates). Increased traffic generation is also of concern during the construction phase, and major roads within 200m have the potential to increase the impact of nitrogen and carbon emissions from vehicles[18] .

2.36 The assessment also noted the potential for radioactive releases to the atmosphere, but that regulatory sources indicate aerial (radioactive) emissions to be low and cause little (human) and biodiversity radiation exposure.[19]

2.37 The HRA Screening Assessment identified that Drigg Coast SAC could be affected by potential changes to air quality. **The potential for adverse impacts on this European Site should be considered further through Appropriate Assessment.**

18 Department for Transport (2003) Transport Analysis Guidance, the Local Air Quality Sub-Objective TAG Unit 3.3.3.
19 Environment Agency (2005) Measuring Environmental Performance, Sector Report for the Nuclear Industry.

Conclusions and Recommendations

2.38 In line with the screening requirement of the Habitats Directive and Regulations, an assessment was undertaken to determine the likely significant effects of the development at Sellafield on the six European Sites that lie within 20km of the nominated site. The HRA Screening Assessment and conclusions were informed by:

- The information gathered on the European Sites – **Appendix 1**;
- The summary analysis of potential environmental impacts generated by the development activities arising from Sellafield**;**
- Consideration, where necessary, of other plans and programmes that have spatial/ contextual relevance – **Appendix 2**
- Government guidance[20] which indicates that HRA for plans is typically broader and more strategic than project level HRA and that it should be undertaken at a level that is proportionate to the available detail of the plan.

2.39 The Screening Assessment identified a number of key impacts arising from the proposed development and the potential for significant effects at three of the European Sites scoped into the HRA screening process. These findings are summarised in Table 3 below.

Table 3: Summary of Likely Significant Effect Screening

European Sites within 20km of Sellafield	Water Resources and Quality	Habitat Loss and Fragmentation	Coastal Squeeze	Air Quality
Drigg Coast SAC	✓	✓	✓	✓
River Ehen SAC	✓	✓	✗	✗
Wast Water SAC	✓	✗	✗	✗
Lake District High Fells SAC	✗	✗	✗	✗
River Derwent and Bassenthwaite Lake SAC	✓	✗	✗	✗
Borrowdale Woodland SAC	✗	✗	✗	✗

[20] Planning for the Protection of European Sites: Appropriate Assessment - Guidance For Regional Spatial Strategies and Local Development Documents, at http://www.communities.gov.uk/documents/planningandbuilding/pdf/160442.pdf

Key		
Likely Significant Effect	✓	**further Appropriate Assessment required**
No Likely Significant Effect	✕	**no further Appropriate Assessment required**
Significant Effect Uncertain	**?**	**precautionary approach taken and further Appropriate Assessment required**

2.40 It is recommended that the HRA proceeds to the next stage of Appropriate Assessment in relation to the four European Sites where the potential for likely significant effects (✓) or significant effect uncertain (**?**) has been identified. The next stage of the HRA process is outlined in Section 3 of this report.

3 HRA Appropriate Assessment of Sellafield

Scoping and Additional Information Gathering

3.1 To support the Appropriate Assessment (AA) phase, additional information was gathered on the European Sites and environmental condition in line with the specific issues identified by the HRA screening exercise. This additional information included air quality data and trends, available from the UK Air Pollution Information System (APIS) and water quality and abstraction data produced by the Environment Agency (EA).

Assessing the Impacts (in-combination) Appropriate Assessment

3.2 The HRA Screening Assessment considered whether the impacts arising from proposed development at Sellafield are likely to significantly affect European Sites scoped into the assessment process. The following sections summarise the analysis undertaken to determine whether the development would have an adverse effect on the integrity of the site, either alone or in-combination with other plans, programmes and projects.

Water Resources and Quality

Drigg Coast, River Ehen, Wast Water and River Derwent and Bassenthwaite Lake SAC

3.3 Current Environment Agency data[21] indicates that the ecological and chemical status of the estuarine environments near to Sellafield are not yet assessed (as no assessment has been made to date no predictions for 2015 status have been made in this report).

3.4 The current ecological status assessments for the coastal water quality at Drigg Coast SAC and both up and downstream from the nominated site at Sellafield are assessed as being ‘moderate’ and the current chemical quality as ‘high’. The Environment Agency predicts that in 2015 the ecological and chemical status will be ‘moderate’ and ‘good’ respectively.

3.5 The ecological status of the rivers around the nominated site at Sellafield, including the River Ehen, River Irt and River Derwent are assessed as ranging from ‘bad’ to ‘good’ ecological quality. The chemical condition of these rivers is assessed as being of ‘pass’ quality or ‘not yet assessed. The Environment Agency predicts no change to either the ecological status or chemical quality of these rivers by 2015.

21 Environmental Agency – http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&lang=_e

3.6 Groundwater chemical quality around the nominated site at Sellafield is assessed by the Environment Agency as being 'good'. The Environment Agency predicts that in 2015 the chemical quality will also be 'good'.

3.7 The ecological status of Wast Water SAC is assessed as being 'good' but the chemical quality has not yet been assessed. The Environment Agency predicts that in 2015 the ecological status will also be 'good' but no prediction on the chemical quality can be made.

3.8 Radioactive discharges (including potential accidental discharges from waste storage) are subject to authorised limits monitored by the Environment Agency and of the non-radioactive discharges, nitrate contributions are considered to be the most significant (research cited by the Environment Agency in the nuclear sector report, November 2005[22]). In particular it is noted that there can be measurable localised impacts on sea nutrient levels in the vicinity of discharges.

3.9 Environmental condition data for Drigg Coast, River Ehen and Wast Water SAC (Appendix 1, site characterisations) relating to water quality indicates that current water quality indicators show ecological and chemical levels around the nominated site at Sellafield to range from 'moderate' to high. However, without further information on discharge levels and quality it is not possible to conclude that discharges and abstraction will not have an adverse effect on the three SACs.

3.10 The water resource management unit around Sellafield is managed through the Environment Agency Catchment Abstraction Management Strategy (CAMS) process[23]. The nominated site is located within the Derwent, West Cumbria and Duddon CAMS and includes a number of watercourses and water bodies designated for their environmental importance, including the River Ehen, Wast Water and the River Derwent and Bassenthwaite SACs. This CAMS area is largely rural, but there are significant industrial water abstractors along the coast. Throughout the area, small-scale water abstraction is important for a range of uses including agriculture, hydropower, campsites and private water supply. The largest water abstractions within this CAMS area are from lakes and reservoirs. Water from Wast Water SAC has been / is used as the current Sellafield power station water abstraction source. Public water supply for the area is mainly from Crummock Water and Ennerdale, along with a number of smaller reservoirs. Thirlmere is used to supply water locally and elsewhere in the north west. Given that future water abstraction requirements and locations for a potential new nuclear power station at the nominated site at Sellafield are currently

22 Environment Agency (2005) Measuring Environmental Performance, Sector Report for the Nuclear Industry.
23 Environmental Agency 2007, The Derwent, West Cumbria and Duddon Catchment Abstraction Management Strategy

unknown, it is not possible to conclude that water supply to the development will avoid levels of abstraction that lead to adverse effects on the four SACs.

3.11 Currently all Water Management Resource Units (WMRU) associated with the River Ehen SAC, Wast Water SAC and River Derwent and Bassenthwaite SAC are classified as 'over licensed' or 'no water available' (with the exception of the Upper Derwent - WMRU 3) with a target status to 2019. Further information provided by the nearby Braystones nominated site indicates water abstraction for cooling water purposes will most likely be sourced from the Irish Sea, as it is unlikely flows within the River Ehen would be sufficient to provide cooling water without significant ecological impact[24], and this could be the same for Sellafield. However, at this stage it is unclear how the likely short term effect of increased water demand, particularly during the construction phase, will be met for the nominated site.

Effects in Combination with Other Plans and Projects

3.12 Aspects of the following plans and projects could lead to 'in combination' effects on European Sites with regards to water resources and quality (see Appendix 2):

- The River Basin Management Plan for the North West outlines what the Environment Agency (under the EU Water Framework Directive) aims to achieve, with regards to improving the water environment, over the next 20 years. The report proposes new strategies and actions under the headings of improving rural land management, reducing the impact of transport and built environments, securing sustainable water sources, improving wildlife habitats and addressing point sources of pollution. Key targets are to ensure the long term improvement of estuarine and coastal areas by 2015, to improve rivers to 27% at good ecological status by the year 2027 and to ensure 60% of groundwater is at good ecological status by 2015.

- The Derwent, West Cumbria and Duddon Catchment Abstraction Management Strategy outlines where water is available and where there is a need to reduce current rates of abstraction up to 2019. For the River Ehen SAC, Wast Water SAC and River Derwent and Bassenthwaite Lake SAC the relevant water resource management units are classified as either 'over licensed' or 'no water available' up to a target status of 2019. Water abstraction is only available at low flows from the Upper Derwent.

- The Cumbria Economic Strategy 2009-2019 views opportunities in the energy and the low carbon economy as a strategic priority for the region. Major Projects for west Cumbria to take this forward include the Britain's Energy Coast™ programme, a £2 billion package of regeneration projects to advance existing strengths in nuclear industry

24 RWE Siting Study: Braystones Nomination Form Supporting Statement, Arup, March 2009.

and promote diversification into other forms of low carbon industries such as renewable energy. The presence of at least one new nuclear station within Cumbria is a key component of the programme.

- In addition to the Sellafield nomination there were three other site nominations for new nuclear power stations situated a short distance south on the Cumbrian coast at Braystones, Kirksanton and Heysham (in Lancashire). However, of these nominated sites only Heysham is considered potentially suitable. Coastal and inland water designated sites are likely to be affected by nuclear and other energy projects including tidal, wave, biomass and wind farm proposals, the cumulative effects of which could be significant for biodiversity.

3.13 In consideration of the above plans, programmes and projects the potential of an in-combination effect for water resources and quality cannot be ruled out for the Drigg Coast, River Ehen, Wast Water and River Derwent and Bassenthwaite SAC.

3.14 **Given the uncertainty over the most likely source of water abstraction and potential impacts on water quality, a precautionary principle requires that at the strategic level adverse effects be assumed for the Drigg Coast SAC, River Ehen SAC, Wast Water SAC and the River Derwent and Bassesnthwaite SAC in terms of water resources and quality until greater site detail (including on technology and mitigation measures) is known.**

Habitat (and species) Loss and Fragmentation

Drigg Coast and River Ehen SAC

3.15 Given the potential for habitat loss at the nominated site at Sellafield through construction of cooling water culverts, sea defences and a marine landing facility there are likely significant effects at Drigg Coast SAC. These proposals could affect sediment flows along the coastline and could change erosion / depositional patterns as a result and lead to habitat loss / modification at the SAC.

3.16 The North West England and North Wales Shoreline Management Plan[25] states wave conditions at the nominated site occur predominantly from the south west, which results in a net northerly drift of sediment. However, with prevailing tidal conditions to the south-east, the balance of littoral drift is considered sensitive to combinations of storm and tide. It is unclear at this stage what effects may occur in terms of erosion and sediment transport regimes as a result of development along this coastline.

25 North West England and North Wales Shoreline Management Plan, Appendix C: Baseline Process Understanding, Report C2 –
General overview of current understanding, Revision 05/12/2008
http://mycoastline.org/index.php?option=com_content&task=view&id=156&Itemid=140

3.17 There is also potential for habitat obstruction to the passage of migratory fish from the construction of cooling water culverts that may extend outside of the nominated site boundary affecting the River Ehen SAC, part of which lies immediately adjacent to the site. Habitat obstruction at the lower reaches of the River Ehen could impact on Atlantic Salmon (a migratory species) a primary qualification feature of the River Ehen SAC. Atlantic Salmon could also be impacted upon through the impingement of fish on cooling water intake screens and the entrainment of fish and larvae as part of the intake cycle. Any impact on the Atlantic Salmon also has implications for the Freshwater Pearl Mussel. The mussel spends its larval or 'glochidal' stage attached to the gills of salmonid fish and therefore is dependent on the maintenance of the salmon population during a key stage in the species life cycle.

Effects in Combination with Other Plans and Projects

3.18 Aspects of the following plans and projects could lead to 'in combination' effects on European Sites with regards to water resources and quality (see Appendix 2)

- The Cumbria and Lake District Joint Structure Plan[26] states that housing and employment will be focused at Whitehaven, Workington, Cleator Moor and Egremont, generally away from Natura 2000 sites. However, it is noted that the development and maintenance of coastal defences and the provision of wind farms and tidal/wave power projects have the potential for land take and disturbance/ severance of habitats and species.

- The Shoreline Management Plan St Bees Head to Earnse Point states that the development, construction and maintenance of coastal defences may lead to potential for land take and disturbance/ severance of habitats and species.

- The Cumbria Economic Strategy 2009-2019 views opportunities in the energy and the low carbon economy as a strategic priority. Major Projects for the West Cumbria region to take this forward include the Britain's Energy Coast™ programme, a £2 billion package of regeneration projects to advance existing strengths in nuclear industry and promote diversification into other forms of low carbon industries such as renewable energy. The presence of at least one new nuclear station within Cumbria is a key component of the programme.

- As previously indicated, in addition to the Sellafield nomination there are three other site nominations for new nuclear power stations situated a short distance south on the coast at Braystones, Kirksanton and Heysham, the cumulative effects of which could be significant for biodiversity. However, of these other nominated sites, only Heysham is

[26] This was replaced by the North West RSS on the 20 September 2008.

considered potentially suitable. As Heysham is at some distance from Sellafield, the potential for cumulative effects on biodiversity will be more limited.

3.19 Given consideration to the above plans, programmes and projects the potential of an in-combination effect for Habitat (and Species) Loss and Fragmentation cannot be ruled out for the Drigg Coast SAC and River Ehen SAC.

3.20 **At this strategic stage, where detailed development proposals are unknown a precautionary approach requires that likely adverse effects be assumed through habitat (and) species fragmentation and loss at Drigg Coast and River Ehen SAC until greater site specific detail (including on technology and mitigation measures) is known.**

3.21 **The potential for mitigation measures to effectively address the adverse effects identified is considered further in the avoidance and mitigation section of this report.**

Coastal Squeeze

Drigg Coast SAC

3.22 The North West England and North Wales Shoreline Management Plan[27] states wave conditions at the nominated site occur predominantly from the south west, which results in a net northerly drift of sediment. However, with prevailing tidal conditions to the south east, the balance of littoral drift is considered sensitive to combinations of storm and tide. It is unclear at this stage what effects may occur in terms of erosion and sediment transport regimes as a result of development along this coastline.

3.23 The Copeland Borough Council Shoreline Management Plan (within management unit 5 Whitriggs Scar to Drigg Point) states that the Drigg spit and the orientation of the coast around Barn Scar would indicate that littoral sediment is moved from north to south along the coast. However, inspection of the recent wave conditions shows that drift is in the opposite direction, albeit that this may be reduced or reversed when tidal currents are accounted for.

3.24 Given that the footprint of the development at the nominated site at Sellafield which may lead to habitat loss and fragmentation impacts and coastal squeeze impacts (coastal squeeze at Drigg Coast only) are currently unknown, it is not possible to conclude that there will be no adverse effects on the two SACs. In addition given current information within the Copeland Borough Council Shoreline Management Plan

27 North West England and North Wales Shoreline Management Plan, Appendix C: Baseline Process Understanding, Report C2 –
General overview of current understanding, Revision 05/12/2008
http://mycoastline.org/index.php?option=com_content&task=view&id=156&Itemid=140

littoral sediment drift to the south from the nominated site towards Drigg Coast SAC cannot be ruled out.

Effects in Combination with Other Plans and Projects

3.25 Some of the plans considered above under Habitat Loss/Fragmentation (paragraph 3.18) are relevant to coastal squeeze effects. Therefore, an in-combination effect on coastal squeeze cannot be ruled out for the Drigg Coast SAC.

3.26 **At this strategic stage, where detailed development proposals that include the extent of design and build are not defined a precautionary approach requires that adverse effects be assumed through coastal squeeze at the Drigg Coast SAC until greater site specific detail (including on technology and mitigation measures) is known.**

3.27 **The potential for mitigation measures to effectively address the adverse effects identified is considered further in the avoidance and mitigation section of this report.**

Air Quality

Drigg Coast SAC

3.28 Information provided by the EA states that emissions to air from major industrial sites in the north west have reduced substantially (but traffic is causing air quality problems in major cities) and that air quality in the north west is generally improving.

3.29 The EA assesses that non-radioactive aerial emissions (sulphur dioxide, nitrogen oxides and volatile organic compounds) from nuclear power stations are extremely low compared with other regulated industries and the EA does not consider them to be an environmental priority. The most recent available assessment of radioactive aerial emissions for regulated nuclear power stations and specifically for current generation at Sellafield indicates that all fall within authorised limits.[28]

3.30 Information provided by the UK Air Pollution Information System[29] indicates that air quality measured around Sellafield (up to a resolution of 5km) is generally good, with pollution levels for all key pollutants (sulphur dioxide, particulates, nitrogen dioxide etc) typically low. However, sensitivities and critical loads have been identified for the interest features within Drigg Coast SAC.

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28 Measuring Environmental Performance: Sector Report for the Nuclear Industry (Environment Agency, Nov 2005).
http://maps.environment-agency.gov.uk/wiyby/queryController?topic=pollution&ep=2ndtierquery&lang=_e&layerGroups=1&x=321000.0&y=145900.0&extraClause=AUTHORISATION_ID~'AF7282'&extraClause=YEAR~2006&textonly=off&latestValue=&latestField=

29 http://www.apis.ac.uk/

3.31 At Drigg Coast SAC, current deposition levels for some pollutants are close to or within exceedance level ranges. For both shifting and fixed dune systems current deposition levels for Nitrogen when compared to critical loads for these habitats is in exceedance by a range of 10 to 20 kg/N//ha/yr. The effects of this eutrophication for fixed and shifting dunes systems can be an increase in tall grasses, decrease in prostrate plants and an increased nitrogen leaching. For shifting dune systems effects can be a biomass increase and increase in nitrogen leaching

Effects in Combination with Other Plans and Projects

3.32 The other plans, programmes and plans considered above under Habitat Loss/Fragmentation (paragraph 3.18, with the exception of the Shoreline Management Plan for St Bees Head to Earnse Point) are relevant to air quality effects. In addition, the Cumbria Local Transport Plan states that future road schemes could have potential indirect effects, including air pollution through increased transport movements.

3.33 In consideration of the plans, programmes and projects (including the development of other nuclear power stations) an in-combination effect from changes in air quality cannot be ruled out for the Drigg Coast SAC.

3.34 **In the context of known air quality conditions and interest feature vulnerabilities and the possibility of effects in combination with other development proposals and plans in the local area and North West region, a precautionary approach requires that, at this strategic level, an adverse affect be assumed for the Drigg Coast SAC until greater site specific detail (including on technology and mitigation measures) is known.**

3.35 **The potential for mitigation measures to effectively address the adverse effects identified is considered further in the avoidance and mitigation section of this report.**

Avoidance and Mitigation Measures

3.36 Avoidance and mitigation measures can apply both at a strategic policy level in the form of policy amendments/caveats, and in more detail at project level, where they are specific measures applicable to the identified issues at individual sites. This HRA is being undertaken at a strategic level where there are development uncertainties regarding the nature, scale and final footprint of the nominated site. These uncertainties limit the capacity of the HRA to reasonably predict the effects on a European Site[30].

3.37 At this strategic stage, the HRA for the nominated site at Sellafield can make avoidance and mitigation recommendations in relation to

30 The key principles and any assumptions made in this plan level HRA of the Nuclear NPS and nominated sites are outlined in Part II of the HRA Report.

Sellafield to inform the strategic siting assessment process and therefore the overall development of the revised draft Nuclear NPS. These recommendations may also subsequently provide guidance to the IPC and potential future developers to ensure that any future development at Sellafield would effectively avoid or mitigate an adverse effect.

3.38 The HRA recommendations for avoidance and mitigation measures in relation to Sellafield are detailed below and summarised in Table 4. Part II of the main HRA report also summarises the measures identified in this report alongside those proposed by other individual site HRAs.

3.39 This HRA is part of an ongoing assessment process that will continue with detailed, project level HRA to be undertaken at development consent stage and informed by detailed information regarding the development plans at the nominated site at Sellafield including consideration of the impact on local defined habitats not covered by the HRA plan process,. Should project-specific findings during the undertaking of the project level HRA result in additional impacts arising which cannot be mitigated by the avoidance and mitigation measures recommended here, then changes to the development design may be required to ensure adverse effects on the integrity of the European Sites considered are adequately avoided. This could include changes to the scale and layout of the development, the technology applied, and/or alterations to the site boundary and location at Sellafield. Such changes required at the project level should be sufficiently flexible to ensure that all identified impacts are.

3.40 Detailed information on the nominated site development and further baseline information regarding important habitats and species will be gathered at the site investigation stage. This will help to inform appropriate mitigation at the project level.

Water Resources and Quality

3.41 Avoiding adverse effects on surface, ground and estuarine waters is primarily the responsibility of the developer, but is subject to stringent management and regulatory frameworks of the Water Companies (resource planning) and the Environment Agency (abstraction licensing and discharge regulation).

3.42 Thermal, radioactive and non-radioactive discharges should go beyond complying with existing standards, with radioactive discharges required to be As Low As Reasonably Achievable (ALARA)[31] and that all other discharge levels are required to be an improvement on existing standards. All discharges which lead to adverse effects on the integrity of European Sites should not be permitted. In addition to thermal effects from direct cooling, there are potential water quality issues, in

31 ALARA is not a dose limit; it is a practice that has as its objective the attainment of dose levels as far below applicable limits as possible.

particular nutrient enrichment from anti-fouling agents, which may be associated with the cooling water process.

3.43 The IPC, as guided by the Nuclear NPS, can direct requirements for the efficiency of water use and the protection of water quality. This may include requiring that management measures relating to supply and discharge (including potential effects on European Sites) are in place prior to the implementation of the nominated site proposals, and that decisions relating to best available technology take specific account of the sensitivities of the individual receiving environments.

3.44 Adverse effects will effectively be mitigated at the site level through suitable design - including use of Sustainable Drainage Systems (SuDS) - and the selection of appropriate discharge standards and construction methods.

Habitat (and species) Loss and Fragmentation/Coastal Squeeze

3.45 Where proposals for design and build remain under development, the revised draft Nuclear NPS should seek to prioritise, through the guidance it provides to the IPC, the avoidance of direct or indirect habitat impacts that may lead to loss or fragmentation.

3.46 In relation to the identified issues at the nominated site at Sellafield, this should include maintaining the connectivity of wildlife corridors for example through careful design and placement of cooling water intake and outfalls, on migratory fish to the River Ehen SAC and ensuring a sustainable water resource is secured to avoid over-burdening the already pressurised freshwater resources of west Cumbria SAC . This should also include careful design of any sea defences (soft engineering) and marine landing facilities (permeable to sediment movements) to avoid potential effects to the Drigg Coast SAC.

3.47 Further studies will be required at project level to determine risks of the development upon the ecological integrity of the European Sites before appropriate mitigation can be determined in full.

Air Quality

3.48 Air quality impacts have been assessed as being potentially significant for the Drigg Coast SAC. Mitigation requirements could include sustainable transport plans including, for example: the use of non-road transport where possible; the phasing of development; and robust monitoring at sites by operators (and the Environment Agency as appropriate) to track changes throughout the lifecycle of proposed operations. In particular, the monitoring should account for the potential for cumulative impacts where the phasing between existing power stations and the new build overlaps.

Table 4: Summary of Avoidance and Mitigation Recommendations

Potential Effects	Suggested Avoidance and Mitigation Measures – Recommended for the IPC
Water Resources and Quality	
• Water Quality • Changes in water quality and drainage from earthworks/excavations and infrastructure provision • Impacts on water and drainage of planned accidental discharges	• Direct requirements for the protection of water quality, to take specific account of the sensitivities of the individual receiving environments • Require suitable design, including use of Sustainable Drainage Systems (SuDs). • Direct the selection of appropriate construction methods • Ensure that thermal discharges avoid adverse effects
• Impacts from abstraction and discharge of water (heated) upon water temperature and groundwater levels	• Ensure that the volume of cooling water returned to the waterbody is within capacity of immediate receiving environment and does not adversely affect sediment flow
Habitat Loss and Fragmentation/Coastal Squeeze	
• Habitat (and Species) Loss due to changes to hydrology and sediment transport regimes arising from construction at the coastal fringe	• Require site layout/ design to avoid or mitigate habitat (and species) losses; • Require sensitive design for all coastal defence structures and marine landing facilities which are permeable to sediment flows along the coast
• Barriers to migration and dispersal of fish populations • Impacts from abstraction and discharge of water (heated) upon fish populations	• Protection measures should be incorporated into water intake/outfall systems so as to avoid adverse effects on migratory fish populations
• Loss of surrounding habitat (construction of associated infrastructure)	• Require additional habitat creation to replace any lost habitats and to maintain connectivity of wildlife corridors around the nominated site
Air Quality	
• Emissions arising from Construction, Operation and Decommissioning	• Promote the use of carbon-efficient forms of transport and construction during the power station lifecycle

Summary of HRA Findings and Recommendations

3.49 The HRA Screening Assessment identified the likely significant effects on four of the European Sites as a result of impacts that may arise from

the nominated site. These effects were assessed further through the AA stage of the HRA which considered: European Site data; available environmental condition data; and the potential effects of other plans 'in-combination' in coming to a conclusion on the likelihood that the development of the nominated site for a new nuclear power station will have adverse effects on European Site integrity.

3.50 Based on HRA experience, professional judgement, and the consultation advice received from the Statutory Consultees, it is reasonable to conclude that the suggested measures may be sufficient to avoid and / or mitigate the adverse effects on the integrity of European Sites identified. However, the effectiveness of the measures proposed can only be ascertained with certainty through HRA at a project level, where the specific details of developments and primary data sources will be available.

3.51 The conclusions of the HRA are limited by the strategic nature of the assessment process and the information available, which does not allow for a definitive prediction of effects on the European Sites considered. A precautionary approach suggests that AA at this strategic level cannot rule out the potential for adverse effects on four European Sites identified through the screening stage through impacts on water resources and quality, habitat/species loss and fragmentation, coastal squeeze and air quality (see Table 5).

Table 5: Summary of Appropriate Assessment

Potential Impacts Arising from Development	European Sites at which likely adverse effects cannot be ruled out
Water resources and quality	• Drigg Coast SAC • River Ehen SAC • Wast Water SAC • River Derwent and Bassenthwaite Lake SAC
Habitat (and species) loss and fragmentation	• Drigg Coast SAC • River Ehen SAC
Coastal squeeze	• Drigg Coast SAC
Air quality	• Drigg Coast SAC

3.52 To address the uncertainties inherent in a strategic level HRA, the AA has proposed a suite of avoidance and mitigation measures to be considered as part of the project level HRA (Table 4). At this stage, it is assessed that the effective implementation of these strategic mitigation measures may help to address the identified adverse effects on European Site integrity, but that more detailed project level HRA is required in order to draw conclusions on their efficacy**.**

3.53 **Further assessment supported by detailed data at project level is therefore required to determine whether nuclear power development at this nominated site could be undertaken without adversely affecting the integrity of European Sites at Sellafield.**

3.54 **Only at the project level HRA can a conclusion of no adverse effect on site integrity be made with any confidence.**

Glossary

AA	Appropriate Assessment
AoS	Appraisal of Sustainability
APIS	UK Air Pollution Information System
DECC	Department for Energy and Climate Change
CAMS	Catchment Abstraction Management Strategy
CCW	Countryside Council for Wales
CHaMPs	Coastal Habitat Management Plans
cSAC	Candidate Special Area of Conservation
EA	Environment Agency
EIA	Environmental Impact Assessment
HRA	Habitats Regulations Assessment
ICZM	Integrated Coastal Zone Management
IPC	Infrastructure Planning Commission
LA	Local Authority
LDF	Local Development Framework
LSE	Likely Significant Effect
LTP	Local Transport Plan
NE	Natural England
NH_3	Ammonia
N2K	Natura 2000 sites
NO_x	Nitrogen Oxide
NPS	National Policy Statement
PPP	Plans, Programmes and Projects
pSPA	Potential Special Protection Area
Ramsar	Wetland Sites designated by the Ramsar Convention
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SPA	Special Protection Area
SSA	Strategic Siting Assessment
SSSI	Site of Special Scientific Interest
SuDS	Sustainable Drainage Systems
WC	Water Companies

WRMU	Water Resource Management Unit

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