

Appendices to the Habitats Regulations Assessment Site Report for Hartlepool

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

Planning for New Energy Infrastructure

October 2010

Habitats Regulations Assessment of the 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 Report of the revised draft Nuclear NPS

- Introduction
- Methods
- Findings

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 Appendices to the HRA site report for Hartlepool.

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.

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Appendix 1: European Site Characterisations

European site Identification

Natura 2000 Site Identification				
Natura 2000 Designation	Radius (measure from central grid reference point, MAGIC)			
	5km	10km	15km	20km
SAC	•None	•Durham coast	•Castle Eden Dene •North York Moors	•None
SPA	•Teesmouth and Cleveland Coastal	•Northumbria Coast	•North York Moors	•None
Ramsar	•Teesmouth and Cleveland Coastal	•Northumbria Coast	•None	•None

Natura 2000 Site Characterisations

Special Areas of Conservation (SAC)¹

1. Castle Eden Dene
2. North York Moors
3. Durham Coast

Special Protection Areas (SPA)²

1. North York Moors
2. Northumbria Coast
3. Teesmouth and Cleveland Coastal

Ramsar Sites³

1. Northumbria Coast
2. Teesmouth and Cleveland Coast

All core site specific information unless otherwise stated has been referenced from the Joint Nature Conservation Committee website ([Protected Sites](#)).

¹ **Special Areas of Conservation (SACs)** are classified under the Habitats Directive and provide rare and vulnerable animals, plants and habitats with increased protection and management.

² **Special Protection Areas (SPAs)** are classified under the Birds Directive to help protect and manage areas which are important for rare and vulnerable birds because they use them for breeding, feeding, wintering or migration. Together SACs and SPAs make up the Natura 2000 series

³ **Ramsar sites** are designated under the Convention on Wetlands of International Importance. The broad objectives are to stem the loss and progressive encroachment on wetlands now and in the future. These are often coincident with SPA sites designated under the Birds Directive. Although RAMSAR sites are not considered part of the Natura 2000 network, they are treated the same way as Natura 2000 sites.

Special Areas of Conservation

Site Name: Castle Eden Dene

- Location Grid Ref: NZ435397
- Site Code: [UK0012768](#)
- Size: 194.4ha

Castle Eden Dene SAC	
Site Description	<p>Castle Eden Dene in north-east England represents the most extensive northerly native occurrence of yew <i>Taxus baccata</i> woods in the UK. Extensive yew groves are found in association with ash-elm <i>Fraxinus-Ulmus</i> woodland and it is the only site selected for yew woodland on magnesian limestone in north-east England. Castle Eden Dene is the largest and biologically the richest of a series of steep-sided wooded denes, formed as deep ravines in the Magnesian Limestone and boulder clay of the Durham Coast. Due to its size and difficult terrain large parts of the woodland remain comparatively free from human disturbance, despite the proximity of Peterlee New Town. The majority of the woodland is developed on base-rich soils with ash <i>Fraxinus excelsior</i> and wych elm <i>Ulmus glabra</i> as the main canopy species, although sycamore <i>Acer pseudoplatanus</i> is well established and Yew <i>Taxus baccata</i> common. Hazel <i>Corylus avellana</i> is the most abundant shrub species, but Guelder Rose <i>Viburnum opulus</i>, Spindle <i>Euonymus europaeus</i>, Privet <i>Ligustrum vulgare</i>, Dogwood <i>Cornus sanguinea</i> and Spurge Laurel <i>Daphne laureola</i> are also significant components of the shrub flora. The species rich ground flora is dominated by Wild Garlic <i>Allium ursinum</i> with Wood Anemone <i>Anemone nemorosa</i>, Dog's Mercury <i>Mercurialis perennis</i> and Sanicle <i>Sanicula europaea</i>, whilst in the humid valley-bottom there are locally extensive stands of Hart's-Tongue Fern <i>Phyllitis scolopendrium</i>. Rare and local species include Lily-of-the-valley <i>Convallaria majalis</i>, Herb Paris <i>Paris quadrifolia</i>, Bird's-nest Orchid <i>Neottia nidus-avis</i> and Round-leaved Wintergreen <i>Pyrola rotundifolia</i>. Juniper <i>Juniperus communis</i> and Small-leaved Lime <i>Tilia cordata</i> also occur in the dene. In the upper parts of the dene on boulder clay soils pedunculate oak <i>Quercus</i></p>

Castle Eden Dene SAC	
	<p><i>robur</i> and, to a lesser extent, Birch <i>Betula pubescens</i> dominate the canopy, with an understorey of Hazel, Holly <i>Ilex aquifolium</i> and Rowan <i>Sorbus aucuparia</i>, and a ground flora containing Tufted Hair-grass <i>Deschampsia cespitosa</i>, or Bracken <i>Pteridium aquilinum</i>. The boulder clay slopes are inherently unstable and land-slips are frequent. These become colonised by a wide range of ruderal and wetland plants in which Giant Horsetail <i>Equisetum telmateia</i> is often abundant, whilst in time willow <i>Salix</i> spp. scrub becomes established. At the western end of the dene is a small stand of grassland, containing Blue Moor-grass <i>Sesleria albicans</i>, Rock Rose <i>Helianthemum nummularium</i>, Quaking Grass <i>Briza media</i> and Fragrant Orchid <i>Gymnadenia conopsea</i>. The insect fauna is exceptionally diverse and includes a large assemblage of nationally and regionally rare species, the best known being the elm-feeding moth, Blomer's Rivulet <i>Discoloxia blomeri</i>.</p>
Qualifying Features	<p>91J0 <u>Taxus baccata woods of the British Isles</u></p>
Conservation Objectives	<p>The Conservation Objectives for this site are, subject to natural change, to maintain the following habitats, with particular reference to any dependent component special interest features habitats, vegetation types, species, species assemblages etc.) for which the land is designated.</p> <p>Habitat Types represented (Biodiversity Action Plan categories) Broadleaved mixed and yew woodland</p> <p>To maintain in favourable condition the <i>Taxus baccata</i> woodland.</p>

Castle Eden Dene SAC													
Component SSSIs	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #d3d3d3;">SAC component site</th> <th style="background-color: #d3d3d3;">Favourable</th> <th style="background-color: #d3d3d3;">Unfavourable recovering</th> <th style="background-color: #d3d3d3;">Unfavourable no change</th> <th style="background-color: #d3d3d3;">Unfavourable declining</th> <th style="background-color: #d3d3d3;">Destroyed, part destroyed</th> </tr> </thead> <tbody> <tr> <td style="background-color: #d3d3d3;">Castle Eden Dene SSSI</td> <td style="text-align: center;">6.79%</td> <td style="text-align: center;">93.21%</td> <td style="text-align: center;">0%</td> <td style="text-align: center;">0%</td> <td style="text-align: center;">0%</td> </tr> </tbody> </table>	SAC component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed	Castle Eden Dene SSSI	6.79%	93.21%	0%	0%	0%
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Castle Eden Dene SSSI	6.79%	93.21%	0%	0%	0%								
Key Environmental Conditions (factors that maintain site integrity)	<p>Broadleaved and Yew Woodland</p> <ul style="list-style-type: none"> To maintain this woodland structure a dense understorey and a more mature overstorey is required with a range of ages and species within and between stands is desirable. Some dead and decaying wood for example fallen logs can provide habitats for fungi and invertebrates. For the most part, yew can be left unmanaged to benefit species that do best under low disturbance or in response to natural processes. 												
SAC Condition Assessment	See SSSI condition assessment.												
Vulnerabilities (includes existing pressures and trends)	<ul style="list-style-type: none"> Deer browsing (yew is readily browsed by deer). Lack of diversity of stand structure. Many stands of this habitat are in older classes that are relatively uniform in composition, with many existing yew woods having regenerated when conditions were favourable during the 19th and 20th Century. Consequently these areas require active and appropriate management to maintain the diversity of stand structure. Air pollution. This is considered to be a potentially significant pressure to the structure and function of this habitat. 												
Landowner/ Management Responsibility	<ul style="list-style-type: none"> Management by Natural England in partnership with Peterlee Town Council, Easington District Council and Durham County Council. 												

Castle Eden Dene SAC	
HRA/AA Studies undertaken that address this site	Draft Appropriate Assessment of the Regional Spatial Strategy for the North East (2007) http://www.gos.gov.uk/nestore/docs/planning/rss_documents/l.pdf

Site Name: North York Moors

- Location Grid Ref: NZ711021
- JNCC Site Code: [UK0030228](#)
- Size: 44082.25 ha

North York Moors SAC	
Site Description	<p>The North York Moors contain the largest continuous tract of heather moorland in England. The site is of national importance for its mire and heather moorland vegetation communities and of international importance for its breeding bird populations, particularly Merlin and Golden Plover.</p> <p>Vegetation Communities: The vegetation displays a transition between blanket bog and dry heath land and supports diverse and extensive upland plant communities. The moorland plateaux are dominated by dry heath on the central and western moors and wet heath and mire communities on the northern and eastern moors. The plateaux are defined by a number of valleys, the sides of which support extensive strands of bracken and small areas of native woodland. Acid grasslands occur along some of the moorland edges.</p> <p>Moorland plateaux: Dry heath covers over half the site and forms the main vegetation type on the western, southern and central moors where the soil is free draining and only a thin peat layer exists. The dry heath is dominated by Heather <i>Calluna vulgaris</i> and Wavy Hair-grass <i>Deschampsia flexuosa</i> almost to the exclusion of other species, although Bilberry <i>Vaccinium myrtillus</i> becomes more dominant on the steeper slopes. Bell Heather <i>Erica cinerea</i> is also found on well drained areas throughout the site, often fringing the sides of tracks and roads. Areas of wet heath tend to be dominated by Heather with Cross-leaved Heath <i>Erica tetralix</i> becoming dominant in wetter areas. Purple Moor-grass <i>Molinia caerulea</i> and Heath Rush <i>Juncus squarrosus</i> are also common within this community.</p>

North York Moors SAC	
	<p>Valley sides and streams: Flushes occur along seepage lines and stream courses across the moors. These flushes tend to be restricted to small areas on steep valley sides where beds of limestone lie close the surface. The flush communities make up only a small area of the site, but are an essential part of the moorland habitat particularly because they support rich invertebrate populations which are an important food source for moorland birds.</p> <p>Birds: The site supports a nationally important assemblage of moorland breeding birds including Merlin, Golden Plover, Snipe, Curlew, Redshank, Whinchat, Ring Ouzel, Hen Harrier, Peregrine and Short-eared Owl. The populations of breeding Merlin and Golden Plover are of international importance. Areas of tall heather are favoured by breeding Merlin, Short-eared Owl and Hen Harrier while the moorland burning and grazing regime provides the varied structure required by Red Grouse and waders such as Golden Plover and Curlew.</p>
Qualifying Features	<p>Annex I habitats that are a primary reason for selection of this site</p> <p>4010 <u>Northern Atlantic wet heaths with <i>Erica tetralix</i></u></p> <p>4030 <u>European dry heaths</u></p> <p>Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site</p> <p>7130 <u>Blanket bogs</u></p>

North York Moors SAC																																					
Conservation Objectives	<p>The Conservation objectives for the site are to maintain in favourable condition the:</p> <ul style="list-style-type: none"> • Northern Atlantic wet heath with <i>Erica tetralix</i> • European dry heath • Blanket bog (priority feature) 																																				
Component SSSIs	<table border="1"> <thead> <tr> <th>SSSI component site</th> <th>Favourable</th> <th>Unfavourable recovering</th> <th>Unfavourable no change</th> <th>Unfavourable declining</th> <th>Destroyed, part destroyed</th> </tr> </thead> <tbody> <tr> <td>Arnecliffe and Park Woods SSSI (3 units)</td> <td>67.24%</td> <td>0.00%</td> <td>0.00%</td> <td>32.76%</td> <td>0.00%</td> </tr> <tr> <td>Beck Hole SSSI (22 units)</td> <td>83.49%</td> <td>12.89%</td> <td>3.61%</td> <td>0.00%</td> <td>0.00%</td> </tr> <tr> <td>Biller Howe Dale SSSI (5 units)</td> <td>86.73%</td> <td>0.00%</td> <td>0.00%</td> <td>13.27%</td> <td>0.00%</td> </tr> <tr> <td>Botton Head SSSI (2 units)</td> <td>100.00%</td> <td>0.00%</td> <td>0.00%</td> <td>0.00%</td> <td>0.00%</td> </tr> <tr> <td>Broughton Bank (1 unit)</td> <td>100.00%</td> <td>0.00%</td> <td>0.00%</td> <td>0.00%</td> <td>0.00%</td> </tr> </tbody> </table>	SSSI component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed	Arnecliffe and Park Woods SSSI (3 units)	67.24%	0.00%	0.00%	32.76%	0.00%	Beck Hole SSSI (22 units)	83.49%	12.89%	3.61%	0.00%	0.00%	Biller Howe Dale SSSI (5 units)	86.73%	0.00%	0.00%	13.27%	0.00%	Botton Head SSSI (2 units)	100.00%	0.00%	0.00%	0.00%	0.00%	Broughton Bank (1 unit)	100.00%	0.00%	0.00%	0.00%	0.00%
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		North York Moors SAC					
	Castlebeck and Scar Woods SSSI (5 units)	92.13%	0.00%	7.87%	0.00%	0.00%	
	Fairy Call Beck SSSI (1 unit)	100.00%	0.00%	0.00%	0.00%	0.00%	
	Farndale SSSI (15 units)	13.99%	13.35%	8.42%	64.23%	0.00%	
	Hill House Nab SSSI (1 unit)	100.00%	0.00%	0.00%	0.00%	0.00%	
	Hole of Horcum SSSI (5 units)	100.00%	0.00%	0.00%	0.00%	0.00%	
	Newtondale SSSI (19 units)	97.52%	2.48%	0.00%	0.00%	0.00%	
	North York Moors SSSI (195 units)	12.47%	58.72%	23.82%	4.98%	0.00%	
	Scar End Wood SSSI (3 units)	60.70%	19.18%	20.12%	0.00%	0.00%	
	Tripsdale SSSI (2 units)	100.00%	0.00%	0.00%	0.00%	0.00%	

North York Moors SAC	
<p>Key Environmental Conditions (factors that maintain site integrity)</p>	<p>Northern Atlantic wet heaths with <i>Erica tetralix</i> and European dry heaths</p> <ul style="list-style-type: none"> • Wet upland heath occurs in areas where peat accumulation results in damp, nutrient poor soils which allow the characteristic plants of wet heathland, such as heather and cross-leaved heath, to dominate the vegetation. • Dry upland heath develops in nutrient-poor, acidic conditions in unenclosed upland areas dominated by dwarf shrubs (for example heather). Upland heaths are unique plant communities that support a particular variety of plants and animals, including rare and scarce species of plants, birds and invertebrates. • The upland heaths have a long history of active management and this is essential for maintaining the nature conservation interest and open nature by preventing the invasion of scrub and trees that would otherwise dominate these dwarf shrub communities. Management should aim to create a structurally diverse mosaic of dwarf shrub vegetation to provide the feeding, breeding and sheltering areas needed by the range of plants and animals that are characteristic of a well managed upland. • Light grazing, particularly in the summer months, is a suitable means of managing dry heath. Grazing also provides dung which is an important habitat for certain invertebrates. Grazing must be carefully controlled. Stock levels need to be appropriate to the type and age structure of the vegetation and light, as heavy grazing excessive trampling and poaching by livestock can damage the habitat further. • Periodic burning is a useful tool for maintaining structurally diverse dry heath but used with caution, as inappropriate burning can be very damaging to both plant and animal communities. Burning should only be undertaken during the winter and should follow an appropriate burning rotation in order to create a mosaic of habitats with vegetation of different ages, composition and structure, which in turn supports a wide diversity of species, for

	North York Moors SAC
	<p>example, burning small patches on a long rotation creates a diverse structure and reduces the impact on animal populations. The use of burning as a management tool on wet heath can be damaging in the same way as on blanket bog and should be carried out only with particular care.</p> <ul style="list-style-type: none"> • Cutting is a possible alternative to burning but must keep to the same seasonal timings as heather burning (including baling). If used it is normally desirable to remove the resultant litter, or germination of seedlings will be inhibited and there will be an additional fire-risk. Care must be taken when using the machinery required for cutting as this can be damaging to fragile peat soils, in particular those of wet heaths and the use of machinery should be avoided where possible on wetter areas. • Artificial drainage is damaging to wet heath plant and animal communities due to lowering of the water table and erosion effects and should be avoided. <p><u>Blanket bogs</u></p> <ul style="list-style-type: none"> • Blanket bog is a peatland habitat confined to cool, wet climates. Peat forms where certain plants decompose very slowly under waterlogged conditions. In ideal circumstances, the peat develops over large expanses of uplands, effectively ‘blanketing’ them. The wet, nutrient-poor growth conditions provided by peat means that the bogs and their associated pools support unique communities of specialised plants and animals. They are also important habitats for breeding populations of wading birds. • Light grazing may be beneficial, particularly on those sites with a history of grazing management. This can be used to prevent the development of tussocky vegetation and scrub on the blanket bog, which would damage the characteristic communities of plants and animals. Care needs to be taken in deciding the precise timing and intensity of grazing.

North York Moors SAC	
	<p>Generally the wetter a site is, the greater the sensitivity to grazing. Light summer grazing by sheep is likely to be an acceptable regime. Heavy grazing must be avoided.</p> <ul style="list-style-type: none"> Where heather burning is practiced, it should be carried out under conditions that encourage 'cool' burns which do not burn into the moss layer or peat. Burning blanket bog can reduce its conservation value where burns are too hot, too frequent or are carried out in the wrong place. Areas that contain pools should not be burnt, as it can be very damaging to the moss hummocks, invertebrate and amphibian populations that they support. Burning can also damage the top layer of peat and prevent the formation of new peat. Burning should not be introduced to blanket bog areas that have not been burnt. In areas where accidental fires are likely, firebreaks can be managed through very careful cutting or burning. No new drainage should be introduced to blanket bogs and deepening of any existing surface drainage should be avoided. It will be appropriate to block existing drains that are eroding or are lowering the water table.
SAC Condition Assessment	See SSSI condition summary
Vulnerabilities (includes existing pressures and trends)	<p><u>Northern Atlantic wet heaths with <i>Erica tetralix</i></u> (The related EC codes are shown in brackets)</p> <ul style="list-style-type: none"> Over-grazing (140 Grazing). Over-grazing (a particular pressure in parts of the uplands) should decline as agri-environment measures and management agreements begin to take effect. Under-grazing / lack of management.

	North York Moors SAC
	<ul style="list-style-type: none"> • Invasive species (954 Invasion by a species) The impacts of heather beetle (particularly on the upland component of this habitat) appear to be increasing and may become a bigger problem (possibly linked to climate or atmospheric deposition). • Development (400 Urbanised areas, human habitation; 401 Continuous urbanisation; 402 Discontinuous urbanisation; 500 Communications networks; 510 Energy transport; 590 Other forms of transportation and communication). • Development pressures – both direct loss to development and secondary effects such as fragmentation and isolation, increased recreation and associated pressures from development close to the habitat – are a particular issue for the lowland component of this habitat. Renewable energy and communication mast developments are a pressure on this habitat in the uplands. • Burning (180 Burning) Inappropriate burning (a particular pressure in parts of the uplands) should decline as agri-environment measures and management agreements begin to take effect. • Water management (810 Drainage) Lack of water due to drainage is a particular issue for H4010. Whilst agri-environment measures and management agreements may have some positive effect, climate change could increase the adverse impact on the habitat. • Air pollution (702 Air pollution)

	North York Moors SAC
	<p>Based on an assessment of the exceedance of relevant critical loads, air pollution is considered to be a potentially significant threat to the future condition of this habitat.</p> <ul style="list-style-type: none"> • Climate change (750 Other pollution or human impacts/ activities) Based on the literature review climate change is considered a major threat to the future condition of this habitat especially in the long term. However, there is a high degree of uncertainty in defining future climate threats on habitats and species due to uncertainty in: future greenhouse gas emissions; the consequential changes in climatic features (for instance temperature, precipitation CO₂ concentrations); the responses of habitats and species to these changes (for instance location, phenology, community structure) and the role of other socio-economic drivers of environmental change. The scale of change in habitats and species as a result of climate change will vary across ecosystems. Small changes in the climate are more likely to have a substantial impact on habitats and species which exist within a narrow range of environmental conditions. The future impacts of climate change on UK biodiversity will be exacerbated when coupled with other drivers of environmental change. <p><u>European dry heaths</u></p> <ul style="list-style-type: none"> • Over-grazing (140 Grazing; 141 Abandonment of pastoral systems) see above. • Under-grazing (140 Grazing; 141 Abandonment of pastoral systems) see above. • Invasive species (954 Invasion by a species) see above. • Burning (180 Burning) see above.

	North York Moors SAC
	<ul style="list-style-type: none"> • Air pollution (402 Air pollution) see above. • Climate change (750 Other pollution or human impacts/ activities) see above. <p><u>Blanket bogs</u> (The related EC codes are shown in brackets)</p> <ul style="list-style-type: none"> • Under and Over Grazing (140 Grazing) see above. • Burning (180 Burning) as above with but please note: Poorly managed and/or accidental fires can be particularly damaging to blanket bog. • Water management (810 Drainage) as above. • Erosion (900 Erosion). • High altitude blanket bogs in particular are losing habitat through constant erosion of the peat mass. Some of this may be due to natural processes. • Forestry (161 Planting) Although new planting may be relatively small scale, some existing plantations are having an impact on the hydrology and species composition of adjacent areas of blanket bog, notably as the trees mature. • Peat extraction (310 Peat extraction, 311 hand cutting of peat, 312 mechanical removal of peat) Commercial peat extraction, though relatively limited in extent can have important local

	North York Moors SAC
	<p>effects. Domestic cutting, most of which occurs on common land, is locally extensive. Where mechanical methods are employed, these can have a significant impact, especially in Northern Ireland where the distinction between commercial and domestic activity can be difficult to determine.</p> <ul style="list-style-type: none"> • Agricultural improvement (120 Fertilisation, 190 Agriculture and forestry activities not referred to above). In addition to drainage, fertiliser application and conversion to pasture has occurred frequently in the past and can be of local significance. • Recreation (501 paths, tracks, cycling tracks, 622 walking, horse riding and non-motorised vehicles, 623 motorised vehicles). • Many popular walking routes, some of which are also used by cyclists and horse-riders, traverse blanket bog areas which are very sensitive to such pressure. The increased use of all-terrain vehicles for recreational, agricultural and sporting activities can also result in local erosion. • Built development (500 Communication networks, 511 Electricity lines, 490 Other urbanisation, industrialisation and similar activities) Wind farms and communication masts, together with their associated infrastructure, are increasingly being proposed on areas of blanket bog, especially those at high altitude. There are also threats from hydro-electric schemes in Scotland. • Air pollution (702 Air pollution) as above.
Landowner/ Management Responsibility	<ul style="list-style-type: none"> • North York Moor National Park Authority/North Yorkshire; Redcar and Cleveland

North York Moors SAC	
<p>HRA/AA Studies undertaken that address this site</p>	<p>Draft Appropriate Assessment of the Regional Spatial Strategy for the North East (2007) http://www.gos.gov.uk/nestore/docs/planning/rss_documents/l.pdf</p> <p>Habitats Regulations Assessment screening of a Hambleton Site Allocations DPD Submission Draft (January 2009) Final Report www.hambleton.gov.uk/Hambleton%20District%20Council/Planning/LDF/AllocPropSubHabitats.pdf</p> <ul style="list-style-type: none"> • HRA Screening confirmed that the majority of the development proposals in the Hambleton Allocations DPD Submission Draft are unlikely to have significant effects. However, a number of uncertainties remain in relation to changes in water levels as a result of abstraction to supply new development, recreational pressures, toxic contamination from sewage discharges and air pollution as a result of increased transport resulting from new development.

Site Name: Durham Coast

- Location Grid Ref: NZ455407
- JNCC Site Code [UK0030140](#)
- Size: 393.63 ha

Durham Coast SAC	
Site Description	<p>The Durham Coast SAC is the <i>only example</i> of vegetated sea cliffs on magnesian limestone exposures in the UK. The Durham Coast between South Shields and Hart Warren is of considerable biological, geological and physiographic interest. It contains most of the paramaritime Magnesian Limestone vegetation in Britain, as well as a species-rich dune system, and supports nationally important numbers of wintering shore birds and breeding Little Terns which contribute to the internationally important populations of the north-east coast.</p> <p>Vegetation Communities: The paramaritime Magnesian Limestone vegetation on the Durham Coast is unique in the mix of plant communities which it contains, and is very different from the other lowland areas of the Magnesian Limestone grassland found in County Durham. On exposed heathlands limited areas of maritime grassland, containing Red Fescue <i>Festuca rubra</i>, Sea Plantain <i>Plantago maritima</i> and Sea Thrift <i>Armeria maritima</i> occur. This gives way on more sheltered slopes to extensive calcareous grasslands, support Glaucous Sedge <i>Carex flacca</i>, Wild Thyme <i>Thymus praecox</i>, Common Rock-rose <i>Helianthemum nummularium</i>, Bloody Crane’s-bill <i>Geranium sanguineum</i>, Purple Milk-vetch <i>Astragalus danicus</i>, Small Scabious <i>Scabiosa columbaria</i>, Saw-wort <i>Serratula tinctoria</i> and Pyramidal Orchid <i>Anacamptis pyramidalis</i>. Wet flushes support a range of vegetation from carpets of the moss <i>Cratoneuron commutatum</i> to tall stands of Hemp Agrimony <i>Eupatorium cannabinum</i> and Common Reed <i>Phragmites australis</i>. A number of unusual plant species, including Marsh Helleborine <i>Epipactis palustris</i>, Grass-of-Parnassus <i>Parnassia palustris</i> and the nationally scarce Round-leaved Wintergreen <i>Pyrola rotundifolia</i> and Bird’s-eye Primrose <i>Primula farinosa</i>, occur in</p>

Durham Coast SAC													
	<p>such flushes. Species-rich neutral grassland has developed on the plateau above the cliff slope where a thick mantle of boulder clay isolates the vegetation from the limestone. Characteristic species found here include Crested Dog's-tail <i>Cynosurus cristatus</i>, Common Bent <i>Agrostis capillaris</i>, Common Knapweed <i>Centaurea nigra</i> and Pepper Saxifrage <i>Silaum silaus</i>.</p> <p>Birds: The Durham coastline supports nationally important numbers of wintering Purple Sandpiper, Sanderling, Little Tern, Kittiwake, Fulmar and Cormorant.</p>												
Qualifying Features	<p>Annex I habitats that are a primary reason for selection of this site:</p> <p>1230 Vegetated sea cliffs of the Atlantic and Baltic coasts.</p>												
Conservation Objectives	<p>This SAC is designated for its vegetated sea cliffs of the Atlantic and Baltic Coasts. The Conservation Objectives for this site are, subject to natural change, to maintain the habitats and geological features in favourable condition), with particular reference to any dependent component special interest features (habitats, vegetation types, species, species assemblages etc.) for which the land is designated.</p>												
Component SSSIs	<p>Durham Coast SSSI (37 units) condition status :</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>SAC component site</th> <th>Favourable</th> <th>Unfavourable recovering</th> <th>Unfavourable no change</th> <th>Unfavourable declining</th> <th>Destroyed, part destroyed</th> </tr> </thead> <tbody> <tr> <td>Durham Coast SSSI</td> <td>60.18 %</td> <td>32.98</td> <td>6.39 %</td> <td>0.45 %</td> <td>0%</td> </tr> </tbody> </table>	SAC component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed	Durham Coast SSSI	60.18 %	32.98	6.39 %	0.45 %	0%
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Durham Coast SSSI	60.18 %	32.98	6.39 %	0.45 %	0%								

Durham Coast SAC	
Key Environmental Conditions (factors that maintain site integrity)	<p>Limestone Grassland</p> <ul style="list-style-type: none"> • Management is achieved by grazing (using low stocking rates in winter) and selective scrub clearance which may need to be assessed on a year by year basis. • Leave some areas ungrazed from time to time may benefit by encouraging the creation of a mixture of habitat types and structures. • Or minimise any harmful effects. • Management should take into consideration the impacts of any anthropogenic effects which may deflect wave energy away from the foreshore. • The turning of boulders for bait collection of peeler crabs can damage the delicate communities found on the underside of the rocks if they are not replaced to their original positions.
SAC Condition Assessment	See SSSI component condition summary.
Vulnerabilities (includes existing pressures and trends)	<p>Factors affecting sea cliffs are identified in the <i>Habitat Action Plan for Vegetated sea cliffs</i>. The main pressures affecting the habitats found in this SAC are listed below. Where available the related EC codes are shown in brackets.</p> <p>Erosion (900 erosion) Erosion is a highly significant factor in soft cliffs. High rates of erosion do not imply a loss of the cliff resource, either in geological or biological terms. Cliff face communities are able to retreat with the cliff line, and erosion is vital for constantly renewing geological exposures and recycling the botanical succession on soft cliffs. However, cliff-top vegetation may be destroyed where it is squeezed between a receding cliff face and cultivated land. Cliff erosion in many places provides an essential supply of sediment to coasts lying down-drift of the cliffs.</p>

	Durham Coast SAC
	<p>Coastal protection (871 sea defence or coast protection works) Coastal protection systems have been built on many soft cliff coasts in order to slow or stop the rate of erosion and thus protect capital assets behind the cliff line. Cliff faces may also be re-profiled and sown with hardy grasses of little value for nature conservation. All such works have the effect of stabilising the cliff face, resulting in geological exposures being obscured, bare soil and early pioneer stages being progressively overgrown, and wet flushes drying out. Soft cliffs require a certain amount of natural erosion to maintain their interest, but unprotected soft cliff is now a relatively scarce habitat.</p> <p>Built development (400 Urbanised areas, human habitation, 410 Industrial or commercial areas) There have been many instances in the UK of urban or industrial development and holiday accommodation being built too close to cliff-tops. Where the cliffs are subsequently discovered to be eroding, there is often political pressure to build the type of defensive works described above. Built development also prevents cliff-top biological communities from retreating in response to cliff erosion, subjecting them to a form of 'coastal squeeze'.</p> <p>Agriculture (101 Modification of cultivation practices, 141 abandonment of pastoral systems) In traditional low-intensity grazing systems, livestock were grazed on cliff grasslands where they maintained open maritime grassland vegetation. Post-war intensification of agriculture has led to maritime grassland on more level terrain being ploughed out, while that on sloping ground has been abandoned and, where not maintained by exposure, is frequently overgrown by scrub. Localised eutrophication can be caused by fertiliser run-off from arable land above and this encourages coarse, vigorous 'weed' species at the expense of the maritime species. Agricultural land drains discharging on the cliff face may cause local acceleration of erosion.</p>

	Durham Coast SAC
	<p>Recreational use (622 walking, horse riding and non-motorised vehicles) The siting of holiday accommodation on cliff-tops not only reduces the landscape value of a site, but can also cause heavy localised erosion and disturbance to nesting birds. An increase in the number of walkers and dogs along some coastal footpaths has increased livestock worrying and even losses and forced a number of farmers to remove their stock from these sites. Consequently, some of the sites are now suffering from a lack of appropriate grazing, and scrub encroachment is likely to become a problem.</p> <p>Grazing (140 Grazing) Lack of grazing or use of inappropriate stock leading to encroachment of scrub/bracken onto maritime grassland is another factor. Overgrazing may be a problem in some places (including that by rabbits), leading to reduction in habitat diversity.</p> <p>Air pollution (702 air pollution) Based on an assessment of relevant literature, this habitat is potentially sensitive to air pollution, but it has not been possible to undertake an assessment of potential impact based on critical loads because of the poor equivalence between this habitat and those for which critical loads are set.</p>
Landowner/ Management Responsibility	<p>City of Sunderland Council District of Easington Council Durham County Council Durham Wildlife Trust Natural England Environment Agency Groundwork North East</p>

	Durham Coast SAC
	<p> Hartlepool Borough Council National Trust Northumbrian Water Ryhope Development Trust Horden and Easington Colliery Regeneration Partnership Seaham Town Council Blackhall Regeneration Partnership </p>
<p>HRA/AA Studies undertaken that address this site</p>	<p> Appropriate Assessment for Darlington Borough Council Local Development Framework Core Strategy (2008) Darlington http://www.darlington.gov.uk/dar_public/Document%20Library/Development%20and%20Environment/Development%20and%20Regeneration/Planning%20Services/Policy/CoreStrategy/2008/CSExecutiveSummary.pdf </p> <ul style="list-style-type: none"> • The potential impacts from the Core Strategy Issues and Options 2008 included those from: • Air quality • Water quality and hydrology • Habitat / species disturbance. • Climate change <p>Although these were potential impacts, the likelihood and significance of the potential impacts were uncertain as there was insufficient information that could determine this.</p> <p> Appropriate Assessment for the Stadium Village Development Framework Supplementary Planning Document (SPD) (2008) http://www.sunderland.gov.uk/stadiumvillage/Documents/stadiumvillageaareport.pdf </p> <ul style="list-style-type: none"> • The Appropriate Assessment concluded that there would be no direct impacts on the Durham

	Durham Coast SAC
	<p>Coast SAC because it is of sufficient geographical distance from the proposed Stadium Village Development Framework SPD. However The Stadium Village Development Framework SPD does have the potential to result in cumulative or in-combination impacts which may result from urban development and growth which subsequently infringes the land areas adjacent to the European sites (including Durham Coast SAC). Therefore the Appropriate Assessment could not fully assess the impacts without considering other Development and Supplementary Planning Documents for other developments proposed for the region.</p> <p>Draft Appropriate Assessment of the Regional Spatial Strategy for the North East (2007) http://www.gos.gov.uk/nestore/docs/planning/rss_documents/l.pdf</p>

Special Protection Areas

Site Name: North York Moors

- Location Grid Ref: NZ724005
- JNCC Site Code: [UK9006161](#)
- Size: 44087.68ha

North York Moors SPA	
Site Description	<p>The North York Moors contain the largest continuous tract of heather moorland in England. The site is of national importance for its mire and heather moorland vegetation communities and of international importance for its breeding bird populations, particularly Merlin and Golden Plover. (See North York Moors SAC site description for details of habitats)</p> <p>Birds: The site supports a nationally important assemblage of moorland breeding birds including Merlin, Golden Plover, Snipe, Curlew, Redshank, Whinchat, Ring Ouzel, Hen Harrier, Peregrine and Short-eared Owl. The populations of breeding Merlin and Golden Plover are of international importance. Areas of tall heather are favoured by breeding Merlin, Short-eared Owl and Hen Harrier while the moorland burning and grazing regime provides the varied structure required by Red Grouse and waders such as Golden Plover and Curlew. The edges of the moor characterised by grass and rush provide habitat for breeding Snipe, Redshank and Lapwing. Whinchat also nest on the moorland edge in grassland and bracken beds. Ring Ouzels frequent sheltered gill sides and rock out-crops whilst Wheatear nest in walls and rocky screes. Peregrine breed in small numbers on the moor and favour nest sites in disused quarries and crags along the moorland edge.</p>
Qualifying Features	<p>Article 4.1 Qualification During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Merlin <i>Falco columbarius</i> - at least 2.7 % of the GB breeding population 1996 • Golden Plover <i>Pluvialis apricaria</i> - at least 2.3 % of the GB breeding population 1996

North York Moors SPA																																																													
Conservation Objectives	<ul style="list-style-type: none"> To maintain, in favourable condition, the habitats for the populations of Annex 1 species (Merlin and Golden Plover) 																																																												
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		North York Moors SPA				
	Hole of Horcum SSSI (5 units)	100.00%	0.00%	0.00%	0.00%	0.00%
	Newtondale SSSI (19 units)	97.52%	2.48%	0.00%	0.00%	0.00%
	North York Moors SSSI (195 units)	12.47%	58.72%	23.82%	4.98%	0.00%
	Scar End Wood SSSI (3 units)	60.70%	19.18%	20.12%	0.00%	0.00%
	Tripsdale SSSI (2 units)	100.00%	0.00%	0.00%	0.00%	0.00%
Key Environmental Conditions (factors that maintain site integrity)	<ul style="list-style-type: none"> • North York Moors supports a distinctive breeding bird community with many species of international importance which should be managed in order to safeguard their populations. • Structural diversity of vegetation is important and thus sympathetic grazing and burning regimes are crucial. • Areas of taller heather in places, such as on slopes or along watercourses, may provide suitable nest sites for Merlin. Conversely, shorter vegetation (particularly on flatter, gently sloping land) provides nesting and feeding sites for birds such as Golden Plover. • Any burning above peat soils needs to be cool and quick, and should avoid damage to the moss layer and the peat surface. • Grouse moor management also involves intensive predator control and in some locations this may result in increased numbers of certain species of ground nesting birds. For species with precariously low numbers this work may be undertaken alongside habitat improvements to maintain or build populations. 					

North York Moors SPA	
	<ul style="list-style-type: none"> • Improvements of enclosed land should be avoided. The re-instatement of tussocky, uneven swards through appropriate stock grazing will provide nest sites and feeding areas for Snipe, Redshank, Lapwing and Curlew. • Bracken control is desirable where seen to be invading habitats of importance. Some patches of bracken may be targeted for scrub or woodland regeneration. • On both open moorland and enclosed farmland, it is vital to maintain or enhance soil wetness and wetland features such as pools and flushes, and to retain and develop local cover of native scrub, scattered trees and woodland. The blocking of grips across peat and blanket bog will enhance soil wetness.
SAC Condition Assessment	See SSSI Condition Assessment.
Vulnerabilities (includes existing pressures and trends)	<p>Over-grazing (a particular pressure in parts of the uplands) should decline as agri-environment measures and management agreements begin to take effect.</p> <ul style="list-style-type: none"> • Burning (180 Burning) Inappropriate burning (a particular pressure in parts of the uplands) should decline as agri-environment measures and management agreements begin to take effect. • Air pollution (702 Air pollution) Based on an assessment of the exceedance of relevant critical loads (see Technical Note III), air pollution is considered to be a potentially significant threat to the future condition of this habitat.

	North York Moors SPA
	<p>4030 <u>European dry heaths</u></p> <ul style="list-style-type: none"> • Over-grazing (140 Grazing; 141 Abandonment of pastoral systems) see above • Under-grazing (140 Grazing; 141 Abandonment of pastoral systems) see above • Invasive species (954 Invasion by a species) see above • Burning (180 Burning) see above • Air pollution (402 Air pollution) see above • Climate change (750 Other pollution or human impacts/ activities) see above <p>7130 <u>Blanket bogs</u> (The related EC codes are shown in brackets)</p> <ul style="list-style-type: none"> • Under and Over Grazing (140 Grazing) see above • Burning (180 Burning) <p>As above with but please note: Poorly managed and/or accidental fires can be particularly damaging to blanket bog.</p> <ul style="list-style-type: none"> • Water management (810 Drainage) as above. • Erosion (900 Erosion) <p>High altitude blanket bogs in particular, especially those in the Pennines and south Wales, are losing</p>

North York Moors SPA	
	<p>habitat through constant erosion of the peat mass. Some of this may be due to natural processes.</p> <ul style="list-style-type: none"> • Forestry (161 Planting) Although new planting may be relatively small scale, some existing plantations are having an impact on the hydrology and species composition of adjacent areas of blanket bog, notably as the trees mature. • Air pollution (702 Air pollution) as above
Landowner/ Management Responsibility	<ul style="list-style-type: none"> • Natural England are responsible for management/North York Moors National Park Authority
HRA/AA Studies undertaken that address this site	<p>Renewable Energy Supplementary Planning Document Habitats Regulations Assessment – Screening Assessment (2008) http://www.visitnorthyorkshiremoors.co.uk/uploads/publication/7572.pdf</p> <ul style="list-style-type: none"> • Appropriate Assessment concluded that renewables like wind turbines on or close to sites could be detrimental to bird populations (particularly with regards to the conservation objectives of the North York Moors SPA). <p>Habitats Regulations Assessment screening of a Hambleton Site Allocations DPD Submission Draft (January 2009) Final Report www.hambleton.gov.uk/Hambleton%20District%20Council/Planning/LDF/AllocPropSubHabitats.pdf</p> <ul style="list-style-type: none"> • HRA Screening confirmed that the majority of the development proposals in the Hambleton Allocations DPD Submission Draft are unlikely to have significant effects. However, a number of uncertainties remain in relation to changes in water levels as a result of abstraction to supply new development, recreational pressures, toxic contamination from sewage discharges and air pollution as a result of increased transport resulting from new development.

Site Name: Northumbria Coast

- Location Grid Ref: NU260192
- JNCC Site Code [UK9006131](#)
- Size: 1107.98 ha

Northumbria Coast SPA	
Site Description	The Northumbria Coast SPA includes much of the coastline between the Tweed and Tees Estuaries in north-east England. The site consists of mainly discrete sections of rocky shore with associated boulder and cobble beaches. The SPA also includes parts of three artificial pier structures and a small section of sandy beach. In summer, the site supports important numbers of breeding Little Tern <i>Sterna albifrons</i> , whilst in winter the mixture of rocky and sandy shore supports large number of Turnstone <i>Arenaria interpres</i> and Purple Sandpiper <i>Calidris maritima</i> .
Qualifying Features	<p>Article 4.1 Qualification During the breeding season the area regularly supports the following birds of European importance listed in Annex I of the Directive:</p> <ul style="list-style-type: none"> • Little Tern <i>Sterna albifrons</i>: 7 % of the GB breeding population 5 year peak mean 1992/3- Eastern Atlantic Breeding 1996/7 <p>Article 4.2 Qualification Over winter the area supports:</p> <ul style="list-style-type: none"> • Ruddy Turnstone <i>Arenaria interpres</i>: 2.6 % of the East Atlantic Flyway population 5 year peak Western Palearctic – wintering means 1992/3 – 1996/7. • Purple Sandpiper <i>Calidris maritima</i>: 1.6 % of the East Atlantic Flyway population 5 year peak means Eastern Atlantic – wintering 1992/3 – 1996/7

Northumbria Coast SPA							
Conservation Objectives	<p>The conservation objective for the internationally important populations of the regularly occurring Annex 1 bird species⁴:</p> <p>Subject to natural change, maintain in favourable condition 5 the habitats for the internationally important populations of the regularly occurring Annex 1 bird species (Little Tern <i>Sterna albifrons</i>), under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Sandy beaches at Low Newton • Shallow inshore waters at Low Newton <p>The conservation objective for the internationally important populations of regularly occurring migratory bird species:</p> <p>Subject to natural change, maintain in favourable condition 5 the habitats for the internationally important populations of regularly occurring migratory bird species Purple Sandpiper <i>Calidris maritima</i> and Turnstone <i>Arenaria interpres</i>, under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Rocky shores with associated boulder and cobble beaches • Artificial high tide roost sites 						
Component SSSIs	SSSI component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed	
	Durham Coast SSSI (37 units)	60.18%	32.98%	6.39%	0.45%	0.00%	

⁴ English Nature 2000. Northumbria Coast: European Marine Site – English Nature’s advice given under Regulation 33 (2) of the Conservation (Natural Habitats, and c.) Regulations 1994.

Northumbria Coast SPA							
		Lindisfarne SSSI (16 units)	29.53%	70.47%	0.00%	0.00%	0.00%
		Northumberland Shore SSSI (21 units)	100.00%	0.00%	0.00%	0.00%	0.00%
Key Environmental Conditions (factors that maintain site integrity)	<p>Sandy beaches</p> <ul style="list-style-type: none"> Little Tern breed in small colonies on coastal sand or shingle substrates, sometimes nesting only metres from the high-tide mark. The nesting area within the Northumbria Coast SPA are the sandy beaches adjacent to the Long Nanny at Low Newton. <p>Shallow inshore waters</p> <ul style="list-style-type: none"> Little Tern forage in shallow inshore waters for small surface dwelling marine fish, crustaceans and invertebrates. The waters of the Long Nanny and the inshore waters within the Northumbria Coast SPA are used by the terns for feeding. <p>Rocky shores with associated boulder and cobble beaches</p> <ul style="list-style-type: none"> The rocky shore areas with reefs, have small areas of sand interspersed amongst the main reefs. The proportion of the reefs covered by sand varies and is minimal. The rocky shore is the predominant habitat and though sandy areas are present their use by Purple Sandpiper and Turnstone is not significant. The rocky shores and the strand line support high densities of invertebrates which are important food for waterfowl. Purple Sandpiper are almost entirely restricted to the rocky shore where they feed on a variety of marine invertebrates, but their main food preference is for mussels, winkles and dog whelks. They sometimes forage on banks of rotting seaweed on the strandline where they eat the larvae. They roost on offshore reefs and mainland shore. The diet of Turnstones is more varied. They feed on seaweed covered rocks, congregating at high tide to roost on the mainland shore or continue to feed on banks of washed up seaweed on the strand line. 						

		Northumbria Coast SPA				
SAC Condition Assessment	SSSI component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed
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	Northumberland Shore SSSI (21 units)	100.00%	0.00%	0.00%	0.00%	0.00%
Vulnerabilities (includes existing pressures and trends)	<p>Internationally important populations of regularly occurring Annex 1 species:</p> <p>Physical loss</p> <ul style="list-style-type: none"> The sandy beach at Low Newton is an important breeding area for Little Tern, the shallow inshore waters are used for feeding. The birds are highly sensitive to any loss of habitat through removal or smothering. Loss of the beach and inshore waters, or parts of them, could damage their long term condition. Activities that may influence the hydrodynamic regime, such as coastal defence and development, can lead to changes to sediment deposition rates and lead to loss of the beach. There is currently low exposure to this operation but because of their high sensitivity, they are considered to be moderately vulnerable. <p>Physical damage</p> <ul style="list-style-type: none"> The beach is currently not exposed to physical damage through extraction but is moderately sensitive as the loss or change in the nature of the substrate of the sandy beach on which the terns nest would lead to it being unsuitable and not being chosen as a nesting site. 					

	Northumbria Coast SPA
	<p>Non-physical disturbance</p> <ul style="list-style-type: none"> • Terns are moderately sensitive to and currently moderately exposed to both visual and noise disturbance and are therefore considered moderately vulnerable. Disturbance can cause them to be displaced from their breeding and feeding areas. They are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to their colony. During the breeding season, this may result in eggs or chicks being abandoned. Birds may move to an alternative and perhaps less favourable site or increase their energy expenditure through escape responses. This disruption in their behaviour may affect their survival. <p>Toxic contamination</p> <ul style="list-style-type: none"> • Toxins may accumulate within the food chain and eventually bioaccumulate in birds. The effects of such toxic compounds are variable, but may cause sub-lethal consequences or mortality of individual birds. Toxic contamination may also affect bird populations indirectly by affecting the abundance of food items. Potential sources of toxic contaminants include diffuse and off-site inputs (e.g. organophosphate sheep dips) as well as point sources, such as effluent discharges. Prey items may be less palatable if contaminated. Contamination by substances such as oil can reduce the quality of habitat for nesting. There is moderate sensitivity to contamination with synthetic and non-synthetic compounds, however, currently there is no evidence to show that this is a problem within this site. <p>Non-toxic contamination</p> <ul style="list-style-type: none"> • Change in water temperature, salinity, nutrient and organic loading can change the type, quality and quantity of prey available for Little Tern. Organic and nutrient enrichment and changes in turbidity can cause a reduction in water clarity, thereby reducing the visibility of prey items for Little Terns in particular. Little Tern are moderately sensitive to this operation but currently there is no evidence to show that this is a problem within this site.

	Northumbria Coast SPA
	<p>Biological disturbance</p> <ul style="list-style-type: none"> • Over exploitation of the fisheries which support the breeding Little Tern, within the European marine site and adjacent waters, could adversely affect the favourable condition of the site. The introduction of pathogens to the feeding waters could contaminate prey or infect birds when feeding. This could result in large scale mortality of Little Tern. Little Tern are moderately sensitive to introduction of microbial pathogens and selective extraction of species but currently there is no evidence that this is a problem at the site. <p>Internationally important populations of regularly occurring migratory species:</p> <p>Physical loss</p> <ul style="list-style-type: none"> • The intertidal rocky shores with associated boulder and cobble beaches are used by internationally important numbers of Purple Sandpiper and Turnstone for feeding and roosting. They are highly sensitive to removal or smothering of the shore and removal of their favoured roosts, but moderately vulnerable because there is currently low exposure to this operation. • The change in substrate, by covering the rocky shores and associated boulder and cobble beaches would lead to it being lost as a feeding resource as it would support less or different unsuitable prey items. Any loss of habitat may increase the numbers of birds using the rest of the site leading to unsustainable depletion of resources and possible density dependant mortality. The loss of onshore and artificial roost sites would mean the loss of the favoured and presumably `safer' roost sites. This could lead to other less suitable sites being used with possible consequential increase in predation and increase in the energy used to fly to roost and feed. <p>Physical damage</p> <ul style="list-style-type: none"> • Physical damage reduces food availability to birds or changes the suitability of habitats for

	Northumbria Coast SPA
	<p>roosting or feeding. Rocky shores are moderately sensitive to abrasion and extraction but there is currently low exposure to this operation. Siltation can clog or block the feeding/respiratory organs of invertebrates living on the rocky shore, which can lead to the death of individuals. Abrasion can result in the dislodgement of individual organisms. The removal of rotting seaweed from the shore removes the habitat on which invertebrates, such as kelp fly larvae, depend. These are a food source for the Purple Sandpiper and Turnstone. Most intertidal communities tend to be more resilient to physical damage because of their adaptation to the physical processes to which they are normally subjected.</p> <p>Non-physical disturbance</p> <ul style="list-style-type: none"> Overwintering waterfowl are moderately sensitive, moderately vulnerable and currently moderately exposed to noise and visual disturbance. They are disturbed by sudden movements of objects and increases in noise disturbance having the effect of displacing the birds from their roosting or feeding grounds. Birds may move to an alternative and perhaps less favourable site, or increase their energy expenditure through escape responses. This disruption of their behaviour may affect their survival. <p>Toxic contamination</p> <ul style="list-style-type: none"> Overwintering waterfowl are moderately sensitive to introduction of synthetic and non-synthetic compounds. They are subject to the accumulation of toxins through the food chain or through direct contact with toxic substances when feeding. There is evidence to suggest that toxic compounds such as heavy metals and organochlorides can bioaccumulate in birds. The effects of such toxic compounds are variable, but may cause sub-lethal consequences or lead to mortality of individual birds. Potential sources of toxic contaminants include diffuse and off-site inputs (for example organophosphate sheep dips) as well as point sources such as effluent discharges. The birds' ability to feed can also be affected by changes in the palatability and/or abundance of prey items caused by toxic contamination. The prey of Purple Sandpiper and

Northumbria Coast SPA	
	<p>Turnstone may be lost from the rocky shore through direct mortality of adults and larvae. Contamination by substances such as oil can reduce the quality of habitat for roosting and feeding. The downstream effects of industrial discharges on features and their exposure levels are at present unknown (although concern exists over water quality in some areas such as the Tyne, for example, over endocrine disruption). There have been historic problems with water quality in the area and hence a need for further investigation into this operation. Because of the proximity to the Tyne, with its levels of industrial activity and potential contamination, the exposure has been assessed as moderate.</p> <p>Non-toxic contamination</p> <ul style="list-style-type: none"> Rocky shores are moderately sensitive to nutrient and organic loading. Because of the proximity to the Tyne, with its levels of industrial activity and potential contamination, the exposure has been assessed as moderate. Organic or nutrient enrichment can change the quantity and diversity of prey available for birds. Nutrient enrichment may cause ephemeral algal blooms. When the algal mats decompose, they cause localised anoxic conditions.
Landowner/ Management Responsibility	<ul style="list-style-type: none"> Durham, North Tyneside, Northumberland, Sunderland, South Tyneside/Managed by Natural England
HRA/AA Studies undertaken that address this site	<p>Stadium Village Supplementary Planning Document Task 1 Appropriate Assessment (2008) http://www.sunderland.gov.uk/stadiumvillage/Documents/stadiumvillageaareport.pdf</p> <p>This AA stated that there were no likely significant impacts from the proposed Stadium village alone, but there were likely significant impacts when considering this development 'in-combination' with other urban developments which include: Housing, development (including industrial) and associated infrastructure (water quality, air quality, land take, disturbance, coastal squeeze).</p>

Site Name: Teesmouth and Cleveland Coast

- Location Grid Ref: NZ568265
- JNCC Site Code [UK9006061](#)
- Size: 1247.31 ha

Teesmouth and Cleveland Coast SPA	
Site Description	<p>Teesmouth and Cleveland Coast includes a range of estuarine and coastal habitats, sand and mud-flats, rocky shore, saltmarsh, freshwater marsh, lagoons, salt marshes, salt pastures, subtidal sediments, open coast, fen, marsh, swamp, neutral grassland, calcareous grassland, lowland open water and their margins and sand dunes. All habitats on and around an estuary which has been considerably modified by human activities. Together these habitats provide feeding and roosting opportunities for important numbers of waterbirds in winter and during passage periods. In summer Little Tern <i>Sterna albifrons</i> breed on beaches within the site, while Sandwich Tern <i>Sterna sandvicensis</i> are abundant on passage.</p>
Qualifying Features	<p>This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:</p> <p>During the breeding season: Little Tern <i>Sterna albifrons</i>, 37 pairs representing at least 1.5% of the breeding population in Great Britain (4 year mean 1993-1996)</p> <p>On passage: Sandwich Tern <i>Sterna sandvicensis</i>, 2,190 individuals representing at least 5.2% of the population in Great Britain (5 year mean 1991-1995)</p> <p>This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting</p>

Teesmouth and Cleveland Coast SPA	
	<p>populations of European importance of the following migratory species:</p> <p>On passage: Ringed Plover <i>Charadrius hiaticula</i>, 634 individuals representing at least 1.3 % of the European/Northern Africa – wintering population (5 yr mean spring 91-95).</p> <p>Over winter: Knot <i>Calidris canutus</i>, 4,190 individuals representing at least 1.2% of the wintering North eastern Canada/Greenland/Iceland/North western Europe population (5 year peak mean 1991/2 - 1995/6)</p> <p>Redshank <i>Tringa totanus</i>, 1,648 individuals representing at least 1.1% of the wintering Eastern Atlantic - wintering population (5 year peak mean 87-91)</p> <p>Assemblage qualification: A wetland of international importance The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl</p> <p>Over winter, the area regularly supports 21,406 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Sanderling <i>Calidris alba</i>, Lapwing <i>Vanellus vanellus</i>, Shelduck <i>Tadorna tadorna</i>, Cormorant <i>Phalacrocorax carbo</i>, Redshank <i>Tringa totanus</i>, Knot <i>Calidris canutus</i>.</p>

Teesmouth and Cleveland Coast SPA																									
Conservation Objectives	<p>Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the regularly occurring Annex 1 bird species under the Birds Directive, in particular:⁵</p> <ul style="list-style-type: none"> • Sand and shingle • Intertidal sandflats and mudflats • Shallow coastal waters <p>For the internationally important populations of regularly occurring migratory bird species under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Rocky shores • Intertidal sandflat and mudflat • Saltmarsh 																								
Component SSSIs	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #d3d3d3;">SSSI component site</th> <th style="background-color: #d3d3d3;">Favourable</th> <th style="background-color: #d3d3d3;">Unfavourable recovering</th> <th style="background-color: #d3d3d3;">Unfavourable no change</th> <th style="background-color: #d3d3d3;">Unfavourable declining</th> <th style="background-color: #d3d3d3;">Destroyed, part destroyed</th> </tr> </thead> <tbody> <tr> <td>Seaton Dunes and Common SSSI (7 units)</td> <td style="text-align: center;">55.39%</td> <td style="text-align: center;">44.61%</td> <td style="text-align: center;">0.00%</td> <td style="text-align: center;">0.00%</td> <td style="text-align: center;">0.00%</td> </tr> <tr> <td>Seal Sands SSSI (5 units)</td> <td style="text-align: center;">3.31%</td> <td style="text-align: center;">0.00%</td> <td style="text-align: center;">92.35%</td> <td style="text-align: center;">0.00%</td> <td style="text-align: center;">4.34%</td> </tr> <tr> <td>Tees and Hartlepool</td> <td style="text-align: center;">100.00%</td> <td style="text-align: center;">0.00%</td> <td style="text-align: center;">0.00%</td> <td style="text-align: center;">00.00%</td> <td style="text-align: center;">0.00%</td> </tr> </tbody> </table>	SSSI component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed	Seaton Dunes and Common SSSI (7 units)	55.39%	44.61%	0.00%	0.00%	0.00%	Seal Sands SSSI (5 units)	3.31%	0.00%	92.35%	0.00%	4.34%	Tees and Hartlepool	100.00%	0.00%	0.00%	00.00%	0.00%
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⁵ English Nature 2000. Teesmouth & Cleveland Coast: European Marine Site – English Nature’s advice given under Regulation 33 (2) of the Conservation (Natural Habitats, &c.) Regulations 1994. & Conservation objectives for component SSSIs

Teesmouth and Cleveland Coast SPA						
	Wetlands SSSI (7 units)					
	Cowpen Marsh SSSI (2 units)	46.82%	0.00%	53.18%	0.00%	0.00%
	South Gare and Coatham SSSI (2 units)	100.00%	0.00%	0.00%	0.00%	0.00%
	Redcar Rocks SSSI (1 unit)	100.00%	0.00%	0.00%	0.00%	0.00%
	Durham Coast SSSI (37 Units)	60.18%	32.98%	6.39%	0.45%	0.00%
Key Environmental Conditions (factors that maintain site integrity)	<p>Sandflats and mudflats</p> <ul style="list-style-type: none"> • Good sediment quality should be maintained and the sediment budget within the estuary/coastal system should not be restricted by anthropogenic influences. • The location and extent of sandflats is dependent on the extent to which the estuary or coast where they occur is constrained from responding to sea level rise and changing sediment regimes. • Management needs to create space to enable landward roll-back to take place in response to sea-level rise, and should allow the system to be dynamic and retain the flexibility to respond to associated change such as the movement of physical features within the system, for example migrating subtidal sandbanks. <p>Rocky shores</p> <ul style="list-style-type: none"> • Rocky shores are formed by natural processes, including erosion and cliff collapse. • It is important to maintain good quality water at all times. • Prevent anthropogenic activities such as dredging and pipe construction which can cause direct damage to rocky shore habitats. 					

Teesmouth and Cleveland Coast SPA	
	<p>Saltmarsh</p> <ul style="list-style-type: none"> • These are the upper vegetated portions of intertidal mudflats in sheltered coastal locations (for example estuaries, lagoons and beach plains). Plants in this environment (halophytes) are adapted to receive regular immersion by the tides. • Not all saltmarsh habitats require active management. If there has not been a history of grazing, the saltmarsh will be able to maintain itself, and grazing should not be introduced. • Coastal erosion as a result of coastal flood-defence works, rising sea-levels, variation in sediment deposition, and land claim for development.
SAC Condition Assessment	See SSSI Condition Assessment.
Vulnerabilities (includes existing pressures and trends)	<p>Internationally important populations of regularly occurring Annex 1 species:</p> <p>Physical damage</p> <ul style="list-style-type: none"> • Habitats within the site (particularly at Hart Warren Dunes, Seaton Sands and Coatham Sands) provide breeding sites for Little Tern population, therefore operations or activities that adversely affect the functional regime of the areas should be avoided. All breeding terns likely to require maintenance of water quality, lack of disturbance to key feeding and roosting areas, the maintenance of open habitat (clear sight-lines) and vegetation-free ground, and a continued food supply. The collection of sea coal from the intertidal zone, although an activity apparently declining in intensity, has the potential to cause direct destruction of Little Tern eggs and young chicks. Similarly abrasion (trampling) may cause similar losses. All breeding terns likely to require maintenance of water quality, lack of disturbance to key feeding and roosting areas, the maintenance of open habitat (clear sight-lines) and vegetation-free ground, and a continued food supply.

Teesmouth and Cleveland Coast SPA	
	<p>Non-physical disturbance</p> <ul style="list-style-type: none"> • Terns are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to sand and shingle banks. This can have the effect of displacing the birds from their roosting or feeding grounds. During the breeding season in particular, this may result in disturbance to the nesting birds causing eggs or chicks to be abandoned. <p>Internationally important populations of regularly occurring migratory species:</p> <p>Non-physical disturbance</p> <ul style="list-style-type: none"> • Waders such as Knot and Redshank can be disturbed by sudden movements of objects and increase in noise disturbance over and adjacent to their feeding and roosting sites. <p>Toxic contamination</p> <ul style="list-style-type: none"> • Given that the Tees is probably one of the most contaminated estuaries in the UK, owing to the large industrial and domestic discharges in the vicinity, the exposure level for synthetic and non-synthetic contamination is high as is the degree of vulnerability of the migratory bird populations. The remobilisation of synthetic compounds previously locked up in soft intertidal sediments has the potential to affect benthic invertebrates with the SPA and in turn the Knot and Redshank that feed upon them. Toxic effects on invertebrates may also be caused by existing discharges. Moreover it is possible that populations of grazing invertebrates for example <i>Littorina</i> spp. have been inhibited by TBT levels, thus contributing to the spread of algal mats within the intertidal area of Seal Sands ⁶(Brown et al. 2000). However there is little evidence of direct toxic contamination of these wader species.

⁶ Brown, A.R., Lewis, R.E., Riddle, A.M. Stanley, R.D. & Widdows, J. (2000). Lower Tees Estuary: a scoping study of the intertidal ecosystem. Report to the EA NE Region.

Teesmouth and Cleveland Coast SPA	
	<p>Non-toxic contamination</p> <ul style="list-style-type: none"> Organic or nutrient enrichment can reduce the availability of food for birds by increasing the growth of algal mats within the intertidal area. Dense algal mats not only suppress densities of mud-dwelling invertebrates in the sediments beneath them but they also reduce the foraging efficiency of Redshank. There is now clear evidence of a significant recent increase in the percentage in of the intertidal mud flats at Seal Sands by <i>Enteromorpha</i> algal mats and remedial action is required. <p>Internationally important populations of regularly occurring migratory species:</p> <p>Non-physical disturbance</p> <ul style="list-style-type: none"> Waders such as Knot, Redshank, Shelduck and Teal can be disturbed by sudden movements of objects and increase in noise disturbance over and adjacent to their feeding and roosting sites. <p>Toxic contamination</p> <ul style="list-style-type: none"> Given that the Tees is probably one of the most contaminated estuaries in the UK, owing to the large industrial and domestic discharges in the vicinity, the exposure level for synthetic and non-synthetic contamination is high as is the degree of vulnerability of the migratory bird populations. The remobilisation of synthetic compounds previously locked up in soft intertidal sediments has the potential to affect benthic invertebrates with the SPA and in turn the Knot, Redshank, Teal and Shelduck that feed upon them. Toxic effects on invertebrates may also be caused by existing discharges. Moreover it is possible that

Teessmouth and Cleveland Coast SPA	
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Landowner/ Management Responsibility	<ul style="list-style-type: none"> Management: Natural England; Authority: Cleveland; Durham; Hartlepool; Redcar and Cleveland; Stockton-on-Tees.
HRA/AA Studies undertaken that address this site	<p>Draft Appropriate Assessment of the Regional Spatial Strategy for the North East (2007) http://www.gos.gov.uk/nestore/docs/planning/rss_documents/l.pdf</p> <p>Habitats Regulations Assessment of Hambleton Development Policies Development Plan Document Submission Draft (2007) http://www.hambleton.gov.uk/Hambleton%20District%20Council/Planning/LDF/HRA%20Final%20Report%20Including%20Appendices.pdf</p> <p>This HRA highlighted that 4 policies out of 44 could have potential effects on Teessmouth and</p>

⁷ Brown, A.R., Lewis, R.E., Riddle, A.M. Stanley, R.D. & Widdows, J. (2000). Lower Tees Estuary: a scoping study of the intertidal ecosystem. Report to the EA NE Region.

	Teesmouth and Cleveland Coast SPA
	<p>Cleveland Coast SPA. These were:</p> <ul style="list-style-type: none"> • Utilities and infrastructure • Specific measures to assist the economy and employment • Specific measure to assist sustainable energy • Specific measures to market town and regeneration <p>Habitats Regulations Assessment (Appropriate Assessment) of the Core Strategy Development Plan Document of the Local Development Framework (no date)</p> <p>http://www.egenda.stockton.gov.uk/aksstockton/images/att3268.doc</p> <p>This HRA highlighted that there would be potential impacts on the Teesmouth and Cleveland Coast from the majority of policies put forward. These were:</p> <ul style="list-style-type: none"> • Air pollution • Disturbance • Water quality • Habitat loss • Decontamination from polluted land • Recreation <p>Habitats Regulations Assessment screening Hambleton Site Allocations DPD Submission Draft (January 2009) Final Report</p> <p>www.hambleton.gov.uk/Hambleton%20District%20Council/Planning/LDF/AllocPropSubHabitats.pdf</p> <ul style="list-style-type: none"> • HRA Screening confirmed that the majority of the development proposals in the Hambleton Allocations DPD Submission Draft are unlikely to have significant effects. However, a

	Teesmouth and Cleveland Coast SPA
	number of uncertainties remain in relation to changes in water levels as a result of abstraction to supply new development, recreational pressures, toxic contamination from sewage discharges and air pollution as a result of increased transport resulting from new development.

Ramsar Sites

Site Name: Northumbria Coast

- Location Grid Ref: NU260192
- JNCC Site Code: [UK11049](#)
- Size: 1107.98ha
- Designation: Ramsar

Northumbria Coast Ramsar	
Site Description	<p>The Northumbria Coast Ramsar site comprises several discrete sections of rocky foreshore (96% of the site) between Spittal, in the north of Northumberland, and an area just south of Blackhall Rocks in County Durham which support a rich algal flora and associated fauna forming an important feeding area for wading birds, in particular nationally important numbers of Purple Sandpiper and high concentrations of Turnstone. The Ramsar site also includes an area of sandy beach at Low Newton, which supports a nationally important breeding colony of Little Tern, and parts of three artificial pier structures which form important roost sites for Purple Sandpiper.</p> <p>The areas of sandy beach within the site support a flora which includes Marram <i>Ammophila arenaria</i> and Sea Sandwort <i>Honkenya peploides</i>.</p>
Qualifying Features	<p>Ramsar Criteria 6 – species/populations occurring at levels of international importance Qualifying species/populations</p> <p>Species regularly supported during the breeding season: Little Tern <i>Sterna albifrons albifrons</i>: 43 apparently occupied nests, representing an average Western Europe of 2.2 % of the GB population (Seabird Census 2000)</p>

Northumbria Coast Ramsar													
	<p>Species with peak counts in winter: Purple Sandpiper <i>Calidris maritima</i>: 291 individuals, representing an average of 1.6% of the E. Atlantic – wintering GB population (5 year peak mean 1998/9-2002/3)</p> <p>Ruddy Turnstone <i>Arenaria interpres interpres</i>: 978 individuals representing an average of 1 % of the NE Canada, Greenland/W. Europe and NW Africa population (5 year peak mean 1998/9-2002/3).</p> <p>For additional species of noteworthy fauna currently occurring at levels of national importance see here: http://www.jncc.gov.uk/pdf/RIS/UK11049.pdf</p>												
Conservation Objectives	<p>Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the habitats supporting the qualifying species (Little Tern; Purple Sandpiper; Turnstone (Ramsar Criterion 6) and the assemblages of international importance (Criterion 5)):</p> <p>The main habitats supporting these species at this SPA/Ramsar site are:</p> <ul style="list-style-type: none"> • Sandy beaches • Shallow inshore waters • Rocky shores with associated boulder and cobble beaches 												
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		Northumbria Coast Ramsar				
	Lindisfarne SSSI (16 units)	29.53%	70.47%	0.00%	0.00%	0.00%
	Northumberland Shore SSSI (21 units)	100.00%	0.00%	0.00%	0.00%	0.00%
Key Environmental Conditions (factors that maintain site integrity)	Sandy beaches					
	<ul style="list-style-type: none"> Little Tern breed in small colonies on coastal sand or shingle substrates, sometimes nesting only metres from the high-tide mark. The nesting areas within the Northumbria Coast European marine site are the sandy beaches adjacent to the Long Nanny at Low Newton. Many birds nest above Highest Astronomical Tide. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site. 					
	Shallow inshore waters					
	<ul style="list-style-type: none"> Little Tern forage in shallow inshore waters for small surface dwelling marine fish, crustaceans and invertebrates. The waters of the Long Nanny and the inshore waters within the Northumbria Coast European marine site are used by the terns for feeding therefore an objective for this sub-feature is included within this advice package. The majority of the feeding occurs offshore, outside the boundary of the Northumbria Coast European marine site. Relevant authorities need to have regard to such adjacent European interests, as they might be affected by activities taking place within, or adjacent to the European marine site. 					
	Rocky shores with associated boulder and cobble beaches					
	<ul style="list-style-type: none"> The rocky shore areas with reefs, have small areas of sand interspersed amongst the main reefs. The proportion of the reefs covered by sand varies and is minimal. The rocky shore is the predominant habitat and though sandy areas are present their use by Purple Sandpiper and Turnstone is not significant. The rocky shores and the strand line support high densities 					

Northumbria Coast Ramsar	
	<p>of invertebrates which are important food for waterfowl. Purple Sandpiper are almost entirely restricted to the rocky shore where they feed on a variety of marine invertebrates. They sometimes forage on banks of rotting seaweed on the strandline and roost on offshore reefs and mainland shore. The diet of Turnstones is more varied, but mainly composed of winkles, shrimps and barnacles. They feed on seaweed covered rocks, congregating at high tide to roost on the mainland shore or continue to feed on banks of washed up seaweed on the strand line.</p>
SAC Condition Assessment	See SSSI components above.
Vulnerabilities (includes existing pressures and trends)	<p>Physical loss</p> <ul style="list-style-type: none"> The sandy beach at Low Newton is an important breeding area for Little Tern, the shallow inshore waters are used for feeding. The birds are highly sensitive to any loss of habitat through removal or smothering. Loss of the beach and inshore waters, or parts of them, could damage their long term condition. Activities that may influence the hydrodynamic regime, such as coastal defence and development, can lead to changes to sediment deposition rates and lead to loss of the beach. There is currently low exposure to this operation but because of their high sensitivity, they are considered to be moderately vulnerable. <p>Physical damage</p> <ul style="list-style-type: none"> The beach is currently not exposed to physical damage through extraction but is moderately sensitive as the loss or change in the nature of the substrate of the sandy beach on which the terns nest would lead to it being unsuitable and not being chosen as a nesting site.

	Northumbria Coast Ramsar
	<p>Non-physical disturbance</p> <ul style="list-style-type: none"> • Terns are moderately sensitive to and currently moderately exposed to both visual and noise disturbance and are therefore considered moderately vulnerable. Disturbance can cause them to be displaced from their breeding and feeding areas. They are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to their colony. During the breeding season, this may result in eggs, or chicks being abandoned. Birds may move to an alternative and perhaps less favourable site or increase their energy expenditure through escape responses. This disruption in their behaviour may affect their survival. <p>Toxic contamination</p> <ul style="list-style-type: none"> • Toxins may accumulate within the food chain and eventually bioaccumulate in birds. The effects of such toxic compounds are variable, but may cause sub-lethal consequences or mortality of individual birds. Toxic contamination may also affect bird populations indirectly by affecting the abundance of food items. Potential sources of toxic contaminants include diffuse and off-site inputs (e.g. organophosphate sheep dips) as well as point sources, such as effluent discharges. Prey items may be less palatable if contaminated. Contamination by substances such as oil can reduce the quality of habitat for nesting. There is moderate sensitivity to contamination with synthetic and non-synthetic compounds, however, currently there is no evidence to show that this is a problem within this site. <p>Non-toxic contamination</p> <ul style="list-style-type: none"> • Change in water temperature, salinity, nutrient and organic loading can change the type, quality and quantity of prey available for Little Tern. Organic and nutrient enrichment and changes in turbidity can cause a reduction in water clarity, thereby reducing the visibility of prey items for Little Terns in particular. Little Tern are moderately sensitive to this operation but currently there is no evidence to show that this is a problem within this site.

Northumbria Coast Ramsar	
	<p>Biological disturbance</p> <ul style="list-style-type: none"> Over exploitation of the fisheries which support the breeding Little Tern, within the Ramsar (and European Marine site) and adjacent waters, could adversely affect the favourable condition of the site. The introduction of pathogens to the feeding waters could contaminate prey or infect birds when feeding. This could result in large scale mortality of Little Tern. Little Tern are moderately sensitive to introduction of microbial pathogens and selective extraction of species but currently there is no evidence that this is a problem at the site. <p>Internationally important populations of regularly occurring migratory species:</p> <p>Physical loss</p> <ul style="list-style-type: none"> The intertidal rocky shores with associated boulder and cobble beaches are used by internationally important numbers of Purple Sandpiper and Turnstone for feeding and roosting. They are highly sensitive to removal or smothering of the shore and removal of their favoured roosts, but moderately vulnerable because there is currently low exposure to this operation. The change in substrate, by covering the rocky shores and associated boulder and cobble beaches would lead to it being lost as a feeding resource as it would support less or different unsuitable prey items. Any loss of habitat may increase the numbers of birds using the rest of the site leading to unsustainable depletion of resources and possible density dependant mortality. The loss of onshore and artificial roost sites would mean the loss of the favoured and presumably 'safer' roost sites. This could lead to other less suitable sites being used with possible consequential increase in predation and increase in the energy used to fly to roost and feed.

	Northumbria Coast Ramsar
	<p>Physical damage</p> <ul style="list-style-type: none"> Physical damage reduces food availability to birds or changes the suitability of habitats for roosting or feeding. Rocky shores are moderately sensitive to abrasion and extraction but there is currently low exposure to this operation. Siltation can clog or block the feeding/respiratory organs of invertebrates living on the rocky shore, which can lead to the death of individuals. Abrasion can result in the dislodgement of individual organisms. The removal of rotting seaweed from the shore removes the habitat on which invertebrates, such as kelp fly larvae, depend. These are a food source for the Purple Sandpiper and Turnstone. Most intertidal communities tend to be more resilient to physical damage because of their adaptation to the physical processes to which they are normally subjected. <p>Non-physical disturbance</p> <ul style="list-style-type: none"> Overwintering waterfowl are moderately sensitive, moderately vulnerable and currently moderately exposed to noise and visual disturbance. They are disturbed by sudden movements of objects and increases in noise disturbance having the effect of displacing the birds from their roosting or feeding grounds. Birds may move to an alternative and perhaps less favourable site, or increase their energy expenditure through escape responses. This disruption of their behaviour may affect their survival. <p>Toxic contamination</p> <ul style="list-style-type: none"> Overwintering waterfowl are moderately sensitive to the introduction of synthetic and non-synthetic compounds. They are subject to the accumulation of toxins through the food chain or through direct contact with toxic substances when feeding. There is evidence to suggest that toxic compounds such as heavy metals and organochlorides can bioaccumulate in birds. The effects of such toxic compounds are variable, but may cause sub-lethal consequences or lead to mortality of individual birds. Potential sources of toxic contaminants include diffuse and off-site inputs (for example organophosphate sheep

	Northumbria Coast Ramsar
	<p>dips) as well as point sources such as effluent discharges. The birds' ability to feed can also be affected by changes in the palatability and/or abundance of prey items caused by toxic contamination. The prey of Purple Sandpiper and Turnstone may be lost from the rocky shore through direct mortality of adults and larvae. Contamination by substances such as oil can reduce the quality of habitat for roosting and feeding. The downstream effects of industrial discharges on features and their exposure levels are at present unknown (although concern exists over water quality in some areas such as the Tyne, for example, over endocrine disruption). There have been historic problems with water quality in the area and hence a need for further investigation into this operation. Because of the proximity to the Tyne, with its levels of industrial activity and potential contamination, the exposure has been assessed as moderate.</p> <p>Non-toxic contamination</p> <ul style="list-style-type: none"> Rocky shores are moderately sensitive to nutrient and organic loading. Because of the proximity to the Tyne, with its levels of industrial activity and potential contamination, the exposure has been assessed as moderate. Organic or nutrient enrichment can change the quantity and diversity of prey available for birds. Nutrient enrichment may cause ephemeral algal blooms. When the algal mats decompose they cause localised anoxic conditions. <p>Biological disturbance</p> <ul style="list-style-type: none"> Rocky shores are moderately sensitive to biological disturbance (microbial pathogens, invasion by non-natives) but there is currently no evidence that this is a problem at the site. Selective extraction of bait species, such as crabs or removal of other key species may reduce food availability for Purple Sandpiper and Turnstone. The activity may have a localised effect on non-collected species through the physical disruption to the habitat when collecting target species.

Northumbria Coast Ramsar	
Landowner/ Management Responsibility	<p>Ownership</p> <ul style="list-style-type: none"> • Private • Non-governmental • Local Authority • Crown Estate <p>Management</p> <ul style="list-style-type: none"> • Natural England
HRA/AA Studies undertaken that address this site	<p>Stadium Village Supplementary Planning Document Task 1 Appropriate Assessment (2008) http://www.sunderland.gov.uk/stadiumvillage/Documents/stadiumvillageaareport.pdf</p> <p>This AA stated that there were no likely significant impacts alone from the proposed Stadium Village Development, but there were likely significant impacts when considering this development ‘in-combination’ with other urban developments which include: Housing, development (including industrial) and associated infrastructure (water quality, air quality, land take, disturbance, coastal squeeze).</p>

Site Name: Teesmouth and Cleveland Coast

- Location Grid Ref: NZ568265
- JNCC Site Code [UK:11068](#)
- Size: 1247.31 ha
- Designation: Ramsar

Teesmouth and Cleveland Coast Ramsar	
Site Description	<p>Teesmouth and Cleveland Coast comprises intertidal sand and mudflats, rocky shore, saltmarsh, freshwater marsh and sand dunes. The Tees Estuary has been much-modified by such activities as land-claim, construction of breakwaters and training walls, and deep dredging. The remaining intertidal areas within the estuary are composed of mud and sand, with some <i>Enteromorpha</i> beds in sheltered areas. Outside the estuary mouth, sandflats predominate, but with significant rocky foreshores and reefs at both Redcar and Hartlepool and anthropogenic boulder beds at South Gare. Moderately extensive sand dune systems flank the estuary mouth, while a smaller dune system lies north of Hartlepool; foredunes are dominated by <i>Ammophila</i>, <i>Elytrigia juncea</i> and <i>Leymus</i> communities, fixed dunes by <i>Festuca rubra</i> communities. Surviving saltmarsh is very limited in extent, and is largely typified by <i>Puccinellia</i>. Behind the dunes and sea-defences a number of significant areas of grazing marsh are found, where <i>Festuca rubra</i> saltmarsh persists alongside inundation grassland, a range of swamp communities and several shallow water bodies.</p> <p>Together these habitats support internationally and nationally important numbers of waterbirds.</p>
Qualifying Features	<p>Ramsar Criterion 5 - Assemblages of international importance Species with peak counts in winter: (no species provided) 9528 waterfowl (5 year peak mean 1998/99-2002/2003)</p>

Teesmouth and Cleveland Coast Ramsar	
	<p>Ramsar Criterion 6 - species/populations occurring at levels of international importance Qualifying Species/populations (as identified at designation): Common Redshank <i>Tringa totanus tetanus</i>: 883 individuals, representing an average of 0.7% of the GB population (5 year peak mean 1998/9 - 2002/3)</p> <p>Species with peak counts in winter Red Knot <i>Calidris canutus islandica</i>: 2579 individuals, representing an average of 0.9 %of population (5 year peak mean 1998/9-2002/3)</p> <p>Details of bird species and flora occurring at levels of National importance are provide: http://www.jncc.gov.uk/pdf/RIS/UK11068.pdf</p>
Conservation Objectives	<p>Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the habitats supporting the qualifying species (Common Redshank; Red Knot (Ramsar Criterion 6) and the assemblages of international importance (Criterion 5)):</p> <p>The main habitats supporting these species at this SPA/Ramsar site are:</p> <ul style="list-style-type: none"> • Sand and shingle • Intertidal sandflats and mudflats • Shallow coastal waters • Rocky shores • Saltmarsh

		Teesmouth and Cleveland Coast Ramsar				
Component SSSIs	SSSI component site	Favourable	Unfavourable recovering	Unfavourable no change	Unfavourable declining	Destroyed, part destroyed
	Seaton Dunes and Common SSSI (7 units)	55.39%	44.61%	0.00%	0.00%	0.00%
	Seal Sands SSSI (5 units)	3.31%	0.00%	92.35%	0.00%	4.34%
	Tees and Hartlepool Wetlands SSSI (7 units)	100.00%	0.00%	0.00%	00.00%	0.00%
	Cowpen Marsh SSSI (2 units)	46.82%	0.00%	53.18%	0.00%	0.00%
	South Gare and Coatham SSSI (2 units)	100.00%	0.00%	0.00%	0.00%	0.00%
	Redcar Rocks SSSI (1 unit)	100.00%	0.00%	0.00%	0.00%	0.00%
	Durham Coast SSSI (37 Units)	60.18%	32.98%	6.39%	0.45%	0.00%

Teesmouth and Cleveland Coast Ramsar	
<p>Key Environmental Conditions (factors that maintain site integrity)</p>	<p>Sandflats</p> <ul style="list-style-type: none"> • Good sediment quality should be maintained and the sediment budget within the estuary/coastal system should not be restricted by anthropogenic influences; • The location and extent of sandflats is dependent on the extent to which the estuary or coast where they occur is constrained from responding to sea level rise and changing sediment regimes; • Management needs to create space to enable landward roll-back to take place in response to sea-level rise, and should allow the system to be dynamic and retain the flexibility to respond to associated change such as the movement of physical features within the system, for example migrating subtidal sandbanks. <p>Rocky shores</p> <ul style="list-style-type: none"> • Rocky shores are formed by natural processes, including erosion and cliff collapse; • It is important to maintain good quality water at all times; • Prevent anthropogenic activities such as dredging and pipe construction which can cause direct damage to rocky shore habitats. <p>Saltmarsh</p> <ul style="list-style-type: none"> • These are the upper vegetated portions of intertidal mudflats in sheltered coastal locations (for example estuaries, lagoons and beach plains). Plants in this environment (halophytes) are adapted to receive regular immersion by the tides; • Not all saltmarsh habitats require active management. If there has not been a history of grazing, the saltmarsh will be able to maintain itself, and grazing should not be introduced; • Coastal erosion as a result of coastal flood-defence works, rising sea-levels, variation in sediment deposition, and land claim for development.

Teesmouth and Cleveland Coast Ramsar	
SAC Condition Assessment	See SSSI Component SSSIs above.
Vulnerabilities (includes existing pressures and trends)	<p>Internationally important populations of regularly occurring Annex 1 species:</p> <p>Physical damage</p> <ul style="list-style-type: none"> Habitats within the site (particularly at Hart Warren Dunes, Seaton Sands and Coatham Sands) provide breeding sites for Little Tern population, therefore operations or activities that adversely affect the functional regime of the areas should be avoided. All breeding terns likely to require maintenance of water quality, lack of disturbance to key feeding and roosting areas, the maintenance of open habitat (clear sight-lines) and vegetation-free ground, and a continued food supply. The collection of sea coal from the intertidal zone, although an activity apparently declining in intensity, has the potential to cause direct destruction of Little Tern eggs and young chicks. Similarly abrasion (trampling) may cause similar losses. All breeding terns likely to require maintenance of water quality, lack of disturbance to key feeding and roosting areas, the maintenance of open habitat (clear sight-lines) and vegetation-free ground, and a continued food supply. <p>Non-physical disturbance</p> <ul style="list-style-type: none"> Terns are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to sand and shingle banks. This can have the effect of displacing the birds from their roosting or feeding grounds. During the breeding season in particular, this may result in disturbance to the nesting birds causing eggs or chicks to be abandoned. <p>Internationally important populations of regularly occurring migratory species:</p> <p>Non-physical disturbance</p> <ul style="list-style-type: none"> Waders such as Knot and Redshank can be disturbed by sudden movements of objects

Teesmouth and Cleveland Coast Ramsar	
	<p>and increase in noise disturbance over and adjacent to their feeding and roosting sites.</p> <p>Toxic contamination</p> <ul style="list-style-type: none"> Given that the Tees is probably one of the most contaminated estuaries in the UK, owing to the large industrial and domestic discharges in the vicinity, the exposure level for synthetic and non-synthetic contamination is high, as is the degree of vulnerability of the migratory bird populations. The remobilisation of synthetic compounds previously locked up in soft intertidal sediments has the potential to affect benthic invertebrates with the SPA and in turn the Knot and Redshank that feed upon them. Toxic effects on invertebrates may also be caused by existing discharges. Moreover it is possible that populations of grazing invertebrates for example <i>Littorina</i> spp. have been inhibited by TBT levels, thus contributing to the spread of algal mats within the intertidal area of Seal Sands⁸(Brown et al. 2000). However there is little evidence of direct toxic contamination of these wader species. <p>Non-toxic contamination</p> <ul style="list-style-type: none"> Organic or nutrient enrichment can reduce the availability of food for birds by increasing the growth of algal mats within the intertidal area. Dense algal mats not only suppress densities of mud-dwelling invertebrates in the sediments beneath them but they also reduce the foraging efficiency of Redshank. There is now clear evidence of a significant recent increase in the percentage in of the intertidal mud flats at Seal Sands by <i>Enteromorpha</i> algal mats and remedial action is required. <p>Internationally important populations of regularly occurring migratory species:</p>

⁸ Brown, A.R., Lewis, R.E., Riddle, A.M. Stanley, R.D. & Widdows, J. (2000). Lower Tees Estuary: a scoping study of the intertidal ecosystem. Report to the EA NE Region.

Teesmouth and Cleveland Coast Ramsar	
	<p>Non-physical disturbance</p> <ul style="list-style-type: none"> Waders such as Knot, Redshank, Shelduck and Teal can be disturbed by sudden movements of objects and increase in noise disturbance over and adjacent to their feeding and roosting sites. <p>Toxic contamination</p> <ul style="list-style-type: none"> Given that the Tees is probably one of the most contaminated estuaries in the UK owing to the large industrial and domestic discharges in the vicinity, the exposure level for synthetic and non-synthetic contamination is high as is the degree of vulnerability of the migratory bird populations. The remobilisation of synthetic compounds previously locked up in soft intertidal sediments has the potential to affect benthic invertebrates with the SPA and in turn the Knot, Redshank, Teal and Shelduck that feed upon them. Toxic effects on invertebrates may also be caused by existing discharges. Moreover it is possible that populations of grazing invertebrates for example <i>Littorina</i> spp. have been inhibited by TBT levels, thus contributing to the spread of algal mats within the intertidal area of Seal Sands⁹. However there is little evidence of direct toxic contamination of these wader species. <p>Non-toxic contamination</p> <ul style="list-style-type: none"> Organic or nutrient enrichment can reduce the availability of food for birds by increasing the growth of algal mats within the intertidal area. Dense algal mats not only suppress densities of mud-dwelling invertebrates in the sediments beneath them but they also reduce the foraging efficiency of Redshank. There is now clear evidence of a significant recent increase in the percentage of the intertidal mud flats at Seal Sands by <i>Enteromorpha</i> algal mats and remedial action is required.

⁹ Brown, A.R., Lewis, R.E., Riddle, A.M. Stanley, R.D. & Widdows, J. (2000). Lower Tees Estuary: a scoping study of the intertidal ecosystem. Report to the EA NE Region.

Teessmouth and Cleveland Coast Ramsar	
Landowner/ Management Responsibility	<ul style="list-style-type: none"> • Ownership varies including: Local authority, Crown Estate and non-governmental • Natural England responsible for management
HRA/AA Studies undertaken that address this site	<p>Habitats Regulations Assessment screening of a Hambleton Site Allocations DPD Submission Draft (January 2009) Final Report www.hambleton.gov.uk/Hambleton%20District%20Council/Planning/LDF/AllocPropSubHabitats.pdf</p> <ul style="list-style-type: none"> • HRA Screening confirmed that the majority of the development proposals in the Hambleton Allocations DPD Submission Draft are unlikely to have significant effects. However, a number of uncertainties remain in relation to changes in water levels as a result of abstraction to supply new development, recreational pressures, toxic contamination from sewage discharges and air pollution as a result of increased transport resulting from new development. <p>Stadium Village Supplementary Planning Document Task 1 Appropriate Assessment (2008) http://www.sunderland.gov.uk/stadiumvillage/Documents/stadiumvillageaareport.pdf</p> <ul style="list-style-type: none"> • This AA stated that there were no likely significant impacts alone from the proposed Stadium Village Development, but there were likely significant impacts when considering this development ‘in-combination’ with other urban developments which include: Housing, development (including industrial) and associated infrastructure (water quality, air quality, land take, disturbance, coastal squeeze).

Appendix 2: Plans and Programmes Review

Regional

Plan	Potential impacts that could cause 'in-combination' effects
	<ul style="list-style-type: none"> •
North East Strategy for the Environment (2008)	<ul style="list-style-type: none"> • Population levels will rise as new housing becomes available leading to increased recreation impacts, particularly on disturbance sensitive sites. • Increased number of visitors/tourists may affect breeding success of SPA fauna.
Rural Development Programme for England (2007-2013) North East Implementation Plan Final	Potential In-combination effects include: <ul style="list-style-type: none"> • Increased use of countryside as recreation/visitors • Increased used of agriculture • Land take from bioenergy • Increased use of infrastructure/traffic
North Yorkshire Local Transport Plan (2006-2011)¹⁰	Diffuse air pollution, water pollution and disturbance from the increase in growth in traffic from: <ul style="list-style-type: none"> • Roads • Rail • Taxis

¹⁰ Includes Timber and mineral extraction

Plan	Potential impacts that could cause 'in-combination' effects
	<ul style="list-style-type: none">• Sea ports and waterways• Airports• Buses• Road Freight• Minerals and timber extraction• Agricultural vehicles• Increase in number of visitors/tourists

Local

Plan	Potential impacts that could cause 'in-combination' effects
<p>Hartlepool Borough Council's LDF</p>	<p>Policies had a combination of both potential positive and negative effects</p> <p>Potential positive impacts:</p> <ul style="list-style-type: none"> • To encourage development to be located in more sustainable locations and therefore in the longer term may contribute to some reduced demand for water resources in the longer term. • While other policies could have potential negative impacts: • Increased access to natural assets (recreation) and therefore increased disturbance to the qualifying species.
<p>County Durham Local Transport Plan (2006-2011)</p>	<ul style="list-style-type: none"> • Land take – Habitat fragmentation • Increased traffic movements – changes in air quality and disturbance • Infrastructure – noise and light pollution; changes in hydrological cycle; water quality; • Increased population and therefore recreation-disturbance; burning • Dust noise and odour associated with industrial processes – changes in air quality; disturbance.
<p>County Durham Local Development Framework Interim Document (2008)</p>	<p>Growth, housing development, associated infrastructure (transport) in the area covering South and East Durham could cause the following impacts:</p> <p>Housing</p> <ul style="list-style-type: none"> • Land take – habitat fragmentation; disturbance • Increased abstraction – changes in hydrological regime; disturbance • Increased traffic levels – changes in air quality; disturbance • Growth in requirements for waste management facilities and increased demand for minerals – habitat fragmentation and disturbance (land take); changes in air quality and disturbance (dust, noise and odour associated with industry); changes in air quality and disturbance

Plan	Potential impacts that could cause 'in-combination' effects
	<p>(increased transport movements); changes in water quality (contamination, accumulation of toxic substances); changes in hydrological cycle and water quality (aggregate removal).</p> <p>Infrastructure</p> <ul style="list-style-type: none"> • Habitat fragmentation and disturbance (land take); changes in air quality and disturbance (increased transport movements); changes in hydrological cycle and water quality (impacts on surface water run-off); changes in hydrological cycle, water quality and disturbance (laying pipes and cables).
<p>Core Strategy Development Plan preferred options report for Stockton-on-Tees Borough Council 2007</p>	<ul style="list-style-type: none"> • All of the options mentioned have the potential to impact on the Natura 2000 sites (Teessmouth and Cleveland Coast SPA/Ramsar site, Durham Coast SAC; North York Moors SPA/Ramsar Site and Castle Eden Dene SAC) in the following ways: • More activity, noise, light • Increased traffic, leading to increased air pollution • Increased use of water • Increased run-off of surface water • Increased visits to the European sites, possibly with associated disturbance of fauna and impacts on habitats (for example, through trampling).
<p>Blyth Valley Borough Council Local Development Framework Information to inform the AA of the Core strategy and Development Policies Development Plan Document (2007)</p>	<p>The possible effects (direct and indirect) of policies in the Core Strategy and DPD, in the context of designated sites and their protection are likely to be in the form of:</p> <ul style="list-style-type: none"> • Land take: • Water resources: • Traffic levels and congestion: • General urbanisation. • Increased tourism and recreation: • Renewable energy schemes:

Plan	Potential impacts that could cause 'in-combination' effects
<p>Core Strategy Development Policies DPDs of the LDF for Redcar and Cleveland Borough Council (2007)</p>	<p>The following policies of the Core Strategy need to be considered for their potentially negative effects on the Teesmouth and Cleveland Coast SPA:</p> <ul style="list-style-type: none"> • CS 5 Spatial Strategy for Redcar Area, • CS 10 Steel, Chemical and Port-related Industries • CS 13 Meeting the Housing Requirements • CS 21 Renewable Energy • CS 27 Improving Accessibility <p>The following policies have potential for in-combination effects, and this is recognised in adopting mitigation measures, as set out in section 5, (Summary and Conclusion).</p> <ul style="list-style-type: none"> • Policies CS 4 and 10 both contain support for port-related development, and, on assessment, their effects on the SPA and its interest features are similar, as may be seen in the tables in section 6.4 (Table 2A) (CS 4, as a spatial strategy, supports other businesses and industry in addition to the port). Similarly, Policies CS 5 and 13 both support housing development, but CS 5 also contains sub-policies for leisure and tourism, as set out above. • Policies CS 21 and CS 27 are also considered for their potential for in-combination effects.
<p>Stadium Village Development Framework Supplementary Planning Document (SPD) 2008</p>	<ul style="list-style-type: none"> • Potential to result in cumulative or in-combination impacts upon Durham Coast SAC which may result from urban development and growth which subsequently infringes into the land areas adjacent to the Natura 2000 Site.

Other plans and programmes

Plan	Potential impacts that could cause 'in-combination' effects
<p>River Basin Management Plan Northumbria River Basin District (Environment Agency 2009)</p>	<p>Climate change</p> <ul style="list-style-type: none"> • Abstraction and other artificial flow pressures • Biological pressures (fisheries management and invasive and non-native species) • Biological pressures (invasive non-native species) • Microbiological pressures (including faecal indicator organisms) • Organic pollution (sanitary determinants) pressure • Nutrients pressure (nitrogen and phosphorus) • Hazardous substances pressure • Acidification pressure • Salinity pressure • Temperature pressure (from point source discharges) • Physical modification pressure • Sediment pressure <p>Development</p> <ul style="list-style-type: none"> • Growth and associated issues • Flooding, coastal erosion and water pollution
<p>River Basin Management Plan Humber River Basin District (Environment Agency 2009)</p>	<p>Climate change</p> <ul style="list-style-type: none"> • Abstraction and other artificial flow pressures • Biological pressures (fisheries management and invasive and non-native species) • Biological pressures (invasive non-native species) • Microbiological pressures (including faecal indicator organisms) • Organic pollution (sanitary determinants) pressure

Plan	Potential impacts that could cause 'in-combination' effects
	<ul style="list-style-type: none"> • Nutrients pressure (nitrogen and phosphorus) • Hazardous substances pressure • Acidification pressure • Salinity pressure • Temperature pressure (from point source discharges) • Physical modification pressure • Sediment pressure <p>Development</p> <ul style="list-style-type: none"> • Growth and associated issues • Flooding, coastal erosion and water pollution
<p>River Tyne to Flamborough Head Draft (SMP) (2006)</p>	<p>Management Area 12 (MA12) – Hartlepool Bay</p> <ul style="list-style-type: none"> • This area includes Teesmouth and Cleveland SPA and Ramsar site. The proposed policy could lead to enhanced scour and/or wave exposure to the SPA and Ramsar features associated with Hartlepool Headland. The SMP policy and the Hartlepool Coastal Strategy have identified the potential loss of the final third of the Heugh breakwater. The decision has been deferred subject to monitoring. If such a loss occurred then the policy suite could lead to enhanced scour and/or wave exposure to the SPA and Ramsar features. Therefore preventative measures are unknown and the implications of the integrity of the site unknown.

Plans not available on-line at the time of assessment:

Review of Consents

Coastal Habitat Management Plan

Catchment Flood Management Plan

Tees Tidal Flood Risk Management Strategy

Appendix 3: Likely Significant Effect (LSE) Screening Table

SIGNIFICANT EFFECTS SCREENING (INCORPORATING IN-COMBINATION ASSESSMENT):

European Sites within a 20km radius of the nominated site

	Designation	Distance to the nominated site
Castle Eden Dene	SAC	15.0 km
North York Moors	SAC	15.6 km
Durham Coast	SAC	11.1 km
North York Moors	SPA	15.6 km
Northumbria Coast	SPA	11.1 km
Teesmouth and Cleveland Coast	SPA	Partly within
Northumbria Coast	Ramsar	11.1 km
Teesmouth and Cleveland Coast	Ramsar	Partly within

The likely significant effects of the development of the nominated site on the above listed European sites located within a 20km radius of the nominated site have been assessed. Some of these European sites have been screened out for the reasons given below. For the remaining European sites, the assessment of the likely significant effects of the construction, operation and decommissioning phases of a new nuclear power station development are presented in tabular form.

European Sites within a 20km radius of the nominated site for which likely significant impacts are not considered to arise:

- **Castle Eden Dene SAC:** Castle Eden Dene SAC in north-east England represents the most extensive northerly native occurrence of yew *Taxus baccata* woods in the UK. Extensive yew groves are found in association with ash-elm *Fraxinus-Ulmus* woodland and it is the only site selected for yew woodland on magnesian limestone in north-east England. Castle Eden Dene is the largest and biologically the richest of a series of steep-sided wooded denes, formed as deep ravines in the Magnesian Limestone and boulder clay of the Durham Coast. Due to its size and difficult terrain large parts of the woodland remain comparatively free from human disturbance, despite the proximity of Peterlee New Town. This SAC covers 194.4 ha, comprises one component SSSI and is located 15 km from the nominated site at Hartlepool. This SAC is considered vulnerable to air pollution; however, given the distance from the nominated site, and a lack of identified pathways for other impacts, it is unlikely that there will be any significant effects on Castle Eden Dene SAC.
- **Durham Coast SAC:** This SAC is designated for vegetated sea cliffs, and is the only example of vegetated sea cliffs on magnesian limestone exposures in the UK. Given the distance of the SAC from the nominated site (11.1km) and the fact that water quality / resources is not an identified vulnerability for this qualifying feature which is predominately maintained as a result of the influence of sea spray and fed by rainwater, any impacts related to water resources/quality from the development are unlikely to be significant. Air quality is identified as a potential vulnerability for the SAC (critical loads have not yet been set for this habitat type), but given the distance of the SAC from the nominated site the impacts of emissions arising from the development are therefore unlikely to significantly impact upon this SAC. Habitat (and species) loss and/or fragmentation and impacts of coastal squeeze arising from the development at the nominated site at Hartlepool are also considered unlikely to affect this SAC due to distance. Non-physical disturbance effects are not relevant to this site as the designation relates to habitats rather than species.
- **North Yorkshire Moors SAC:** This SAC contains the largest continuous tract of heather moorland in England and is designated for its Northern Atlantic wet heaths with *Erica tetralix*, European dry heaths and blanket bogs. Changes to hydrology and air quality are identified as potential vulnerabilities for the qualifying habitats of this SAC. However, as these heathland and blanket bog communities are predominately rainwater fed, atmospheric emissions from the development are not likely to be of more than local concern during construction and decommissioning, and accidental radioactive emissions

are unlikely given the level of regulatory control. This SAC is also 15.6 km from the nominated site. It is therefore unlikely that there would be any significant water quality/resources or air quality impacts on this SAC from the development of the nominated site. There are no identified pathways for impacts relating to habitat (and species) loss/ fragmentation. Coastal squeeze impacts are not relevant (the SAC being inland). Non- physical disturbance effects are also not relevant as the designation relates to habitat rather than species.

- **North Yorkshire Moors SPA:** Changes to hydrology, and air quality, are identified as potential vulnerabilities for the habitats (heathland and blanket bog communities) supporting the qualifying species (Merlin and Golden Plover) of this SPA. However, as these heathland and blanket bog communities are predominately rainwater fed, atmospheric emissions from the development are not likely to be of more than local concern during construction and decommissioning, and accidental radioactive emissions are unlikely given the level of regulatory control. This SPA is also 15.6 km from the nominated site. It is therefore unlikely that there would be any significant water quality/resources or air quality impacts on this SAC from the development of the nominated site. There are no identified pathways for impacts relating to habitat (and species) loss/ fragmentation. Coastal squeeze impacts are not relevant (the SPA being inland). There are not likely to be any disturbance effects on the qualifying bird species of the SPA due to the distance between the SPA and nominated site.

Northumbria Coast SPA/Ramsar Site

Unitary Authority: Durham, North Tyneside, Northumberland, Sunderland, South Tyneside

Source: Construction (duration approximately 5 years)

Northumbria Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Water Resources/Quality	
Potential Impacts: Pathway	Potential effects on water quality and drainage from earthworks/excavations and infrastructure provision (sedimentation, pollution incidents through watercourses and cycles).
Potential effects on the SAC: Receptor	<p>Organic and nutrient enrichment and changes in turbidity and increased sedimentation through excavation during construction can cause a reduction in water clarity, thereby reducing the visibility of prey items. This is an identified vulnerability for Little Terns in particular.</p> <p>Any activities arising from construction/ development that may influence the hydrodynamic regime, such as coastal defence can lead to changes to sediment deposition rates and lead to the potential loss of the shoreline habitats that are essential for breeding and roosting Little Tern, Purple Sandpiper and Turnstone.</p>
Risk of Likely Significant Effect (LSE)?	Given the distance of the SPA/Ramsar site from the nominated site (11.1 km) the potential impacts upon water quality arising from construction need to be further assessed. There is therefore the potential for a likely significant effect upon the SPA/Ramsar site.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and development

Northumbria Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Water Resources/Quality	
Risk from 'In Combination' Effects?	Unknown
AA Required?	Yes

Northumbria Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Disturbance (Noise, Light, Visual)	
Potential Impacts: Pathway	Construction activity (scheduled for up to 6-7 years) is likely to result in significant local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site.
Potential effects on the SAC: Receptor	Terns are moderately sensitive to both visual and noise disturbance and are therefore considered vulnerable. Disturbance can cause them to be displaced from their breeding and feeding areas and this may result in eggs or chicks being abandoned and increased energy expenditure affect their ability to survive.
Risk of Likely Significant Effect (LSE)?	Given the distance of the SPA/Ramsar site from the nominated site, the potential impacts of disturbance (noise, light, visual) arising from the construction stage of the development are considered minimal and unlikely to be significant.
Potential Impacts: Other Plans and Programmes	No
Risk from 'In Combination' Effects?	No
AA Required?	No

Northumbria Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Habitat (and Species) Loss and Fragmentation	
Potential Impacts: Pathway	Construction of cooling water culverts, extension of site into 'buffer' habitats, possible development at the coastal fringes.
Potential effects on the SAC: Receptor	Construction of new or over ground transmission lines could cause direct disturbance and physical loss of terrestrial habitats.
Risk of Likely Significant Effect (LSE)?	Given the distance of the SPA/Ramsar site from the nominated site, the potential impacts of loss and fragmentation of habitat and species arising from the construction stage of the development are considered minimal and unlikely to be significant.
Potential Impacts: Other Plans and Programmes	No
Risk from 'In Combination' Effects?	No
AA Required?	No

Source: Operation (duration approx 60 years)

Northumbria Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Water Resources/Quality	
Potential Impacts: Pathway	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling (heated water up to 10° warmer than the receiving environment).
Potential effects on the SAC: Receptor	<p>Organic and nutrient enrichment and changes in turbidity and increased sedimentation through excavation during construction can cause a reduction in water clarity, thereby reducing the visibility of prey items. This is an identified vulnerability for Little Tern in particular.</p> <p>Any activities arising from construction/development that may influence the hydrodynamic regime, such as coastal defence can lead to changes to sediment deposition rates and lead to the potential loss of the shoreline habitats that are essential for breeding and roosting Little Tern, Purple Sandpiper and Turnstone.</p>
Risk of Likely Significant Effect (LSE)?	Given the distance of the SPA/Ramsar site from the nominated site (11.1 km), the potential impacts upon water quality arising from construction need to be further assessed. There is therefore the potential for a significant effect upon the SPA/Ramsar site.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and development
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Source: Decommissioning (duration approx 30 years)

Northumbria Coast SPA/Ramsar Site: Decommissioning (duration approx 30 years)	
Water Resources/Quality	
Potential Impacts: Pathway	Potential effects on water quality and drainage from (de)construction activities, earthworks, infrastructure, waste storage.
Potential effects on the SAC: Receptor	Accidental spillage of synthetic and non-synthetic compounds and sediment input may result in nutrient loading and changes to the marine environment that could be transported (either through currents or sediment movements) along the coastline and to the SPA, resulting in impacts on its features, for example, changes through to prey availability, palatability and smothering of sensitive shoreline habitats used for breeding.
Risk of Likely Significant Effect (LSE)?	Given the distance of the SPA/Ramsar site from the nominated site, the potential impacts upon water quality arising from decommissioning need to be further assessed.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and development
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Northumbria Coast SPA/Ramsar Site: Decommissioning (duration approx 30 years)

Disturbance (Noise, Light, Visual)	
Potential Impacts: Pathway	Decommissioning activity (scheduled for a minimum of 30 years) likely to result in local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site.
Potential effects on the SAC: Receptor	Terns are moderately sensitive to both visual and noise disturbance and are therefore considered vulnerable. Disturbance can cause them to be displaced from their breeding and feeding areas and this may result in eggs or chicks being abandoned and increased energy expenditure affecting their ability to survive.
Risk of Likely Significant Effect (LSE)?	Given the distance of the SPA/Ramsar site from the nominated site (within 10 km), the potential impacts of noise, light and visual disturbance arising from the development are unlikely to impact upon this SPA/Ramsar.
Potential Impacts: Other Plans and Programmes	No
Risk from 'In Combination' Effects?	No
AA Required?	No

Teesmouth and Cleveland Coast SPA/Ramsar Site

Unitary Authority: Redcar and Cleveland, Stockton-on-Tees, Hartlepool

Source: Construction (duration approx 5 years)

Teesmouth and Cleveland Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Water Resources/Quality	
Potential Impacts: Pathway	Potential effects on water quality and drainage from earthworks/ excavations and infrastructure provision (sedimentation, pollution incidents through water courses and cycles).
Potential effects on the SAC: Receptor	<p>Organic and nutrient enrichment and changes in turbidity and increased sedimentation through excavation during construction can cause a reduction in water clarity, thereby reducing the visibility of prey items. Little Terns are particularly sensitive.</p> <p>Any activities arising from construction/development that may influence the hydrodynamic regime, such as coastal defence can lead to changes to sediment deposition rates and lead to loss of the shore habitats that are essential for the qualifying birds.</p> <p>The remobilisation of synthetic compounds previously locked up in soft intertidal sediments (from former dredged works) have the potential to affect bottom dwelling marine organisms and the qualifying bird species that feed on them.</p>
Risk of Likely Significant Effect (LSE)?	Given the proximity of the SPA to the nominated site, the potential impacts upon water quality arising from construction need to be further assessed. There is the potential for a significant effect upon this SPA/Ramsar site.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and development

Teesmouth and Cleveland Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Water Resources/Quality	
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Air Quality	
Potential Impacts: Pathway	Potential local impacts from increased development/traffic growth, and the emissions arising from construction activity. Likely to be restricted to a local level, for example dust/particulates.
Potential effects on the SAC: Receptor	An increase in airborne pollutants can lead to nutrient loading, relevant to conditions supporting low diversity invertebrate communities that provide food sources for wintering birds.
Risk of Likely Significant Effect (LSE)?	Air quality not an identified vulnerability for the SPA/Ramsar site, although the potential effects of increased nutrient loading from air borne pollutants should be considered in the context of known scale/known environmental conditions. There is the potential for significant effect, particularly at a local level.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and development
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Disturbance (Noise, Light, Visual)	
Potential Impacts: Pathway	Construction activity likely to result in significant local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site.
Potential effects on the SAC: Receptor	Breeding birds (Little Tern) and overwintering birds (Redshank, Knot, Sanderling and Shelduck) are vulnerable to disturbance by sudden movements and noise which can displace them from their breeding, roosting and feeding grounds. Little Tern are particularly sensitive while on eggs or with young.
Risk of Likely Significant Effect (LSE)?	Given that this SPA/Ramsar site is adjacent to the nominated site, the potential impacts of disturbance (noise, light and visual) arising from the construction stage are likely to be significant.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and development
Risk from 'In Combination' Effects?	Uncertain.
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Habitat (and Species) Loss and Fragmentation	
Potential Impacts: Pathway	Construction of cooling water culverts, extension of site into 'buffer' habitats, possible development at the coastal fringes.
Potential effects on the SAC: Receptor	Potential for fragmentation of habitat through loss of buffer habitats (land between designated areas) for proposed site. Particular issues for sightlines between feeding and roosting sites for Little Tern, Knot, Redshank, Teal, Sanderling and Shelduck.
Risk of Likely Significant Effect (LSE)?	Given that this SPA/Ramsar site is adjacent to the nominated site, the potential impacts of loss and fragmentation of habitat and species arising from the construction stage of the development are likely to be significant.
Potential Impacts: Other Plans and Programmes	
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Construction (duration approx 5 years)	
Coastal Squeeze	
Potential Impacts: Pathway	Construction of infrastructure and facilities relating to the operation of the nuclear power station may result in an encroachment upon land at the coastal fringes. All supporting habitats are sensitive to removal by land reclamation and construction activity.
Potential effects on the SAC: Receptor	The qualifying bird interests of this SPA/Ramsar site are vulnerable to the physical loss of supporting habitats and changes to sedimentation regimes.
Risk of Likely Significant Effect (LSE)?	The location of the proposed development is on the coast. However the footprint of the development and therefore its impact upon the coastal fringe remain unknown. The extent of this encroachment onto the coastal fringe will depend on the footprint of the power station and may extend into the habitats of this SPA. Any habitat loss as a result of coastal squeeze or otherwise is considered to be significant.
Potential Impacts: Other Plans and Programmes	River Basin Management Plan Development, erosion, flooding
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Source: Operation (duration approx 60 years)

Teesmouth and Cleveland Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Water Resources/Quality	
Potential Impacts: Pathway	Potential impacts on water quality and drainage from planned and accidental discharges (radioactive and non-radioactive), and from the abstraction and discharge of water for cooling (heated water up to 10° warmer than the receiving environment).
Potential effects on the SAC: Receptor	<p>Changes in organic and nutrient loading can impact on marine communities within the SPA/Ramsar site. Changes in nutrient loading and turbidity can reduce water clarity, thus affecting the visibility of prey items.</p> <p>Increased sedimentation, and/or pollution can impact on the marine communities which in turn affect the birds which prey on them.</p> <p>Toxins can bind to sediments and can accumulate in marine communities and therefore have an impact on the birds and marine mammals which feed on them. The effects of such toxic compounds are variable, but may cause sub-lethal consequences or mortality of individual birds. Toxic contamination may also affect bird populations indirectly by affecting the abundance and palatability of food items.</p>
Risk of Likely Significant Effect (LSE)?	Given that this SPA/Ramsar site is adjacent to the nominated site the potential impacts of operation on water quality, changes in nutrient composition, effects of heavy metals and radioactive discharges, temperature and hydrological regimes are likely to be significant.
Potential Impacts: Other Plans and Programmes	<p>Local Development Framework strategies</p> <p>Housing and associated infrastructure</p>

Teesmouth and Cleveland Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Water Resources/Quality	
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Air Quality	
Potential Impacts: Pathway	Potential local impacts from increased development/traffic growth, and the emissions arising from construction activity. Likely to be restricted to a local level, for example dust/particulates.
Potential effects on the SAC: Receptor	An increase in airborne pollutants can lead to nutrient loading.
Risk of Likely Significant Effect (LSE)?	Air quality is not an identified vulnerability for the SPA/Ramsar however potential effects of increased nutrient loading from air borne pollutants should be considered in the context of the local scale. Therefore there is the potential for significant effect, particularly at a local level.
Potential Impacts: Other Plans and Programmes	Local Development Frameworks Increases in airborne pollutants arising from housing/ economic development, infrastructure, increase in transport.
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Disturbance (Noise, Light, Visual)	
Potential Impacts: Pathway	<ol style="list-style-type: none"> 1. Operational activity likely to result in local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site (for example pressure venting). 2. Operational technologies.
Potential effects on the SAC: Receptor	<ol style="list-style-type: none"> 1. Terns are vulnerable to both visual and noise disturbance. Disturbance can cause them to be displaced from their breeding and feeding areas. They are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to their colony. During the breeding season, this may result in eggs or chicks being abandoned. 2. Possible implications associated with impingement of fish, eggs and larvae on the cooling water intake screens.
Risk of Likely Significant Effect (LSE)?	<ol style="list-style-type: none"> 1. Given that this SPA/Ramsar site is adjacent to the nominated site, the potential impacts of noise, light and visual disturbance arising from the development are likely to be significant. 2. Given the proximity of the SPA/Ramsar site to the nominated site, the potential impacts of operational technologies may be significant.
Potential Impacts: Other Plans and Programmes	<p>Local Development Framework strategies Housing and associated infrastructure</p>
Risk from 'In Combination' Effects?	Uncertain

Teesmouth and Cleveland Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Disturbance (Noise, Light, Visual)	
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Operation (duration approx 60 years)	
Habitat (and Species) Loss and Fragmentation	
Potential Impacts: Pathway	Changes to footprint of site through operation, for example, to accommodate waste storage, develop infrastructure. Intake of water for cooling and discharge of (heated) cooling water to tidal reservoir and main estuary.
Potential effects on the SAC: Receptor	Potential for fragmentation of habitat through loss of buffer habitats (land between designated areas) for the nominated site, in particular those between the current power station, golf course and field to the east that are known to support the qualifying bird species. Also, particular issues for sightlines between feeding and roosting sites for all qualifying bird species and the habitats that support them.
Risk of Likely Significant Effect (LSE)?	Given that this SPA/Ramsar site is adjacent to the nominated site and that the footprint of the power station would be likely to impinge and therefore impact onto the designated site, the loss and fragmentation of habitat and species arising from the operation stage of the development are unknown and further assessments are required.
Potential Impacts: Other Plans and Programmes	
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Source: Decommissioning (duration approx 30 years)

Teesmouth and Cleveland Coast SPA/Ramsar Site: Decommissioning (duration approx 30 years)	
Water Resources/Quality	
Potential Impacts: Pathway	Potential effects on water quality and drainage from (de)construction activities, earthworks, infrastructure, waste storage.
Potential effects on the SAC: Receptor	Accidental spillage of synthetic and non-synthetic compounds and sediment input may result in nutrient loading, and its discharge into watercourses and the marine environment may lead to impacts upon the qualifying species and identified habitats supporting these species within the SPA/Ramsar site. (See construction stage for details).
Risk of Likely Significant Effect (LSE)?	Given that this SPA/Ramsar site is adjacent to the nominated site, significant potential impacts upon water quality arising from decommissioning cannot be ruled out at this stage and need to be further assessed.
Potential Impacts: Other Plans and Programmes	
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Decommissioning (duration approx 30 years)	
Air Quality	
Potential Impacts: Pathway	Potential local impacts from increased development/traffic growth associated with decommissioning and the emissions arising from de-construction activity. Likely to be restricted to a local level, for example dust/particulates.
Potential effects on the SAC: Receptor	An increase in airborne pollutants can lead to nutrient loading.
Risk of Likely Significant Effect (LSE)?	Air quality not an identified vulnerability for the SPA/Ramsar although the potential effects of increased nutrient loading from air borne pollutants should be considered in the context of a local scale. Therefore, there is the potential for significant effect, particularly at a local level.
Potential Impacts: Other Plans and Programmes	Local Development Frameworks Increases in airborne pollutants arising from housing/economic development, infrastructure, increase in transport.
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Decommissioning (duration approx 30 years)	
Disturbance (Noise, Light, Visual)	
Potential Impacts: Pathway	Decommissioning activity likely to result in local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site.
Potential effects on the SAC: Receptor	Terns are vulnerable to both visual and noise disturbance. Disturbance can cause them to be displaced from their breeding and feeding areas. They are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to their colony. During the breeding season, this may result in eggs or chicks being abandoned.
Risk of Likely Significant Effect (LSE)?	Given that the SPA/Ramsar site is adjacent to the nominated site, the potential impacts of noise, light and visual disturbance arising from the decommissioning are likely to be significant.
Potential Impacts: Other Plans and Programmes	Local Development Framework strategies Housing and associated infrastructure.
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Teesmouth and Cleveland Coast SPA/Ramsar Site: Decommissioning (duration approx 30 years)	
Habitat (and Species) Loss and Fragmentation	
Potential Impacts: Pathway	<p>Changes to footprint of nominated site through decommissioning activities, for example, to accommodate waste storage, develop infrastructure.</p> <p>Intake of water for cooling and discharge of (heated) cooling water to tidal reservoir and main estuary.</p>
Potential effects on the SAC: Receptor	Potential for fragmentation of habitat through loss of buffer habitats (land between designated areas) for proposed site. Particular issues for sightlines between feeding and roosting sites for all qualifying bird species (Little Tern, Redshank, Knot, Sanderling, Shelduck and Teal) and the habitats that support them.
Risk of Likely Significant Effect (LSE)?	Given that this SPA is adjacent to the nominated site and that the footprint of any waste storage areas or infrastructure is unknown, impacts on habitats arising from the decommissioning stage of the development are unknown and further assessments are required.
Potential Impacts: Other Plans and Programmes	
Risk from 'In Combination' Effects?	Uncertain
AA Required?	Yes

Appendix 4: HRA/ Appropriate Assessment Proforma

Northumbria Coast SPA

- Location: NU260192
- Size (ha): 1107.98
- Designation: SPA

	Northumbria Coast SPA
Qualifying Features	<p>Article 4.1 Qualification During the breeding season the area regularly supports the following birds of European importance listed in Annex I of the Directive:</p> <ul style="list-style-type: none"> • Little Tern <i>Sterna albifrons</i> - 7% of the GB breeding population 5 year peak mean 1992/3-1996/7 <p>Article 4.2 Qualification Over winter the area supports:</p> <ul style="list-style-type: none"> • Ruddy Turnstone <i>Arenaria interpres</i> -2.6 % of the East Atlantic Flyway population 5 year peak 1992/3 – 1996/7. • Purple Sandpiper <i>Calidris maritima</i> -1.6 % of the East Atlantic Flyway population 5 year peak mean 1992/3 – 1996/7

Northumbria Coast SPA	
Conservation Objectives	<p>The conservation objective for the internationally important populations of the regularly occurring Annex 1 bird species: ¹¹</p> <p>Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the regularly occurring Annex 1 bird species (Little Tern <i>Sterna albifrons</i>), under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Sandy beaches at Low Newton • Shallow inshore waters at Low Newton <p>The conservation objective for the internationally important populations of regularly occurring migratory bird species:</p> <p>Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of regularly occurring migratory bird species Purple Sandpiper <i>Calidris maritima</i> and Turnstone <i>Arenaria interpres</i>, under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Rocky shores with associated boulder and cobble beaches • Artificial high tide roost sites
Key Environmental Conditions (factors that maintain site integrity)	<p>Sandy beaches</p> <ul style="list-style-type: none"> • Little Tern breed in small colonies on coastal sand or shingle substrates, sometimes nesting only metres from the high-tide mark. The nesting areas within this SPA are the sandy beaches adjacent to the Long Nanny at Low Newton.

¹¹ English Nature 2000. Northumbria Coast: European Marine Site – English Nature’s advice given under Regulation 33 (2) of the Conservation (Natural Habitats, &c.) Regulations 1994.

Northumbria Coast SPA	
	<p>Shallow inshore waters</p> <ul style="list-style-type: none"> • Little Tern forage in shallow inshore waters for small surface dwelling marine fish, crustaceans and invertebrates. The waters of the Long Nanny and the inshore waters within the Northumbria Coast SPA are used by the terns for feeding. <p>Rocky shores with associated boulder and cobble beaches</p> <ul style="list-style-type: none"> • The rocky shore areas with reefs have small areas of sand interspersed amongst the main reefs. The proportion of the reefs covered by sand varies and is minimal. The rocky shore is the predominant habitat and though sandy areas are present their use by Purple Sandpiper and Turnstone is not significant. The rocky shores and the strand line support high densities of invertebrates which are important food for waterfowl. Purple Sandpiper are almost entirely restricted to the rocky shore where they feed on a variety of marine invertebrates on banks of rotting seaweed on the strandline. Purple Sandpiper will also roost on offshore reefs and mainland shore. The diet of Turnstones is more varied. They feed on seaweed covered rocks, congregating at high tide to roost on the mainland shore or continue to feed on banks of washed up seaweed on the strand line.
<p>Vulnerabilities (includes existing pressures and trends)</p> <p><i>Details at Appendix 1</i></p>	<p>Internationally important populations of regularly occurring Annex 1 species</p> <ul style="list-style-type: none"> • Physical loss • Physical damage • Non-physical disturbance • Toxin Contamination • Non-toxic contamination • Biological disturbance

Northumbria Coast SPA	
	<p>Internationally important populations of regularly occurring migratory species</p> <ul style="list-style-type: none"> • Physical loss • Physical damage • Non-physical disturbance • Toxic contamination • Non-toxic contamination • Biological disturbance
<p>Predicted Impacts</p> <p><i>What are the issues arising from the plan and how might the site be affected?</i></p>	<p>Water Resources and Quality</p> <ul style="list-style-type: none"> • Increased/altered drainage from earthworks and excavation • Potential for toxic contamination from accidental leakage • Radioactive discharges (accidental and routine) • Changes to water temperature from controlled discharge • Sedimentation and changes in organic and nutrient loading arising from construction during the construction and decommissioning phases.
<p>Potential In-combination effects (screening)</p> <p><i>What other plans and programmes could lead to in-combinations effects?</i></p>	<p>The following plans have the potential to contribute ‘in-combination’ impacts in relation to the key issues identified. In-combination impacts may be positive where the plans’ function is to actively manage those identified issues (for example Catchment Abstraction Management Strategies).</p> <p>Water Resources and Quality</p> <ul style="list-style-type: none"> • River Basin Management Plan Northumbria River Basin District • County Durham Local Development Frameworks

Northumbria Coast SPA	
<p>Appropriate Assessment</p> <p>Likelihood of adverse effect on integrity:</p>	<p>Water Resources and Quality</p> <ul style="list-style-type: none"> • Current Environment Agency (EA) data¹² (draft classifications) indicates that the Tees, one of three estuaries in the Northumbria River Basin District, is falling short of good ecological potential mainly because of the hydromorphological conditions which will need further investigation to determine the capability of achieving good ecological status. For river and lake water bodies, 37% are at good ecological status or potential leaving certain stretches of poor and bad quality. • Radioactive discharges are subject to targets monitored by the EA and of the non-radioactive discharges, nitrate contributions are considered to be the most significant (research cited by the EA in the nuclear sector report). In particular it is noted that there can be measurable localised impacts on sea nutrient levels in the vicinity of discharges. • Key vulnerabilities for Northumbria Coast SPA (Appendix 1, Site Characterisations) indicate that any increase in nutrient loading through discharge of synthetic and non-synthetic toxic compounds should be avoided, given their likely impact upon waterfowl. There is evidence to suggest that toxic compounds can bioaccumulate in birds, potentially resulting in mortality. Contamination by substances such as oil can also reduce the quality of habitats for roosting and feeding. Potential sources of toxic contaminants include diffuse and off-site inputs as well as point sources, such as effluent discharges. • Change in water temperature, salinity, nutrient and organic loading can change the type, quality and quantity of prey available for Little Tern. Organic and nutrient enrichment and changes in turbidity can cause a reduction in water clarity, thereby reducing the visibility of prey items for Little Terns in particular. <p>Without more up-to-date information on the current status of the water quality in the Tees estuary and bearing in mind that there is no information on discharge levels and the quality of discharge arising from the development, it is not possible to determine whether there will be an adverse effect on site integrity.</p>

¹² Environment Agency (2009). River Basin Management Plan: Northumbria River Basin District.

Northumbria Coast SPA	
<p>Possible Avoidance and Mitigation Measures – includes recommendations for policy/proposals</p>	<p>Water Resource and Quality</p> <ul style="list-style-type: none"> • Adverse impacts upon surface, ground and estuarine waters should be avoided through the implementation of appropriate safety measures and water quality monitoring. This is primarily the responsibility of the Water Companies (resource planning) and the Environment Agency (abstraction licensing and discharge regulation). However, the draft Nuclear NPS can direct requirements for efficiency of water use and can require that control and regulation measures relating to supply and discharge are in place prior to the implementation of the nominated site proposals. • Careful design of cooling water culverts should be undertaken to avoid the effects of sedimentary processes or thermal regime and should take account of the route length and design of the intake/outfall structures. • Fish protection measures should be incorporated into the cooling water intake/system design. • Adverse impacts should be minimised through safe operation and decommissioning and through the safe transfer and interim storage of waste. • Primary data collection and subsequent laboratory analyses of samples for a full suite of parameters (including radioactive elements) should be undertaken to determine the impacts of the proposed discharge/abstraction regime arising from the development upon the ecology and chemistry of the water resources impacted and upon those species and communities supported by this resource. • Appropriate construction methods should be incorporated into the construction environmental management plan (CEMP) to minimise the impacts of the development upon water resources and water quality. • Ensure that the volume of cooling water returned is within the capacity of the immediate receiving environment and does not alter the sediment flow. • Surface and groundwater flows should be designed to minimise the impacts (including the use of Sustainable Drainage Systems).

Northumbria Coast SPA	
<p>Conclude no adverse effect on integrity?</p>	<ul style="list-style-type: none"> • It is not possible at this stage of the development of the Nuclear NPS to say that proposals at Hartlepool will not have adverse effects on site integrity of Northumbria Coast SPA as a result of impacts to water quality. It is, however, considered that given the distance of the nominated at Hartlepool to this SPA, water quality impacts are unlikely to have an adverse effect on site integrity given the available mitigation measures to address site level impacts.

Northumbria Coast Ramsar

- Location: NU260192
- Size (ha): 1107.98
- Designation: Ramsar

Northumbria Coast Ramsar	
Qualifying Features	<p>Ramsar Criteria 6 – species/populations occurring at levels of international importance Qualifying species/populations:</p> <p>Species regularly supported during the breeding season: Little Tern <i>Sterna albifrons albifrons</i> - 43 apparently occupied nests, representing an average of 2.2 % of the GB population (Seabird Census 2000)</p> <p>Species with peak counts in winter: Purple Sandpiper <i>Calidris maritima</i> - 291 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)</p> <p>Ruddy Turnstone <i>Arenaria interpres interpres</i> - 978 individuals representing an average of 1 % of the population (5 year peak mean 1998/9-2002/3.</p>
Conservation Objectives	<p>Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the habitats supporting the qualifying species (Little Tern; Purple Sandpiper; Ruddy Turnstone (Ramsar Criterion 6) and the assemblages of international importance (Criterion 5):</p> <p>The main habitats supporting these species at this Ramsar site are:</p>

Northumbria Coast Ramsar	
	<ul style="list-style-type: none"> ● Sandy beaches ● Shallow inshore waters ● Rocky shores with associated boulder and cobble beaches ● Artificial high tide roost sites
<p>Key Environmental Conditions (factors that maintain site integrity)</p>	<p>Sandy beaches</p> <ul style="list-style-type: none"> ● Little Tern breed in small colonies on coastal sand or shingle substrates, sometimes nesting only metres from the high-tide mark. The nesting areas within the Northumbria Coast Ramsar site are the sandy beaches adjacent to the Long Nanny at Low Newton. <p>Shallow inshore waters</p> <ul style="list-style-type: none"> ● Little Tern forage in shallow inshore waters for small surface dwelling marine fish, crustaceans and invertebrates. The waters of the Long Nanny and the inshore waters within the Northumbria Coast European marine site are used by the terns for feeding therefore an objective for this sub-feature is included within this advice package. <p>Rocky shores with associated boulder and cobble beaches</p> <ul style="list-style-type: none"> ● The rocky shore areas with reefs have small areas of sand interspersed amongst the main reefs. The proportion of the reefs covered by sand varies and is minimal. The rocky shore is the predominant habitat and though sandy areas are present their use by Purple Sandpiper and Turnstone is not significant. The rocky shores and the strand line support high densities of invertebrates which are important food for waterfowl. Purple Sandpiper are almost entirely restricted to the rocky shore where they feed on a variety of marine invertebrates. They sometimes forage on banks of rotting seaweed on the strandline. They roost on offshore reefs and mainland shore. The diet of Turnstones is more varied and they feed on seaweed covered rocks, congregating at high tide to roost on the mainland shore or continue to feed on banks of washed up seaweed on the strand line.

Northumbria Coast Ramsar	
<p>Vulnerabilities (includes existing pressures and trends)</p> <p><i>Details at Appendix 1</i></p>	<ul style="list-style-type: none"> ● Physical loss ● Physical damage ● Non-physical disturbance ● Toxin contamination ● Non-toxic contamination ● Biological disturbance
<p>Predicted Impacts</p> <p><i>What are the issues arising from the plan and how might the site be affected?</i></p>	<p>Water Resources and Quality</p> <ul style="list-style-type: none"> ● Potential for toxic contamination from accidental leakage ● Radioactive discharges (accidental and routine) ● Changes to water temperature from controlled discharge ● Sedimentation and changes in organic and nutrient loading arising from construction during the construction and decommissioning phases.
<p>Potential In-combination effects (screening)</p> <p><i>What other plans and programmes could lead to in-combinations effects?</i></p>	<p>The following plans have the potential to contribute ‘in-combination’ impacts in relation to the key issues identified. In-combination impacts may be positive where the plans’ function is to actively manage those identified issues (for example Catchment Abstraction Management Strategies).</p> <p>Water Resources and Quality</p> <ul style="list-style-type: none"> ● County Durham Local Transport Plan ● County Durham LDF

Northumbria Coast Ramsar	
<p>Appropriate Assessment</p> <p>Likelihood of adverse effect on integrity:</p>	<p>Water Resources and Quality</p> <ul style="list-style-type: none"> ● Current ¹³Environment Agency data (draft classifications) indicates that the Tees, one of three estuaries in the Northumbria River Basin District is falling short of good potential mainly because of the hydromorphological conditions which will need further investigation. to determine the capability of achieving good ecological status. For river and lake water bodies, 37% are at good ecological status or potential leaving stretches of poor and bad quality. ● Radioactive discharges are subject to targets monitored by the EA and of the non-radioactive discharges, nitrate contributions are considered to be the most significant (research cited by the EA in the nuclear sector report). In particular it is noted that there can be measurable localised impacts on sea nutrient levels in the vicinity of discharges. ● Key vulnerabilities for Northumbria Coast Ramsar (Appendix 1, Site Characterisations) indicate that any increase in nutrient loading through discharge of synthetic and non-synthetic toxic compounds should be avoided, given their likely impact upon waterfowl. There is evidence to suggest that toxic compounds can bioaccumulate in birds which can lead to mortality. Contamination by substances such as oil can reduce the quality of habitats for roosting and feeding. Potential sources of toxic contaminants include diffuse and off-site inputs as well as point sources, such as effluent discharges. ● Change in water temperature, salinity, nutrient and organic loading can change the type, quality and quantity of prey available for Little Tern. Organic and nutrient enrichment and changes in turbidity can cause a reduction in water clarity, thereby reducing the visibility of prey items for Little Terns in particular. ● Without more up-to-date information on the current status of the water quality in the Tees estuary and bearing in mind there is no information on discharge levels and the quality of discharge arising from the development, it is not possible to determine whether there will be an adverse effect on the

¹³ Environment Agency (2009) River Basin Management Plan: Northumbria River Basin District.

Northumbria Coast Ramsar	
	<p>site integrity of this Ramsar site.</p> <ul style="list-style-type: none"> • The potential for cumulative effects arising from other plans and programmes are unknown. However, a Natural Commitment¹⁴ has been made which reports on the Region's progress towards one of the key regional biodiversity targets and a national PSA target that, nationally and regionally, 95% of all nationally important wildlife sites (the underpinning SSSIs) are to be in a favourable condition by 2010.
<p>Possible Avoidance and Mitigation Measures – includes recommendations for policy/proposals</p>	<p>Water Resource and Quality</p> <ul style="list-style-type: none"> • Adverse impacts upon surface, ground and estuarine waters should be avoided through the implementation of appropriate safety measures and water quality monitoring. This is primarily the responsibility of the Water Companies (resource planning) and the Environment Agency (abstraction licensing and discharge regulation). However, the draft Nuclear NPS can direct requirements for efficiency of water use and can require that control and regulation measures relating to supply and discharge are in place prior to the implementation of the nominated site proposals. • Careful design of cooling water culverts should be undertaken to avoid the effects of sedimentary processes or thermal regime and should take account of the route length and design of the intake/outfall structures. • Fish protection measures should be incorporated into the cooling water intake/system design. • Adverse impacts should be minimised through safe operation and decommissioning and through the safe transfer and interim storage of waste. • Primary data collection and subsequent laboratory analyses of samples for a full suite of parameters (including radioactive elements) should be undertaken to determine the impacts of the

¹⁴ English Nature (2003). Natural Commitment, Working together for wildlife in the North East.

Northumbria Coast Ramsar	
	<p>proposed discharge/abstraction regime arising from the development upon the ecology and chemistry of the water resources impacted and upon those species and communities supported by this resource.</p> <ul style="list-style-type: none"> • Appropriate construction methods should be incorporated into the construction environmental management plan (CEMP) to minimise the impacts of the development upon water resources and water quality. • Ensure that the volume of cooling water returned is within the capacity of the immediate receiving environment and does not alter the sediment flow. • Surface and groundwater flows should be designed to minimise the impacts (including the use of Sustainable Drainage Systems).
Conclude no adverse effect on integrity?	<ul style="list-style-type: none"> • It is not possible at this stage of the development of the draft Nuclear NPS to say that proposals at Hartlepool would not have adverse effects on site integrity of Northumbria Coast Ramsar site as a result of impacts to water quality. It is, however, considered that given the distance of the nominated at Hartlepool to this Ramsar site, water quality impacts are unlikely to have an adverse effect on site integrity given the available mitigation measures to address site level impacts.

Teesmouth and Cleveland SPA

- Location: NZ568265
- Size (ha): 1247.31
- Designation: SPA

Teesmouth and Cleveland SPA	
Qualifying Features	<p>Article 4.1 Qualification (79/409/EEC) During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Little Tern <i>Sterna albifrons</i> -1.5% of the GB breeding population 4 year mean, 1995-1998 <p>On passage the area regularly supports:</p> <ul style="list-style-type: none"> • Sandwich Tern <i>Sterna sandvicensis</i> - 4.0 % of the GB population 5 year mean for 1988 to 1992 <p>Article 4.2 Qualification (79/409/EEC)</p> <p>On passage:</p> <ul style="list-style-type: none"> • Ringed Plover <i>Charadrius hiaticula</i> - 634 individuals representing at least 1.3% of the European/North African population wintering population (5 year mean spring 91-95). <p>Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • Red Knot <i>Calidris canutus</i> – 1.6 % of the population 5 year peak mean 1991/92-1995/96 <p>On passage the area regularly supports:</p> <ul style="list-style-type: none"> • Redshank <i>Tringa totanus</i> – 1.1. % of the East Atlantic Flyway population 5 year peak mean 1987-1991

Teesmouth and Cleveland SPA	
	<p>Article 4.2 Qualification (79/409/eec): an internationally important assemblage of birds Over winter the area regularly supports:</p> <ul style="list-style-type: none"> • 21,312 waterfowl (5 year peak mean 1991/2-1995/96) <p>Including: Red Knot <i>Calidris canutus</i>; Shelduck <i>Tadorna tadorna</i>; Teal <i>Anas crecca</i>; Redshank <i>Tringa totanus</i> and Sanderling <i>Calidris alba</i></p>
Conservation Objectives	<p>Conservation objectives Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the regularly occurring Annex 1 bird species under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Sand and shingle • Intertidal sandflats and mudflats • Shallow coastal waters <p>For the internationally important populations of regularly occurring migratory bird species under the Birds Directive, in particular:</p> <ul style="list-style-type: none"> • Rocky shores • Intertidal sandflat and mudflat • Saltmarsh
Key Environmental Conditions (factors that maintain site integrity)	<p>Sandflats and mudflats</p> <ul style="list-style-type: none"> • Good sediment quality should be maintained and the sediment budget within the estuary/coastal system should not be restricted by anthropogenic influences. • The location and extent of sandflats is dependent on the extent to which the estuary or coast

Teesmouth and Cleveland SPA	
	<p>where they occur is constrained from responding to sea level rise and changing sediment regimes.</p> <ul style="list-style-type: none"> • Management needs to create space to enable landward roll-back to take place in response to sea-level rise, and should allow the system to be dynamic and retain the flexibility to respond to associated change such as the movement of physical features within the system, for example migrating subtidal sandbanks. <p>Rocky shores</p> <ul style="list-style-type: none"> • Rocky shores are formed by natural processes, including erosion and cliff collapse; • It is important to maintain good quality water at all times; • Prevent anthropogenic activities such as dredging and pipe construction which can cause direct damage to rocky shore habitats. <p>Saltmarsh</p> <ul style="list-style-type: none"> • These are the upper vegetated portions of intertidal mudflats in sheltered coastal locations (for example estuaries, lagoons and beach plains). Plants in this environment (halophytes) are adapted to receive regular immersion by the tides; • Not all saltmarsh habitats require active management. If there has not been a history of grazing, the saltmarsh will be able to maintain itself, and grazing should not be introduced; • Coastal erosion as a result of coastal flood-defence works, rising sea-levels, variation in sediment deposition, and land claim for development. <p>Bird communities are highly mobile and exhibit patterns of activity related to tidal waters and the distribution and availability of prey. Changes in the habitat may affect individual species in different ways. The important bird populations require a functional ecosystem capable of supporting the various marine (intertidal and subtidal) habitats for feeding, resting and breeding. In addition to the key</p>

Teesmouth and Cleveland SPA	
	<p>environmental conditions required for the habitats (as listed above) that support the qualifying species, the most important factors related to the bird species are:</p> <ul style="list-style-type: none"> ● Extent and distribution of suitable feeding, roosting and breeding habitats ● Sufficient prey (depending on the bird species) ● Minimal level of disturbance ● Good water quality to support the marine communities of which the birds feed ● Water quality and salinity gradients to maintain saltmarsh conditions for birds feeding and roosting
<p>Vulnerabilities (includes existing pressures and trends)</p> <p><i>Details at Appendix 1</i></p>	<p>Internationally important populations of regularly occurring Annex 1 species</p> <ul style="list-style-type: none"> ● Physical damage ● Non-physical disturbance <p>Internationally important populations of regularly occurring migratory species</p> <ul style="list-style-type: none"> ● Non-physical disturbance ● Toxic contamination ● Non-toxic contamination <p>Internationally important populations of regularly occurring migratory species</p> <ul style="list-style-type: none"> ● Non-physical disturbance ● Toxic contamination ● Non-toxic contamination
Predicted Impacts	<p>Water Resources and Quality</p> <ul style="list-style-type: none"> ● Increased/altered drainage from earthworks and excavation

Teesmouth and Cleveland SPA	
<p><i>What are the issues arising from the plan and how might the site be affected?</i></p>	<ul style="list-style-type: none"> ● Potential for toxic contamination from accidental leakage ● Radioactive discharges (accidental and routine) ● Alteration of flow from abstraction ● Changes to water temperature from controlled discharge ● Sedimentation and changes in organic and nutrient loading arising from construction during the construction and decommissioning phases ● Potential for fish, larvae and eggs in cooling water intake <p>Habitat Loss and Fragmentation</p> <ul style="list-style-type: none"> ● Direct loss of terrestrial, marine (intertidal and subtidal) habitats that support the qualifying bird species for which the SPA is designated for through general construction and deconstruction activities and where encroachment upon the coastal fringe is necessary (in particular the current power station, golf course and field to the east that are known to support the qualifying populations of waterbirds). ● Fragmentation from encroachment onto surrounding habitats during construction of the nuclear power station and related infrastructure required during the construction and decommissioning phases. ● Development along the coastal fringe can impact upon erosion and sediment transport regimes that are required to maintain designated habitats and species present within the SPA. <p>Disturbance (noise, light and visual)</p> <ul style="list-style-type: none"> ● Construction and decommissioning activity likely to result in significant local increases in noise events. ● Light pollution and visual disturbance in and around the immediate vicinity of the site.

Teesmouth and Cleveland SPA	
	<ul style="list-style-type: none"> • Operational activity likely to result in local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site. <p>Coastal Squeeze</p> <ul style="list-style-type: none"> • Reduction of coastal margin through encroachment of the nominated site into the coastal fringe. <p>Air Quality</p> <ul style="list-style-type: none"> • Local level impacts (reduced air quality, NOx gases from road/transport generation sources) arising from construction, operation, decommissioning activities • Accidental radioactive discharges.
<p>Potential In-combination effects (screening)</p> <p><i>What other plans and programmes could lead to in-combinations effects?</i></p>	<p>The following plans have the potential to contribute ‘in-combination’ impacts in relation to the key issues identified. In-combination impacts may be positive where the plans’ function is to actively manage those identified issues (for example Catchment Abstraction Management Strategies).</p> <p>Water Resources and Quality</p> <ul style="list-style-type: none"> • County Durham Transport Plan • River Basin Management Plan: Northumbria River Basin District • Local Development Frameworks <p>Habitat Loss and Fragmentation Coastal Squeeze</p> <ul style="list-style-type: none"> • Local Development Frameworks • County Durham Local Transport Plan <p>Disturbance (noise, light and visual)</p> <ul style="list-style-type: none"> • County Durham Local Transport Plan

Teesmouth and Cleveland SPA	
	<ul style="list-style-type: none"> • Local Development Frameworks <p>Air Quality</p> <ul style="list-style-type: none"> • Local Development Frameworks • County Durham Local Transport Plan
<p>Appropriate Assessment</p> <p>Likelihood of adverse effect on integrity:</p>	<p>Water Quality</p> <ul style="list-style-type: none"> • Current Environment Agency data¹⁵ (draft classifications) indicates that the Tees, one of three estuaries in the Northumbria River Basin District, is falling short of good potential mainly because of the hydromorphological conditions which will need further investigation to determine the capability of achieving good ecological status. For river and lake water bodies, 37% are at good ecological status or potential leaving stretches of poor and bad quality. • Given that the Tees is probably one of the most contaminated estuaries in the UK, owing to the large industrial and domestic discharges in the vicinity, the exposure level for synthetic and non-synthetic contamination is high. The remobilisation of synthetic compounds previously locked up in soft intertidal sediments (from previous developments) has the potential to affect benthic invertebrates with the SPA and in turn the waterfowl that feed upon them. Toxic effects on invertebrates may also be caused by existing discharges. Migratory bird populations are considered to be highly vulnerable to bioaccumulation of toxins. • Radioactive discharges are subject to targets monitored by the EA and of the non-radioactive discharges, nitrate contributions are considered to be the most significant (research cited by the EA in the nuclear sector report). In particular it is noted that there can be measurable localised impacts on sea nutrient levels in the vicinity of discharges. • Without more up-to-date information on the current status of the water quality in the Tees estuary

¹⁵ Environment Agency (2009) River Basin Management Plan: Northumbria River Basin District.

	Teesmouth and Cleveland SPA
	<p>and bearing in mind that there is no information on discharge levels and the quality of discharge arising from the potential development, it is not possible to determine whether any potential impacts are likely to be significant</p> <ul style="list-style-type: none"> ● Given that water abstraction requirements, mechanisms used during abstraction and locations for Hartlepool are currently unknown, it is not possible to conclude that water supply to the development will avoid direct impacts upon fish species during uptake (through impingement) that lead to adverse effects on the SPA. <p>Habitat Loss and Fragmentation/ Coastal Squeeze</p> <ul style="list-style-type: none"> ● Coastal erosion as a result of coastal flood-defence works, rising sea-levels, variation in sediment deposition and land claimed for development have all resulted in coastal squeeze. The net loss of the habitats supporting the qualifying species around Hartlepool may lead to a loss of habitats within this SPA. ● The extent of the loss and/or fragmentation of marine and terrestrial habitats from the construction of nuclear reactors, construction areas and other infrastructure and facilities relating to the operation of the nuclear power station is currently unknown given that the exact scope of the development and the requirements for coastal or sea defence infrastructure remain undetermined at this stage. The significance of habitat and species loss arising from the development in the context of wider habitat changes and sensitivities therefore cannot be assessed. At this strategic stage where detailed development plans are unknown, it is therefore not possible to conclude that no adverse impacts upon the SPA will arise from the proposed development with regards to loss and fragmentation of habitats and species. <p>Disturbance (noise, light and visual)</p> <ul style="list-style-type: none"> ● Habitats within the site (particularly at Hart Warren Dunes, Seaton Sands and Coatham Sands) provide breeding sites for Little Tern population, therefore operations or activities that adversely

Teesmouth and Cleveland SPA	
	<p>affect the functional regime of the areas should be avoided. The biggest threats to Little Terns are disturbance from humans (including dog-walkers). The birds are also particularly vulnerable to disturbance by sudden movements of objects and increases in noise disturbance over or adjacent to sand and shingle banks. This can have the effect of displacing the birds from their roosting or feeding grounds. During the breeding season in particular, this may result in disturbance to the nesting birds causing eggs or chicks to be abandoned.</p> <ul style="list-style-type: none"> • Waders such as Knot, Redshank and Sanderling can be disturbed by sudden movements of objects and increase in noise disturbance over and adjacent to their feeding and roosting sites. <p>Air Quality</p> <ul style="list-style-type: none"> • Information provided by the UK Air Pollution Information System¹⁶ indicated that the levels of NO_x and SO₂ were within the critical level for supporting habitats within Teesmouth and Cleveland Coast SPA for one of the qualifying species (Little Tern) but at the time of searching for this information, no data for other pollutants was available from the Environmental Agency. However it should be noted that other data¹⁷ for this SPA states that this European site currently exceeds its critical level for nitrogen deposition, which in turn may lead to increased local eutrophication and acidification. • The Environment Agency 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 EA's most recent available assessment of radioactive aerial emissions indicates that all fall within authorised limits.¹⁸
Possible Avoidance and	Water Resource and Quality

¹⁶ <http://www.apis.ac.uk/>

¹⁷ RSS for the North East (2008).

¹⁸ Environment Agency (Nov 2005). Measuring Environmental Performance: Sector for the Nuclear Industry.

Teesmouth and Cleveland SPA	
<p>Mitigation Measures – <i>includes recommendations for policy/proposals</i></p>	<ul style="list-style-type: none"> ● Adverse impacts upon surface, ground and estuarine waters should be avoided through the implementation of appropriate safety measures and water quality monitoring. This is primarily the responsibility of the Water Companies (resource planning) and the Environment Agency (abstraction licensing and discharge regulation). However, the draft Nuclear NPS can direct requirements for efficiency of water use and can require that control and regulation measures relating to supply and discharge are in place prior to the implementation of the nominated site proposals. ● Careful design of cooling water culverts should be undertaken to avoid the effects of sedimentary processes or thermal regime and should take account of the route length and design of the intake/outfall structures. ● Fish protection measures should be incorporated into the cooling water intake/system design. ● Adverse impacts should be minimised through safe operation and decommissioning and through the safe transfer and interim storage of waste. ● Primary data collection and subsequent laboratory analyses of samples for a full suite of parameters (including radioactive elements) should be undertaken to determine the impacts of the proposed discharge/abstraction regime arising from the development upon the ecology and chemistry of the water resources impacted and upon those species and communities supported by this resource. ● Appropriate construction methods should be incorporated into the construction environmental management plan (CEMP) to minimise the impacts of the development upon water resources and water quality. ● Ensure that the volume of cooling water returned is within the capacity of the immediate receiving environment and does not alter the sediment flow. ● Surface and groundwater flows should be designed to minimise the impacts (including the use of Sustainable Drainage Systems).

Teesmouth and Cleveland SPA	
	<p>Habitat Loss and Fragmentation/Coastal Squeeze</p> <ul style="list-style-type: none"> • Proposals for design and build should be required to avoid any direct loss of habitat impacts that may lead to habitat loss/fragmentation and/or coastal squeeze. • Any areas outside designated areas where birds are displaced should be mitigated for (for example enhancement/creation, management and monitoring in the current power station and golf course and field to the east). • Reinstatement of any areas affected by temporary construction works and incorporate appropriate habitat creation, management and monitoring. • The use of modern tunnelling techniques should be used for cabling and remote infrastructure, including cooling water culverts, where appropriate to avoid the surface impacts to sensitive areas of the SPA. • An ecological mitigation and management plan should link to the existing integrated land management plan. • A sensitive design should be used for all coastal defence structures and marine landing facilities which are permeable to sediments flows. • Avoid adverse impacts upon sensitive habitats and species which could lead to their loss or fragmentation. Preventative measures implemented should allow for the avoidance of key habitats and/or species during construction works, and ensure that adequate measures are implemented within construction environmental management plans to minimise direct and indirect impacts upon habitats and species of factors such as disturbance, pollution etc. The interest features on the designated sites should guide the identification of potential mitigation and compensation measures. • Maintenance of connectivity of wildlife corridors around the development site should be undertaken as early as possible prior to the development works. • Avoidance of impacts through the safe operation and decommissioning of the development and of

Teesmouth and Cleveland SPA	
	<p>interim waste storage management should be sought.</p> <ul style="list-style-type: none"> • Further studies are necessary to determine risks of the development upon the ecological integrity of the SPA and surrounding areas that may be impacted on before mitigation and an assessment of likely effects can be undertaken. <p>Disturbance (noise, light, visual)</p> <ul style="list-style-type: none"> • Disturbance events in relation to bird species are most significant when they are irregular/sudden and unpredictable. These impacts are relevant all year as both populations of breeding and wintering birds use the designated site. However these impacts would be most severe during the period from November to March due to the number of wintering birds (c. > 24,000) using this European site. Construction activities such as dredging and piling should avoid low tide periods at this time of the year. Noise, light and visual impacts can be managed at the site level through the appropriate phasing and timing of construction (and deconstruction) works which account for the breeding and feeding cycles of designated bird species within the SPA site. Information on flight lines/migration routes/feeding and roosting areas should also be obtained to inform this phasing/timing of works. • Minimise the need for encroachment of construction into sensitive areas through site design. • Screening of the works area and control of the workforce to limit disturbance effects on birds including the timing of activities and the use of sympathetic techniques where appropriate to reduce construction noise levels. • The nature of the mitigation measures required would need to be agreed with relevant Statutory Bodies prior to any commencement of the development. Such mitigation measures would form part of the wider site management plan which requires agreement from developers to ensure their implementation prior to the commencement of any development works. • The draft Nuclear NPS should direct requirements for technologies and operating practices that take account of identified sensitivities in bird and fish populations.

Teesmouth and Cleveland SPA	
	<p>Air Quality</p> <ul style="list-style-type: none"> • Whilst air quality impacts are not listed as key vulnerabilities for this SPA, the Teesmouth and Cleveland Coast SPA is reported to have reached its critical load in terms of nitrogen deposition. Nitrogen deposition may have a deleterious effect on some of the habitats supporting the qualifying bird species, for example sand dune vegetation by promoting plant growth and thereby rendering the open areas that are required for nesting unsuitable for the birds. Therefore the draft Nuclear NPS should take into account the potential for air quality impacts to arise, particularly at a local level. • Sustainable transport plans for example, public transport infrastructure and/or non-road transport means, phasing of development, and the implementation of robust monitoring at sites to track changes in air quality over time should be implemented. • Promotion of the use of carbon-efficient forms of transport. • In addition, the potential for cumulative impacts to arise from other plans and programmes implemented which overlap with the nuclear development in future (for example during the decommissioning phase of the development) should also be considered.
Conclude no adverse effect on integrity?	<ul style="list-style-type: none"> • It is not possible at this stage of the development of the draft Nuclear NPS to say that proposals at Hartlepool would not have an adverse effect on site integrity of Teesmouth and Cleveland Coast SPA as a result of impacts to water quality, habitat loss and fragmentation/coastal squeeze, disturbance (noise, light and visual) or air quality.

Teesmouth and Cleveland Ramsar

- Location: NZ568265
- Size (ha): 1247.31
- Designation: Ramsar

Teesmouth and Cleveland Ramsar	
Qualifying Features	<p>Ramsar criterion 5 Assemblage of international importance:</p> <p>9528 waterfowl (5 year peak mean 1998/99 – 2002/2003)</p> <p>Ramsar criterion 6 – species/populations occurring at levels of international importance Qualifying Species/populations (as identified at designation):</p> <p>Common Redshank, <i>Tringa totanus totanus</i> - 883 individuals, representing an average of 0.7 % of the GB population (5 year peak mean 1998/9 – 2002/3)</p> <p>Species with peak counts in winter: Red Knot <i>Calidris canutus islandica</i> (wintering) - 2579 individuals, representing an average of 0.9 % of the GB population (5 year peak mean 1998/9-2002/3).</p>
Conservation Objectives	<p>Subject to natural change, maintain in favourable condition the habitats supporting the qualifying species (Common Redshank; Red Knot (Ramsar Criterion 6)) and the assemblages of international importance (Criterion 5):</p>

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	<p>The main habitats supporting these species at this Ramsar site are:</p> <ul style="list-style-type: none"> • Sand and mudflats • Shallow inshore waters • Rocky shores with associated boulder and cobble beaches • Saltmarsh • Freshwater marsh
<p>Key Environmental Conditions (factors that maintain site integrity)</p>	<p>Sandflats and mudflats</p> <ul style="list-style-type: none"> • Good sediment quality should be maintained and the sediment budget within the estuary/coastal system should not be restricted by anthropogenic influences. • The location and extent of sandflats is dependent on the extent to which the estuary or coast where they occur is constrained from responding to sea level rise and changing sediment regimes. • Management needs to create space to enable landward roll-back to take place in response to sea-level rise, and should allow the system to be dynamic and retain the flexibility to respond to associated change such as the movement of physical features within the system, for example migrating subtidal sandbanks. <p>Rocky shores</p> <ul style="list-style-type: none"> • Rocky shores are formed by natural processes, including erosion and cliff collapse. • It is important to maintain good quality water at all times. • Prevent anthropogenic activities such as dredging and pipe construction which can cause direct damage to rocky shore habitats.

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	<p>Saltmarsh</p> <ul style="list-style-type: none"> • These are the upper vegetated portions of intertidal mudflats in sheltered coastal locations (for example estuaries, lagoons and beach plains). Plants in this environment (halophytes) are adapted to receive regular immersion by the tides. • Not all saltmarsh habitats require active management. If there has not been a history of grazing, the saltmarsh will be able to maintain itself, and grazing should not be introduced. • Coastal erosion as a result of coastal flood-defence works, rising sea-levels, variation in sediment deposition, and land claim for development.
<p>Vulnerabilities (includes existing pressures and trends)</p> <p><i>Details at Appendix 1</i></p>	<p>Internationally important populations of regularly occurring Annex 1 species</p> <ul style="list-style-type: none"> • Physical damage • Non-physical disturbance <p>Internationally important populations of regularly occurring migratory species</p> <ul style="list-style-type: none"> • Non-physical disturbance • Toxic contamination • Non-toxic contamination <p>Internationally important populations of regularly occurring migratory species</p> <ul style="list-style-type: none"> • Non-physical disturbance • Toxic contamination • Non-toxic contamination
<p>Predicted Impacts</p>	<p>Water Resources and Quality</p> <ul style="list-style-type: none"> • Increased/altered drainage from earthworks and excavation

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<p><i>What are the issues arising from the plan and how might the site be affected?</i></p>	<ul style="list-style-type: none"> ● Potential for toxic contamination from accidental leakage ● Radioactive discharges (accidental and routine) ● Alteration of flow from abstraction ● Changes to water temperature from controlled discharge ● Sedimentation and changes in organic and nutrient loading arising from construction during the construction and decommissioning phases <p>Habitat Loss and Fragmentation</p> <ul style="list-style-type: none"> ● Direct loss of terrestrial, marine (intertidal and subtidal) habitats that support the qualifying bird species for which the Ramsar site is designated for through general construction and deconstruction activities and where encroachment upon the coastal fringe is necessary. ● Fragmentation from encroachment onto surrounding habitats during construction of the nuclear power station and related infrastructure required during the construction and decommissioning phases. <p>Disturbance (noise, light and visual)</p> <ul style="list-style-type: none"> ● Construction and decommissioning activity likely to result in significant local increases in noise events. ● Light pollution and visual disturbance in and around the immediate vicinity of the site. ● Operational activity likely to result in local increases in noise events, light pollution and visual disturbance in and around the immediate vicinity of the site. <p>Coastal Squeeze</p> <ul style="list-style-type: none"> ● Reduction of coastal margin through encroachment of the nominated site into the coastal fringe.

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	<ul style="list-style-type: none"> • Development along the coastal fringe can impact upon erosion and sediment transport regimes that are required to maintain designated habitats and species present within the Ramsar Site. <p>Air Quality</p> <ul style="list-style-type: none"> • Local level impacts (reduced air quality arising from increased emissions from road/transport generation sources) arising from construction decommissioning activities. • Accidental radioactive discharges.
<p>Potential In-combination effects (screening)</p> <p><i>What other plans and programmes could lead to in-combinations effects?</i></p>	<p>The following plans have the potential to contribute ‘in-combination’ impacts in relation to the key issues identified. In-combination impacts may be positive where the plans’ function is to actively manage those identified issues (for example Catchment Abstraction Management Strategies).</p> <p>Water Resources and Quality</p> <ul style="list-style-type: none"> • County Durham Transport Plan • River Basin Management Plan: Northumbria River Basin District • County Durham Local Transport Plan • Local Development Frameworks <p>Disturbance (noise, light and visual)</p> <ul style="list-style-type: none"> • County Durham Local Transport Plan • Local Development Frameworks <p>Air Quality</p> <ul style="list-style-type: none"> • Local Development Frameworks

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	<ul style="list-style-type: none"> • County Durham Local Transport Plan
<p>Appropriate Assessment</p> <p>Likelihood of adverse effect on integrity:</p>	<p>Water Quality</p> <ul style="list-style-type: none"> • Current ¹⁹Environment Agency data (draft classifications) indicates that the Tees, one of three estuaries in the Northumbria River Basin District is falling short of good potential mainly because of the hydromorphological conditions which will need further investigation, to determine the capability of achieving good ecological status or potential. leaving stretches of poor and bad quality. • Given that the Tees is probably one of the most contaminated estuaries in the UK owing to the large industrial and domestic discharges in the vicinity, the exposure level for synthetic and non-synthetic contamination is high as is the degree of vulnerability of the migratory bird populations. The remobilisation of synthetic compounds previously locked up in soft intertidal sediments (from previous developments) has the potential to affect benthic invertebrates within the Ramsar site and in turn the waterfowl that feed upon them. Toxic effects on invertebrates may also be caused by existing discharges. • Radioactive discharges are subject to targets monitored by the EA and of the non-radioactive discharges, nitrate contributions are considered to be the most significant (research cited by the EA in the nuclear sector report). In particular it is noted that there can be measurable localised impacts on sea nutrient levels in the vicinity of discharges. • There is evidence to suggest that toxic compounds can bioaccumulate in birds which can lead to mortality. Contamination by substances such as oil can reduce the quality of habitats for roosting and feeding. Potential sources of toxic contaminants include diffuse and off-site inputs as well as point sources, such as effluent discharges. • Change in water temperature, salinity, nutrient and organic loading can change the type, quality

¹⁹ Environment Agency (2009). River Basin Management Plan: Northumbria River Basin District.

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	<p>and quantity of prey available for Little Tern. Organic and nutrient enrichment and changes in turbidity can cause a reduction in water clarity, thereby reducing the visibility of prey items for Little Terns in particular.</p> <ul style="list-style-type: none"> • Without more up-to-date information on the current status of the water quality in the Tees estuary and bearing in mind that there is no information on discharge levels and the quality of discharge arising from the potential development, it is not possible to determine whether any impacts are likely to be significant • Given that water abstraction requirements, mechanisms used during abstraction and locations for Hartlepool are currently unknown, it is not possible to conclude that water supply to the proposed development would avoid levels of abstraction and direct impacts upon fish species during uptake that lead to adverse effects on the Ramsar site. <p>Habitat Loss and Fragmentation/ Coastal Squeeze</p> <ul style="list-style-type: none"> • Coastal erosion as a result of coastal flood-defence works, rising sea-levels, variation in sediment deposition and land claimed for development have all resulted in coastal squeeze. The net loss of the habitats supporting the qualifying species around the nominated site at Hartlepool may lead to a loss of habitats within this Ramsar site. • The extent of the loss and/or fragmentation of marine and terrestrial habitats from the construction of nuclear reactors, construction areas and other infrastructure and facilities relating to the operation of the nuclear power station is currently unknown given that the exact scope of the development and the requirements for coastal or sea defence infrastructure remain undetermined at this stage. The significance of habitat and species loss arising from the development in the context of wider habitat changes and sensitivities therefore cannot be assessed. At this strategic stage where detailed development plans are unknown, it is therefore not possible to conclude that no adverse impacts upon the SPA would arise from the proposed development with regards to loss and fragmentation of habitats and species.

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	<p>Disturbance (noise, light and visual)</p> <ul style="list-style-type: none"> • Habitats within the site (particularly at Hart Warren Dunes, Seaton Sands and Coatham Sands) provide breeding sites for Little Tern population, therefore operations or activities that adversely affect the functional regime of the areas should be avoided. Little Terns are disturbed by sudden movements of objects and increases in noise disturbance over or adjacent to sand and shingle banks. This can have the effect of displacing the birds from their roosting or feeding grounds. During the breeding season in particular, this may result in disturbance to the nesting birds causing eggs or chicks to be abandoned. • Waders such as Knot, Redshank and Sanderling can be disturbed by sudden movements of objects and increase in noise disturbance over and adjacent to their feeding and roosting sites. <p>Air Quality</p> <ul style="list-style-type: none"> • Information provided by the UK Air Pollution Information System²⁰ indicated that the levels of NO_x and SO₂ were within the critical level for Teesmouth and Cleveland Coast Ramsar site for one of the qualifying species (Little Tern) but at the time of searching for this information, no data for other pollutants was available from the Environmental Agency. • The Environment Agency 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 EA's most recent available assessment of radioactive aerial emissions indicates that all fall within authorised limits.²¹ • Air quality issues around the nominated site at Hartlepool are considered to be most significant

²⁰ <http://www.apis.ac.uk/>

²¹ Measuring Environmental Performance: Sector Report for the Nuclear Industry (Environment Agency, Nov 2005).

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	<p>during construction and decommissioning phases. The potential for cumulative effects from other plans and programmes is minimised by the measures for sustainable development set out in the Natural Commitment²² which reports on the Region's progress towards one of the key regional biodiversity targets and a national PSA target that, nationally and regionally, 95% of all nationally important wildlife sites (underpinning SSSIs) are to be in a favourable condition by 2010.</p>
<p>Possible Avoidance and Mitigation Measures – <i>includes recommendations for policy/proposals</i></p>	<p>Water Resource and Quality</p> <ul style="list-style-type: none"> • Adverse impacts upon surface, ground and estuarine waters should be avoided through the implementation of appropriate safety measures and water quality monitoring. This is primarily the responsibility of the Water Companies (resource planning) and the Environment Agency (abstraction licensing and discharge regulation). However, the draft Nuclear NPS can direct requirements for efficiency of water use and can require that control and regulation measures relating to supply and discharge are in place prior to the implementation of the nominated site proposals. • Careful design of cooling water culverts should be undertaken to avoid the effects of sedimentary processes or thermal regime and should take account of the route length and design of the intake/outfall structures. • Fish protection measures should be incorporated into the cooling water intake/system design. • Adverse impacts should be minimised through safe operation and decommissioning and through the safe transfer and interim storage of waste. • Primary data collection and subsequent laboratory analyses of samples for a full suite of parameters (including radioactive elements) should be undertaken to determine the impacts of the proposed discharge/abstraction regime arising from the development upon the ecology and chemistry of the water resources impacted and upon those species and communities supported

²² English Nature (2003). Natural Commitment, Working together for wildlife in the North East.

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	<p>by this resource.</p> <ul style="list-style-type: none"> • Appropriate construction methods should be incorporated into the construction environmental management plan (CEMP) to minimise the impacts of the development upon water resources and water quality. • Ensure that the volume of cooling water returned is within the capacity of the immediate receiving environment and does not alter the sediment flow. • Surface and groundwater flows should be designed to minimise the impacts (including the use of Sustainable Drainage Systems). <p>Habitat Loss and Fragmentation/Coastal Squeeze</p> <ul style="list-style-type: none"> • Proposals for design and build should be required to avoid any direct loss of habitat impacts that may lead to habitat loss/fragmentation and/or coastal squeeze. • Any areas outside designated areas where birds are displaced should be mitigated for (for example enhancement/creation, management and monitoring in the current power station and golf course and field to the east). • Reinstatement of any areas affected by temporary construction works and incorporate appropriate habitat creation, management and monitoring. • The use of modern tunnelling techniques should be used for cabling and remote infrastructure, including cooling water culverts, where appropriate to avoid the surface impacts to sensitive areas of the Ramsar site. • An ecological mitigation and management plan should link to the existing integrated land management plan. • A sensitive design should be used for all coastal defence structures and marine landing facilities which are permeable to sediments flows. • Avoid adverse impacts upon sensitive habitats and species which could lead to their loss or

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	<p>fragmentation. Preventative measures implemented should allow for the avoidance of key habitats and/or species during construction works, and ensure that adequate measures are implemented within construction environmental management plans to minimise direct and indirect impacts upon habitats and species of factors such as disturbance, pollution etc. The interest features on the designated sites should guide the identification of potential mitigation and compensation measures.</p> <ul style="list-style-type: none"> ● Maintenance of connectivity of wildlife corridors around the development site should be undertaken as early as possible prior to the development works. ● Avoidance of impacts through the safe operation and decommissioning of the development and of interim waste storage management should be sought. ● Further studies are necessary to determine risks of the development upon the ecological integrity of the Ramsar site and surrounding areas that may be impacted on before mitigation and an assessment of likely effects can be undertaken. <p>Disturbance (noise, light, visual)</p> <ul style="list-style-type: none"> ● Disturbance events in relation to bird species are most significant when they are irregular/sudden and unpredictable. These impacts are relevant all year as both populations of breeding and wintering birds use the designated site. However these impacts would be most severe during the period from November to March due to the number of wintering birds (c. > 24,000) using this European site. Construction activities such as dredging and piling should avoid low tide periods at this time of the year. Noise, light and visual impacts can be managed at the site level through the appropriate phasing and timing of construction (and deconstruction) works which account for the breeding and feeding cycles of designated bird species within this Ramsar site. Information on flight lines/migration routes/feeding and roosting areas should also be obtained to inform this phasing/timing of works. ● Minimise the need for encroachment of construction into sensitive areas through site design.

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	<ul style="list-style-type: none"> • Screening of the works area and control of the workforce to limit disturbance effects on birds including the timing of activities and the use of sympathetic techniques where appropriate to reduce construction noise levels. • The nature of the mitigation measures required would need to be agreed with relevant Statutory Bodies prior to any commencement of the development. Such mitigation measures would form part of the wider site management plan which requires agreement from developers to ensure their implementation prior to the commencement of any development works. • The draft Nuclear NPS should direct requirements for technologies and operating practices that take account of identified sensitivities in bird and fish populations. <p>Air Quality</p> <ul style="list-style-type: none"> • Whilst air quality impacts are not listed as key vulnerabilities for this Ramsar site, nitrogen deposition may have a deleterious effect on some of the habitats supporting the qualifying bird species, for example sand dune vegetation by promoting plant growth and thereby rendering the open areas that are required for nesting unsuitable for the birds. Therefore the draft Nuclear NPS should take into account the potential for air quality impacts to arise, particularly at a local level. • Sustainable transport plans for example, public transport infrastructure and/or non-road transport means, phasing of development, and the implementation of robust monitoring at sites to track changes in air quality over time should be implemented. • Promotion of the use of carbon-efficient forms of transport. • In addition, the potential for cumulative impacts to arise from other plans and programmes implemented which overlap with the nuclear development in future (for example during the decommissioning phase of the development) should also be considered.
Conclude no adverse effect on integrity?	<ul style="list-style-type: none"> • It is not possible at this stage of the development of the draft Nuclear NPS to say that proposals

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	at Hartlepool would not have an adverse effect on the site integrity of Teesmouth and Cleveland Coast Ramsar site as a result of impacts to water quality, habitat loss and fragmentation/ coastal squeeze, disturbance (noise, light and visual) or air quality.

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Office for Nuclear Development
Department of Energy & Climate Change
3 Whitehall Place
London SW1A 2AW
www.decc.gov.uk