

Appendices to the Appraisal of Sustainability Site Report for Sizewell

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

Appraisal of Sustainability of the revised draft Nuclear National Policy Statement

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

The AoS/SEA Reports are presented in the following documents:

AoS Non-Technical Summary

Main AoS Report of revised draft Nuclear NPS

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

Annexes to Main AoS Report: Reports on Sites

- Site AoS Reports
- Technical Appendices

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

This document is the Appendices to the Appraisal of Sustainability Site Report for Sizewell. These appendices have been prepared by the Department of Energy and Climate Change with expert input from a team of specialist planning and environmental consultancies led by MWH UK Ltd with Enfusion Ltd, Nicholas Pearsons Associates Ltd, Studsvik UK Ltd and Metoc plc.

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Appendix 1: Sustainable Development Themes and Appraisal of Sustainability Objectives

* Note: additional decision-aiding questions to aid appraisal have been added in red text.

AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)	Guide Questions
Air Quality	
12. To avoid adverse impacts on air quality	Will it result in the release of low level radionuclides that may adversely affect human health or biodiversity? Will it contribute to an increase in the number or expansion of AQMAs?
Biodiversity and Ecosystem Services	
1. To avoid adverse impacts on the integrity of wildlife sites of international and national importance 2. To avoid adverse impacts on valuable ecological networks and ecosystem functionality 3. To avoid adverse impacts on Priority Habitats and Species including European Protected Species	Will it result in the loss of habitats of international/national importance? Will it affect other statutory or non-statutory wildlife sites? Will it result in harm to internationally or nationally important or protected species? Will it adversely affect the achievement of favourable conservation status for internationally and nationally important wildlife sites? Will it affect the structure and function/ecosystem processes that are essential to restoring, securing and/or maintaining favourable condition of a feature or a site? Will the proposal enable the BAP targets for maintenance, restoration and expansion to be met? Will the proposal result in changes to coastal evolution that is otherwise needed to sustain coastal habitats? Will it result in the release of harmful substances for example oil, fuel and other pollution into waterbodies which could affect aquatic ecosystems? Will it result in the accidental migration of radionuclides which could harm aquatic or terrestrial ecosystems? Will it result in changes to stream hydrology and morphology that could affect aquatic or terrestrial ecosystems? Will it result in thermal discharges that could adversely affect aquatic ecosystems? Will it result in soil contamination that could damage aquatic or terrestrial ecosystems?
Climate Change	
13. To minimise greenhouse gas emissions	Will it take account of future effects and risks of climate change for example sea level rise? Will future changes in weather patterns be considered? Will it result in increased vehicular emissions (particularly carbon dioxide)?

AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)	Guide Questions
	Will it result in increased emissions from asset construction, maintenance and demolition, waste recycling and disposal or other activities ? Note: Adaptation to climate change is discussed in other relevant topic appraisals, eg. biodiversity, water, flood risk.
Communities: Population, Employment and Viability	
4. To create employment opportunities 5. To encourage the development of sustainable communities 10. To avoid adverse impacts on property and land values and avoid planning blight	Will it create both temporary and permanent jobs in areas of need? Will it result in in-migration of population? Will it result in out-migration of population? Will it affect the population dynamics of nearby communities (age-structure)? Will it result in a decrease in property and land values as a result of a change in perceptions or blight?
Communities: Supporting Infrastructure	
8. To avoid adverse impacts on the function and efficiency of the strategic transport infrastructure 9. To avoid disruption to basic services and infrastructure	Will it result in changes to services and service capacity in population centres? Will it result in the direct loss of strategic road/rail/air/port infrastructure? Will it result in increased congestion/pressure on key transport infrastructure? Will it result in loss or disruption to basic services and infrastructure (for example electricity, gas)? Will it place significant pressure on local/regional waste management facilities (non-nuclear waste)?
Human Health and Well-Being	
6. To avoid adverse impacts on physical health 7. To avoid adverse impacts on mental health 11. To avoid the loss of access and recreational opportunities, their quality and user convenience	Will it adversely affect the health of local communities through accidental radioactive discharges or exposure to radiation? Will the storage of radioactive waste result in adverse physical and mental health effects for local communities? Will exposure to noise and vibration as a result of plant activities lead to physical and mental health impacts on nearby communities? Will it adversely affect the health of the workforce? Will the perceptions of adverse risk as a result of activities lead to adverse impacts on mental health for nearby communities? Will it result in the loss of recreational and amenity land or loss of access? Will it adversely affect the ability of an individual to enjoy and pursue a healthy lifestyle?
Cultural Heritage	
22. To avoid adverse impacts on the	Will it adversely affect historic sites of international/national importance and their setting?

AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)	Guide Questions
23. internationally and nationally important features of the historic environment. To avoid adverse impacts on the setting and quality of built heritage, archaeology and historic landscapes	Will it adversely affect other historic sites of known value? Will it adversely affect landscapes of historic importance?
Landscape	
24. To avoid adverse impacts on nationally important landscapes 25. To avoid adverse impacts on landscape character, quality and tranquillity, diversity and distinctiveness	Will it adversely affect landscapes within or immediately adjacent to a National Park? Will it adversely affect landscapes in or immediately adjacent to an AONB or National Scenic Area? Will it adversely affect Heritage Coast or Preferred Conservation Zones? Will it adversely affect local landscapes/townscapes of value? Will it affect the levels of tranquillity in an area? Will it adversely affect the landscape character or distinctiveness? Will it result in increased levels of light pollution?
Soils, Geology and Land Use	
19. To avoid damage to geological resources 20. To avoid the use of greenfield land and encourage the re-use of brownfield sites 21. To avoid the contamination of soils and adverse impacts on soil functions	Will it result in the compaction and erosion of soils? Will it lead to the removal or alteration of soil structure and function? Will it lead to the contamination of soils which would affect biodiversity and human health? Will it compromise the future extraction/ use of geological/ mineral reserves? Will it result in the loss of agricultural land? Will it lead to damage to geological SSSIs and other geological sites? Will it result in the loss of Greenfield land? Will it adversely affect land under land management agreements?
Water: Hydrology and Geomorphology	
15. To avoid adverse impacts on surface water hydrology and channel geomorphology (including coastal geomorphology)	Will it result in the increased sedimentation of watercourses? Will it adversely affect channel geomorphology? Will hydrology and flow regimes be adversely affected by water abstraction? Will it result in demand for higher defence standards that will impact on coastal processes? Can the higher defence standards be achieved without compromising habitat quality and sediment transport?
Water: Water Quality (including surface, coastal and marine)	
16. To avoid adverse impacts on surface	Will it cause deterioration in surface water quality as a result of accidental pollution, for example spillages,

AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)	Guide Questions
water quality (including coastal and marine water quality) and assist achievement of Water Framework Directive objectives	leaks? Will it cause deterioration in coastal and / or marine water quality as a result of accidental pollution, for example spillages, leaks? Will it cause deterioration in surface water quality as a result of the disturbance of contaminated soil? Will it cause deterioration in coastal and / or marine water as a result of the disturbance of contaminated soil? Will it affect designated Shellfish Waters? Will it affect Freshwater Fish Directive sites? Will it increase turbidity in water bodies? Will it increase the temperature of the water in water bodies?
Water: Water Supply and Demand	
17. To avoid adverse impacts on the supply of water resources	Will it adversely affect water supply as a result of abstraction? Will it increase demand for water?
Water: Groundwater Quality and Flow	
18. To avoid adverse impacts on groundwater quality, distribution and flow and assist achievement of Water Framework Directive objectives	Will it cause deterioration in groundwater quality as a result of accidental pollution, for example spillages, leaks? Will it cause deterioration in groundwater quality as a result of the disturbance of contaminated soil?
Flood Risk	
14. To avoid increased flood risk (including coastal flood risk) and seek to reduce risks where possible	Will it result in demand for higher defence standards that will impact on coastal processes?

Appendix 2: Appraisal Matrices

Key to Appraisal				
Key to appraisal of Strategic Effects:			Abbreviations:	
Significance		Category of effect	Timescale	
++	Major Significant	Development actively encouraged as it would resolve an existing sustainability problem. Effect considered to be of national/international significance.	C	Construction stage
+	Minor Significant	No Sustainability constraints and development acceptable. Effect considered to be of national/international significance.	O	Operation stage
0	No significance	Neutral effect	D	Decommissioning stage
-	Minor Significant	Potential sustainability issues; mitigation and/or negotiation possible. Effect considered to be of national/ international significance.	Likelihood	
--	Major Significant	Problematical because of known sustainability issues; mitigation or negotiation difficult and/ or expensive. Effect considered to be of national/international significance.	H	High Likelihood
?	Uncertainty	Where the significance of an effect is particularly uncertain, for example because insufficient information is available at the plan stage to fully appraise the effects of the development or the potential for successful mitigation, the significance category is qualified by the addition of ?	M	Medium Likelihood
			L	Low Likelihood

Note: Separate appraisal matrices have been completed for each AoS objective under the Water Quality and Resources topic but the findings are presented in an aggregated appraisal under Water Quality and Resources in the site report.

Air Quality
AoS Objective: 12. To avoid adverse impacts on air quality Guide questions: Will it result in the release of low level radionuclides that may adversely affect human health or biodiversity? Will it contribute to the degradation of air quality – both local and transboundary?
Potential Receptors:
• Local populations and wider regional population (human health) • Sensitive habitats, including Westleton Heath and Suffolk National Nature Reserves; Minsmere-Walberswick Ramsar, SSSI and SAC and SPA; Alde-Ore estuary Ramsar, SPA, SAC and SSSI; Sandlings SPA; and 8 No. SSSIs (Crag Pit, Aldeburgh; Aldeburgh Hall Pit; Round Hill Pit, Aldeburgh; Potton Hall Fields, Westleton; Leiston-Aldeburgh; Sizewell Marshes; Aldeburgh Brick Pit; and Snape Warren).
Potential Significant Effects and Mitigation Possibilities:
International/National/Transboundary 1. The release of non-radioactive gaseous emissions during construction and operation is not likely to have a strategically significant effect, as effects from construction and operation will be localised (see regional/local appraisal below) and controlled through appropriate regulatory regimes and consents/permits (possibly similar in nature to those the existing Sizewell B nuclear reactor currently operates under) and management techniques during construction, operation and decommissioning stages. 2. However, there is potential for release of radioactive emissions, planned and accidental, during the operation and decommissioning of a nuclear power station and waste storage on the site. This has potentially negative significant consequences for a wide demographic area, including the Ipswich conurbation due to prevailing wind direction (south west to south-south west). The potential effects of release of radiation are discussed in the main AoS report, however, detailed modelling will be required and considered as part of the HSE and Environmental Regulators risk assessment as carried out for the consenting process. There is, however, an opportunity to employ any lessons learned from the decommissioning of the Sizewell A nuclear reactor and the currently operational Sizewell B reactor (anticipated operational period up to at least 2035).

Air Quality

3. There is a small risk that increased concentrations of airborne pollutants or nutrients could have an adverse effect on adjacent sites of nature conservation interest. Any accidental or planned release of radioactive emissions may also affect sensitive ecosystems. This is discussed further in the Biodiversity and Ecosystem Sections.

Regional/Local

4. Air quality in Eastern England is relatively good with an average air quality index score of <3 (where 1-3 good, 4-6 moderate, 6-9 poor and 10 bad). However, pockets of relatively poor air quality exist in the region, particularly in urbanised areas and major route corridors that experience high levels of traffic flow. One Air Quality Management Area (AQMA) has been declared in the Suffolk Coastal District Council Region (Woodbridge, approx 25 km southwest of Sizewell), however the effect on air quality is not likely to be significant, provided construction and operation is in accordance with regulatory/consenting regimes.
5. It is unlikely that the development project will lead to the designation of any new AQMAs in the region due to the duration of construction activities, or the extension of the existing AQMA and by virtue of distance.
6. As with any major infrastructure project, the emission of pollutants to the atmosphere associated with transport and the generation of fine particulates and dust during construction have the potential for local nuisance and impacts on health within a zone of influence from the construction site. Air pollution can be minimised and controlled through working in accordance with good site environmental practices and managed through the use of Construction Environmental Management Plans. This is discussed in further detail in Section 9 of the AoS report.
7. The release of radioactive emissions from the site will be governed by HSE and the environmental regulator through the development of appropriate discharge limits, as part of the permits under the Environmental Permitting (England and Wales) Regulations 2010 (the Radioactive Substances Act 1993 still applies in Scotland and Northern Ireland). This will be specific to the reactor type being used, alongside the siting and sensitivity of the receiving environment.
8. There is a small risk that increased concentrations of airborne pollutants or nutrients could have an adverse effect on adjacent sites of nature conservation interest. Any accidental or planned release of radioactive emissions may also affect sensitive ecosystems. This is discussed further in the Biodiversity and Ecosystem Sections.

Summary of Significant Strategic Effects:

Timescale	C	O	D
Significance	-	-?	- ?
Likelihood	M	L	L

Air Quality	
Significant Effects • Release of non-radioactive emissions is unlikely to have a strategically significant effect on air quality • There is a small risk that increased concentrations of airborne pollutants or nutrients could have an adverse effect on adjacent sites of nature conservation interest. • Release of radioactive emissions (planned and accidental) can have a significant strategic effect on air quality, including transboundary effects. The HSE and Environmental Regulator will consider this as part of the HSE and Environmental Regulators risk assessment carried out as part of the consenting process and must be satisfied risk to public health and safety is within acceptable limits.	Mitigation and Monitoring Possibilities • Refer to mitigation measures contained in the Biodiversity and Ecosystems Sections. • Release of radioactive emissions controlled through regulatory process and risk assessment undertaken for consenting process.

Biodiversity and Ecosystems

AoS Objective:

1. To avoid adverse impacts on the integrity of wildlife sites of international and national importance.
2. To avoid adverse impacts on valuable ecological networks and ecosystem functionality.
3. To avoid adverse impacts on Priority Habitats and Species including European Protected Species.

Guide questions:

Will it result in the loss of habitats of international/national importance?

Will it affect other statutory or non-statutory wildlife sites?

Will it result in harm to internationally or nationally important or protected species?

Will it adversely affect the achievement of favourable conservation status for internationally and nationally important wildlife sites?

Will it affect the structure and function/ecosystem processes that are essential to restoring, securing and/or maintaining favourable condition of a feature or a site?

Will the proposal enable the BAP targets for maintenance, restoration and expansion to be met?

Will the proposal result in changes to coastal evolution that is otherwise needed to sustain coastal habitats?

Will it result in the release of harmful substances, for example, oil, fuel and other pollution into waterbodies which could affect aquatic ecosystems?

Will it result in the accidental migration of radionuclides which could harm aquatic or terrestrial ecosystems?

Will it result in changes to stream hydrology and morphology that could affect aquatic or terrestrial ecosystems?

Will it result in thermal discharges that could adversely affect aquatic ecosystems?

Will it result in soil contamination that could damage aquatic or terrestrial ecosystems?

Potential Receptors:

- Minsmere to Walberswick Heaths and Marshes SAC – adjacent to the north of the site.
- Minsmere-Walberswick SPA – adjacent to the north of the site.
- Sandlings SPA – approximately 1.75 km to the south west of the site.
- Minsmere Walberswick Ramsar – adjacent to the north of the site.
- Outer Thames Estuary SPA – adjacent to site, off shore
- Sizewell Marshes SSSI – adjacent and within site area, proposed access road to pass through the SSSI.
- Minsmere-Walberswick Heaths and Marshes SSSI – adjacent to the site, forms a component part of the Minsmere-Walberswick Heaths and Marshes

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SAS and the Minsmere-Walberswick SPA/Ramsar.

- Leiston-Aldeburgh SSSI – approximately 1.75 km south of the site, forms a component part of the Sandlings SPA.
- Alde-Ore and Butley Estuaries SAC – approximately 6 km south of the site.
- Alde-Ore Estuary SPA/Ramsar - approximately 6 km south of the site
- Alde-Ore Estuary SSSI - approximately 6 km south of the site, forms a component part of the Alde-Ore and Butley Estuaries SAC and the Alde-Ore Estuary SPA/Ramsar.

Priority habitats and species (including European Protected Species): habitats include lowland meadows, coastal grazing marsh, lowland dry acid grassland, lowland heathland, reedbeds, annual vegetation of driftlines, perennial vegetation of stony banks, coastal lagoons and coastal vegetated shingle. Associated protected species include nationally important breeding and wintering bird species (including Bittern, Avocet, Nightjar, Marsh Harrier, Hen Harrier, Nightingale, Woodlark, Little Tern, Red Throated Diver, wading and waterfowl species), bat species, reptiles, Great Crested Newt, nationally important invertebrate species, Badger, Otter and Water Vole.

Local network of arable farmland, grassland, hedgerows, woodland, scrub and coastal dune vegetation with potential local populations of breeding and wintering birds, bats, reptiles, Great Crested Newt, invertebrates, Badger, Otter and Water Vole.

Potential Significant Effects and Mitigation Possibilities:

International/National/Transboundary

1. **Disturbance (noise, light and visual)** effects during construction (scheduled for up to 6-7 years) and both operation/decommissioning could have an adverse impact on nationally important species of breeding and wintering birds associated with the Minsmere-Walberswick SPA/Ramsar site, the Outer Thames Estuary SPA, and Sizewell Marshes SSSI designated areas. Visual and noise disturbance could arise from general construction site activities, the increase in the number of workers on site, including any temporary workers' accommodation on site, and their work adjacent to and within the designated sites, from the presence of construction plant and equipment, construction traffic, and site lighting. The Minsmere-Walberswick SPA/Ramsar site is nationally significant for several species including breeding Bitterns, Nightjar, Avocet, Little Tern and waterfowl, and overwintering Hen Harrier and waterfowl. Sizewell Marshes SSSI also hosts nationally significant breeding species typical of wetland habitats including Bittern and several species of wader and waterfowl; a new access road is proposed by the nominator that will cut through a section of the SSSI. In addition, it is uncertain what impact the nominated site will have on the Sandlings SPA, Leiston-Aldeburgh SSSI and Alde-Ore Estuary, both nationally important for breeding and wintering birds including Nightjar and Woodlark. There is the potential for disturbance effects on important bird species utilising designated areas to be affected by primarily the construction but also operational and decommissioning phases of the nominated site which could

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result in the birds avoiding their preferred areas for breeding, feeding or roosting and being displaced. The nominator will need to assess the potential for disturbance effects especially during construction but also during operation and decommissioning on birds in the affected designated areas, and within the development footprint, to define measures to avoid or minimise such effects.

2. Direct loss and fragmentation of priority habitats and habitats used by priority species, during construction, from earthworks and excavations, construction of new power station buildings and infrastructure, including new roads, buildings and storage facilities, on terrestrial and coastal priority habitats. The construction of infrastructure to accommodate a new plant which is proposed to include cooling water infrastructure, coastal defences, and a marine landing facility, may result in the encroachment of development onto both the foreshore and inland resulting in the loss of both key coastal and terrestrial habitats associated with the Minsmere-Walberswick Heaths and Marshes SAC/SSSI and Sizewell Marshes SSSI, and aquatic habitats associated with the Outer Thames Estuary SPA. Direct loss of habitat is likely to occur to accommodate a marine landing facility and new access road, passing through Kenton Hills and the Sizewell Marshes SSSI. In addition, the permanent presence of site buildings and infrastructure, including roads and lighting, will lead to longer-term loss, fragmentation and disturbance of habitats which could comprise severance of wildlife corridors, such as any commuting and foraging routes used by bats through the site. The potential for priority habitats and areas used by priority species should be retained within the site, and new habitats should be created to mitigate for any impacts; such measures will need to be considered by the nominator in the site design and layout, including the routing and location of roads and other infrastructure, and measures should be defined in the nominator's proposals and EIA to avoid or minimise such losses. Further detailed site level surveys would be required to determine a baseline for the prediction of the effects of developing the site on any protected species within the development footprint in order to implement suitable mitigation measures, as proposed in the nominators EIA Scoping Report and DECC Scoping Opinion.
3. Hydrological impacts: The site is hydrologically continuous with the adjacent Sizewell Marshes SSSI, and given the importance of this area, any impacts upon the local water table through the need for dewatering of the site during construction, would need to be fully understood and any potential impacts mitigated.
4. The abstraction of water for cooling purposes can lead to incidental mortality of fish and other aquatic species. Fish, larvae and eggs can be sucked into condenser circuits and subject to heat before being returned to the sea. The coastal waters of the North Sea adjacent to Sizewell are important and prosperous fisheries for a range of commercial species, with a regional focus on Sole *Solea solea*. Surveys of the biological communities adjacent to the exiting Sizewell power stations, undertaken in 1991, found that communities present were in accordance with the natural features of the Suffolk coast and indicate a relatively constant faunal assemblage. BE's EIA Scoping Report states that countermeasures and assessments have, in the past, focused on the commercial fish species of *Solea solea*, with the existing Sizewell B offshore intake deliberately placed in deep water and designed to reduce likely fish catches. The station also employs a return system which allows more robust fish to survive. Further studies will be required by the nominator to assess the effects on aquatic ecology from abstraction for the site and to identify a suitable intake/system design which avoids significant ecological effects to the fish/benthic assemblages.
5. Discharge of the heated water (up to 10°C warmer) used in the power station's cooling system into the North Sea may result in changes to aquatic

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ecology in areas affected by higher temperatures, which may be negative, or positive for certain species. Both changes to water quality and water temperature can impact species composition and encourage excessive algal growth, which could result in wider impacts on commercial fisheries and the wider marine environment including feeding birds associated with the Minsmere-Walberswick SPA/Ramsar. Discharges of heated water from a new power station would be released in addition to that from the existing Sizewell 'B' power station for its remaining operational lifetime; the impact of cumulative discharges is not known. Further studies should be required to understand fully the extent and likely significance of effects on aquatic ecology, especially in relation to commercial fisheries and bird populations associated with Minsmere-Walberswick SPA/Ramsar within the zone of influence from the site.

6. Routine releases of radioactive discharges to water during operation, to the aquatic environment of the North Sea, is envisaged as being, for all reactor designs being considered through the GDA process, within authorised limits that will be set by the relevant agency under the Environmental Permitting (England and Wales) Regulations 2010. Aquatic discharges from a new power station would be released in addition to those currently discharged to the area under authorisation from the existing Sizewell 'B' power station for its remaining operational lifetime. The marine, estuarine and inland habitats/species associated with the Minsmere-Walberswick Heaths and Marshes SAC/SSSI and Alde-Ore and Butley Estuary SAC/SSSI that are particularly vulnerable to contamination with toxic compounds, including through direct contact or accumulation of toxins and radionuclides through the food chain. Further studies will be required to understand fully the extent and likely significance of effects on aquatic ecology of proposals for additional radioactive discharges from the site.
7. There is a 'very small risk' of accidents or incidents at any nuclear power station site leading to unplanned release of radiation into the environment, during operation, including from interim radioactive waste storage, during decommissioning activities, and during transport of radioactive waste for final disposal. There is also the potential for accidental discharges of pollutants by leaks or spillages from the additional wastewater treatment plant that would be required. Such releases could adversely affect terrestrial and aquatic flora and fauna associated with the Minsmere to Walberswick Heaths and Marshes SAC, Minsmere to Walberswick SPA/Ramsar/SSSI, Sizewell Marshes SSSI and Alde-Ore Estuary SAC/SPA/Ramsar/SSSI, such is the diffuse and mobile nature of these ecosystems. However, the operation of nuclear power stations, including waste storage, and decommissioning activities and the transport of radioactive waste, are subject to strict regulatory controls which aim to minimise such risks, and the likelihood of any effect is considered low. The designated sites and local ecological systems are currently subject to these risks from the existing Sizewell 'B' power station. Further studies are likely to be required to assess the risks and potential effects of the occurrence of such events on biodiversity.
8. There is potential for local changes in the air quality from increased development/traffic growth, and emissions (nitrogen oxides, sulphur dioxide) arising from construction/decommissioning and operational activity (argon-41, krypton-85 and tritium). An increase in airborne pollutants can lead to nutrient loading that can impact through the ecosystem to affect protected species associated with the Minsmere to Walberswick Heaths and Marshes SAC and Sizewell Marshes SSSI sites. Further background environmental condition information and modelling is likely to be required to predict potential impacts of local changes in air quality and the effects of planned or accidental releases of radioactive emissions over a larger scale/time frame.

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9. The area could be a focus for a number of potential high profile projects involving both nuclear and renewable energy options, the cumulative effects of which are likely to be significant to the overall impacts on biodiversity, for example the continued operation of Sizewell B power station, decommissioning of Sizewell A (and B) power stations.				
Regional/ Local				
10. Site construction may lead to direct loss of habitats and disturbance of associated species, with severance of wildlife corridors, as noted above for inter/national biodiversity issues. These losses may adversely affect ecological networks within the locality for mobile protected species reliant on wildlife corridors and wider connectivity within the landscape. Further site level surveys would be required to determine a baseline for the prediction of the effects of developing the site on habitats and protected species within the development footprint in order to implement suitable mitigation measures.				
11. The pollution of watercourses with sediment, oil, fuel, cement or other substances during construction, from general construction site activities, earthworks and excavations, site drainage works and use of vehicles, could affect habitats and species in the local network of watercourses especially those associated with the Sizewell Marshes SSSI which is hydrologically continuous to the site. Contamination by synthetic and non-synthetic compounds is also potentially an issue for the Minsmere to Walberswick Heaths and Marshes SAC, as toxins can bind to sediments, affecting supporting species. Changes in organic and nutrient loading can also change species composition of plants. Mitigating methods will need to be adopted during all phases of the plants lifecycle to reduce pollution contamination, with regular water monitoring in place.				
Summary of Significant Strategic Effects:			Timescale	C O D
			Significance	--? --? --?
			Likelihood	M M M
Significant Effects		Mitigation and Monitoring Possibilities		
Noise, visual and light disturbance during construction may impact upon important bird populations, key species associated with both the surrounding European designated Natura 2000 sites and Ramsar wetland site and other protected species, for example bat species.		Minimise need for encroachment of construction into sensitive areas through site design. Construction environmental management plan to minimise disturbance, for example through timing, visual/noise screening.		
Direct loss and fragmentation of priority terrestrial habitats and disturbance to species during construction of power station, access road and other site infrastructure. Permanent habitat		Avoid or minimise losses through site layout design and location/routeing of infrastructure.		

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loss and severance of wildlife corridors through presence of buildings, roads and lighting. • Potential changes to the water table through dewatering of construction site and presence of operational site, affecting the hydrological regime associated with Sizewell Marshes SSSI. • Impact of cooling water abstraction on fish species and aquatic ecology associated with the qualifying features of surrounding Natura 2000 sites. • Impact of discharge of heated waters on aquatic ecology in relation to surrounding Natura 2000 sites. • Routine discharges of radioactive liquids during operation, potential for accumulation in aquatic environment and harm to species. • Small risk of accidental discharges of radioactive materials to aquatic environment. • Pollution of water courses from construction and operational activities, with impact on Sizewell Marshes SSSI and other surrounding Natura 2000 sites. • Changes in air quality and potential effects on qualifying features of Natura 2000 Sites. • Cumulative effects with other energy and development projects, including the operation of the existing Sizewell 'B', decommissioning of Sizewell 'A'.	Habitat creation to replace lost habitats and maintain connectivity of wildlife corridors around site. Ecological mitigation and management plan, adapted for the site. • Further studies needed to fully understand potential hydrological effects of site development. • Incorporation of fish protection measures within cooling water intake/system design. Further studies necessary to determine impact. • Further studies necessary to determine impact. • Avoidance through safe operation and decommissioning and waste storage and transfer. • Further studies necessary to determine risks. • Avoidance through safety measures and water quality monitoring. • Avoidance through safety measures and water quality monitoring. Further studies to determine significance. • Further studies necessary to determine impact.

Climate Change	
AoS Objective: 13. To minimise greenhouse gas emissions Guide questions: Will it result in increased vehicular emissions (particularly carbon dioxide)? Will the development result in an overall reduction in greenhouse gas emissions over its life time resulting from changes in: Transport of people and goods • Scope, form and methods of asset construction, maintenance and demolition • Waste recycling and disposal • Land management practices • Other secondary activities in the wider local and national economy Note: Adaptation to climate change is discussed in other relevant topic appraisals, eg. biodiversity, water, flood risk.	
Potential Receptors:	
Human population and environment at all geographical scales.	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary 1. The effects of changes in greenhouse gas emissions as a result of the proposed development have national and international effects, particularly when combined with a wider nuclear programme. The benefits of the low carbon emissions from the operation of nuclear power stations due to this technology and that are independent of the site chosen are considered in the overarching AoS report. Emissions during the operational phase of the power station are significantly lower than that of any non-nuclear (conventional fossil fuel-powered) facility delivering equivalent power output. 2. During the operational phase, the carbon footprint is similar to those of wind power with equivalent output but with significantly less land or area	

Climate Change	
	coverage.
3.	This consideration is independent of any life-cycle (embodied) carbon emission analysis, which is currently outside the scope of this study.
4.	Although the effects of any emissions will be felt globally, the emissions during construction and decommissioning will largely be determined by regional and local factors (for example local transport infrastructure and how the location of the site will affect transport emissions).
5.	Construction and decommissioning activities will have both direct and indirect greenhouse gas emissions associated with them regardless of the location of such plants. A comparison of these construction and decommissioning related emissions to those of fossil-fuelled power plants will largely depend upon the design parameters of such plants with the exception of specific sub-activities associated with nuclear fuel and nuclear wastes.
Regional/Local	
6.	The provision of a nuclear power station for energy generation at the site will make a positive contribution to future local and national climate change targets. The combination of nuclear power generation with increased investment in renewable energy sources will assist in reducing greenhouse gas emissions compared to no nuclear power facility option in the region.
7.	The activities involved in the construction of the plant are likely to have a negative impact on targets for reductions in carbon from transport and construction plant. The materials incorporated in the plant will also contribute to levels of embodied carbon in the region. The extent will depend upon the methods of transport and construction adopted and on the types and quantities of materials incorporated in the plant. There is potential for sea transport to be used for major items of plant and equipment. The indirect impacts associated with the construction phase could be higher in totality than the emissions of the construction activity itself. These include the influx of labour population, increased population vehicular usage, transport of materials, and higher demand on utilities.
8.	Other considerations include the possibility of the need to expand road or rail transport in order to accommodate the construction technical and upgrade demands in a rural setting. The net cross-cutting impacts of emissions on biodiversity, land, water, population and health should be considered - opportunities of applying better transport, material and application design aspects may seek to minimise these impacts.
9.	Energy and climate change impacts from decommissioning the plant at the end of its life are not sensitive to the site location other than the distance that will be required to transport nuclear waste to any long term waste Geological Disposal Facility. The means of disposing of nuclear waste, including spent fuel, from new nuclear power stations is being considered as part of the Government's programme for Managing Radioactive Waste Safely.
10.	The site is situated in a region more susceptible to the following compared to other regions such as the South West. These susceptibilities are:

Climate Change						
• a rise in overall temperature that could be between 2- 5 °c • hotter and drier summers, milder and wetter winters • summer rainfall could see a drop of up to 45- 50% • winter could see rainfall increasing by up to 30% • a rise in sea levels of between 22-28cm • longer growing seasons with no dominant season • lower humidity and drop in soil moisture levels potentially affecting trees and woodlands						
11.	The site sits in the region of East of England which ranks 5 th in carbon emissions per capita but the largest emitter per head from domestic sources. The advent of a new nuclear power plant may have positive implications on public transport infrastructure investment and improvement on the one hand and to assist in investment in the low carbon technologies in the construction sector, including domestic housing.					
12.	Carbon dioxide emissions from gas consumption are above average levels for at least two nearby towns of Bury St Edmunds and Ipswich compared to the other major towns and cities in the region. The development of a new nuclear power plant is likely to contribute to much lower emissions from electricity generation that could replace or offset the gas consumption. Replacement or offsetting of gas consumption with nuclear power electricity generation may have positive energy security implications that will be considered at NPS level.					
Summary of Significant Strategic Effects:			Timescale	C	O	D
			Significance	-	++	-?
			Likelihood	M	H	L
Significant Effects			Mitigation and Monitoring Possibilities			
• The reductions in greenhouse gas emissions due to the operation of nuclear power plants compared to alternative fossil fuel sources of energy will have positive long term effects during the operational stage and longer term. The cumulative benefits of a nuclear programme for climate change are further discussed in the main AoS report.			• Appropriate sea and coastal defence measures along with flood alleviation designs should be seriously considered. • The impacts during construction may be			

Climate Change	
• The site is particularly susceptible to the future impacts of climate change associated with sea level rise, flooding, drought, coastal erosion and more intense storm and weather events. Of this the sea level rise is most likely to affect the latter half of the site's operational and the site's decommissioning phase. • Locating a nuclear power station on Sizewell could have a positive multiplier effect on the further investment and implementation of other renewable (low carbon) energy sources in the region. • Construction activity will produce an increase in greenhouse gas emissions, but will make only a relatively small addition to the regional inventory of emissions in comparison to the low carbon energy output of the station. This is discussed in the main AoS Report. • The operational phase of the power station is likely to have far lower carbon footprint compared to those of fossil-fuel powered stations providing similar power output.	- mitigated by selection of carbon-efficient forms of transport and construction. There is also the possibility of offsetting the emissions. • The greenhouse gas emissions arising from construction and operation should be monitored to inform carbon reduction through the lifetime of the project.

Communities: Population, Employment and Viability	
AoS Objective: 4. To create employment opportunities. 5. to encourage the development of sustainable communities 10. To avoid adverse impacts on property and land values and avoid planning blight Guide questions: Will it create both temporary and permanent jobs in areas of need? Will it result in in-migration of population? Will it result in out-migration of population? Will it affect the population dynamics of nearby communities (age-structure)? Will it result in a decrease in property and land values as a result of a change in perceptions or blight?	
Potential Receptors:	
Local and regional resident workforce Local and regional population	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary No significant effects identified at this scale.	
Regional/Local 1. Short-medium term positive effects through creating new jobs for local and regional population. The quality and quantity of employment during the construction stages (approx 5-6 years) of the reactor will differ to the operational stage (approx 30 years), where longer-term employment will lead to quality of life benefits. Labour requirements will tail-off towards the end of the operational stage however, decommissioning will still require significant levels of labour for a minimum of 30 years. The significance of the effect is greater at the local level, whereas at the regional level this is of minor significance, as jobs are absorbed into regional employment figures.	

Communities: Population, Employment and Viability

2. The existing operational reactor at Sizewell B is a significant local employer, employing over 500 full-time staff and 250 from contract partners. A new power station may assist in offsetting future job-losses once Sizewell B is closed and decommissioned, however, it is noted the time difference between decommissioning (estimated to be 2035) and construction of any new reactor will likely require employees to seek employment elsewhere.
4. Positive effects through the provision of training, education and upskilling for employees and contractors in the region.
5. Positive multiplier effects (for both nuclear-related industry and wider industry as a result of increased demand from an incoming population). Of greater significance at the local level.
6. Some uncertainty is identified as the construction may affect the ability of other industries/projects to source labour, for example for house-building in region, potential expansion of Stansted Airport, A14 upgrade. Problems related to sourcing construction labour have been identified by the Institute of Civil Engineers, where predicted growth in the East of England's construction sector is higher than the national average, but the skills supply is significantly below it, particularly of highly trained and experienced engineers. Likely changes to the population dynamics of local communities - with potential positive and negative effects. Effects dependent on source of labour, for example from local community or outside. Possible negative effects during construction stage as a temporary new community (construction labour) may not integrate with existing community. Longer term, new employees likely to be drawn from a wide area, including local communities and the wider area generally up to 25 mile radius, with less pressure on local services. Positive economic and social benefits likely as new population will require new services and facilities and will help to support existing services.
7. Potential for adverse effects on property values within close proximity to site. Mitigation possible. No evidence to suggest significant effects beyond immediate site surrounds.

Summary of Significant Strategic Effects:

Timescale	C	O	D
Significance	+	+	0
Likelihood	H	H	M

Significant Effects

- Strategic effects are considered minor positive with regard to the creation of temporary jobs during construction and permanent full-time employment during operation, although some uncertainty identified as the project may lead to a shortage of local construction workers to meet the needs of other industries and major projects in the East of England region.

Mitigation and Monitoring Possibilities

- Consideration may need to be given to potential negative effects/difficulties in sourcing labour and the effects of this on the local/regional construction industry.

Communities: Supporting infrastructure

AoS Objective:

- 8. to avoid adverse impacts on the function and efficiency of the strategic transport infrastructure
- 9. to avoid disruption to basic services and infrastructure

Guide questions:

- Will it result in changes to services and service capacity in population centres?
- Will it result in the direct loss of strategic road/rail/air/port infrastructure?
- Will it result in increased congestion/pressure on key transport infrastructure?
- Will it result in loss or disruption to basic services and infrastructure (for example electricity, gas)?
- Will it place significant pressure on local/regional waste management facilities (non-nuclear waste)?

Potential Receptors:

- Local and regional population
- Existing transportation and service infrastructure
- Existing waste management infrastructure

Potential Significant Effects and Mitigation Possibilities:

International/National/Transboundary

The area is connected to the main A12 via local A roads and the A12 (Lowestoft to Ipswich and London) is the subject of strategic local development of improvements (i.e. bypasses). The A14 (Ipswich to Newmarket) has been identified as a national road route. Congestion issues in the local area are noted in the region's population centres (Ipswich, Bury St Edmunds, and Lowestoft). There are congestion issues on strategic routes, particularly the A14 where a number of junctions are reaching capacity.

Future growth associated with regeneration is being taken forward in partnership with the Highways Agency. Strategic development plans are in place for a scheme to provide a new route for the A12, bypassing the four villages of Farnham, Stratford, Glenham and Marlesford and providing a better route alignment.

Communities: Supporting infrastructure

Regional/Local

1. Negative effects identified for transportation network. Nature and significance of effects depend on mode of transport, and further details on construction workforce, timeframes and volume of materials to be transported.
2. Non-nuclear construction waste will need to be further considered once details are available, including the volume and type of waste likely to be produced and transportation routes.
3. Capacity of the regional infrastructure that exists at the particular lifecycle stage of the facility will need to be considered to ensure sufficient planning of the management of wastes generated. Implementation of current good practice and initiatives will assist in minimising impacts on existing waste facilities. Such initiatives include the preparation of a Construction Waste Management Plan during the construction stage, and sustainable waste management / minimization during operation.
4. As with the operation of any medium to large industrial facility, there is the potential for accidental releases of non-radiological, but hazardous, wastes (such as waste oils and lubricants) during the operational and decommissioning phase of the facility that can impact on habitats and species, including wintering birds, and migratory fish. It is anticipated any effects will be local however and not strategic: implementation of sustainable management techniques during these phases will reduce the risk of any such releases.
5. Operational waste (non-radiological), including those classed as hazardous (waste oils, lubricants etc) will have impacts upon the capacity of existing waste management services. Any such impacts are however not expected to be significant as it may be possible to utilize and extend the current arrangements for the existing nuclear facility.
6. It is not likely that significant impacts on the current waste management infrastructure will be caused by non-radiological wastes generated during the decommissioning phase of the facility. Best practice and statutory obligations at the time of the process shall be implemented to ensure a sustainable approach is taken to the management of the wastes generated and protect the wider environment (local air quality and amenity). There is however an opportunity to employ any lessons learned from the decommissioning of the Sizewell A nuclear reactor and the currently operational Sizewell B reactor (anticipated operational period up to at least 2035).
7. Long term pressures and effects on the (non-radiological) waste management infrastructure are unlikely to be significant.
8. Any influx of a new temporary workforce will place pressure on existing infrastructure, social and community services, as will increased population in local towns and villages in the longer term. This may require augmentation of existing services (including electricity and wastewater infrastructure) to cope with demand, however is not considered to have a significant effect. Further details regarding the sourcing of the workforce will be required to consider this at the detailed planning stage.

Communities: Supporting infrastructure				
9. The development of a nuclear power station at Sizewell may require new power lines to be built, or existing lines to be upgraded, to connect the facility with the National Grid. The potential impact of new or upgraded power lines will be considered in a separate Networks National Policy Statement (NPS), due to be published by the Government in November 2009.				
Summary of Significant Strategic Effects:			Timescale	C O D
			Significance	- - -
			Likelihood	M M M
Significant Effects		Mitigation and Monitoring Possibilities		
- Potential for significant effects on strategic road infrastructure through increased congestion/ disruption of traffic. This may lead to increased congestion during construction, operation and decommissioning stages. - Potential for negative effects on local access road network due to transport of large loads during construction <i>via</i> minor country roads.		- Further studies will be required to assess in detail the effects on the strategic road network as well as local access roads. - Appropriate mitigation measure to reduce the effects of transportation could include a Transport Management Plan (construction and decommissioning) and Green Travel Plan (construction, operation and decommissioning). Consideration of alternatives to road for the transport of large loads (for example transport by rail).		

Human Health and Well-being
AoS Objective: 6. To avoid adverse impacts on physical health. 7. To avoid adverse impacts on mental health. 11. To avoid the loss of access and recreational opportunities, their quality and user convenience. Guide questions: Will it adversely affect the health of its workforce or local communities through accidental radioactive discharges or exposure to radiation during construction, operation, decommissioning and interim storage of radioactive waste on the site? Will it lead to unacceptable community disturbance during construction, operation or decommissioning? Are there any particularly vulnerable local communities that could be affected? Will it help to reduce any health inequalities? Will local perceptions of risk associated with the proposed power station lead to adverse impacts on mental health for nearby communities? Will it adversely affect the ability of an individual to enjoy and pursue a healthy lifestyle?
Potential Receptors:
• Temporary local and regional resident workforce during construction and decommissioning phases. • Permanent and temporary workforce during site operational phase. • Local and regional resident population, visiting tourists and recreational users. • National and international resident population.
Potential Significant Effects and Mitigation Possibilities:
International/National/Transboundary 1. National and transboundary health risks: There is a potential for any radioactive material discharged from a new nuclear power station at the site to travel both nationally and internationally (for example to countries on the European continent). However, current radiological monitoring of the nuclear power stations that have been on the Sizewell site since 1966 (see Appendix 4), suggests that the risk to the public is extremely low with total dosage from all sources (including direct radiation) estimated as being less than 0.5% of the limit specified in the Ionising Radiations Regulations 1999. With

Human Health and Well-being

regard to transboundary effects, there is a requirement under Article 37 of the Euratom Treaty for the United Kingdom, before plant authorisation can be granted, to submit its assessment of the likely effects to a panel of European experts who decide whether contamination of the water, soil or airspace of another Member State is likely to take place.

2. **Exposure Limits:** The radiation to which members of the public are exposed by the operations of a nuclear power station is limited to 1 mSv per year.¹ This limit applies to all members of the public, including those who receive the highest doses as a result of the location of their homes and their habits of life. It also applies to the cumulative effects of planned exposures from all sources of radiation, excluding medical exposures of patients and natural background radiation. This will need to be taken into account when planning all future power plants in terms of their size, design, position and allowed emissions and discharges. Therefore, the exposures of people living near to a new nuclear power stations have to be less than the dose limit taking into account exposures from any other nearby sites and any past controlled releases. This statutory dose limit is reinforced by the concept of ALARP (As Low As Reasonably Practicable), which is used by the nuclear regulators to reduce doses to as low as is reasonably practicable

Regional/Local

3. **Health impacts from routine discharges:** The strict regulatory framework, to restrict both routine discharges from nuclear power stations and direct radiation exposures to workers and the general public, should reduce potential health impacts to acceptable levels and ensure that radiation doses are well within internationally agreed limits. The relevant regulators, by means of a statutory authorisation procedure, will require the operators of nuclear plants to ensure that the exposure of workers and the public to radioactivity from nuclear sites is kept below stringent legal limits which are as low as is reasonable achievable. This system of regulation should ensure that the permitted discharges from the proposed nuclear power station at Sizewell do not cause unacceptable risk to health.
4. **Transmission Lines:** It is possible that the proposed power station will require additional electricity transmission lines to link its output to the national grid system. Given the current uncertainty regarding the health effects of prolonged low level exposure to electromagnetic fields (EMFs) it is recommended that, in keeping with Health Protection Agency advice², a precautionary approach be adopted to the routing of any required power lines.
5. **Risk of accident – unplanned release of radiation:** During the operation of the nuclear power station, there is a risk of unplanned release of radiation into the environment leading to adverse health impacts. However, the risk of such an accident is very small because of the strict regulatory regime in

¹ This is through the Ionising Radiations Regulations 1999 <http://www.statutelaw.gov.uk> (which includes all activities carried out under a nuclear site licence granted by the Nuclear Installations Inspectorate under the Nuclear Installations Act 1965) http://www.opsi.gov.uk/RevisedStatutes/Acts/ukpga/1965/cukpga_19650057_en_1, the Radioactive Substances Direction 2000 <http://www.defra.gov.uk/ENVIRONMENT/radioactivity/government/legislation/pdf/rsd2000.pdf> and the Radioactive Substances (Basic Safety Standards) (Scotland) Regulations 2000 <http://www.opsi.gov.uk/legislation/scotland/ssi2000/20000100.htm>

² http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733817602

Human Health and Well-being

the UK (referred to above) and the generic design assessment being carried out by the Health and Safety Executive (HSE) . This assessment, and the Executive's input into the nuclear site licensing regime, is designed to ensure that several levels of protection and defence are provided against significant faults or failures, accident management and emergency preparedness strategies are prepared and that all reasonably practicable steps have been taken to minimise the radiological consequences of an accident.

6. Risk of accident – transport of nuclear material: The transportation of nuclear materials to and from the site increases the possibility of an accident with radiological consequences. However, the safety record for the transport of nuclear material suggests that the risks are very low. Data from the Radioactive Materials Transport Event Database (RAMTED) for the period 1958 to 2006 showed that of the recorded 850 events associated with the transport of radioactive materials no 'significant dose events' were associated with the nuclear power industry. Rather all nineteen recorded significant dose events involved the transport of industrial radiography sources that were moved without the source being properly returned to the container.
7. Health services: There is a possibility that the influx of workers required for the construction and operational phases of the proposed new power station may put a strain on local health and other services and lead to community integration and conflict issues. In order to realistically gauge whether or not this will be a problem, a review should be carried out during the planning process to determine the need for additional health service capacity and community assistance in the area.
8. Health and safety issues: The work associated with the construction and operation of a nuclear power plant at Sizewell brings with it the possibility of health and safety incidents. However, nuclear power stations are highly regulated in this regard and must not only comply with the requirements of the Health and Safety at Work Act 1974 but also with the requirements of the Nuclear Installations Act 1965 and the Ionising Radiations Regulations 1999. This means that the potential operator must have a licence from the Nuclear Installations Inspectorate (NII) before construction can begin. Such a licence will only be granted if the NII is satisfied that the power station can be built, operated and decommissioned safely with risks being kept to 'as low as reasonably practicable' (ALARP) at all times. The licence will, therefore, have conditions attached to it which will allow NII to control safety risks throughout the lifetime of the project.
9. Perception of risk: It is possible that the perception of risk associated with living or working near to a nuclear power plant could adversely affect the health and well-being of relevant individuals. However, there is little literature available on this potential impact which suggests that it has not been a significant problem in the past. In any event, in the case of the Sizewell site, people living and working nearby have had a long time to get used to there being a number of nuclear power stations at Sizewell so this is unlikely to be a significant problem at this location.
10. Recreation: With regard to recreation, there is a potential impact associated with the coastal path which passes the site. It is likely that this path may need to be closed during some phases of power station construction but this effect will be temporary and can readily be mitigated by providing a bypass path around the site.

Human Health and Well-being

11. Community well-being: The Suffolk Coastal District Council area is not a particularly deprived area, although income and education deprivation are seen as a problem. The siting of a new nuclear power station at Sizewell should help to alleviate these deprivations somewhat as more jobs will be created in the area leading to an increase in community wealth, additional housing and other associated neighbourhood infrastructure.
12. Community disturbance: The presence of, and more particularly the construction of, a nuclear power station at the nominated site is certain to increase community disturbance to some degree when compared to the current situation. Potential disturbances in the construction phase include noise and vibration, dust and increased traffic although these effects would be temporary. Construction noise will be variable and transient in nature and will need to be mitigated by the use of good construction practice, regulation and timing of construction operations, the use of noise controlled plant and equipment and noise and vibration monitoring. There is also likely to be some disturbance associated with increased traffic during the operational and decommissioning phases of the power station. These effects should be considered, and mitigated if necessary, during the planning stage of the power station project by considering the adoption of an environmental management plan for the construction phase and an appropriate transport plan for all project phases. In particular, significant benefits would result if potential sources of noise emissions could be reduced through a combination of engineering design solutions.
13. Employment: Whilst employment levels in the Suffolk Coastal District Council area are relatively high compared to the rest of England, there are still people seeking work in this area and the region in general. As has been demonstrated, being in work can contribute to individual healthiness and, more particularly, being unemployed can be harmful to health in both a mental and physical sense. The development of a new nuclear power station at Sizewell can thus be expected to improve the general mental and physical health and well-being of the area's population by providing more short term (construction and decommissioning phases) and long term (operational phase) work opportunities.

Summary of Significant Strategic Effects:

Timescale	C	O	D
Significance	+	+	+
Likelihood	M	M	M

Significant Effects	Mitigation and Monitoring Possibilities
- The rigorous system of regulating routine radioactive discharges from the potential nuclear power station at Sizewell should ensure that there are no unacceptable risks to health when the plant is operating normally - The potential requirement for appropriate additional health service capacity for the influx of both construction and operational workers. - The construction and operation of the proposed nuclear power station may lead to unacceptable community disturbance.	- Undertake a project-level health impact assessment to predict the effects of the power station discharges on the local and regional population. - Ensure an environmental construction management plan and an all-phase travel plan are produced, observed and monitored.

Human Health and Well-being

- | | |
|---|--|
| <ul style="list-style-type: none">• It is likely that the presence of a new nuclear power station at Sizewell will lead to an increase in employment, community wealth, additional housing and other associated neighbourhood infrastructure – these positive effects are likely to be much more significant than any potential negative consequences assuming any effects on population health are not realised. | <ul style="list-style-type: none">• Ensure sufficient monitoring of power station discharges and effects on local health is undertaken throughout the operational and decommissioning phases of the project. |
|---|--|

Cultural Heritage
AoS Objective: 22. To avoid adverse impacts on the internationally and nationally important features of the historic environment. 23. To avoid adverse impacts on the setting and quality of built heritage, archaeology and historic landscapes Guide questions: Will it adversely affect historic sites of international/national importance and their setting? Will it adversely affect other historic sites of known value? Will it adversely affect landscapes of historic importance?
Potential Receptors:
Scheduled Monuments Listed Buildings Conservation Areas Historic Landscape Archaeology
Potential Significant Effects and Mitigation Possibilities:
International/National/Transboundary 1. The nearest scheduled monument consists of the original site of Leiston Abbey with a later chapel and pillbox which lies within approximately 2km of the site. A potential effect on its setting may arise from the development of a nuclear power station, as for other scheduled monuments in the wider vicinity. 2. There are also 2 Grade I and 6 Grade II* listed buildings within an approximate 5km distance of the site and a potential effect on their settings may arise from the development. All setting issues will need to be addressed by the nominator at the project level stage. Regional/ Local

Cultural Heritage

3. The nearest Conservation Areas are Leiston and Thorpeness which are located within an approximate 3km distance of the site. There is a potential effect on their setting.
4. There are no listed buildings within or adjacent to the site. However, there are around 90 Grade II listed buildings within an approximate 5km distance and there may be an effect on their settings. All setting issues will need to be addressed by the nominator at the project level stage.
5. Many of the fields around the existing facility are shown on 19th century Ordnance Survey maps and there is potential for historic hedgerows and landscape to exist which could be affected/lost as a result of the development.
6. Previous archaeological investigation at the site of the previously proposed Sizewell 'C' nuclear power station in 1993 has identified 2 prehistoric sites, a saltworking site of possible Roman date and 4 Medieval occupation sites. The presence of these features indicates historic activity spanning a long period of time in the area within and immediately surrounding the existing facility. As such the area is likely to be considered to be of at least local or regional archaeological importance. As a minimum, an archaeological watching brief will be required during construction. However, it is more likely that a detailed archaeological investigation of the area will be required, including intrusive investigation (for example trial trenching and detailed recording).
7. Operational effects include potential setting impacts on historic assets in the wider vicinity.
8. If a buried archaeological resource exists significant effects to this resource are possible during decommissioning as excavations are likely to be required.

Summary of Significant Strategic Effects:

Timescale	C	O	D
Significance	-	-	-
Likelihood	M	M	M

Significant Effects

- If a buried archaeological resource is present the main effects would be at a local scale, within the footprint of the proposed new facility. Effects would be permanent and irreversible.
- Immediately surrounding the site, there may be potential effects on the settings of historic assets. The significance will depend on distance, topography and the ability to mitigate.

Mitigation and Monitoring Possibilities

- Detailed investigations (trial trenching etc.) may be required prior to construction, with an excavation and/or watching brief potentially required prior to and during the construction phase.
- It may be possible to mitigate potential adverse setting effects on heritage assets through appropriate landscaping/planting schemes.

Landscape
AoS Objective: 24. To avoid adverse impacts on Nationally important landscapes. 25. To avoid adverse impacts on landscape character, quality and tranquillity, diversity and distinctiveness. Guide questions: Will it adversely affect landscapes within or immediately adjacent to a National Park? Will it adversely affect landscapes in or immediately adjacent to an AONB or National Scenic Area? Will it adversely affect Heritage Coast or Preferred Conservation Zones? Will it adversely affect local landscapes/townscapes of value? Will it affect the levels of tranquillity in an area? Will it adversely affect the landscape character or distinctiveness?
Potential Receptors:
• The landscape character of the Suffolk Coast and Heaths (No 82) National Character Area, the Suffolk Coast and Heaths Area of Outstanding Natural Beauty • The landscape character and features within the Suffolk Landscape Assessment landscape type described as 'the Estate Sandlands', and the character of adjoining landscape types including the Coastal dunes and Shingle Ridges and the Coastal levels, also within the AONB. • The Suffolk Heritage Coast • The visual amenity of local residents in surrounding coastal town, villages and hamlets, surrounding recreational areas, walkers on public footpaths and the Suffolk Coast and Heaths Path, local road and rail users, all within the AONB and on the Suffolk Heritage Coast. • One of the more tranquil parts of the county of Suffolk. <i>Note: Refer to Cultural Heritage assessment for consideration of the potential effects of the development on the setting of any scheduled ancient monuments, listed buildings, Historic Parks and Gardens, and Conservation Areas that may fall within 5km from the site.</i>

Landscape	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary	
1.	There are no anticipated transboundary effects likely to arise from the site, given distances across the North Sea.
2.	There will be direct impacts upon the nationally recognised landscape character and visual amenity within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty. Natural England, in their National Character Area No 82 detailed description, refer to this particular area as follows: ' <i>South of Lowestoft, the coast is largely undeveloped with a coast road between Aldeburgh and Thorpeness. It is a subtle landscape of low crumbling cliffs and steep shingle banks, sweeping in a series of wide bays punctuated by lighthouses, church towers, Martello towers and the inappropriate mass of the Sizewell nuclear power stations.</i> ' The development of another new nuclear power station at Sizewell may add significantly to the existing buildings' visual mass and extend the site operations across the foreshore and into adjoining landscape areas. This will potentially give rise to significant adverse effects beyond those that are already recognised as arising from the existing power stations. Some of the potential landscape character impacts may be able to be mitigated in the long term and this might include landscape/nature conservation enhancement and compensation works in the vicinity. However, visual impacts will not be able to be fully mitigated until after decommissioning, which is likely to be after a period of some 67 years. Over such time periods, it is difficult to have certainty over the future land use of the decommissioned sites.
3.	The development of a new nuclear power station at the site at Sizewell may also have implications for the Suffolk Heritage Coast, a national non statutory designation, which applies to the coastline alongside the existing power station. The potential incorporation of two cooling culverts and a marine landing station could have adverse impacts upon the character of the existing shoreline, as could the incorporation of sea defences if they were required. These structures are likely to be in place for the operational and decommissioning period and potentially beyond, resulting in landscape and visual effects that would be highly visible from the Suffolk Coast and Heaths Path. Even with sensitive design and careful selection of materials new structures on the beach would be likely to locally detract from the current shoreline.
Regional/Local	
4.	To the west and north of the site for the new power station is an area named Sizewell Belts which falls within the Coastal levels landscape type, as defined in the Suffolk Landscape Character Assessment 2008. This landscape type comprises the following special qualities as defined in the Suffolk Coast and Heaths AONB management plan 2008-2013 ' <i>extensive wet grazing marshes, ancient drainage and enclosure patterns, open and extensive views, specialist wildlife.</i> ' Parts of this area are accessible as common land and a new power station and associated infrastructure at Sizewell is likely to be highly visible and in close proximity with corresponding adverse visual and indirect adverse effects on the landscape character.
5.	Given the likely scale of any new development, it will not be possible to fully mitigate the significant landscape and visual impacts over a long

Landscape

timescale, either immediately surrounding the site or from the surrounding area, from which the development would be visible. In addition, new development alongside the existing facility will add to the landscape and visual impacts of the existing power stations, which are already a prominent feature along the coast.

6. The site at Sizewell, itself, specifically falls within the Estate Sandlands Landscape Type and could have associated works that may directly effect the Shingle Landscape Type as defined in the Suffolk Landscape Character Assessment 2008, prepared by Suffolk County Council. Direct adverse landscape and visual impacts are likely to result from the removal or effects upon some existing mixed and commercial coniferous woodland, the edges of dunes, the shingle beach, on grassland and arable fields of some more recent woodland planting, from the creation of temporary construction areas, new power station buildings, ancillary buildings, a new permanent access road, ancillary facilities, enhanced sea defences, a marine landing station and water cooling culverts. The visual effects of construction and the operational of a new power station on neighbouring residents (including the village of Leiston), walkers, holiday makers and road users including effects associated with lighting and traffic may also be significantly adverse, at local level and these are also likely to have a negative impact upon the tranquillity of the area.
7. Potential mitigation measures include: Protective fencing and buffer areas incorporated during construction to protect areas of adjoining woodland and sand dunes; avoidance of temporary laydown areas on the foreshore; and siting of the new power station building in close proximity to the existing power station buildings to avoid a significant broadening of visual impact. The potential scale of impacts on landscape features associated with ancillary buildings could be reduced if alternative locations for some non-essential site buildings were sought to avoid loss of woodland. Construction of a sea defence wall in a position that avoids direct impact on the shingle beach and edge dunes and in a form that respects local distinctiveness and materials, could reduce the impact of this element. Sensitive design and or alignment of the water cooling facility and a low impact design for the marine landing platform may reduce adverse impacts on the shingle beach and dunes.
8. Other mitigation measures might include: delivery of construction materials by sea to reduce road use; the use of directional, cut off level lighting and restricted working hours, to limit potential light pollution.
9. Key positive opportunities include landscape restoration and off set enhancement measures. These measures could include: some woodland planting and dune grassland restoration to the decommissioned site, the temporary construction areas and the surrounding landscape within the wider estate. There is potential to target landscape mitigation measures so that they address the recommendations for enhancement of specific character types, identified within the Suffolk Landscape Guidelines 2008 (currently in draft form).
10. With the above potential mitigation, local site impacts could be reduced to a slight adverse to neutral level after decommissioning, however, there are still likely to be some localised long term adverse effects, as there is likely to be some uncertainty over future land use requirements given the timescales involved.
- 11.

Landscape				
Summary of Significant Strategic Effects:	Timescale	C	O	D
	Significance	--	--	0?
	Likelihood	H	H	H
Significant Effects	Mitigation and Monitoring Possibilities			
- During construction and operation the main direct impacts on distinctive landscape character and features would be at local level but within an area that is nationally recognised for its landscape character and quality (AONB and Heritage Coast). There are likely to be some long lasting adverse direct and indirect landscape and visual impacts on the site and the surrounding area including part of the Suffolk Heritage Coast, with limited potential for mitigation. The existing power station is already a prominent feature from local viewpoints and is visible from some more distant viewpoints, including Southwold. Further development is highly likely to lead to a noticeable deterioration in some views, which are unlikely to be able to be mitigated, given the scale of new buildings. Overall, the potential effects of a new power station during construction and in operation, despite mitigation, are highly likely to be adverse on landscape character, at a local level, within a nationally designated landscape. - The decommissioning of the facilities may allow some landscape restoration of previously developed areas in the long term, however, long term land uses for the restored areas is difficult to predict at this stage.	- Given the potential scale and extent of the new power station facilities, effective mitigation during the construction and operational phases of adverse effects is unlikely. - Significant compensatory measures may be required and restoration of temporary construction areas could be delivered through an Integrated Land Management Plan for the site which builds on existing arrangements. - The decommissioning of the facilities may allow some landscape restoration of previously developed areas in the long term, however, long term land uses for the restored areas are difficult to predict.			

Soils, Geology and Land use
AoS Objective: 19. to avoid damage to geological resources 20. to avoid the use of greenfield land and encourage the re-use of brownfield sites 21. to avoid the contamination of soils and adverse impacts on soil functions Guide questions: Will it result in the compaction and erosion of soils? Will it lead to the removal or alteration of soil structure and function? Will it lead to the contamination of soils which would affect biodiversity and human health? Will it compromise the future extraction/use of geological/ mineral reserves? Will it result in the loss of agricultural land? Will it lead to damage to geological SSSIs and other geological sites? Will it result in the loss of Greenfield land? Will it adversely affect land under land management agreements?
Potential Receptors:
The site lies within a local area of agricultural land use. No significant geological designated site lies within the local vicinity. Sizewell Marshes SSSI – adjacent to and potentially (to be confirmed by nomination) within the site. Minsmere-Walberswick Heaths and Marshes SSSI/SPA/SAC – adjacent to the site. Adjacent agricultural land/green field land (to be confirmed by nomination) adjacent to the site.
Potential Significant Effects and Mitigation Possibilities:

Soils, Geology and Land use

International/ National/Transboundary

1. The site potentially lies within the Sizewell Marshes SSSI and also Minsmere-Walberswick Heaths and Marshes SSSI/SPA/SAC. Construction activities and operational activities are likely to have a detrimental effect to the short/medium term soil quality within the area of the proposed development. Compaction/removal/alteration of soils is likely to affect the soil quality within these designated sites, which may also affect biodiversity; however this is addressed in the appraisal of Biodiversity.
2. There are no geological designations of note within the local vicinity.
3. The loss of greenfield land is not considered to be significant on a National level.

Regional/Local

4. The soils in the local area adjacent to the site lie within a region classified to be of moderate to low fertility by the National Soils Resources Institute. Any development is likely to have a local effect on agricultural land use and agriculture prevalent in the local area. The soils could potentially be returned to an equivalent agricultural grade but reinstating the original soils matrix is unlikely. The extent of the loss of agricultural land is unlikely to be significant in a national context. Soils could be returned to a similar agricultural importance once the site has been decommissioned, however the original soils matrix is unlikely to be restored.
5. Construction of new plant upon greenfield sites. The loss of greenfield land is likely to be of local significance.
6. Radioactive contamination of soils is not covered as part of this assessment but is covered by the additional research being undertaken as part of the wider radioactive waste issue. The site would fall within National Permitting requirements and therefore management of the site in order to prevent the contamination of soils would be covered by these legislative requirements. Contamination and effects to Human Health would also be covered by this investigation.
7. A landfill has been identified to the south of the existing Sizewell power stations. It is likely to be of minor significance as any disturbance/assessment would need to be addressed with the relevant regulator. Detailed assessments of existing contaminated land will need to be undertaken as part of the site specific EIA.

Soils, Geology and Land use					
Summary of Significant Strategic Effects:		Timescale	C	O	D
		Significance	-?	-?	-?
		Likelihood	M	M	M
Significant Effects		Mitigation and Monitoring Possibilities			
The construction of the power station and associated infrastructure (including transmission lines/towers) will lead to the direct loss of soil structure. This may include impacts on soils that maintain terrestrial habitats, including designated nature conservation sites; the Sizewell Marshes SSSI and Minsmere-Walberswick Heaths and Marshes SSSI/SPA/SAC. This is considered further in the biodiversity appraisal.		Limitation of the footprint of the development reducing the area of soils affected. Avoidance of any soils within designated sites of ecological importance.			

Water - Hydrology and Geomorphology	
AoS Objective: 15. To avoid adverse impacts on surface water hydrology and channel geomorphology (including coastal geomorphology)	
Guide questions: Will it result in the increased sedimentation of watercourses? Will it adversely affect channel geomorphology? Will hydrology and flow regimes be adversely affected by water abstraction? Will it result in demand for higher defence standards that will impact on coastal processes? Can the higher defence standards be achieved without compromising habitat quality and sediment transport?	
Potential Receptors:	
Local and district resident population and tourists, local and district ecosystems in river and coastal waters and on the foreshore.	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary. The potential effects on surface water hydrology and fluvial and coastal geomorphology are likely to be limited to the coastline within approximately 10-20km of the site. It will be necessary, however, to undertake a data collection and modelling exercise to confirm the spatial extent of this impact.	
Regional/Local 1. The existing site is surrounded to the north, west and south by areas which are shown on Environment Agency (EA) maps as being at risk of flooding from rivers or the sea. There are no fluvial or coastal flood defences shown on the EA web site at or in close proximity to the existing site. Accordingly, during the life span of the proposed nuclear power station, and as a result of potential sea-level rises, the site is likely to require the construction of new coastal and fluvial defences. These defences would be designed to counteract the effects of existing fluvial and coastal processes, but are likely to have the secondary effect of impacting the movement of sediment along the coast. These may have further effects on terrestrial and marine ecosystems. The effects are likely to continue as long as the defences need to be maintained to protect the site. It is likely, however, that after a period	

Water - Hydrology and Geomorphology

of time, a new, stable equilibrium condition will be attained. It is not possible to assess whether these effects will be positive or negative without further information on the proposed design of the defences, and a more detailed investigation of the local and regional fluvial and coastal physical processes/dynamics. The effects of the construction and long-term presence of upgraded coastal defences on coastal process, hydrodynamics and sediment transport along the coast could be reduced or possibly eliminated by the adoption of suitable, environmentally-friendly designs.

2. The provision of cooling water for the proposed power station may require excavation/dredging in the foreshore and coastal waters to enable the construction of a channel and/or pipeline for the abstraction and return of the cooling water. Construction disturbance associated with these works may have the short-term effect of accelerated delivery of sediment to the sea during construction. Over the longer-term, during operation, there is the possibility that the discharge of cooling water may affect local coastal hydrodynamics and sedimentation processes. The effects of construction and operation of the cooling water system on coastal processes and hydrodynamics and sediment transport could be reduced or potentially eliminated by suitable design and construction methods.
3. The potential effects of the development on the local hydrological network includes construction of flood defences, the modification of the local drainage network through local diversion of small watercourses and drainage ditches, the removal of riparian vegetation and associated bank collapse, and increased loading of channel banks from construction machinery. During construction there is also a risk of increased sediment transfer to water courses from excavated areas and stockpiles. In addition, there is the risk of increased transfer of sediment from site drainage and from dredging activities to water bodies. The development is also likely to affect surface water run-off through increasing the surface of impermeable areas (for example roads and car parking areas). These potential adverse effects may, however, be reduced by suitable mitigation methods, for example, Sustainable Drainage Systems (SuDs), including the use of permeable pavements, and retention ponds or swales to retain drainage water and sediments.

Summary of Significant Strategic Effects:

Timescale	C	O	D
Significance	-	-	-
Likelihood	M	M	M

Significant Effects

- New coastal and fluvial defence works and marine landing station which may potentially impact on coastal processes, hydrodynamics and sediment transport, and any indirect effects on internationally designated habitats.
- Works to provide (and discharge) cooling water on coastal processes, hydrodynamics and sediment transport, and any indirect effects on internationally designated habitats.

Mitigation and Monitoring Possibilities

- Suitable design and location of coastal and fluvial flood defence works and marine landing station.
- Use of SuDs.
- Selection of appropriate construction methods

Water: Water Quality (including surface, coastal and marine)	
AoS objective: 16. To avoid adverse impacts on water quality (including surface, coastal and marine water quality) and to help meet the objectives of the Water Framework Directive. Guide questions: Will it cause deterioration in surface water quality as a result of accidental pollution, for example spillages, leaks? Will it cause deterioration in coastal and / or marine water quality as a result of accidental pollution, for example spillages, leaks? Will it cause deterioration in surface water quality as a result of the disturbance of contaminated soil? Will it cause deterioration in coastal and / or marine water as a result of the disturbance of contaminated soil? Will it affect designated Shellfish Waters? Will it affect Freshwater Fish Directive sites? Will it increase turbidity in water bodies? Will it increase the temperature of the water in water bodies?	
Potential Receptors:	
Local and district resident population and tourists, local and district ecosystems in river and coastal waters and on the foreshore. Regional and international receptors could potentially be affected by releases of persistent contaminants.	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary Not significant.	
Regional/Local 1. The main liquid discharges from the proposed power station during routine operation will be treated effluent from the wastewater treatment plant and the return of cooling water to the sea at elevated temperatures (if this mode of cooling were to be selected). The EA will be responsible for permitting	

Water: Water Quality (including surface, coastal and marine)				
the discharges and it is anticipated that they will seek to apply standards that ensure that the discharges lead to no deterioration in water quality or meet the statutory water quality standards (whichever is the most stringent). 2. In the case of the discharge of cooling water it is unlikely to be feasible to eliminate some changes in thermal conditions locally. Detailed appraisal of the proposals for disposal of cooling water will be required to assess the significance of this effect. Sizewell B power station with cooling water discharges is operating to the south of site. 3. Liquid waste streams are separated from the radioactive materials; accordingly radioactive materials are not expected to be present in any of the routine discharges of liquid waste. It is expected that liquid discharges will be treated to standards set by the EA to ensure compliance with all relevant legislation				
Summary of Significant Strategic Effects:			Timescale	C O D
			Significance	- - ?
			Likelihood	M M M
Significant Effects		Mitigation and Monitoring Possibilities		
Thermal impact of cooling water discharges (if this mode of cooling were to be adopted). This effect is of local and regional significance.		Thermal discharges will need to be permitted by the EA. The discharge quality will need to comply with existing standards or meet the no deterioration standard.		

Water: Water supply and demand	
AoS objective: 17. To avoid adverse impacts on the supply of water resources. Guide questions: Will it adversely affect water supply as a result of abstraction? Will it increase demand for water?	
Potential Receptors:	
Local and district resident population and tourists. District ecosystems dependent surface water features.	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary. Not significant.	
Regional/Local - The site lies within the confined Chalk major aquifer. The Chalk is overlain by the Crag Formation, which forms a locally important aquifer. Groundwater from the Crag Formation is currently used for water supply within 3 km. Hence the development is potentially expected to have an impact on water supply in the area. - The construction and operation of a new nuclear power station at Sizewell may increase demand for potable supplies both at the site and in local communities where the workforce will live. Depending on the nature of the demand and the potential efficiency savings, there may be implications for meeting this demand. However, this is unlikely to be significant in the operational phase where the numbers of additional workers is smaller; it may be more significant during the construction period when a substantial increase in the local population is likely. - There is a small surplus of 1-2 Ml/d available within Essex and Suffolk Water's 'Blyth' Water Resource Zone (WRZ) throughout the planning period to	

Water: Water supply and demand				
2034/5. If the increased water supply required at the site were to exceed this amount then it would probably be derived from outside the existing Essex and Suffolk Water's 'Blyth' WRZ with water transferred from adjacent WRZ's. This may require new resource developments in the adjacent WRZ's, hence additional water supply could impact on local aquatic ecosystems (including in designated nature conservation sites) within and downstream of aquifers or catchments used to provide additional water.				
Summary of Significant Strategic Effects:			Timescale	C O D
			Significance	- O O
			Likelihood	M H H
Significant Effects		Mitigation and Monitoring Possibilities		
Increased demand for water during the construction phase. The potential magnitude and duration of increased water demand will depend on the timing of the development in relation to the activities (operation or decommissioning) of the existing site. Similar significant effects are likely to apply to wastewater production from the site.		Studies to ensure that capacity of water and wastewater infrastructure in the WRZ is sufficient.		

Water - Groundwater Quality and Flow	
AoS Objective: 18. To avoid adverse impacts on groundwater quality, distribution and flow and to help meet the objectives of the Water Framework Directive Guide questions: Will it cause deterioration in groundwater quality as a result of accidental pollution, for example spillages, leaks? Will it cause deterioration in groundwater quality as a result of the disturbance of contaminated soil?	
Potential Receptors:	
Local and district resident population and tourists, local and district ecosystems with connections to groundwater.	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary. Not significant.	
Regional/Local 1. The major aquifer present at the site is the Chalk Formation. The Chalk is overlain by the Crag Formation, which forms a locally important aquifer. There is a groundwater source protection zone located approximately 3 km west from the existing site. The source protection zone is formed by two boreholes at Leiston abstracting groundwater from the Crag Formation. The eastern boundary of the total catchment of the groundwater source is located approximately 2.5 km west from the existing site. 2. The Chalk and Crag Formations could also be used locally for private water supplies, and discharges from these groundwater bodies may support local groundwater dependent surface water aquatic ecosystems. Localised groundwater pathways are likely to exist, hence accidental discharges or construction disturbance at the site could cause deterioration in groundwater quality and flow quantity.	

Water - Groundwater Quality and Flow				
3. If increased water supply is required at the site, and the amount needed were to exceed the surplus within the Blyth WRZ, then an additional water supply would probably be derived from outside the existing Blyth WRZ, with water transferred from adjacent WRZ's. This may require new resource developments in the adjacent WRZ's. If additional supplies were derived from groundwater bodies, this could lead to impacts on District groundwater dependent surface water features and aquatic ecosystems, including internationally and nationally designated water-related nature conservation sites (see Biodiversity).				
Summary of Significant Strategic Effects:			Timescale	C O D
			Significance	- - 0
			Likelihood	M M M
Significant Effects		Mitigation and Monitoring Possibilities		
Potential impacts on local groundwater bodies.		Studies to ensure that local groundwater bodies are investigated and suitable design is adopted to mitigate potential impacts.		

Flood Risk	
AoS Objective: 14. To avoid increased flood risk (including coastal flood risk) and seek to reduce risks where possible	
Guide questions: Will it result in demand for higher defence standards?	
Potential Receptors:	
Site workers. Local, District ecosystems in coastal waters and on foreshore.	
Potential Significant Effects and Mitigation Possibilities:	
International/National/Transboundary The potential effects	
Regional/Local 1. The site is located partially in Flood Zone 1 and partially in Flood Zone 3. It is likely through the impacts of climate change on sea level rise that flood risk to the site will increase. 2. There are existing defences, the composition and standard of protection of which is unknown. 3. To mitigate against flood risk for the lifetime of the development, ongoing maintenance and improvement of these defences may be required, which could affect coastal processes. 4. To avoid extensive mitigation, development should be located in the areas at lowest risk of flooding.	

Flood Risk					
Summary of Significant Strategic Effects:		Timescale	C	O	D
		Significance	-	-	-
		Likelihood	M	M	M
Significant Effects		Mitigation and Monitoring Possibilities			
Main effects are through the continued management and improvement of existing natural defences which could affect coastal processes.		It may be possible to mitigate these effects through appropriate management and techniques for improving the existing defences.			

Appendix 3: Plans and Programmes Review (Regional)

Revised Regional Spatial Strategy for the East of England 2008 – 2021 (2008) (Government Office for the East of England)

The revised RSS for the East of England outlines sub-regional policy and guidance for the environment, housing, transport and the economy and employment. In particular it seeks to reduce the region's impact on, and exposure to, the effects of climate change and to put in place a development strategy with the potential to support continued sustainable growth beyond 2021. It also incorporates the Regional Transport Strategy for the East of England.

In particular, the spatial strategy seeks to ensure that development:

- maximises the potential for people to form more sustainable relationships between their homes, workplaces, and other concentrations of regularly used services and facilities, and their means of travel between them; and
- respects environmental limits by seeking net environmental gains wherever possible, or at least avoiding harm, or (where harm is justified within an integrated approach to the guiding principles set out above) minimising, mitigating and/or compensating for that harm.

Economic Development:

- The whole of Suffolk is to see 53,000 jobs created between 2001 – 2021, with 30,000 of these being in the Suffolk Haven Gateway which includes the Suffolk Coastal area.

Housing:

- For the plan period, 2001 – 2021, a minimum total of 10,200 houses are to be built within the Suffolk Coastal area. 3,200 of these will be built on the fringes of Ipswich as part of the Ipswich policy area.

Transport:

- The strategic and regional road networks should be improved, managed and maintained in accordance with priorities for the strategic and regional functions of the region's motorway, trunk road and primary route network. This will aim to achieve improved access to key centres, improve safety, improve the efficiency of movement of freight that cannot travel by railway and water and to mitigate environmental impacts.
- Priority should be given to the efficient and sustainable movement of freight, maximising the proportion of freight carried by rail and water where those are the most efficient modes.
- The Suffolk Haven Gateway is one area that is likely to come under increasing transport pressure as a result of underlying traffic growth and the development strategy of the RSS.

Nature Conservation:

Revised Regional Spatial Strategy for the East of England 2008 – 2021 (2008) (Government Office for the East of England)

- Conserve and enhance the natural, historic and built environment by positive management and protect it from development likely to cause harm;
- Adopt an approach that integrates protection and enhancement of nationally and internationally designated sites and areas while meeting the social and economic needs of local communities;
- Protect all important aspects of the countryside, including individual features, special sites, their setting, and the wider landscape;
- Promote a sustainable approach to the use of the region's natural resources;
- Secure effective protection of the environment by considering the nature and location of proposed development.
- Restore damaged and lost environmental features whenever possible.
- The Suffolk Coasts and Heaths is an area of national and regional importance and should be protected.
- Must ensure that development does not have adverse effects on the integrity of sites of European or international importance for nature conservation.

Historic Environment:

- The historic environment of the East of England will be preserved and enhanced.

Coastal Planning:

- Shoreline Management Plans and other policies will be used to restrict development in areas liable to coastal flooding.

Renewable Energy:

- The RSS encourages the supply of energy from decentralised, renewable and low carbon energy sources.
- The aims are that by 2010, 10% of the region's energy and by 2020, 17% of the region's energy should to come from renewable sources.

Water Resources and Flood Risk:

- The RSS aims to reduce water pollution, reduce the effects of floods and droughts, and ensure that most inland and coastal waters attain 'good ecological status' by 2015.
- The priorities are to defend existing properties from flooding and locate new development where there is little or no risk of flooding.

Waste:

- The RSS aims to minimise the impact of new developments on regional waste management requirements;
- The RSS also aims to minimise the environmental impact of waste management, including impacts arising from the movement of waste, and help secure the recovery and disposal of waste without endangering human health;
- The objectives for waste in the East of England are to eliminate the landfilling of untreated municipal and commercial waste by 2021 and

Revised Regional Spatial Strategy for the East of England 2008 – 2021 (2008) (Government Office for the East of England)

secure at least the following minimum levels of recovery - municipal waste recovery of 50% at 2010 and 70% at 2015, and commercial and industrial waste recovery of 72% at 2010 and 75% at 2015.

- Account should be taken of the regional and sub regional current and future hazardous waste levels and provide suitable management to control it.

Air Quality:

- By managing the transport infrastructure and encouraging movement away from cars towards public transport and by improving access across the area, the RSS aims to improve air quality.

LINK: http://www.gos.gov.uk/goee/docs/Planning/Regional_Planning/Regional_Spatial_Strategy/EE_Plan1.pdf

A Shared Vision: The Regional Economic Strategy for the East of England (2004) (East of England Development Agency)

The Regional Economic Strategy sets the long-term vision for the sustainable economic development of the East of England.

The RES sets out 8 strategic goals with related priorities and actions which aim to:

1. Increase employment in disadvantaged communities and support wider choices for young people. Also to develop skills to support the community.
2. Ensure business development adds value to local communities and supports the accelerated and sustained growth, productivity and competitiveness of the regions business.
3. Stimulate demand for research and development and ensure strong links between regional universities and research centres.
4. Ensure high quality supply of houses and business land and premises to support economic growth.
5. Create improved access to and quality of employment for disadvantaged people.
6. Promote delivery of strategic road, rail and other public transport priorities for the region. Taking advantage of sustainable airport expansion and in the region and make the most of the gateways to the sea. The RES aims to understand and address the importance of transport links with London.
7. Improve skills and ability of people to make efficient use of ICT.
8. Capture the advantages of the renewable energy potential of the region and establish the region as an exemplar of environmentally sustainable development.

The Haven Gateway sub-region is of national and regional importance, providing a strategic transport gateway for trade and tourism between the UK, the rest of Europe and elsewhere in the world.

Major expansions are planned for the ports at Harwich and Felixstowe.

The projected job growth for the Suffolk part of the Haven Gateway is 29,400 between 2001 and 2021.

LINK: <http://insighteast.org.uk/viewResource.aspx?id=14915>

Suffolk Climate Action Plan 2009 (Suffolk Climate Change Partnership)

The main aims of the Suffolk Climate Action Plan are to:

- Reduce greenhouse gas emissions.
- Adapt in advance of the changes that will occur due to the changing climate.

- Change attitudes and behaviour about how we use natural resources.
- Identify and communicate the economic, social and environmental benefits of taking action on climate change, and the costs of not taking action.
- Work in partnership across Suffolk to encourage individuals and organisations to be involved.

The CAPs vision is “to equip Suffolk to meet the challenges of climate change”. The CAP sets 2025 as the target year to have achieved:

- A 60% reduction in CO2 emissions
- A climate-resilient Suffolk.

The current national target is 2050.

Water and coastal management are likely to be the most serious climate change issues in Suffolk. The combination of low lying land and coast, current pressures on water resources, levels of expected housing growth and the degree of predicted climate change mean that Suffolk is particularly susceptible. Critical decisions currently being made about our future management of our rivers, estuaries, coast and water resources in Suffolk need to be sustainable in the face of climate change.

LINK: http://www.greensuffolk.org/what_are_we_doing/climate_change/consultation_on_suffolk_climate_action_plan

Sustainable Communities in the East of England (2003) (Office of the Deputy Prime Minister)

This regional programme of action sets out proposals for maintaining and creating sustainable communities in the East of England.

The Key Strategic challenges for the region are stated as:

- Addressing problems of high and then rapidly rising house prices and their impact on the recruitment and retention of staff, particularly close to London and around Cambridge but spreading deeper into the region.
- Improving transport infrastructure – railways, roads, airports and ports to meet the needs of economic growth.
- Ensuring that the benefits of economic growth are spread across the region, particularly to those urban and rural communities facing problems of deprivation and peripherality.
- Addressing the development consequences of scarce water resources throughout the region and an increasing sea level for coastal and low lying areas.

LINK: <http://www.communities.gov.uk/documents/communities/pdf/143600.pdf>

Suffolk Coast and Heaths AONB Management Plan 2008-2013 (2008) Local Authorities and Suffolk Coast and Heaths Partnership)

This plan sets out the management objectives for the Suffolk Coast and Heaths AONB as agreed by the Local Authorities whose jurisdiction the AONB falls and the members of the Suffolk Coast and Heaths Partnership. All public bodies must have regard to the objectives in the plan.

There are three key requirements that the management of the AONB must meet:

1. To conserve and enhance natural beauty and to maintain the special qualities of the landscape.
2. To manage the assets and resources of the AONB in a sustainable way, seeking to meet environmental, economic and social needs.
3. To meet the demand for recreation where this is consistent with the conservation of natural beauty and the management of the land and helping people enjoy, understand and value the AONB.

There are 14 aims set out to help meet the above requirements.

LINK: <http://www.suffolkcoastandheaths.org/downloads.asp?PageId=161>

East of England Regional Waste Management Strategy 2002 (East of England Region Waste Technical Advisory Body)

The Regional Waste Management Strategy will encourage a positive attitude to waste management in the region and will promote methods of waste reduction.

The objectives of the RWMS are:

- Minimise the environmental impact of waste management
- Seek to reduce the generation of waste
- Implement the Best Practicable Environmental Option for each type of waste
- View waste as a resource and maximise the reuse, recycling and composting of waste, and extracting value from the remainder
- Secure safe treatment and disposal of hazardous and residual wastes
- Seek to secure where appropriate regional and county/unitary self-sufficiency in provision for waste management
- Enlist and encourage community support and participation

The RWMS identifies 24 policies to deal with the waste management in the East of England.

LINK: <http://www.eera.gov.uk/Documents/About%20EERA/Policy/Planning%20and%20Transport/RWMS16-7.pdf>

Suffolk Local Biodiversity Action Plan 2000 – 2007 (Suffolk Biodiversity Partnership)

The Suffolk Local Biodiversity Action Plan has identified 57 species and 21 habitats within the area for which specific action plans have been produced.

LINK: <http://www.suffolk.gov.uk/Environment/Biodiversity/BiodiversityActionPlans.htm>

River Basin Management Plan - Anglian River Basin District, Environment Agency (2009)

The River Basin Management Plan sets out what the Environment Agency, under the guidelines of the UK Water Framework Directive, aim to achieve, with regards to improving the water environment over the next 20 years. The plan focuses on the pressures facing the water environment in the Anglian River Basin District, and sets out objectives and actions for addressing them.

The key targets of the plan are:

- By 2015, 16% of surface waters (rivers, lakes, estuaries) in this river basin district are going to improve for at least one biological, chemical or physical element. This includes an improvement of over 1,700km of river, in relation to fish, phosphate, specific pollutants and other elements
- 19% of surface waters will be at good or better ecological status/potential and 45% of groundwater bodies will be at good status by 2015,
- At least 30% of assessed surface waters will be at good or better biological status by 2015

The following challenges are addressed in the plan:

- point source pollution from sewage treatment works;
- the physical modification of water bodies;
- diffuse pollution from agricultural activities;
- water abstraction;
- diffuse pollution from urban sources.

LINK: <http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/anglian/Intro.aspx>

Lowestoft to Harwich Shoreline Management Plan, Subcell 3c Walberswick to The Haven, Thorpeness 1997 (Suffolk Coastal District Council, Waveney District Council, Environment Agency)

The SMP sets out the strategy for coastal defence for the length of coast between Lowestoft and Harwich taking account of natural coastal processes and human and other environmental influences and needs.

The main objectives of the SMP are to:

- assess a range of strategic coastal defence options and agree a preferred approach;
- outline future requirements for monitoring, management of data and research related to the shoreline;
- inform the statutory planning process and related coastal zone planning;
- identify opportunities for maintaining and enhancing the natural coastal environment, taking account of any specific targets set by legislation or any locally set targets;
- set out arrangements for continued consultation with interested parties.

The strategy for the coastline directly in front of the Sizewell power station, North Sizewell to Sizewell Gap, is to hold the line. The strategy for the section of coast to the north, Dunwich Heath to North Sizewell, is to retreat the existing line and to the south, Sizewell Gap to Thorpeness Common, the strategy is to do nothing and hold the existing line.

North Sizewell to Sizewell Gap – retreating the existing line allows natural processes to continue to operate but at a reduced present day level. Considering the economic importance of the Sizewell Power Station directly to the south of the unit, some maintenance of any protective banks would need to be undertaken to safeguard against any unpredicted erosion.

Sizewell Gap to Thorpeness – the coastline will be held at Sizewell Gap to protect the power station. The option to Do Nothing would maintain the operation of present day natural processes allowing alongshore movement across the unit to Thorpeness where fine grained material is moved offshore via a sediment bridge. Historically this area is an area of coastal stability and except for erosion in the south of the unit it is expected to remain stable.

LINK: <http://www.suffolksmp2.org.uk/publicdocuments/shoreline/SMP%203C%20May%201998%20Policy%20R.%20Blyth-Thorpeness.pdf>

Appendix 4: Baseline Information

Note: Information on Comparators and Trends is included where applicable/available.

Air

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Air				
Regional Air Quality	1, 2, 3	Air quality in Eastern England is relatively good with an average air quality index score of <3 (where 1-3 good, 4-6 moderate, 6-9 poor and 10 bad). However, pockets of relatively poor air quality exist in the region, particularly in urbanised areas and major route corridors that experience high levels of traffic flow. There are 60 Air Quality Management Areas (AQMA) in the Eastern Region of England. One AQMA has been declared in Suffolk Coastal District (Woodbridge, approx 25 km southwest of Sizewell).		The average air pollution index for the East of England has been gradually increasing since 2002. Significant pressures on meeting air quality objectives are being experienced in a number of urban areas and major route corridors. This is reflected in the relatively large number of AQMA in the region and is largely as a result of increasing population, traffic and congestion in the region (there has been an increase of 19% of vehicles on the roads from 1995 – 2006).

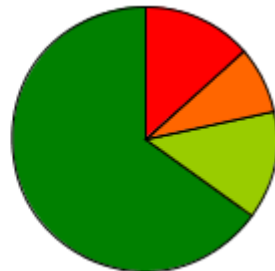
Key to Data Sources

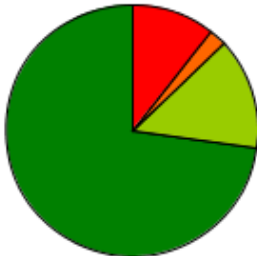
1	East of England Regional Assembly (2008). East of England Plan Review to 2031 Integrated Sustainability Appraisal. http://www.eera.gov.uk/What-we-do/developing-regional-strategies/east-of-england-plan/east-of-england-plan-review-to-2031/east-of-england-plan-review-to-2031-integrated-sustainability-appraisal/ [accessed 03 March 2009] NB: The East of England Regional Assembly dissolved on the 31 March 2010 and no longer functions as an organisation. From 1 April 2010, much of EERA's work will be taken forward by a new organisation called the East of England LGA - www.eelga.gov.uk
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2	UK Air Quality Archive. http://www.airquality.co.uk/archive/lagm/lagm.php [accessed 03 March 2009]
3	Environment Agency: State of the Environment – Eastern England http://www.environment-agency.gov.uk/research/library/publications/34059.aspx [accessed 03 March 2009]

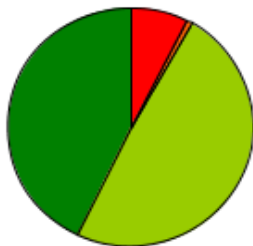
Biodiversity and Ecosystems

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Biodiversity and Ecosystems				
Suffolk Biodiversity Action Plan	1	The Suffolk Biodiversity Action Plan was adopted in 1996, with plans updated in 1998 and 2000; it includes plans for 14 priority habitats and 2 local habitats, and 49 priority species and 5 local species.		
Suffolk and Essex Water Biodiversity Action Plan	2	The Suffolk and Essex Water Biodiversity Action Plan was adopted in 2000 and recognises 4 habitats and 10 priority species.		
Natura 2000 sites (N2K)	3,4	There are 10 N2K sites within 20 km of the site : • Alde-Ore & Butley Estuaries; • Benacre to Easton Bavents Lagoons; • Dew's Ponds; • Minsmere to Walberswick Heaths & Marshes; • Orfordness-Shingle Street; • Staverton Park & The Thicks, Wantisden; • Alde-Ore Estuary; • Benacre to Easton Bavents; • Minsmere-Walberswick and • Sandlings. There is also one further 'potential' N2K site within 20 km of the site: • Outer Thames Estuary SPA The following are considered are considered particularly relevant to the site: • Minsmere to Walberswick Heath and Marshes SAC, adjacent to the site. • Minsmere-Walberswick SPA, adjacent to the site. • Sandlings SPA, 1.75km south-west of the proposed site.		

Indicator	Data Source	Current Data	Comparators				Trend												
		- Alde-Ore & Butely Estuaries SAC, 6km south of the site. - Alde-Ore Estuary SPA, 6 km south of the site - Outer Thames Estuary SPA, offshore area adjacent to the site																	
Ramsar sites	5	There are 2 Ramsar sites within 20 km of the site: - Alde-Ore Estuary lies adjacent to the site. - Minsmere-Walberswick, lies 6km south of the site.																	
Sites of Special Scientific Interest (SSSI)		There are 573 SSSI within the East of England of which 141 are situated within Suffolk.																	
		Region: East of England																	
		<table><tr><th>% Area meeting PSA target</th><th>% Area favourable</th><th>% Area unfavourable recovering</th><th>% Area unfavourable no change</th><th>% Area unfavourable declining</th><th>% Area destroyed / part destroyed</th></tr><tr><td>78.19%</td><td>64.92%</td><td>13.27%</td><td>8.12%</td><td>13.67%</td><td>0.02%</td></tr></table>						% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	78.19%	64.92%	13.27%	8.12%	13.67%	0.02%
		% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed												
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County: Suffolk																			
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% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed														
86.96%	72.88%	14.08%	2.14%	10.82%	0.07%														

Indicator	Data Source	Current Data	Comparators	Trend
		% Area favourable % Area unfavourable recovering % Area unfavourable no change % Area unfavourable declining % Area destroyed / part destroyed  There are 28 SSSI within 20 km of the nominated site; 4 of these are within 5-6 km and are considered particularly relevant to any development: • Sizewell Marshes, adjacent and within the nominated site. • Minsmere-Walberswick Heaths and Marshes, adjacent to the site: this SSSI forms a component part of the Minsmere to Walberswick Heaths & Marshes SAC and Minsmere-Walberswick SPA and Ramsar site. • Leiston-Aldeburgh, 1.75km south of the site: this SSSI forms a component part of the Sandlings SPA. • Alde-Ore Estuary, 6km south of the site: this SSSI forms a component part of the Alde-Ore & Butley Estuaries SAC and Alde-Ore Estuary SPA and Ramsar site.		
Sizewell Marshes SSSI	8	Lowland, unimproved wet meadows, which support outstanding assemblages of invertebrates and breeding birds. The condition of the SSSI land in England is assessed by Natural England. There are six reportable condition categories: favourable; unfavourable recovering; unfavourable no change; unfavourable declining; part destroyed and destroyed. Currently 100% of the site is meeting PSA targets, with 100% of site in favourable condition.		

Indicator	Data Source	Current Data	Comparators				Trend												
		% Area favourable % Area unfavourable recovering % Area unfavourable no change % Area unfavourable declining % Area destroyed / part destroyed  <table><tr><th>% Area meeting PSA target</th><th>% Area favourable</th><th>% Area unfavourable recovering</th><th>% Area unfavourable no change</th><th>% Area unfavourable declining</th><th>% Area destroyed / part destroyed</th></tr><tr><td>100.00%</td><td>100.00%</td><td>0.00%</td><td>0.00%</td><td>0.00%</td><td>0.00%</td></tr></table>						% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	100.00%	100.00%	0.00%	0.00%	0.00%	0.00%
% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed														
100.00%	100.00%	0.00%	0.00%	0.00%	0.00%														
Minsmere-Walberswich Heaths and Marshes SSSI	9	A complex series of habitats, notably mudflats, shingle beach, reedbeds, heathland and grazing marsh, which combine to create an area of exceptional scientific interest. Currently 91.71% of the site is meeting PSA targets: <table><tr><th>% Area meeting PSA target</th><th>% Area favourable</th><th>% Area unfavourable recovering</th><th>% Area unfavourable no change</th><th>% Area unfavourable declining</th><th>% Area destroyed / part destroyed</th></tr><tr><td>91.71%</td><td>42.88%</td><td>48.83%</td><td>0.62%</td><td>7.67%</td><td>0.00%</td></tr></table>						% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	91.71%	42.88%	48.83%	0.62%	7.67%	0.00%
% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed														
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Indicator	Data Source	Current Data	Comparators	Trend												
		% Area favourable % Area unfavourable recovering % Area unfavourable no change % Area unfavourable declining % Area destroyed / part destroyed 														
Leiston-Aldeburgh SSSI	10	A mosaic of habitats including acid grassland, heath, scrub, woodland, fen, open water and vegetated shingle. Currently 100% of the site is meeting PSA targets: <table><tr><th>% Area meeting PSA target</th><th>% Area favourable</th><th>% Area unfavourable recovering</th><th>% Area unfavourable no change</th><th>% Area unfavourable declining</th><th>% Area destroyed / part destroyed</th></tr><tr><td>100.00%</td><td>48.87%</td><td>51.13%</td><td>0.00%</td><td>0.00%</td><td>0.00%</td></tr></table> % Area favourable % Area unfavourable recovering % Area unfavourable no change % Area unfavourable declining % Area destroyed / part destroyed 			% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	100.00%	48.87%	51.13%	0.00%	0.00%	0.00%
% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed											
100.00%	48.87%	51.13%	0.00%	0.00%	0.00%											
Alde-Ore Estuary SSSI	11	A complex series of coastal and estuarine habitats including mud-flats, saltmarsh, vegetated shingle and coastal lagoons which are of special botanical and ornithological value. Currently 78.06% of the site is meeting PSA targets:														

Indicator	Data Source	Current Data	Comparators				Trend												
		<table><tr><th>% Area meeting PSA target</th><th>% Area favourable</th><th>% Area unfavourable recovering</th><th>% Area unfavourable no change</th><th>% Area unfavourable declining</th><th>% Area destroyed / part destroyed</th></tr><tr><td>78.06%</td><td>75.96%</td><td>2.10%</td><td>0.59%</td><td>21.36%</td><td>0.00%</td></tr></table> % Area favourable % Area unfavourable recovering % Area unfavourable no change % Area unfavourable declining % Area destroyed / part destroyed 						% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	78.06%	75.96%	2.10%	0.59%	21.36%	0.00%
% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed														
78.06%	75.96%	2.10%	0.59%	21.36%	0.00%														
National Nature Reserves (NNR)	12	There 46 NNR within the East of England, 8 within Suffolk. The following NNR sites are within 20 km of the site: - Orfordness-Havergate; - Suffolk Coast; - Westleton Heath and - Benacre.																	
Local Nature Reserves (LNR)	13	There are 183 LNR sites within the East of England, 37 within Suffolk The following LNR sites is within 20 Km of the site: The Haven, Aldeburgh.																	
Minsmere RSPB reserve	14	This reserve has areas of woodland, heathland and reedbeds, host to a number of bird species including Avocets, Bearded Tits, Marsh Harriers and Nightingales. The reserve is situated to the north adjacent to the nominated site.																	
North Warren RSPB reserve	15	This reserve contains grazing marshes, reedbeds, heathland and woodland. Thousands of ducks, swans and geese use the marshes in winter, while spring																	

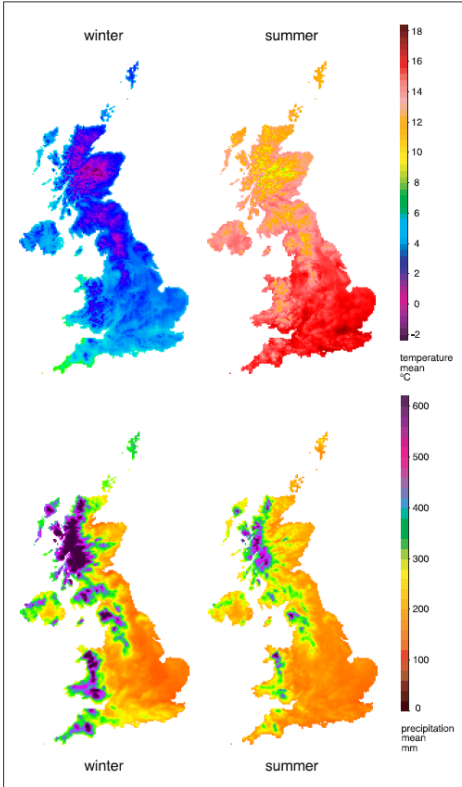
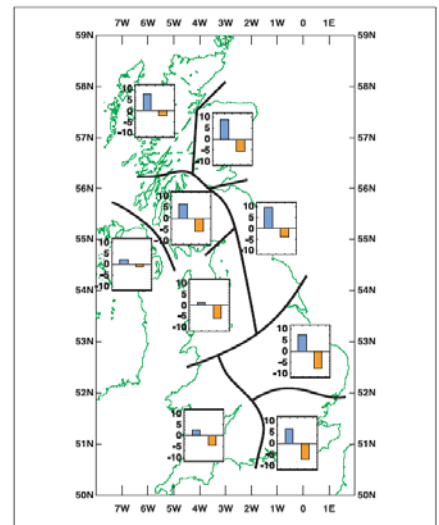
Indicator	Data Source	Current Data	Comparators	Trend
		brings breeding Bitterns, Marsh Harriers, Woodlarks and Nightingales. The reserve is situated 1.5km south of the nominated site.		
Local Wildlife Sites	16	Sizewell Marshes SSSI also includes the Sizewell Belts nature reserve owned by British Energy and managed by Suffolk Wildlife Trust. <i>[Note: Information on any local sites is to be obtained from a local record centre at the appropriate time]</i>		

Key to Data Sources

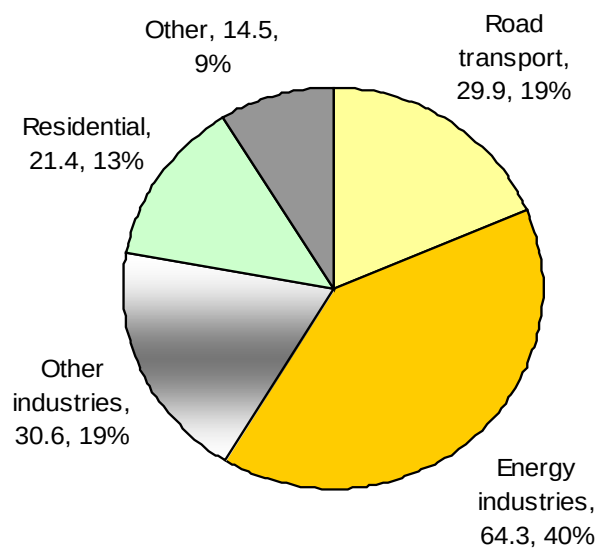
1	Suffolk Biodiversity Action Plan. http://www.ukbap.org.uk/lbap.aspx?ID=377 [accessed 03 March 2009]
2	Suffolk and Essex Water Biodiversity Action Plan. http://www.ukbap.org.uk/lbap.aspx?ID=378 [accessed 03 March 2009]
3	JNCC, UK SAC Sites. http://www.jncc.gov.uk/page-1458 [accessed 03 March 2009]
4	JNCC, UK SPA Sites. http://www.jncc.gov.uk/page-1400 [accessed 03 March 2009]
5	JNCC, RAMSAR Sites. http://www.jncc.gov.uk/page-1389 [accessed 03 March 2009]
6	Regional SSSI details, East of England, Natural England. http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdr18&Category=R&Reference=East+Of+England [accessed 03 March 2009]
7	County SSSI details, East of England, Natural England. http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdr18&Category=C&Reference=1038 [accessed 03 March 2009]
8	Natural England, Sizewell Marshes, SSSI Citation. http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=1003416 [accessed 03 March 2009]
9	Natural England, Minsmere-Walberswick Heaths and Marshes, SSSI Citation. http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=1000721 [accessed 03 March 2009]
10	Natural England, Leiston-Aldeburgh, SSSI Citation. http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=2000370 [accessed 03 March 2009]
11	Natural England, Alde-Ore Estuary, SSSI Citation. http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=1003208 [accessed 03 March 2009]
12	National Nature Reserves, Natural England. http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/nnr/regions/east.aspx [accessed 03 March 2009]

13	Local Nature Reserves, Natural England. http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_results.asp?N=&C=38&Submit=Search [accessed 03 March 2009]
14	Minsmere RSPB Reserve, RSPB. http://www.rspb.org.uk/reserves/guide/m/minsmere/about.asp [accessed 03 March 2009]
15	North Warren RSPB Reserve. http://www.rspb.org.uk/reserves/guide/n/northwarren/index.asp [accessed 03 March 2009]
16	Local Record Centre Database. http://www.nbn-nfbr.org.uk/nfbr.php [accessed 03 March 2009]
17	JNCC: Outer Thames Estuary SPA information. http://www.jncc.gov.uk/pdf/SPA/UK9020309.pdf [accessed 03 September 2010]

Climate Change

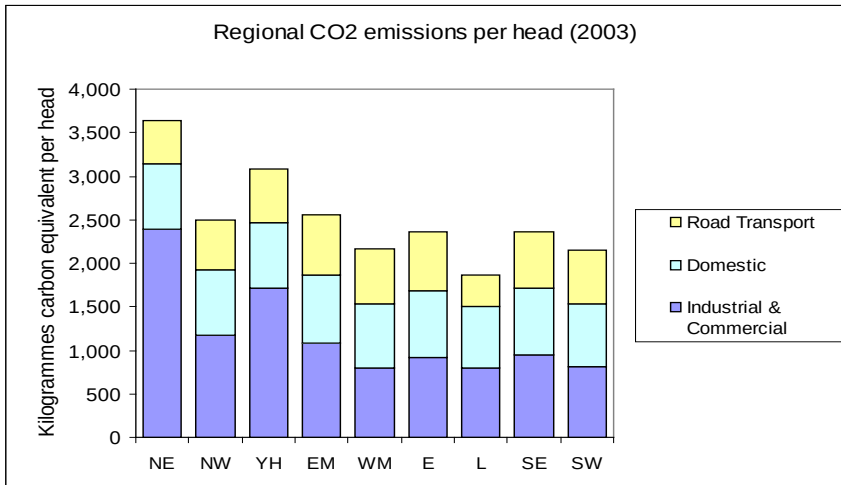
Indicator	Data Source	Current Data	Comparators	Trend
Topic: Climate Change				
East of England, Region (Precipitation & Temperatures)	1, 5, 6	The 2006 East of England Regional Assembly's (EERA) Regional Economic Strategy (RES) reported that the East of England will potentially be the region most affected by climate change, as it is topographically flat and low-lying and being on the East coast makes it more vulnerable to flooding. If high levels of greenhouse gases continue to be emitted, the Environment Agency predicts that by 2080 the region could experience: • a rise in overall temperature between 2- 5 degrees Celsius • hotter and drier summers, milder and wetter winters • summer rainfall could see a drop of up to 45- 50 % • winter could see rainfall increasing by up to 30 % • a rise in sea levels of between 22-28 cm – potentially increasing the risk of flooding and coastal erosion • longer growing seasons with no dominant season • lower humidity and drop in soil moisture levels potentially affecting trees and	 Figure 18: Average observed 1961-1990 winter and summer temperature (°C, top) and precipitation (mm, bottom) in the UK. Data on a 5 km grid.	 Figure 12: The trend (1961 to 2000) in the fraction of the total seasonal precipitation contributed by the "most intense" precipitation events in winter (left-hand bars) and in summer (right-hand bars) for a number of UK regions. Positive (blue) numbers indicate an increasing trend in the proportion of the total precipitation that comes from the "most intense" events, i.e., "most intense" events are increasing either in frequency or in intensity. The lower bound to the class of "most intense" events is defined (separately for each season and region) by an amount (mm) calculated from the 1961 to 1990 period, namely the daily precipitation exceeded on a minimally sufficient number of days necessary to account for precisely 10 per cent of the seasonal precipitation. [Source: Tim Osborn]

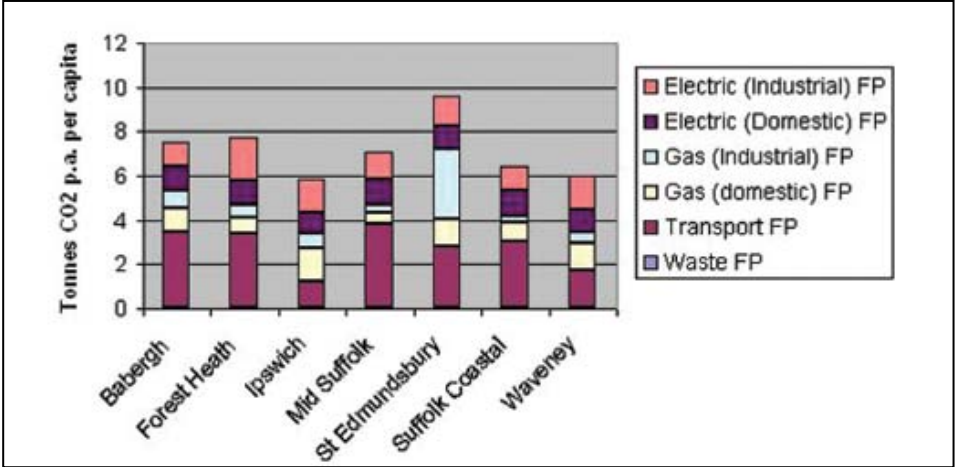
Indicator	Data Source	Current Data	Comparators	Trend
		woodlands Based on UKCIP's data from 1961 to 2000, Sizewell, being in the Region of East of England, shows fairly consistent trends in total precipitation from most intense weather-related events compared with the rest of the UK. These "most intense events" could have a profound effects on: • Agriculture • Transport • Infrastructure • Electricity transmission systems		

Indicator	Data Source	Current Data	Comparators	Trend																		
Greenhouse Gas Emissions (East of England Region)	3	Carbon Emissions: A report published in 2006 by the East of England Development Agency (EEDA) referenced DEFRA's UK Greenhouse Gas Emissions for 1990 and 2004, as shown in the pie charts below. Carbon dioxide emission (total=160.7 MtC) by source 1990  <table><caption>Carbon dioxide emission (total=160.7 MtC) by source 1990</caption><thead><tr><th>Source</th><th>Percentage</th><th>Emission (MtC)</th></tr></thead><tbody><tr><td>Energy industries</td><td>40%</td><td>64.3</td></tr><tr><td>Road transport</td><td>19%</td><td>29.9</td></tr><tr><td>Other industries</td><td>19%</td><td>30.6</td></tr><tr><td>Residential</td><td>13%</td><td>21.4</td></tr><tr><td>Other</td><td>9%</td><td>14.5</td></tr></tbody></table>	Source	Percentage	Emission (MtC)	Energy industries	40%	64.3	Road transport	19%	29.9	Other industries	19%	30.6	Residential	13%	21.4	Other	9%	14.5		Despite contributing 5 MtC in 2004, emissions from the East of England's Energy Industries sector have decreased overall since 1990. The road transport sector, conversely, has seen a significant increase in carbon dioxide emissions.
Source	Percentage	Emission (MtC)																				
Energy industries	40%	64.3																				
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Indicator	Data Source	Current Data	Comparators	Trend																		
		Carbon dioxide emission (total=153.0 MtC) by source 2004 <table><thead><tr><th>Source</th><th>Value (MtC)</th><th>Percentage (%)</th></tr></thead><tbody><tr><td>Energy industries</td><td>56.5</td><td>37%</td></tr><tr><td>Road transport</td><td>32.6</td><td>21%</td></tr><tr><td>Other industries</td><td>27.1</td><td>18%</td></tr><tr><td>Residential</td><td>24.0</td><td>16%</td></tr><tr><td>Other</td><td>12.9</td><td>8%</td></tr></tbody></table> The report indicates that the East of England's largest contribution to total CO₂ emissions is from the Energy Industries sector, which contributed 5 MtC.			Source	Value (MtC)	Percentage (%)	Energy industries	56.5	37%	Road transport	32.6	21%	Other industries	27.1	18%	Residential	24.0	16%	Other	12.9	8%
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		Total Regional CO2 emissions by source (2003) <table border="1"> <caption>Estimated data from 'Total Regional CO2 emissions by source (2003)' chart</caption> <thead> <tr> <th>Region</th> <th>Industrial & Commercial (MtC)</th> <th>Domestic (MtC)</th> <th>Road Transport (MtC)</th> <th>Total (MtC)</th> </tr> </thead> <tbody> <tr> <td>NE</td> <td>6.0</td> <td>2.0</td> <td>1.0</td> <td>9.0</td> </tr> <tr> <td>NW</td> <td>8.0</td> <td>5.0</td> <td>4.0</td> <td>17.0</td> </tr> <tr> <td>YH</td> <td>8.5</td> <td>4.0</td> <td>3.0</td> <td>15.5</td> </tr> <tr> <td>EM</td> <td>4.5</td> <td>3.5</td> <td>3.0</td> <td>11.0</td> </tr> <tr> <td>WM</td> <td>4.0</td> <td>4.0</td> <td>3.5</td> <td>11.5</td> </tr> <tr> <td>E</td> <td>5.0</td> <td>4.5</td> <td>3.5</td> <td>13.0</td> </tr> <tr> <td>L</td> <td>6.0</td> <td>5.0</td> <td>3.0</td> <td>14.0</td> </tr> <tr> <td>SE</td> <td>7.5</td> <td>6.0</td> <td>5.5</td> <td>19.0</td> </tr> <tr> <td>SW</td> <td>4.0</td> <td>4.0</td> <td>3.0</td> <td>11.0</td> </tr> </tbody> </table> From the graph above, the East of England is ranked 5th out of the 9 regions in the UK for CO₂ emissions per head. The region is the largest emitter per head from domestic sources, at 780 kilograms (kg) per head; compared to the English average of 750 kg per head.			Region	Industrial & Commercial (MtC)	Domestic (MtC)	Road Transport (MtC)	Total (MtC)	NE	6.0	2.0	1.0	9.0	NW	8.0	5.0	4.0	17.0	YH	8.5	4.0	3.0	15.5	EM	4.5	3.5	3.0	11.0	WM	4.0	4.0	3.5	11.5	E	5.0	4.5	3.5	13.0	L	6.0	5.0	3.0	14.0	SE	7.5	6.0	5.5	19.0	SW	4.0	4.0	3.0	11.0
Region	Industrial & Commercial (MtC)	Domestic (MtC)	Road Transport (MtC)	Total (MtC)																																																		
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		Regional CO2 emissions per head (2003) <table border="1"><caption>Regional CO2 emissions per head (2003) - Estimated Data</caption><thead><tr><th>Region</th><th>Industrial & Commercial</th><th>Domestic</th><th>Road Transport</th><th>Total</th></tr></thead><tbody><tr><td>NE</td><td>2400</td><td>750</td><td>500</td><td>3650</td></tr><tr><td>NW</td><td>1200</td><td>750</td><td>600</td><td>2550</td></tr><tr><td>YH</td><td>1750</td><td>750</td><td>650</td><td>3150</td></tr><tr><td>EM</td><td>1100</td><td>800</td><td>700</td><td>2600</td></tr><tr><td>WM</td><td>800</td><td>750</td><td>650</td><td>2200</td></tr><tr><td>E</td><td>950</td><td>750</td><td>700</td><td>2400</td></tr><tr><td>L</td><td>800</td><td>750</td><td>350</td><td>1900</td></tr><tr><td>SE</td><td>950</td><td>750</td><td>700</td><td>2400</td></tr><tr><td>SW</td><td>800</td><td>750</td><td>650</td><td>2200</td></tr></tbody></table> The table below shows the 2005 figures from the EERA's Annual Monitoring Report for 2006/2007. Table 6.6a Total emissions 2005 (m tonnes CO2) <table><tr><th></th><th>Industrial, commercial & public</th><th>Domestic</th><th>Road transport</th><th>Land use change & forestry</th><th>Total</th></tr><tr><td>East of England</td><td>17</td><td>13</td><td>15</td><td>1</td><td>47</td></tr><tr><td>England</td><td>194</td><td>122</td><td>125</td><td>3</td><td>444</td></tr></table> Table 6.6b Per capita emissions 2005 (tonnes CO2 per resident) <table><tr><th></th><th>Industrial, commercial & public</th><th>Domestic</th><th>Road transport</th><th>Land use change & forestry</th><th>Total</th></tr><tr><td>East of England</td><td>3.2</td><td>2.5</td><td>2.9</td><td>0.1</td><td>8.7</td></tr><tr><td>England</td><td>3.9</td><td>2.5</td><td>2.5</td><td>0.1</td><td>9.0</td></tr></table>			Region	Industrial & Commercial	Domestic	Road Transport	Total	NE	2400	750	500	3650	NW	1200	750	600	2550	YH	1750	750	650	3150	EM	1100	800	700	2600	WM	800	750	650	2200	E	950	750	700	2400	L	800	750	350	1900	SE	950	750	700	2400	SW	800	750	650	2200		Industrial, commercial & public	Domestic	Road transport	Land use change & forestry	Total	East of England	17	13	15	1	47	England	194	122	125	3	444		Industrial, commercial & public	Domestic	Road transport	Land use change & forestry	Total	East of England	3.2	2.5	2.9	0.1	8.7	England	3.9	2.5	2.5	0.1	9.0	
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Greenhouse Gas Emissions (Suffolk)	2,4	A carbon emissions baseline has been published for Suffolk, with data presented at the Suffolk local authority level.		The latest published carbon dioxide data established Suffolk's baseline as 4 826 504 tonnes (2004) with an																																																																																							

Indicator	Data Source	Current Data	Comparators	Trend
		The South East Climate Change Partnership (SECCP) model does not cover the issues of travel by rail and air or solid fuels and heating oil. Carbon dioxide emissions from waste to landfill are taken into account, however the methane component was omitted when reporting on the GHGs . The following graph illustrates the SECCP carbon dioxide footprint from February 2007 for local authorities in Suffolk:  The summary of carbon dioxide emissions at County level, based on 2004 data, is presented in the table below:		average per capita emission of 7 tonnes. It should be noted that it is below the UK average of 9 tonnes. At local authority level in Suffolk, Suffolk Coastal is the 3rd lowest carbon dioxide emitter per capita.

Indicator	Data Source	Current Data	Comparators	Trend																						
		<table><thead><tr><th>Subject</th><th>Value</th></tr></thead><tbody><tr><td>Total CO₂ Emissions (tonnes)</td><td>4,826,501</td></tr><tr><td>CO₂ per head of population (tonnes)</td><td>7.06</td></tr><tr><td>Total CO₂ Emissions from Transport (tonnes)</td><td>1753,543</td></tr><tr><td>Transport as % of Total</td><td>36.33</td></tr><tr><td>Total Domestic CO₂ Emissions (tonnes)</td><td>1,445,770.00</td></tr><tr><td>Domestic as % of Total</td><td>29.95</td></tr><tr><td>Total Industrial & Commercial CO₂ Emissions (tonnes)</td><td>1,574,460</td></tr><tr><td>Industrial and Commercial as % of Total-</td><td>32.62</td></tr><tr><td>Total CO₂ Emissions from Landfill (tonnes)*</td><td>52,728</td></tr><tr><td>Waste (Landfill) as % of Total</td><td>1.09</td></tr></tbody></table> * Comprising Municipal Solid Waste		Subject	Value	Total CO ₂ Emissions (tonnes)	4,826,501	CO ₂ per head of population (tonnes)	7.06	Total CO ₂ Emissions from Transport (tonnes)	1753,543	Transport as % of Total	36.33	Total Domestic CO ₂ Emissions (tonnes)	1,445,770.00	Domestic as % of Total	29.95	Total Industrial & Commercial CO ₂ Emissions (tonnes)	1,574,460	Industrial and Commercial as % of Total-	32.62	Total CO ₂ Emissions from Landfill (tonnes)*	52,728	Waste (Landfill) as % of Total	1.09	
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Local Authorities Greenhouse Gas Emissions	3,4	Suffolk Local Authorities Carbon Footprint Report (2007) mentions that Suffolk Coastal's leading carbon emitter is transport with 45.5%, followed by domestic electricity with 17.7%, industrial electricity with 17%, domestic gas with 13.5%, industrial gas with 5.21% and waste at 0.7%.																								
Topic: Energy																										
Energy	7,8	<u>Electricity Consumption 2007 (Suffolk Coastline)</u> Overall: 303.2 GWh (0.1 % of UK) Average Domestic Consumption: 5,212 kWh Average Industrial Consumption: 56,778 kWh <u>Total Energy Consumption 2006 (Suffolk Coastline)</u> 1,211.4 GWh <u>Electricity Consumption 2007 (East of England)</u> Overall: 28,257.4 GWh Average Domestic Consumption: 4,795 kWh Average Industrial Consumption: 75,083 kWh																								

Indicator	Data Source	Current Data	Comparators	Trend
		<u>Electricity Consumption 2007 (Great Britain)</u> Overall: 309,669.5 GWh Average Domestic Consumption: 4,392 kWh Average Industrial Consumption: 79,077 kWh <u>Total Energy Consumption 2006</u> East of England: 156,267.2 GWh UK: 2,120,261.5 GWh		
Renewable Energy	7,8	<u>Energy Consumption from Renewable Sources 2006 (Suffolk Coastline)</u> 4.7 GWh <u>Total Energy Consumption from Renewable Sources 2006</u> East of England: 529.0 GWh (0.02 %) UK: 6,939.5 GWh (0.3 %)		
Current Capacity	7,8	There are 10 power stations within a 112km radius of the site, in addition to the existing nuclear power station at Sizewell, which ceased operation in 2002. The 10 power stations have a combined capacity of 7.4 GW (fossil fuel mix), 0.4 GW (wind) and 2.2 GW (nuclear).		

Key to Data Sources

1	The East of England Regional Assembly (EERA) http://www.eera.gov.uk/Documents/About%20EERA/Policy/Planning%20and%20Transport/PlanHome/RPG/RPG14/SEASustainabilityAppraisal/SEA/AppBii_Final_Baselinedata.pdf [accessed 03 March 2009] NB: The East of England Regional Assembly dissolved on the 31 March 2010 and no longer functions as an organisation. From 1 April 2010, much of EERA's work will be taken forward by a new organisation called the East of England LGA - www.eelga.gov.uk
2	Suffolk County Council [online] available : http://www.suffolk.gov.uk/NR/rdonlyres/375F0B65-1E52-43AD-98E8-6BF6EB42ABB8/0/SCCsEnvironmentActionPlanv2.pdf [accessed 03 March 2009]

3	East of England Observatory, Climate Change and the East of England http://www.eastofenglandobservatory.org.uk/SearchResponse.aspx?IPSVTermIDs=1309 [accessed 03 March 2009]
4	CRed, Suffolk Carbon Reduction http://www.suffolk.gov.uk/Environment/EnvironmentalManagement/CredSuffolk.htm [accessed 03 March 2009]
5	United Kingdom Climate Impact Programme UKCIP02 http://www.ukcip.org.uk/images/stories/Pub_pdfs/UKCIP02_tech.pdf [accessed 03 March 2009]
6	Government Office for the East of England, East of England Plan ⁸ http://www.gos.gov.uk/goee/docs/Planning/Regional_Planning/Regional_Spatial_Strategy/EE_Plan1.pdf [accessed 03 March 2009]
7	Department of Business Enterprise and Regulatory Reform (December 2008). Electricity Consumption Data at Regional and Local Authority Level. http://www.berr.gov.uk/energy/statistics/regional/regional-local-electricity/page36213.html
8	Department of Business Enterprise and Regulatory Reform (October 2008). Total final energy consumption at regional and local authority level. http://www.berr.gov.uk/energy/statistics/regional/total-final/page36187.html

Communities: Population and Economy

Indicator	Data Source	Current Data			Comparators		Trend
Topic: Population							
Age of population	1, 2		Leiston	Suffolk Coastal (Non-Metropolitan District)	East of England	England	The East of England had a population of 5.6 million in 2006, according to the mid-year population estimates. This was an increase of 206,000 (3.8%) between 2001 and 2006. Over the 25 years between 1981 and 2006 the population increased by 16%. The largest percentage change was a 48% increase in East Cambridgeshire ² .
		All People (Count)	6,241	115,141	5,388,140	49,138,831	
		People aged 0-4 (%)	5.66	5.31	5.97	5.96	
		People aged 5-7 (%)	3.88	3.66	3.79	3.74	
		People aged 8-9 (%)	2.48	2.51	2.59	2.61	
		People aged 10-14 (%)	7.29	6.64	6.51	6.57	
		People aged 15 (%)	1.17	1.25	1.23	1.27	
		People aged 16-17 (%)	2.47	2.53	2.44	2.51	
		People aged 18-19 (%)	1.73	1.92	2.22	2.40	
		People aged 20-24 (%)	4.71	3.75	5.54	6.01	
		People aged 25-29 (%)	5.18	4.47	6.29	6.65	
		People aged 30-44 (%)	20.45	20.58	22.42	22.65	
		People aged 45-59 (%)	19.84	20.93	19.59	18.88	
		People aged 60-64 (%)	5.11	5.63	4.95	4.87	
		People aged 65-74 (%)	9.36	10.57	8.64	8.35	
		People aged 75+	7.52	7.44	5.80	5.60	

Indicator	Data Source	Current Data			Comparators		Trend
		75-84 (%)					
		People aged 85-89 (%)	2.05	1.87	1.36	1.30	
		People aged 90 and over (%)	1.11	0.94	0.66	0.64	
		Mean age of population in the area	41.13	42.08	39.12	38.60	
		Median age of population in the area	41.00	43.00	38.00	37.00	
		The population in Leiston and Suffolk Coast is older than the national average and regional average. In Leiston about 7.52% of the population is aged over 75 years, with 3.16% aged over 85 years.					
		People aged 65 and over make up approximately 20% of the Suffolk Coastal population which is higher than the national average of 15%.					
Topic: Employment							
Percentage Economically Active –Employed %	1, 2	Leiston	Suffolk Coastal (Non-Metropolitan District)	East of England	England		
		Full Time 38.48	38.29	42.61	40.81		
		Part Time 15.29	13.83	12.48	11.81		
		In the second quarter of 2007 the employment rate (for people of working age) in the East was 77%, among the highest in the UK where the overall rate was 74 per cent ² . Full time employment levels at ward and district levels are slightly					

Indicator	Data Source	Current Data		Comparators		Trend
		below the national and regional average. Part time working at both ward and district level is above the national and regional average.				
Percentage Economically Active –unemployed % ¹		2.58	2.16	2.60	3.35	
		Unemployment levels are slightly below the national average at a ward and district level.				
Industry of employment		Leiston 100% (2,800)	Suffolk Coastal (Non Metropolitan District) 100% (52,327)	East of England 100% (2,579,378)	England 100% (22,441,498)	
All persons						
Agriculture/ Forestry (%)		3.86	3.77	1.90	1.45	
Fishing (%)		0.14	0.08	0.02	0.02	
Mining (%)		0.25	0.16	0.21	0.25	
Manufacturing (%)		11.86	9.60	11.47	14.83	
Electricity/Gas/Water Supply (%)		7.14	1.90	0.63	0.71	
Construction (%)		9.79	6.27	7.62	6.76	
Wholesale/ Retail Trade (%)		18.61	15.11	17.29	16.85	
Hotels/ Restaurant (%)		9.00	5.59	4.16	4.73	
Transport/ Communications (%)		5.18	15.27	7.41	7.09	
Financial (%)		1.64	3.60	5.81	4.80	
Real Estate (%)		8.04	10.50	13.31	13.21	
Public Admin (%)		2.75	5.27	5.16	5.66	
Education (%)		4.64	6.92	7.34	7.74	
Health & Social Work (%)		10.86	10.72	9.68	10.70	
Other (%)		6.25	5.24	4.99	5.20	

Indicator	Data Source	Current Data		Comparators		Trend
Self Employed (%)		9.41	10.51	9.25	8.32	
Socio-Economic Classifications 2001 (% Persons aged 16-74)		Leiston	Suffolk Coastal (Non-Metropolitan District)	East of England	England	
Large employers and higher managerial occupations		1.33	3.57	3.81	3.50	
Higher professional occupations		2.68	5.36	5.33	5.11	
Lower managerial and professional occupations		13.27	19.32	19.86	18.73	
Semi-routine occupations		17.23	11.70	11.77	11.65	
Routine occupations		13.76	8.15	8.57	9.02	
Never Worked		1.30	1.06	1.68	2.72	
Full-time students		4.52	4.81	5.78	7.03	

Key to Data Sources

1	National Statistics 2001, Neighbourhood Statistics: Leiston (Ward) http://neighbourhood.statistics.gov.uk/dissemination/LeadTableView.do?a=7&b=6099271&c=IP16+4UR&d=14&e=15&q=488943&i=1001x1003x1004&m=0&r=0&s=1236083286468&enc=1&dsFamilyId=27
2	National Statistics http://www.statistics.gov.uk/cci/nugget.asp?id=1131
3	East of England Observatory http://www.eastofenglandobservatory.org.uk/

Communities: Supporting Infrastructure

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Transport				
Regional freight Routes	1	The Sizewell area is not well served by major road transport links. The area is connected to the main A12 via local A roads and the A12 (Lowestoft to Ipswich and London) is the subject of strategic local development of improvements (i.e. bypasses). The A14 (Ipswich to Newmarket) has been identified as a national road route. Congestion issues in the local area are noted in the region's population centres (Ipswich, Bury St Edmunds, and Lowestoft). There are congestion issues on strategic routes, particularly the A14 where a number of junctions are reaching capacity. Future growth associated with regeneration is being taken forward in partnership with the Highways Agency. Strategic development plans are in place for a scheme to provide a new route for the A12, bypassing the four villages of Farnham, Stratford, Glenham and Marlesford and providing a better route alignment.		
Figure 7.1 Forecast Daily Stress 2016 (A36 and A46 are not included as no data was available)  Figure 6.4 Observed Stress 2008 (A36 and A46 are not included as no data was available)  Figure 7.2 Forecast Daily Stress 2026 (A36 and A46 are not included as no data was available) 				

Indicator	Data Source	Current Data	Comparators	Trend
		Rail connections are adequate for the area’s current transport loading and there are proposals for further improvement to the East Suffolk Rail Line. There is currently no marine off- loading facility at Sizewell, but it is noted that a temporary facility was built for use during the construction of the existing nuclear power station. The nearest major shipping links are located in Great Yarmouth, approximately 50 miles north of the site.		
Topic: Waste				
Municipal Waste	2,3	In 2006/2007 Suffolk County Council was one of the best performing waste disposal and unitary authorities in the country with a 43.5% recycling and compost rate. Landfill remains the principal method of waste disposal in Suffolk County Council. A total of 36.5% of municipal waste was sent to landfill in the region in 2006/2007, this was lower than the English average of 58%. There are seven municipal waste disposal sites operational in Suffolk Council, with a combined current capacity anticipated to last up until at least 2020. No information suggests expansion of capacity is currently being considered. However Suffolk Coastal District Council is currently in the process of considering alternative waste treatment options (Mechanical Biological Treatment and Energy from Waste plant). There are currently no operational hazardous waste landfill sites in Suffolk County, although established waste management contractors are known to operate and provide services within the region.	Total municipal waste in the region has increased by just under 41% since 1995-1996, from 296,000 tonnes to 418, 466 tonnes in 2006/2007. A decline in total municipal waste has been noted between 2003/2004 and 2007/2008, from 287,417 tonnes to 230,150 tonnes. A large percentage attributable to removal of Biodegradable Municipal Waste from the waste streams. The resulting improvements have resulted levels of recycling and composting performance that are consistently amongst the best in the England. Between 1995 and 2007, Suffolk increased its household waste recycling level from 12.1% to 42.9%.	
Radioactive and Hazardous Waste		The operation of a new nuclear power station at the site will require the interim storage of spent fuel and intermediate level waste on site for a period of approximately 100 years after operation has ceased. The arrangements for dealing with all types of radioactive and hazardous waste arising from the operation and decommissioning of new power stations, (including gaseous and liquid radioactive discharges). are appraised in Chapter 6 of the Main		

Indicator	Data Source	Current Data	Comparators	Trend
		AoS Report.		

Key to Data Sources

1	Highways Agency 2008, Regional Network Report South East [online] available: http://www.highways.gov.uk/business/documents/RNR08_SE.pdf
2	Suffolk Waste Partnership. 2007/2008 Annual Report of the Joint Municipal Waste Management Strategy 2008 [online] available: http://www.suffolkrecycling.org.uk/Files/2007-08-Annual-Report-Final.pdf [accessed 03 March 2009]
3	East of England Regional Waste Management Strategy, East of England Region Waste Technical Advisory Body (2002)

Human Health and Well-Being

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Human Health & Well-Being				
Community well-being	1	A useful gauge of the overall well-being of the area can be obtained from the various deprivation indices on the Office of National Statistics, Neighbourhood Statistics web page. This data compares the Super Output Area, Suffolk Coastal 004C to England as a whole as follows: • Income deprivation greater than average • Employment deprivation less than average • Health deprivation less than average • Education deprivation greater than average • Barriers to housing and services are much less than average • Crime is much less than average • Living environment deprivation is approximately average		
Index of multiple deprivation (2007)	2	The Department of Communities and Local Government's index of deprivation (an index combining a range of economic, social and housing issues into a single deprivation score) shows Suffolk Coastal District Council's area ranked as 274 out of 354 (where 1 is most deprived). This ranking shows that the Suffolk Coastal	Other district councils in Suffolk are ranked as follows: • Babergh is 277 • Forest Heath is 265 • Mid Suffolk is 306 • Waveney is 114 Aside from Waveney district, which is	

Indicator	Data Source	Current Data	Comparators	Trend																				
		area is not particularly deprived.	significantly more deprived, the Suffolk Coastal area ranks at a similar deprivation level to other district councils in Suffolk.																					
Age profile (mid 2006)	1	In the Super Output Area, Suffolk Coastal 004C the age profile of the population is as follows: <table><thead><tr><th>Age Band (years)</th><th>Percentage</th></tr></thead><tbody><tr><td>0 – 15</td><td>19.0</td></tr><tr><td>16 – 64 (males)</td><td rowspan="2">53.5</td></tr><tr><td>16 – 59 (females)</td></tr><tr><td>65+ (males)</td><td rowspan="2">27.5</td></tr><tr><td>60+ (females)</td></tr></tbody></table>	Age Band (years)	Percentage	0 – 15	19.0	16 – 64 (males)	53.5	16 – 59 (females)	65+ (males)	27.5	60+ (females)	These figures compare to the age profile for the UK as a whole in 2006 as follows: <table><thead><tr><th>Age Band (years)</th><th>Percentage</th></tr></thead><tbody><tr><td>0 – 15</td><td>20.1</td></tr><tr><td>16 – 64 (males)</td><td rowspan="2">61.6</td></tr><tr><td>16 – 59 (females)</td></tr><tr><td>65+ (males)</td><td rowspan="2">18.3</td></tr><tr><td>60+ (females)</td></tr></tbody></table> As can be seen from the tables, there is a much higher proportion of people in the upper age bracket (retired or approaching retirement) in the Super Output Area, Suffolk Coastal 004C than in the UK as a whole. There are also proportionately fewer people of working age in the area, therefore.	Age Band (years)	Percentage	0 – 15	20.1	16 – 64 (males)	61.6	16 – 59 (females)	65+ (males)	18.3	60+ (females)	
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General health (2001)	1	For the census in 2001, people were asked whether their health over the preceding twelve months was 'good', 'fairly good' or 'not good'. The results for the Super Output Area, Suffolk Coastal 004C were as follows: • Good – 64.1% • Fairly good – 27.9% • Not good – 8%	For comparison purposes, the same data for the overall Suffolk Coastal area and England are as below: <table><thead><tr><th></th><th>Suffolk Coastal</th><th>England</th></tr></thead><tbody><tr><td>Good</td><td>69.8</td><td>68.8</td></tr><tr><td>Fairly good</td><td>22.7</td><td>22.2</td></tr><tr><td>Not good</td><td>7.5</td><td>9.0</td></tr></tbody></table> Taken together the figures for 'good' and 'fairly good' health in the Super Output Area, Suffolk		Suffolk Coastal	England	Good	69.8	68.8	Fairly good	22.7	22.2	Not good	7.5	9.0									
	Suffolk Coastal	England																						
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Indicator	Data Source	Current Data	Comparators	Trend		
			Coastal 004C are comparable with those for the other two areas as are the numbers of people reporting 'not good' health.			
Life expectancy at birth (Jan 04 – Dec 06)	1			Data from the same source for previous years show that these figures for life expectancy at birth in the Suffolk Coastal District Council area have risen slightly for both males and females since 2001.		
			Suffolk Coastal		East of England	England
		Males	79.80		78.30	77.32
		Females	82.90		82.30	81.55
			As can be seen from above, the life expectancy in the Suffolk Coastal District Council area is good with ages slightly above the national average for England.			
Infant mortality (Jan 03 – Dec 05)	1	Infant mortality in the Suffolk Coastal District Council area for the years in question was 4.5 persons in every 1000.	This compares to the figure of 4.2 persons for the East of England region and 5.1 persons per thousand in England as a whole.	Data from the same source for previous years show that figures for infant mortality in the Suffolk Coastal District Council area have risen slightly from a low in 2002-04 but are lower than they were in 1998-2000.		
Proximity to medical services	3	Medical services in the area of the Sizewell site are as follows: - One General Practitioner (GP) practice (Dr Osler and Partners) within 5 km of the site. Four other GP practices are within 10 km of the site. - Closest hospital is the Aldeburgh Community Hospital (6.9 km) but this has no Accident and Emergency (A&E) department - Nearest hospital with an A&E department is The Ipswich				

Indicator	Data Source	Current Data	Comparators	Trend
		Hospital NHS Trust in Heath Road, Ipswich which is 33.5 km away The nearest hospital providing services to the Suffolk Mental Health Partnership NHS Trust is St Clements Hospital which is 34.3 km away		
Education - examination results for young people (2006 – 07)	1	In the Super Output Area, Suffolk Coastal 004C, 61% of pupils achieved 5 or more A*- C grade passes including English and Mathematics at GCSE or equivalent.	This compares to the figure of 54% of students for the Suffolk Coastal District Council area and 46% of students for England as a whole.	
Housing – total unfit dwellings (Apr 06)	1	The total percentage of unfit dwellings in the Suffolk Coastal District Council area for the year in question was 1.4%.	This compares to a percentage of 3.2% for the East of England region and 4.2% for England as a whole.	Data from the same source show that the percentage of unfit dwellings has reduced slightly since January 2001.
Radioactivity monitoring	4	The Food Standards Agency's annual RIFE (Radioactivity In Food and the Environment) report details the results of regular radiological monitoring carried out to ensure that discharges of radioactivity do not result in unacceptable doses to the public. RIFE 13 relates to monitoring carried out in 2007. From this report it is possible to extract the following conclusions: - water, sediment, beach and terrestrial and marine food and animal samples were collected from around the Sizewell site in 2007 - analysis of tritium, carbon-14 and	The dose limit for members of the public specified in The Ionising Radiation Regulations 1999 is 1 millisievert (mSv) per year for all artificial sources of radiation. Estimations of dosage levels to the public from the Sizewell sampling were as follows: - estimated dose from locally grown foodstuffs was less than 0.005 mSv - estimated dose to local fish and shellfish consumers was less than 0.005 mSv - the total dose from all sources, including direct radiation, was assessed as being less than 0.005 mSv	Trends in the data noted from sampling in previous years are as follows: - the estimated dose from locally grown foodstuffs has reduced markedly since 2006 when it was 0.059 mSv due to gaseous discharges - there has been no significant trend in estimated doses to seafood consumers in recent years - the total assessed dose from all sources has

Indicator	Data Source	Current Data	Comparators	Trend
		sulphur-35 in milk, crops and fruit all showed very low concentrations of artificial radionuclides • concentrations of radioactivity in freshwater were low • concentrations of artificial radionuclides in seafood, sediment, sand and seawater were low • tritium concentrations in seafood were below the limit of detection		reduced significantly from 0.091 mSv in 2006
Health related to nuclear installations	5	There has been, since 1966, a nuclear power station operating at Sizewell, with Sizewell A (operation until 2006), and then Sizewell B (operating since 1995). There are, therefore, historical data which can be analysed to correlate the incidence of disease reported around Sizewell so that it can be compared to the average prevalence of the same disease in the British population as a whole. Such a comparison for childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours was undertaken by the Committee on Medical Aspects of Radiation in the Environment (COMARE) in 2005. The results of this study for Sizewell are as below: • actual cases of childhood leukaemia and non-Hodgkin lymphoma between 1969 and 1993 in a 25km area around the	For comparison purposes, the figures derived using statistics for Britain as a whole are as follows: • the expected number of cases of childhood leukaemia and non-Hodgkin lymphoma between 1969 and 1993 in a 25km area around the plant should have been 14.23 • the expected number of cases of childhood tumours between 1969 and 1993 in a 25km area around the plant should have been 24.81 It was concluded, from the above statistics, that there was no evidence of excess numbers of these cases in the 25 km area which would include either primary exposure to radioactive discharges or secondary exposure from re-suspended material.	

Indicator	Data Source	Current Data	Comparators	Trend
		plant were 11 actual cases of childhood solid tumours between 1969 and 1993 in a 25km area around the plant were 22		

Key to Data Sources

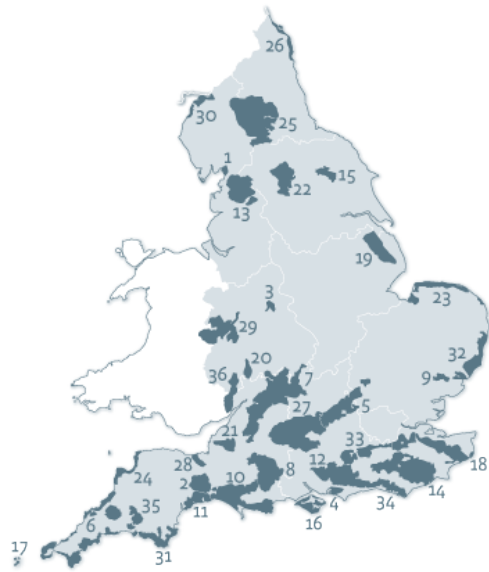
1	Office of National Statistics http://neighbourhood.statistics.gov.uk/dissemination/home.do;jessionid=ac1f930c30d607c6170cbe3146ada704c9cac1978fc7?m=0&s=1236174480737&enc=1&bhcp=1&nsjs=true&nsck=true&nssvg=false&nswid=996
2	Department of Communities and Local Government, Indices of Deprivation http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/
3	NHS 'Find Services' on the web at: http://www.nhs.uk/servicedirectories/Pages/ServiceSearch.aspx
4	Food Standards Agency, Radioactivity In Food and the Environment (RIFE) report (2007) on the web at: http://www.food.gov.uk/science/surveillance/radiosurv/rife13
5	Committee on Medical Aspects of Radiation in the Environment (COMARE) (2005). Tenth Report. The incidence of childhood cancer around nuclear installations in Great Britain. Health Protection Agency, June 2005. http://www.comare.org.uk/comare_docs.htm

Cultural Heritage

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Cultural Heritage				
Scheduled Monuments		There are 2 Scheduled Monuments within an approximate 5km distance of the site, consists of the original site of Leiston Abbey with a later chapel and pillbox which lies within approximately 2km of the site.		
Conservation Areas		The nearest Conservation Areas are Leiston and Thorpeness which are located within an approximate 3km distance of the site. There is a potential effect on their setting.		
Listed Buildings		There are around 8 listed buildings within an approximate distance of 5km of which also 2 Grade I and 6 Grade II*.		
Archaeological sites		Previous archaeological investigation at the site of the previously proposed Sizewell 'C' nuclear power station in 1993 has identified 2 prehistoric sites, a saltworking site of possible Roman date and 4 Medieval occupation sites. The presence of these features indicates historic activity spanning a long period of time in the area within and immediately surrounding the existing facility. As such the area is likely to be considered to be of at least local or regional archaeological importance. As a minimum, an archaeological watching brief will be required during construction. However, it is more likely that a detailed archaeological investigation of the area will be required, including intrusive investigation (e.g. trial trenching and detailed recording).		
Historic Landscape		Many of the fields around the existing facility are shown on 19 th century Ordnance Survey maps and there is potential for historic hedgerows and landscape to exist which could be affected/lost as a result of the development.		

Landscape

Indicator	Data Sources	Current Data	Comparators	Trend
Topic: Landscape				
National Character Area (NCA)	1	The site at Sizewell is situated within the Suffolk Coast and Heaths NCA (82). Key Characteristics: - Geologically different from the rest of East Anglia; Crag deposits form deep free-draining acidic sands and gravels, easily worked, giving rise to distinctive topography and landcover. - Largely unspoilt mosaic of estuaries, saltmarsh, grazing marsh, reedbed, river valleys, arable, heath and woodland, with strong coastal influence, eg shingle spits and ridges resulting from longshore drift. - Large commercial ports of Harwich and Felixstowe and seasonal influx of yachts to the rivers and harbours provide interest and variety of scale along the estuaries, with influence of seabirds, wind and intertidal mud flats. - Large conifer plantations, closely associated with heathland and birch scrub. - Sparsely settled, with small nucleated villages and isolated farmhouses. Brick buildings with colour-washed walls and pantiles as typical features. - Coastal towns and villages form the focus of tourist activity, especially where combined with sailing. - A string of landscaped parkland along the A12 in the west, and along the Stour and Orwell estuaries. - Impact of major development: Felixstowe docks, Sizewell nuclear power stations and the associated infrastructure, and military bases. Surrounding NCA's within Suffolk Coastal District include: 83- South Norfolk and High Suffolk Claylands 86- South Suffolk and North Essex Clayland		

Indicator	Data Sources	Current Data	Comparators	Trend
Areas of Outstanding Natural Beauty	2	 Suffolk Coast and Heaths AONB (Area 32) The site falls within The Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB). The current AONB Management Plan 2008-2013 has relevant objectives and landscape character sections. Selected quotes from the AONB management plan related to Sizewell include: <i>‘The current nuclear power station at Sizewell and its associated infrastructure has a considerable adverse impact on the natural beauty of the area’.</i> <i>‘Should consent be granted for such a development then a comprehensive package of measures would be required to mitigate the adverse impacts’.</i>		

Indicator	Data Sources	Current Data	Comparators	Trend
		<i>'Future development within the AONB must recognise the essential value of tranquillity and build in solutions that respect this special quality. This may include such easy 'wins' as low level/directional/timed lighting, traffic calming and alternative transport options. Work is also needed to explore how tranquil areas can be mapped and retained.'</i> The following Landscape Types within the AONB (Identified in the Suffolk Coast and Heaths AONB Management Plan 2008-13) will be potentially directly effected: Special qualities of the Estate Sandlands Landscape Type 7: • <i>'Lowland heath and its associated wildlife</i> • <i>Large open vistas across heaths with limited trees</i> • <i>Ancient woodlands on the western fringe, distinctive field patterns and elm and pine hedges</i> • <i>Coniferous forest meeting multiple needs</i> • <i>Good walking, cycling and riding opportunities'</i> Special qualities of the Coastal Dunes and Shingle Ridges Landscape Type 5 • <i>'Shingle features, some vegetated - Orford Ness</i> • <i>Short sections of crumbling soft cliffs- Dunwich</i> • <i>Bodies of water (broads / saline lagoons) -</i> • <i>Shingle Street</i> • <i>Sense of space, isolation and tranquillity</i> • <i>Coastal towns and villages – Aldeburgh,</i> • <i>Southwold, Walberswick, Dunwich</i> • <i>Beach huts and fishermen's huts</i> • <i>Martello towers'.</i> Special qualities in the Coastal levels Landscape Type 6 • <i>'Extensive wet, grazing marshes</i> • <i>Ancient drainage and enclosure patterns</i> • <i>Open and extensive views</i>		

Indicator	Data Sources	Current Data	Comparators	Trend
		<i>Specialist wildlife'</i>		
Heritage Coasts	3	 Suffolk Heritage Coast (Area 7)		

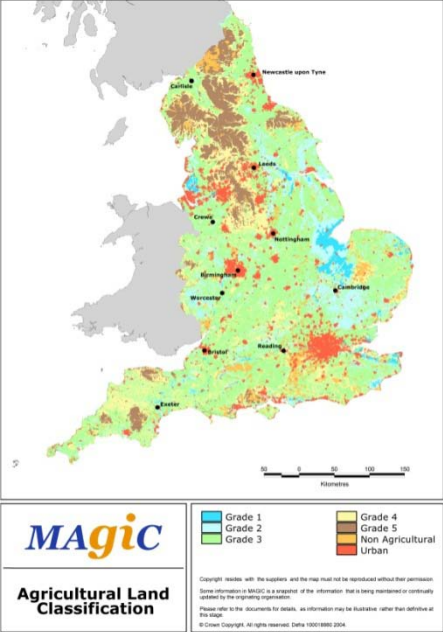
Indicator	Data Sources	Current Data	Comparators	Trend
Local Landscape Character Types/ Areas	4	Relevant Suffolk Landscape Character Assessment 2008 Landscape Types in and immediately around the site area Landscape Type 7 Estate Sandlands ‘Key Characteristics (Obtained from the Character type description) • <i>Flat or very gently rolling plateaux of freely-draining sandy soils, overlying drift deposits of either glacial or fluvial origin</i> • <i>Chalky in parts of the Brecks, but uniformly acid and sandy in the south-east</i> • <i>Absence of watercourses</i> • <i>Extensive areas of heathland or acid grassland</i> • <i>Strongly geometric structure of fields enclosed in the 18th & 19th century.</i> • <i>Large continuous blocks of commercial forestry</i> • <i>Characteristic ‘pine lines’ especially, but not solely, in the Brecks</i> • <i>Widespread planting of tree belts and rectilinear plantations</i> • <i>Generally a landscape without ancient woodland, but there are some isolated and very significant exceptions</i> • <i>High incidence of relatively late, estate type, brick buildings</i> • <i>North-west slate roofs with white or yellow bricks. Flint is also widely used in as a walling material</i> • <i>On the coast red brick with pan-tiled roofs, often black-glazed’</i>		

Indicator	Data Sources	Current Data	Comparators	Trend
		Landscape Type 5 Coastal Dunes and Shingle Ridges <i>'Key Characteristics</i> <i>Flat or gently rolling landform of sand or shingle</i> <i>Low fragile vegetation</i> <i>Vast open uncluttered landscape</i> <i>Historic Military structures</i> <i>Occasional large buildings in an empty landscape</i> <i>Occasional fishing huts and boats on the beach</i> <i>Only in short stretches is there the paraphernalia of intensive tourist activity, beach huts and piers'</i> Landscape Type 6 Coastal levels <i>'Key Characteristics</i> <i>Flat marshland adjacent to the coast or estuaries</i> <i>Marine alluvium soils</i> <i>Sinuuous and complex mediaeval dyke networks</i> <i>19th C uniform dyke networks</i> <i>Cattle grazed wet grassland</i> <i>Widespread modification for arable production</i> <i>Small plantations and carr woodlands</i> <i>Inland side of rising ground often wooded</i> <i>Important wildlife conservation areas</i> <i>Unsettled landscape with domestic buildings on the fringes</i> <i>Derelict wind pumps'</i> Surrounding Landscape Types which could potentially be indirectly affected. Landscape Type 1 Ancient Estate Claylands. Landscape Type 25 Leiston Urban Area. Landscape Type 14 Rolling Estate Claylands. Landscape Type 16 Rolling Estate Sandlands.		

Key to Data Sources

1	Natural England. Landscape Character Areas – Vale of Taunton and Quantock Fringes [online] available: http://www.naturalengland.org.uk/Images/jca146valeoftauntonandquantockfringestcm2-21223_tcm6-5615.pdf [accessed 13 February 2009]
2	Natural England – Areas of Outstanding Natural Beauty [online] available http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/aonb/default.aspx [accessed 13 February 2009]
3	Natural England – Heritage Coasts [online] available http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/heritagecoasts/default.aspx [accessed 13 February 2009]
4	Suffolk Landscape Character Assessment 2008
5	The Suffolk Coast and Heath AONB Management Plan 2008-2013, The Adopted Suffolk Coastal Local Plan 1999 with subsequent modifications 'Saved policies'
6	Tranquility and tranquil areas (based on CPRE data) [online] available http://www.cpre.org.uk/campaigns/landscape/tranquillity/national-and-regional-tranquillity-maps [accessed 13 February 2009]
7	CPRE Website Light Pollution Map for the South West Region

Soils, Geology and Land Use

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Soils				
Agricultural Land Classification	1	Please refer to the map. The Magic map produced by DEFRA in 2004 indicates the current agricultural grade of lands in England and Wales. These grades are Agricultural land classification Grades 1-5, non-agricultural and Urban. National Soils Research Institute (Report available) - Newport/Mendham Soils - Deep well drained sandy soils/Deep peat soils associated with Clayey over sandy soils, in part very acid. - Glaciofluvial drift/Fen peat and river alluvium - Free draining permeable soils in unconsolidated sands or gravels with relatively high permeability and high storage capacity/ Drained lowland peaty soils with groundwater controlled by pumping - Barley, other cereals and sugar beet some carrots and potatoes, some coniferous woodland and lowland heath habitats.		
Soils				
				
Topic: Geology				
Geological SSSIs	3	There are no geological SSSIs within the local vicinity.		
Geology and Land Quality	2	Geological Risks The local Geology is Norwich Crag, Red Crag and Chillesford Clay.		

Indicator	Data Source	Current Data	Comparators	Trend
		Some mineral abstraction has been recorded locally associated with the existing power plants. Based on the information within the Envirocheck report the geological risks are: • High Risk for the Potential for Compressible Ground Stability Hazards; • Low risk of Landslide Ground stability Hazard; • Very low risk of running sand ground stability hazard; • Very low risk of potential for shrinking or swelling clay ground stability hazard. • Environmental Hazards Based on the Envirocheck report the main environmental Hazards are; • Landfill recorded to the South of the Site. No information is currently available on the activities of this site • Historic Land Use • Historic maps ranging from the 1880's to current were studied. No previous developments were noted at the site pre the construction of the existing power station.		

Key to Data Sources

1	National Soils Research Institute Report 27374310 – (Report available on request). Purchased 26 th February 2009
2	Envirocheck Report 27374310_1_1 – (Report available on Request) Purchased 26 th February 2009
3	Natural England Nature on the Map web site accessed on the 05 th March 2009-03-05 http://www.natureonthemap.org.uk/map.aspx?m=nreserves

Water Quality and Resources

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Water				
Current State of the Waters in the Anglian River Basin District	1, 2	In the Anglian River Basin District (RBD) report, prepared by the Environment Agency (EA), 5% of rivers (by length) meet the requirements for good ecological status or good potential. The main reasons being high phosphate levels, low dissolved oxygen levels, low invertebrate counts and low fish counts. In total, 15% of all surface waters are designated as artificial and 56% of all surface waters are designated as heavily modified. A greater number of groundwater bodies (65% by number) meet the requirements for good chemical status, while 57% of lakes and 37% of canals meet the requirements for good status or good potential. Currently none of the RBD coastal and estuarine water bodies are achieving either good ecological status or good ecological potential. The Anglian RBD predicts that by 2015, 7.5% of rivers (by length) will reach good status or good potential. The groundwater situation is expected to remain unchanged by 2015. Although the EA assume little change in the status of coastal and estuarine water bodies by 2015, the EA target in 2027 is that all water bodies will achieve good status or good potential. The site is located within the East Suffolk Zone (ESZ) of the Anglian RBD. Currently 43 km of rivers (approximately 10% by length) in this zone are achieving either good ecological status or good ecological potential. The EA are expecting little change by 2015. The target for 2027 is that all water bodies in the ESZ will achieve good status or good potential. The area is mostly rural with few towns. Agriculture is the main land use. Areas of the coast are of international importance for conservation. Many of the East Suffolk rivers are impacted by drought and periods of low flow which is reflected in the low dissolved oxygen levels in some rivers during droughts.		

Indicator	Data Source	Current Data	Comparators	Trend
		The RBD has the following comments on infrastructure expansion relevant to the proposed site: “There is the nuclear power generation site on the coast at Sizewell, which may undergo expansion. Actions will be necessary to mitigate any negative impacts and ensure good ecological status is achieved.” Groundwater is an important resource in the Anglian RBD, as the majority of the drinking water comes from groundwater. Hence it is vital that these sources are maintained for the future. The main pressures on groundwater are abstraction for drinking water supply, agriculture and industry, and contamination with nitrates and saline water near to the coast. Currently 65% of groundwater bodies achieve good chemical status and 68% achieve good quantitative status. The EA has set out several plans for the region: • to maintain 68% of groundwater at good quantitative status and 65% at good chemical status to 2015; • to achieve “good” status in all groundwater by 2027; • to modify or revoke all abstraction licences adversely affecting the conservation features of Natura 2000 sites by 2015; • to investigate the need for the actions required to modify abstraction licences for those surface and groundwater bodies where there is a high risk that groundwater abstraction may be limiting good ecological or good qualitative status by 2015.		

Indicator	Data Source	Current Data	Comparators		Trend																								
		Local information relevant to the Water Framework Directive (WFD) for the area in close proximity to the site, taken from the EA website, is summarised in the table below: <table><tr><th rowspan="2">Sector</th><th colspan="2">Ecological Quality</th><th colspan="2">Chemical Quality</th></tr><tr><th>Current</th><th>Predicted 2015</th><th>Current</th><th>Predicted 2015</th></tr><tr><td>Rivers : Leiston Brook monitoring point (Sizewell Belts)</td><td>Moderate</td><td>Moderate</td><td>Not Assessed</td><td>Not Assessed</td></tr><tr><td>Groundwater</td><td>Poor (Quantitative)</td><td>Poor (Quantitative)</td><td>Poor</td><td>Poor</td></tr><tr><td>Coastal</td><td>Moderate</td><td>Moderate</td><td>High</td><td>Good</td></tr></table>			Sector	Ecological Quality		Chemical Quality		Current	Predicted 2015	Current	Predicted 2015	Rivers : Leiston Brook monitoring point (Sizewell Belts)	Moderate	Moderate	Not Assessed	Not Assessed	Groundwater	Poor (Quantitative)	Poor (Quantitative)	Poor	Poor	Coastal	Moderate	Moderate	High	Good	
Sector	Ecological Quality		Chemical Quality																										
	Current	Predicted 2015	Current	Predicted 2015																									
Rivers : Leiston Brook monitoring point (Sizewell Belts)	Moderate	Moderate	Not Assessed	Not Assessed																									
Groundwater	Poor (Quantitative)	Poor (Quantitative)	Poor	Poor																									
Coastal	Moderate	Moderate	High	Good																									
		Leiston Brook is the nearest water course to the site. This catchment has not yet been assessed under WFD, but results are available for a single monitoring point on the brook. At this point the brook currently has moderate ecological water quality. The predicted ecological quality in 2015 has been assessed by the EA as moderate. The current and predicted (2015) chemical water quality of Leiston Brook catchment has not been assessed. The major aquifer present at the site is the confined Chalk which is impacted by saline intrusion from the sea. Under the WFD classification, groundwater is currently assessed as poor (quantitative) and the chemical quality has also been assessed as poor. The status is not expected to improve by 2015. The Norwich and red crag formations are also present at the site overlying the Chalk and form a locally important aquifer in connection with the Chalk. There is a groundwater source protection zone located approximately 3 km west from the proposed site. The source protection zone is formed by two abstraction boreholes at Leiston abstracting groundwater from the Crag																											

Indicator	Data Source	Current Data	Comparators	Trend
		Formation. The eastern boundary of the total catchment of the groundwater source is located approximately 2.5 km west from the proposed site.		
Current State of the Waters in the East Suffolk CAMS	3	The proposed site is located within the East Suffolk Catchment Abstraction Management Strategy area. The Consultation Report was prepared in January 2008. The site is located within the eastern edge of Water Resource Management Unit WRMU4, River Yox. Surface water drainage from the site either drains east to the sea or west to Sizewell Belts, which then drains to Minsmere Level within the River Yox catchment. The proposed site is located within Groundwater Management Unit GWMU16, Confined Chalk. WRMU4 resource availability status is classed as No Water Available at low flows, and GWMU16 resource availability status is classed as Over Abstracted. The strategy for this WRMU is to remain at No Water Available. This means that for new licences no consumptive licences will be granted at low flows, water is only available during periods of higher flow and will have Hands Off Flow (HOF) conditions. There will be a presumption of renewal, subject to the other review criteria and local considerations. Existing licence conditions and renewals may be subject to modifications determined by the outcome of the Review of Consents process, or the Restoring Sustainable Abstraction Programme. Permissions which cannot be shown to have no adverse effect on the integrity of Habitats Directive Sites may only be allowed to continue if the competent authority considers that there are no alternative solutions, or there are imperative reasons of overriding public interest and adequate compensatory measures can be secured. Water related sites in close proximity to the site are listed below:		

Indicator	Data Source	Current Data	Comparators	Trend
		- Water related Sites of Special Scientific Interest (SSSI) occur at Sizewell Marshes, Leiston-Aldeburgh and Minsmere-Walberswick Heaths and Marshes. - Water related Special Area of Conservation (SAC) occur at Minsmere to Walberswick Heaths and Marshes. - Water related Special Protection Area (SPA) occur at Minsmere to Walberswick. - Water related Ramsar sites occur at Minsmere to Walberswick. - There are also additional local features at 7 County Wildlife Sites including Sizewell Levels and associated areas. The water resource availability status of GWMU16 is Over-abstracted. The target status and strategy for this GWMU is to remain at Over-abstracted given the level of uncertainty associated with the resource assessment. Under the current abstraction regime there have been several environmental impacts experienced which further indicate a resource availability status of Over-abstracted. These include saline intrusion and changes in chalk groundwater levels. As a precautionary approach the EA considered that a status of "Over-abstracted" was the most suitable in order to ensure that the current situation was not made any worse. This means that for new licences there is no water available for abstraction from this GWMU; and for existing licences there will be a presumption of renewal, subject to the other review criteria and local considerations. The EA will write to licence holders to request a voluntary reduction in licence quantity which reflects actual need. There is no new groundwater available in this management unit. Existing licence holders may develop new boreholes with EA permission but the authorised quantity will not increase. It will be the responsibility of the licence holder to manage their total licensed quantity between multiple sources of supply.		
Water Demand and Availability	4	The assessment of demand and supply occurs at the level of a Water Resource Zone (WRZ). A WRZ is defined by the EA as 'the largest possible zone in which all resources, including external transfers, can be shared and		

Indicator	Data Source	Current Data	Comparators	Trend
Projected to 2024		hence the zone in which all customers experience the same risk of supply failure from a resource shortfall'. The site is located in Essex & Suffolk Water's 'Blyth' WRZ. The Blyth resource zone in Suffolk is bounded by the Suffolk coastline in the east stretching from Aldeburgh in the south to Walberswick in the north. The zone stretches as far west as Earl Soham, and as far north as Chediston. The zone includes the towns and villages of Saxmundham, Leiston, Framlingham, Peasenhall and the southern side of Halesworth. The zone is predominantly rural in nature. All the water supplied within the Blyth resource zone is sourced from groundwater via Chalk sources at Walpole, Benhall, Saxmundham, Parham and Little Glemham, and Crag sources at Coldfair Green and Leiston. Raw water at each of these sites is treated on site with the exception of Little Glemham and Leiston, which are effectively satellite boreholes treated at Benhall WTW and Coldfair Green WTW respectively. The Blyth zone remains in surplus of supply to forecast demand over the whole planning horizon to 2034/5. The projected surplus at 2024 is 1.75 MI/d and 1.01 MI/d in 2034. No new resource developments are planned for this zone within the planning horizon.		
Sensitive Areas – Urban Waste Water Directive	5	There are no identified Bathing Waters or Shellfish Waters in close proximity to the site.		
Shoreline Management	6	A Shoreline Management Plan has been produced in March 2009 which is directly relevant to the site at Sizewell. The geomorphology and coastal processes are not described in the report. The preferred plan and recommendations are to maintain the natural coastal defence at Sizewell but to generally allow the natural development of the coast. This would not preclude local management to reduce the rate of erosion, but this would have to be assessed in detail, taking into account the potential impacts on natural conservation interests. The preferred policy is that in the present and medium term, no works are considered necessary, however in the long term, there is the potential need to reinforce defences at Sizewell. The specific policy at the power station and village is to "Hold the Line".		

Indicator	Data Source	Current Data	Comparators	Trend
Coastal Processes and Sediments		There is a continuous cycle of change to the beach profile at Sizewell, with wave action causing a two-way exchange of sand between the beach and the backshore and dune sediment stores. This process of change within the system is important to the physical resilience of the region, allowing the systems to naturally adjust to external pressures. There is a long-term southerly movement of sedimentary material throughout this region with the episodic erosion of the soft cliffs at Dunwich and Minsmere being the main sources of sediment. Combined with the current management of the shingle beach and dunes fronting the power station at Sizewell the current inundation and erosion threat at the station is relatively low. Although the coast at Sizewell is generally stable, under rising sea levels there would be natural retreat with cliff erosion, particularly during storm events. The stability of the cliffs would also be affected by any significant change in the Sizewell offshore bank. If the bank were to reduce in height the shoreline would be more vulnerable to wave attack and greater erosion would occur. However, the bank could well migrate inland with the beaches, maintaining similar levels of protection to today. The main risk to the site is a decrease in supply of sediment from the north that would result in a thinning of the beach and increased wave action on the shoreline leading to coastal retreat. The cliffs between Dunwich and Minsmere are likely to continue to experience episodic erosion, releasing sediment into the system.		

Key to Data Sources

1	Environment Agency Draft River Basin Management Plan, Anglian River Basin District, December 2008 ³
2	WFD maps - http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=wfd_rivers&layerGroups [accessed 13 February 2009]
3	East Suffolk Catchment Management Strategy, January 2008, Environment Agency
4	Essex & Suffolk Water Limited, Periodic Review Of Price Limits 2009, Draft Water Resources, Management Plan, Essex & Suffolk Water Area, April 2008
5	Water Quality – Sewage Treatment in the UK: Sensitive Areas [online] access: http://webarchive.nationalarchives.gov.uk/20080305115859/http://www.defra.gov.uk/environment/water/quality/uuwtd/sensarea/shellfish/index.htm [accessed 13 February 2009]

³ The data used in this assessment are taken from the Draft River Basin Management Plan, which was the most up to date plan available at the time of writing. Draft plans were presented to the Government for approval in September 2009 and were subsequently published in December 2009.

6	Lowestoft Ness To Landguard Point Subcell 3c [online] access: http://www.suffolksmp2.org.uk/publicdocuments/PolicySummary/Policy%20Summary%20-%20PDZ4%20Minsmere%20to%20Thorpeness%20V3c.pdf [accessed 13 February 2009]
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Flood Risk

Indicator	Data Source	Current Data	Comparators	Trend
Topic: Water				
Flood Risk	1	Part of this site is in Flood Zone 1, but is almost completely surrounded by Flood Zone 3, 'High Probability', as indicated on the Environment Agency's Flood map. This means that the site is at risk from coastal flooding with an annual probability of flooding of >0.5% in any one year. There are natural flood defences at this site, no information was available on the composition or the standard of protection of these defences.		Flood risk is expected to increase in the UK due to the predicted changes in climate leading to more intense rainfall events, wetter winters, rising sea levels and coastal erosion. Scenarios of climate change for the UK were published by the United Kingdom Climate Impacts Programme (UKCIP) in 1998 and 2002. 'The Climate of the UK and Recent Trends 2008' by the Met Office, provided the following general comments in relation to trends in climate change and how this might affect flood risk: • Global sea level rise has accelerated between mid 19th century and mid 20th century and is now about 3mm per year • All regions in the UK have experienced an increase over the past 45 years in the contribution to winter rainfall from heavy precipitation events; in summer all regions except North East England and North Scotland show decreases • Sea level rise around the UK rose by about 1mm/per year in the 20th century, corrected for land movement. The rate for the 1990s and 2000s has been higher than this Most recently in June 2009, UKCIP launched the

Indicator	Data Source	Current Data	Comparators	Trend
				latest UK Climate Change Predictions 2009 (UKCP09). These give information about climate change but not directly about flood risk. The key findings on climate change confirm the trends highlighted in the 2008 report and suggest: • All areas of the UK get warmer, and the warming is greater in summer than in winter. • There is little change in the amount of precipitation that falls annually, but it is likely that more of it will fall in the winter, with drier summers for much of the UK. • Sea levels rise and the rise is greater in the south of the UK than in the north.

Key to Data Sources

1	Map of Sizewell (Flood map) http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=647500.0&y=261500.0&topic=floodmap&ep=map&scale=4&location=Sizewell,%20Suffolk&lang=e&layerGroups=default&textonly=off Accessed 6th March 09
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