

# Appendices to the Appraisal of Sustainability Site Report for Dungeness

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 Dungeness. 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
<b>Air Quality</b>	
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 Air Quality Management Areas (AQMAs)?
<b>Biodiversity and Ecosystem Services</b>	
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?
<b>Climate Change</b>	
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)? 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.
<b>Communities: Population, Employment and Viability</b>	
4. To create employment opportunities	Will it create both temporary and permanent jobs in areas of need?

AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)	Guide Questions
5. To encourage the development of sustainable communities 10. To avoid adverse impacts on property and land values and avoid planning blight	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?
<b>Communities: Supporting Infrastructure</b>	
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)?
<b>Human Health and Well-Being</b>	
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?
<b>Cultural Heritage</b>	
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	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?
<b>Landscape</b>	
24. To avoid adverse impacts on nationally important landscapes 25. To avoid adverse impacts on landscape character, quality and	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?

AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)	Guide Questions
tranquillity, diversity and distinctiveness	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?
<b>Soils, Geology and Land Use</b>	
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?
<b>Water: Hydrology and Geomorphology</b>	
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?
<b>Water: Water Quality (including surface, coastal and marine)</b>	
16. To avoid adverse impacts on surface water quality (including coastal and marine water quality) and assist achievement of Water Framework Directive objectives	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?
<b>Water: Water Supply and Demand</b>	
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?
<b>Water: Groundwater Quality and Flow</b>	
18. To avoid adverse impacts on	Will it cause deterioration in groundwater quality as a result of accidental pollution, for example spillages, leaks?

<b>AoS/SEA Objective (Numbers refer to Scoping Report and Environmental Study)</b>	<b>Guide Questions</b>
groundwater quality, distribution and flow and assist achievement of Water Framework Directive objectives	Will it cause deterioration in groundwater quality as a result of the disturbance of contaminated soil?
<b>Flood Risk</b>	
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.



<b>Air Quality</b>
<p><b>AoS Objective:</b> 12. To avoid adverse impacts on air quality</p> <p><b>Guide questions:</b> 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?</p>
<b>Potential Receptors:</b>
<ul style="list-style-type: none"> <li>• Local populations and wider regional population (human health)</li> <li>• Sensitive habitats, including Dungeness National Nature Reserve and SAC; Dungeness to Pett Level SPA; and Dungeness, Romney Marsh and Rye Bay SSSI.</li> </ul>
<b>Potential Significant Effects and Mitigation Possibilities:</b>
<p><b>International/ National/ Transboundary</b></p> <ol style="list-style-type: none"> <li>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 Dungeness B nuclear reactor currently operates under) and management techniques during construction, operation and decommissioning stages.</li> <li>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 coastal areas such as Hastings and Eastbourne conurbations due to prevailing wind direction (south-south west to south west). The prevailing wind direction may also lead to the dispersion of emissions away from UK populated areas and across the sea, however in extreme and severe circumstances this could lead to dispersion of emissions over continental Europe. 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 Dungeness A nuclear reactor and the currently operational Dungeness B reactor (anticipated operational period up to at least 2018).</li> <li>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.</li> </ol>
<p><b>Regional/ Local</b></p> <ol style="list-style-type: none"> <li>4. Air quality in the South East is generally good to moderate. Areas of poor air quality tend to concentrate around major route corridors (roads) and congestion areas, whilst elevated levels of ozone have been an issue in the region, particularly in rural areas. In 2006 there were 22 air pollution incidents deemed by the Environment Agency to have a 'serious' impact on air quality. No Air Quality Management Areas (AQMAs) are located within the vicinity of the site, however the effect on air quality is not likely to be significant, provided construction and operation is in accordance with regulatory/consenting regimes.</li> </ol>

## Air Quality

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.
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. 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

#### 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 an increased risk of transboundary / international effects. The HSE/NII and EA will consider this as part of the risk assessment which is 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

- Please 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 designated 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:

Dungeness to Pett Level SPA, Dungeness SAC, and SSSI – adjacent to and potentially within the nominated Dungeness.

Dungeness NNR and Ham Street Woods NNR - adjacent to and potentially (to be confirmed by nomination) within the nominated Dungeness.

Poulton Wood, Aldington LNR, Romney Warren LNR and Rye Harbour LNR - adjacent to and potentially (to be confirmed by nomination) within the nominated Dungeness.

Local Wildlife Sites - adjacent to and potentially within the nominated area in Dungeness.

The site and surrounding areas are areas of nature conservation importance because of the diverse coastal landscape comprising of diverse habitats, including specialist shingle vegetation, maritime communities, established lichen-rich acid grassland, scrub and wetland habitats, naturally formed hollows (open pits) containing fen, swamp, wet scrub vegetation and saltmarshes. All of the vegetation types contain some species which are rare, at least in South East England.<sup>1</sup>

<sup>1</sup> Royal Haskoning Proposed Nuclear Development at Dungeness – Environmental Scoping Report. British Energy, Final report November 2008.

## Biodiversity and Ecosystems

### Potential Significant Effects and Mitigation Possibilities:

#### International/ National/ Transboundary

1. Increase in disturbance (noise, light and visual) effects during construction could have an adverse impact on fauna (such as birds being particularly susceptible to disturbance from noise). There is likely to be an increase in traffic using the local road network during construction. Increased use of the railhead would also have noise implications during uploading/unloading. Use of a marine landing facility could potentially have noise implications also.
2. Direct loss and fragmentation of priority habitats will result from the positioning of nominated Dungeness, the network of habitats in the wider area will need to be considered, as there may be effects on dispersing birds and animal species moving between designations. If a railhead is to be used for delivery of bulk construction materials, this would need to be lengthened to provide for longer trains and widened to provide space for unloading/lay-down, leading to potential loss of habitat from adjacent designated areas.
3. The abstraction of water for cooling purposes could potentially impact on fisheries, plankton, intertidal and subtidal benthic habitats. Excavation (dredging) of the seabed may be required for both the cooling water intake and outfall culverts. Water abstraction could potentially impact on the marine environment, for instance fish impingement on water intake screens, and also fish eggs and larvae (ichthyoplankton). Infrastructure associated with cooling water culverts and intake/outfall construction may cause scouring and changes to the local sediment transport regime and may impact on marine ecology.
4. Thermal impacts from cooling waters could potentially impact on fisheries, plankton, intertidal and subtidal benthic habitats/macrobenthos (the marine environment). Excavation (dredging) of the seabed may be required for both the cooling water intake and outfall culverts. Infrastructure associated with cooling water culverts and intake/outfall construction may cause scouring and changes to the local sediment transport regime and may impact on marine ecology.
5. Routine releases of radioactive discharges to water during operation and general water quality. The site is adjacent to, and in places encroaches into the marine environment, therefore it has potential to impact upon water quality.
6. 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 transportation of waste for final disposal. There is also the potential for accidental discharges of pollutants by leaks or spillages from the water treatment plants. Such releases could adversely affect both terrestrial and marine flora/fauna associated with the designated local sites, and further afield, such is the diffuse and mobile nature of ecosystems. The designated sites and local ecological systems are currently subject to these risks from the existing Dungeness power stations A and B. Further studies are likely to be required to assess the risks and potential effects of the occurrence of such events on the biodiversity of the site/area.
7. There is potential for local changes in the air quality from increased development/traffic growth. With all major construction activity, there is likely to be generation and re-suspension of settled materials causing fugitive emissions of general dust and sand, which could potentially impact on flora and fauna on the site, and further afield.

<b>Biodiversity and Ecosystems</b>						
<p>8. Number of potential other high profile developments such as potential airports and wind farm developments could potentially have in-combination effects on the ecology of the site. Cumulative effects could potentially be significant to the overall impacts on local biodiversity.</p>						
<b>Regional/ Local</b>						
<p>9. An observed decline in species such as rare and scare invertebrates (ie the Sussex Emerald Moth) needs to be understood, in order for the potential impacts of the development to be assessed. Local Wildlife Sites provide suitable environments for a range of species and habitats locally, covering botanical, invertebrate, bird and mammal interests.</p>						
<p>10. Water quality could be impacted upon from the installation of new cooling water intake and outfall culverts, as trenching and/or dredging works will be required, and water quality could be altered through the resuspension of sediments.</p>						
<p>11. Construction operations will involve the use of large quantities of mobile plant. It is more difficult to control noise on such vehicles during to their mobile nature. Regionally important species such as breeding wheatear could be subject to disturbance during construction phase.</p>						
<p>12. Increase in light levels locally during the construction phase, could potentially impact on the surrounding fauna, especially in the winter months.</p>						
<p>13. Potential loss of verges along the approach road to the proposed development, if widening is required during construction. This would result in loss of modified shingle vegetation, and potentially rare invertebrates. Land could potentially be lost to provide additional parking facilities on the site.</p>						
<b>Summary of Significant Strategic Effects:</b>			Timescale	C	O	D
			Significance	--?	--?	-- ?
			Likelihood	M	M	M
<b>Significant Effects</b>			<b>Mitigation and Monitoring Possibilities</b>			
<ul style="list-style-type: none"> <li>Disturbance (noise, light and visual).</li> </ul>			<ul style="list-style-type: none"> <li>Opportunities to reduce traffic impacts may include scheduling construction delivery times to off peak traffic hours and encouraging the workforce to adopt alternative measures and practices, such as rail, cycle etc. Volume of traffic could potentially be reduced if the railhead was expanded and used, lessening the amount of traffic on local roads. Minimise need for encroachment of construction into sensitive areas through Dungenessesign. Utilise Environmental Management Plan to minimise disturbance for instance through timing/screening.</li> </ul>			
<ul style="list-style-type: none"> <li>Direct loss and fragmentation of priority habitats (including damage to), of designated sites and more local areas such as road verges during construction and operation.</li> </ul>			<ul style="list-style-type: none"> <li>The interest features on the designated sites will guide the identification of potential mitigation and compensation measures. Appropriate management systems should be put in</li> </ul>			

Biodiversity and Ecosystems	
<ul style="list-style-type: none"> <li>• Abstraction of water for cooling purpose.</li> <li>• Discharge of heated waters.</li> <li>• Routine releases of radioactive discharges to water during operation and general water quality issues including potential accumulation in aquatic environment, and harm to species.</li> <li>• Small risk of accidental discharges/incidents of radioactive materials to environment.</li> <li>• Potential changes in the air quality.</li> <li>• Cumulative effects of other high profile developments.</li> <li>• Decline in species observed.</li> <li>• Impacts on water quality.</li> <li>• Increase in light levels during Construction phase.</li> </ul>	<p>place to protect local designated sites. Encouraging workforce to use alternative travel arrangements to reduce landtake needed for parking. In order to reduce loss or damage to surrounding habitats, the position of the site, within the network of habitats will need to be considered, as this could have effects on dispersing birds/animals/species between designations.</p> <ul style="list-style-type: none"> <li>• Incorporation of fish protection measures within cooling water intake/system design.</li> <li>• Further studies necessary to determine impact.</li> <li>• Primary data collection and subsequent laboratory analyses of samples for a full suite of parameters (including radioactive elements) is likely to be required to help define the existing regime. Avoidance through safe operation and decommissioning/waste storage/transfer.</li> <li>• Avoidance through safe operation and decommissioning/waste storage/transfer.</li> <li>• Further studies necessary to determine impact.</li> <li>• Further studies necessary to determine impact.</li> <li>• Further understanding is required for species noted to be declining, before mitigation and an assessment of likely effects can be undertaken.</li> <li>• Water quality studies are necessary to determine impact. Potential impacts on hydrology/hydrogeology will need to be understood.</li> <li>• Changes to existing lighting regimes will need to be considered, and where appropriate, shielding will be used to reduce the impact as much as possible.</li> </ul>

## 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 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 windpowered stations with equivalent output but with significantly less land or area 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 decommission 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.

## Climate Change

6. Other global, generic issues relating to vulnerability of nuclear power plants to climatic impacts such as sea level rise, most intense weather events and flooding are covered in other topics unless regionally or locally significant.

### Regional/Local

7. The provision of a nuclear power station for energy generation at this site will make a positive contribution to the objectives of Kent County Council (KCC) to incorporate carbon reduction as a requirement of public sector investment decisions and procurement, when compared to some other sources of energy. The combination of nuclear power generation with increased investment in renewable energy sources which will assist in reducing greenhouse gas emissions compared to no nuclear power facility option in the region.
8. 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 plants. 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. Another option for transportation to consider will be the use of the current rail infrastructure in place. 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 the labour population, increased population vehicular usage, transport of materials, higher demand on utilities.
9. 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.
10. 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 depository 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. [Discussion point – how should we deal with the question of the possible location of the GDF in appraising sites. Options include deferring consideration until MRWS programme has identified potential sites or to test alternative assumptions about location].
11. The site is situated in South East, which is one of the most susceptible regions to climate change due to the following:
- Average summer temperatures could be around 3°C warmer
  - Average summer rainfall could decrease by as much as 40%
  - Average winter rainfall could increase by up to 20%
  - Sea level may rise by up to 40cm
12. The nominated site comes under the authority of Shepway District Council. Shepway does not have a disproportionately high climate change impact relative to other Kent Local Authorities. However, it is one of the Local Authorities that has high carbon dioxide emissions from the industry and commercial sectors.



Climate Change						
Summary of Significant Strategic Effects:			Timescale	C	O	D
			Significance	-	++	-?
			Likelihood	M	H	? ?
<p><b>Significant Effects</b></p> <ul style="list-style-type: none"> <li>• The reductions in greenhouse gas emissions due to the operation of nuclear power plants compared to alternative sources of energy will have positive long term effects during the operational stage and longer term. The cumulative benefits of a nuclear program for climate change are further discussed in the main AoS report.</li> <li>• Locating a nuclear power station on the site could have a positive multiplier effect on the further investment and implementation of other renewable (low carbon) energy sources in the region.</li> <li>• 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.</li> <li>• The operational phase of the power station is likely to have far less carbon footprint compared to those of fossil-fuel powered stations providing similar power output.</li> </ul>	<p><b>Mitigation and Monitoring Possibilities</b></p> <ul style="list-style-type: none"> <li>• The impacts during construction may be mitigated by selection of carbon-efficient forms of transport and construction. There is also the possibility of offsetting the emissions.</li> <li>• The greenhouse gas emissions arising from construction and operation should be monitored to inform carbon reduction through the lifetime of the project.</li> </ul>					

<b>Communities:Population, Employment and Viability</b>
<p><b>AoS Objective:</b>                      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</p> <p><b>Guide questions:</b>                      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?</p>
<b>Potential Receptors:</b>
<p>Local and regional resident workforce                      Local and regional population</p>
<b>Potential Significant Effects and Mitigation Possibilities:</b>
<b>International/ National/ Transboundary</b>
<p>No significant effects identified at this scale.</p>
<b>Regional/Local</b>
<ol style="list-style-type: none"> <li>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 60 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 min 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.</li> <li>2. The existing reactor at the site is a significant local employer, employing over 570 full-time staff and over 250 full-time staff from contract partners). A new power station may assist in offsetting job-losses from the decommissioning of the existing power station at the site -however it is noted the time difference between decommissioning (estimated to be 2018) and construction of any new reactor will likely require employees to seek employment elsewhere.</li> <li>3. Positive effects through the provision of training, education and upskilling for employees and contractors in the region.</li> <li>4. 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.</li> <li>5. Some uncertainty is identified as the construction may affect the ability of other industries/projects to source labour, e.g. for house-building in region and other major infrastructure projects. The South East Region is estimated to have the second highest annual recruitment requirement for construction workers for the 2009-2013, second only to Greater London.</li> </ol>

<b>Communities:Population, Employment and Viability</b>																
<p>6. Likely changes to the population dynamics of local communities - with potential positive and negative effects. Effects dependent on source of labour, e.g. 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.</p> <p>7. Potential for adverse effects on property values within close proximity to the site. Mitigation possible. No evidence to suggest significant effects beyond immediate site surrounds.</p>																
<b>Summary of Significant Strategic Effects:</b>				<table border="1"> <tr> <td>Timescale</td> <td>C</td> <td>O</td> <td>D</td> </tr> <tr> <td>Significance</td> <td style="background-color: #90EE90;">+ ?</td> <td style="background-color: #90EE90;">+ ?</td> <td style="background-color: #000080; color: white;">0</td> </tr> <tr> <td>Likelihood</td> <td>H</td> <td>H</td> <td>M</td> </tr> </table>	Timescale	C	O	D	Significance	+ ?	+ ?	0	Likelihood	H	H	M
Timescale	C	O	D													
Significance	+ ?	+ ?	0													
Likelihood	H	H	M													
<p><b>Significant Effects</b></p> <ul style="list-style-type: none"> <li>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.</li> </ul>		<p><b>Mitigation and Monitoring Possibilities</b></p> <ul style="list-style-type: none"> <li>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.</li> </ul>														

<b>Communities: Supporting infrastructure</b>
<p><b>AoS Objective:</b>                      8. to avoid adverse impacts on the function and efficiency of the strategic transport infrastructure                      9. to avoid disruption to basic services and infrastructure</p> <p><b>Guide questions:</b>                      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 (e.g. electricity, gas)?                      Will it place significant pressure on local/regional waste management facilities (non-nuclear waste)?</p>
<b>Potential Receptors:</b>
<ul style="list-style-type: none"> <li>• Local and regional population</li> <li>• Existing transportation and service infrastructure</li> <li>• Existing waste management infrastructure</li> </ul>
<b>Potential Significant Effects and Mitigation Possibilities:</b>
<p><b>International/ National/ Transboundary</b></p> <ol style="list-style-type: none"> <li>1. Significant effects may arise through increased congestion and disruption of traffic on the M20 if decommissioning of the existing facilities and construction of the new power station are undertaken concurrently and in combination with the planned residential development around the Ashford 'Growth Area'.</li> <li>2. This can be mitigated by designing transport management plans and using alternatives to road for the transport of large loads (eg transport by rail and sea).</li> <li>3. Impacts of the transportation of Nuclear Waste are unknown the location of a long-term waste geological depository facility is known. This is being considered as part of the Government's programme for Managing Radioactive Waste Safely.</li> <li>4. Impacts of the storage and disposal of nuclear waste are dealt with in the main AoS Report.</li> </ol>
<p><b>Regional/ Local</b></p> <ol style="list-style-type: none"> <li>5. Pressure on local basic services (this includes conventional waste networks) and infrastructure in South Kent and Shepway.</li> </ol>

### Communities: Supporting infrastructure

6. The Lydd (London Ashford) Airport is close to Dungeness. The regulators would need to consider any expansion of the airport in relation to safety at the existing nuclear power station and any new nuclear power station.
7. 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.
8. 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.
9. 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.
10. 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 Dungeness nuclear facility.
11. Long term pressures and effects on the (non-radiological) waste management infrastructure are unlikely to be significant.
12. 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.
13. The construction and operation of a nuclear power station at the site is likely to require additional services/ connection to existing services (including electric, water and wastewater), however the location of an existing plant at the site will limit the amount of new infrastructure required. This is not considered to be a significant effect.
14. Mitigation measures include designing transport management plans and using alternatives to road for the transport of large loads (eg transport by rail and sea).
15. The development of a nuclear power station at Dungeness 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 October 2009.

<b>Communities:Supporting infrastructure</b>						
<b>Summary of Significant Strategic Effects:</b>			Timescale	C	O	D
			Significance	- ?	- ?	- ?
			Likelihood	M	M	M
<b>Significant Effects</b> <ul style="list-style-type: none"> <li>• Effects will be on local service and infrastructure in the South Kent and Shepway locality.</li> <li>• On a national scale the effect will be on the M20 motorway if a cumulative effect occurs with the decommissioning, the new build of the power station and the development around the Ashford 'Growth Area' all happening concurrently.</li> </ul>			<b>Mitigation and Monitoring Possibilities</b> <ul style="list-style-type: none"> <li>• Further studies will be required to assess in detail the effects on the road network, including the M20 Motorway.</li> <li>• Appropriate mitigation measure to reduce the effects of transportation could include a Transport Management Plan (construction and decommissioning) .Consideration of alternatives to road for the transport of large loads (e.g. transport by sea).</li> </ul>			

## 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 the site to travel both nationally and internationally (e.g., to countries on the European continent). However, current radiological monitoring of the nuclear power stations that have been on the site since 1965 (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 29% of the limit specified in the Ionising Radiations Regulations 1999. With 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. Cumulative effects: The cumulative effect of this discharge and a number of others being considered has the potential to increase radiation doses to the UK population, and possibly citizens of other countries to a more significant level than that currently observed. 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.

## Human Health and Well-being

### 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 Dungeness do not cause unacceptable risk to health.
4. Other health impacts: 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 advice<sup>2</sup>, a precautionary approach be adopted to the routing of any required power lines. In addition, it would be prudent to undertake a project level health impact assessment to evaluate this potential effect together with those which may be associated with routine plant emissions and transport-related air pollution and noise.
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 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. Disease clusters: In the past, there has been a lot of publicity about clusters of cancerous diseases, particularly childhood leukaemias, around nuclear power station sites. This subject was researched in 2005 by COMARE (Committee on Medical Aspects of Radiation in the Environment) when they looked at the incidences of childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours around the UK nuclear power station sites, including Dungeness. This study found that the expected number of cases of both childhood leukaemia, non-Hodgkin lymphoma and other malignant tumours were no more than would be expected for a typical area with similar population in Britain as a whole.
8. Health services: The influx of workers required for the construction phase of the proposed new power station may put a strain on local health services as may, though to a lesser extent, the station operational staff. Given this situation, it would be prudent, to review the need for appropriate additional

<sup>2</sup> [http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb\\_C/1195733817602](http://www.hpa.org.uk/web/HPAweb&HPAwebStandard/HPAweb_C/1195733817602)



## Human Health and Well-being

health service capacity during the planning process. A further factor to be considered during any such review is that the nearest hospital with an accident and emergency department is more than 25 kilometres away which is not ideal for dealing with an on-site medical emergency.

9. Health and safety issues: The work associated with the construction and operation of a nuclear power plant at Dungeness 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.
10. 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 site, people living and working nearby have had a long time to get used to there being an adjacent nuclear plant so this is unlikely to be a problem at this location.
11. 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.
12. Community well-being: The Shepway District Council area is a reasonably deprived area with income, employment, health and education deprivation, and barriers to housing and services being greater than average for England as a whole. The siting of a new nuclear power station at Dungeness should help to alleviate some of these deprivations as more jobs will be created in the area leading to an increase in community wealth, additional housing and other associated neighbourhood infrastructure.
13. Community disturbance: The presence of, and more particularly the construction of, a nuclear power station at the 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. 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 all project phases.
14. Employment: Based on figures for 2009, employment levels in the Shepway District Council area are lower than in the SE England region and less than the national average. As has been demonstrated<sup>3</sup>, 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 Dungeness 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

<sup>3</sup> Waddell G and Burton K (2006): 'Is work good for your health and well-being?', TSO, London

<b>Human Health and Well-being</b>						
decommissioning phases) and long term (operational phase) work opportunities.						
<b>Summary of Significant Strategic Effects:</b>			Timescale	C	O	D
			Significance	+	+	+
			Likelihood	M	M	M
<p><b>Significant Effects</b></p> <ul style="list-style-type: none"> <li>• The possibility that the cumulative effects of all future nuclear plants will increase radiation doses to the UK population, and possibly citizens of other countries</li> <li>• The possibility of local and regional health risks from the likely permitted discharges from the proposed new Dungeness power station</li> <li>• The potential for electromagnetic fields generated by any required additional power lines to cause adverse health effects in the local and regional population</li> <li>• The potential requirement for appropriate additional health service capacity for the influx of both construction and operational workers</li> <li>• The construction and operation of the proposed nuclear power station may lead to unacceptable community disturbance</li> <li>• It is likely that the presence of a new nuclear power station at Dungeness 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</li> </ul>			<p><b>Mitigation and Monitoring Possibilities</b></p> <ul style="list-style-type: none"> <li>• Ensure potential cumulative effects are calculated and assessed when planning and consenting all future nuclear power plants</li> <li>• Undertake a health impact assessment to predict the effects of the power station discharges on the local and regional population</li> <li>• Carry out a review of local health provision to ensure it is adequate for the expected influx of power station workers</li> <li>• Ensure an environmental construction management plan and an all-phase travel plan are produced, observed and monitored</li> <li>• Ensure sufficient monitoring of power station discharges and effects on local health is undertaken throughout the operational and decommissioning phases of the project</li> </ul>			

## 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 Area
- Archaeology

**Potential Significant Effects and Mitigation Possibilities:**

**International/ National/ Transboundary**

The nearest scheduled monument is Lade Fort which lies within 4km. 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.

There is also one Grade I listed building within an approximate distance of 5km of the site and potential effect on it's setting may arise from the development. All setting issues will need to be addressed by the nominator at the project level stage.

**Regional/ Local**

A Conservation Area is located directly east of the existing nuclear power station and there is a potential physical and setting effect.

The Grade II listed Old Lighthouse exists just to the east of the existing nuclear power station and, depending on the location of the new facility, there may be a physical or setting effect. There are 57 Grade II listed buildings within an approximate 5km distance of the site which may be an effect on their settings. All setting issues will need to be addressed by the nominator at the project level stage.

The site of Dungeness Redoubt, built in 1798, lies close to the existing nuclear power station as does the site of St Lawrence's Battery. Other archaeological sites of post medieval date and layers of palaeo-environmental potential may be present within the site. The presence of these features indicates historic activity in the post medieval period in the area immediately surrounding the existing facility. As such the area is likely to be considered of at least local to regional archaeological importance. An archaeological watching brief may be required during construction, although it is possible that a detailed archaeological investigation of the area will be required, including intrusive investigation (e.g. trial trenching and detailed recording).

Operational effects include potential setting impacts on historic assets in the wider vicinity.

<b>Cultural Heritage</b>						
If a buried archaeological resource exists significant effects to this resource are possible during decommissioning as excavations are likely to be required.						
<b>Summary of Significant Strategic Effects:</b>			Timescale	C	O	D
			Significance	-	-	-
			Likelihood	M	M	M
<b>Significant Effects</b>			<b>Mitigation and Monitoring Possibilities</b>			
<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>			<ul style="list-style-type: none"> <li>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.</li> <li>It may be possible to mitigate against potential adverse setting effects on heritage assets through appropriate landscaping/planting schemes.</li> </ul>			

<b>Landscape</b>
<p><b>AoS Objective:</b></p> <p>24. To avoid adverse impacts on Nationally important landscapes.</p> <p>25. to avoid adverse impacts on landscape character, quality and tranquillity, diversity and distinctiveness.</p> <p><b>Guide questions:</b></p> <p>Will it adversely affect landscapes within or immediately adjacent to a National Park?</p> <p>Will it adversely affect landscapes in or immediately adjacent to an AONB or NSA?</p> <p>Will it adversely affect Heritage Coast or Preferred Conservation Zones?</p> <p>Will it adversely affect local landscapes/townscapes of value?</p> <p>Will it affect the levels of tranquillity in an area?</p> <p>Will it adversely affect the landscape character or distinctiveness?</p>
<b>Potential Receptors:</b>
<ul style="list-style-type: none"> <li>• Potential receptors from public footpaths and trails within the High Weald and Kent Downs AONB and also on the Dover - Folkestone Heritage Coast.</li> <li>• The landscape character of the Romney Marshes NCA (123) and the Dungeness Shingles landscape character type (refer to Landscape Assessment of Kent, October 2004).</li> <li>• The landscape character of neighbouring NCAs including High Weald (NCA 122), Low Weald (NCA 121) and Wealdon Greensand (NCA 120) landscapes.</li> <li>• Distinctive site landscape features within the Dungeness Shingle Landscape Character Type (LCT).</li> <li>• The landscape character of neighbouring landscape character types including: Walland Marsh Farmlands, Brookland Farms and Romney Coast.</li> <li>• The visual amenity of local residents and holiday makers within the Denge Marsh and Lyd area. Viewpoints from local landmark features including the 1901 and 1904 lighthouses and coastguard building on the tip of the Dungeness foreland and from within Romney Marshes.</li> </ul> <p>Note: Refer to Cultural Heritage assessment for consideration of the effects of the development on any scheduled ancient monuments, listed buildings or Conservation Areas that fall within 5km from the site.</p>
<b>Potential Significant Effects and Mitigation Possibilities:</b>
<p><b>International/ National/ Transboundary</b></p> <ol style="list-style-type: none"> <li>1. The site is likely to be visible from shipping lanes within the English channel and potentially visible from the north west coast of France in clear conditions. However, the significance of any impact is likely to be insignificant given the distance involved and the nature of change in the views experienced.</li> <li>2. The site is remote from nationally important designations including the proposed South Downs NP, the High Weald AONB and the Kent Downs AONB.</li> </ol>

## Landscape

The proposed South Downs NP is located approximately 50km to the east and is therefore the landscape setting or visual amenity is not likely to be affected by the development. The High Weald AONB is located 22km to the west; Kent Downs AONB is located 25km to the north east and the Dover – Folkestone Heritage Coast is located 21km to the north east of the proposed development. Due to the open, exposed character of the site and its local surroundings there is some potential for indirect effects on the character of parts of the nearby AONBs and also perhaps on the Heritage Coast.

3. The site at Dungeness is located on the south east corner of Romney Marshes (NCA 123). This distinctive landscape has been described as: 'Dungeness, at the southerly tip of the marshes is the longest shingle foreland in Europe and the extensive low lying shingle beaches, ridges and salt marsh provide a real sense of isolation and remoteness, especially along the coast. Much of this area is dominated by the imposing power station and associated transmission lines. Past gravel extraction pits now flooded, military uses and expanding holiday resorts add to the general clutter along the coast'. Higher ground is located within the High Weald approximately 18km to the south east and on the Kent Downs approximately 25km to the north east. The proposals may be visible from this higher ground, but the visual impact is not likely to be significant given the distance of these visual receptors.
4. The site is located deep within south east corner of the Romney Marshes (NCA 123). Due to the distance of the outlying High Weald (NCA 121), Low Weald (NCA 121) and Wealdon Greensand (NCA 120), the impacts on landscape character are not likely to be significant, however, there may potentially be some indirect visual effects on these landscapes.

### **Regional/ Local**

5. The site is located approximately 18km south east of the High Weald Special Landscape Area (SLA); 20km south of the Old Romney Shoreline SLA and is immediately surrounded by the Dungeness SLA. Due to the open, exposed character of the Dungeness SLA, the proposed development is likely to have significant impact on the landscape setting and visual amenity of the nearby High Weald and Old Romney Shoreline SLA.
6. The site at Dungeness is located on the south east corner of the Dungeness Shingle LCT (refer to Landscape Assessment of Kent, October 2004). The sensitivity of the Dungeness Shingle LCT is considered 'to be very high due to the high visibility over the dominant landform, and the many unique features. The cluster of defence installations, power station and holiday properties on the spit, specialised coastal and shingle-based vegetation, all contribute to a very strong sense of place'. The footprint of the proposed power station built form and ancillary structures, including a marine landing platform, transmission lines, signage, additional security fencing, lighting and roads which are likely to contribute to this and likely to have direct effects and also imposing visual clutter in what is essentially a very prominent, open landscape. The existing power station is identified as being a dominant visual feature. The expansion of this could magnify this existing impact.
7. There would potentially be direct adverse landscape and visual impacts on the Dungeness Shingle LCT resulting from the potential removal of shingle beach, pasture and saltmarsh resulting from the creation of compound areas, power station buildings and ancillary structures. Indirect adverse landscape and visual impacts may result from increased vehicular traffic both on and offshore, that in turn, would have negative impact on the tranquillity of the LCT.
8. The indirect landscape and visual effects of construction and the operation on neighbouring residents may result from increased lighting and traffic, both on and offshore, that may have a negative impact on the tranquillity of the LCT. During the construction phase there will be increased lighting which may impact on nearby residential communities more significantly in the winter months. Given the scale of the proposed development, it will not

## Landscape

be possible to mitigate for all the landscape and visual impacts. In addition, new development alongside the existing facility will add to the landscape and visual impacts of the existing power station which is already a prominent feature.

9. The overarching landscape objective, taken from the Dungeness Integrated Land Management Plan (ADAS, 2006) is: 'To ensure the long term survival of the bold open landscape character, whilst also enhancing the visual amenity of the landscape of Dungeness'. This could be supported through the following key mitigation measures: Protection measures to conserve existing vegetation, marshland and shingle beach in the temporary construction laydown area; avoidance of temporary laydown areas on the foreshore; siting of the power station and ancillary structures in close proximity to the existing power station to avoid cumulative visual impacts; sensitive design and/or alignment of the water cooling facility and marine landing platform; provision of buffer zones between construction compounds and nearby residential properties; delivery of construction materials by sea to reduce road use; light shields to reduce light spill and restricted working hours to limit light pollution in the winter months.
10. Key opportunities include landscape restoration proposals that may include grassland, wetland and lagoon restoration on decommissioning of the power station. This could include landscape restoration and offsite enhancement measures including the creation of grassland, marshland and wetland lagoons as part of the Integrated Land Management Plan.
11. With this potential Dungeness design and mitigation in place, 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.

### Summary of Significant Strategic Effects:

Timescale	C	O	D
Significance	-	-	0?
Likelihood	H	H	H

#### Significant Effects

- Due the open, prominent character of the Dungeness cusped foreland and far reaching views, there are likely to be significant adverse direct and indirect landscape and visual impacts during the construction, operation and decommissioning of the new power station.
- Direct impacts are likely to include the localised loss of distinctive coastal landform including shingle beaches and/or saltmarsh.
- Indirect impacts may include adverse impacts on visual amenity over a wide area, including potentially parts of the High Weald AONB located 22km to the south west; Kent Downs AONB located 25km to the north east and the Dover – Folkestone Heritage Coast located approximately 21km to the north east of the proposed development.
- Other indirect landscape and visual impacts are likely to result from increased onshore and offshore traffic that will in turn have a negative impact on the tranquility of the landscape.
- The existing power station is already a prominent built feature from local viewpoints and is visible from some long-distance viewpoints, particularly from areas of high ground.

#### Mitigation and Monitoring Possibilities

- There may be some potential to limit adverse effects on site landscape features and potential construction impacts. However given the scale of the likely new power station, opportunities for mitigation of associated visual impacts is limited.
- The decommissioning of the facilities may allow some landscape restoration of previously developed areas in the long term, which could be delivered and monitored through the use of an Integrated Land Management Plan.

### Landscape

Further development is highly likely to lead to a perceptible deterioration in some views, which would not be able to be mitigated, given the scale of new buildings.

- The decommissioning of the facilities may allow some landscape restoration of previously developed areas in the long term, however, the long term land uses for restored areas are difficult to predict. This leads to the view that the precautionary principle ought to be applied when it comes to assessing the significance of impacts at this stage.



## 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 the Storm Beach shingles of Dungeness point. No significant geological designated site lies within the local vicinity however the Dungeness shingles On the coast are the largest shingle structure in the United Kingdom and have developed over the past 5000 years. Shingle is aligned in sub-parallel ridges of differing ages with the oldest ridges furthest from the coast.

The site lies within Dungeness, Romney Marsh And Rye Bay SSSI, Dungeness to Pett level SPA and Dungeness SAC (to be confirmed by nomination)

No significant agricultural land lies with the site.  
Loss of Greenfield area within the site area.

**Potential Significant Effects and Mitigation Possibilities:**

**International/ National/ Transboundary**

1. The site potentially lies within the area of Romney Marsh And Rye Bay SSSI, Dungeness to Pett level SPA and Dungeness SAC. Construction activities and operational activities are likely to have a detrimental effect to the long term soil/gravel quality within the area of the proposed development. Compaction/removal of soils/gravels is likely to affect the soil/gravel 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. Construction of new plant upon Greenfield sites. The loss of any Greenfield land is likely to be of local significance and may be of national significance given the areas utilisation.

<b>Soils, Geology and Land Use</b>						
<p>5. Mineral abstraction has been noted in the area but further abstraction would not be likely due to international protection status.</p> <p>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.</p>						
<b>Summary of Significant Strategic Effects:</b>			Timescale	C	O	D
			Significance	-?	-?	-?
			Likelihood	M	M	M
<b>Significant Effects</b>			<b>Mitigation and Monitoring Possibilities</b>			
<ul style="list-style-type: none"> <li>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; Romney Marsh And Rye Bay SSSI, Dungeness to Pett level SPA and Dungeness SAC. This is considered further in the biodiversity appraisal.</li> </ul>			<ul style="list-style-type: none"> <li>Limitation of the footprint of the development reducing the area of soils affected. Avoidance of any soils within designated sites of ecological importance.</li> </ul>			

## 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 lakes, fluvial 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 nominated site is surrounded by areas which are shown on Environment Agency (EA) maps as being at risk of flooding from rivers and sea without defences. The existing site is surrounded on the east, north, west and south by areas which are shown on EA maps as being at risk of flooding from rivers and sea without defences. 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 flood 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 in the river system and along the coast. These may have further effects on fluvial 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 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 water bodies during construction. Over the longer-term, during operation, there is the possibility that the discharge of cooling water may affect local fluvial and coastal hydrodynamics and sedimentation processes. The effects of construction and operation of the cooling water system on fluvial and coastal processes and hydrodynamics and sediment transport could be reduced or potentially eliminated by suitable design and construction methods.

Water - Hydrology and Geomorphology						
<p>3. The potential effects of the development on the local river network includes construction of fluvial 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 Dungeness 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 (e.g. 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.</p>						
<b>Summary of Significant Strategic Effects:</b>			Timescale	C	O	D
			Significance	-	-	-
			Likelihood	M	M	M
<b>Significant Effects</b>			<b>Mitigation and Monitoring Possibilities</b>			
<ul style="list-style-type: none"> <li>• New defence works on fluvial and coastal processes, hydrodynamics and sediment transport, and any indirect effects on internationally designated habitats.</li> <li>• Works to provide (and discharge) cooling water on coastal processes, hydrodynamics and sediment transport, and any indirect effects on internationally designated habitats.</li> </ul>			<ul style="list-style-type: none"> <li>• Suitable design, including use of SuDs.</li> <li>• Selection of appropriate construction methods</li> </ul>			

**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 lakes, river and coastal waters and on 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 consenting 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 acceptability of this effect. Existing power stations with cooling water discharges are operating at the 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.

<b>Water - Water Quality (including surface, coastal and marine)</b>						
Summary of Significant Strategic Effects:			Timescale	C	O	D
			Significance	-	-	?
			Likelihood	M	M	M
<b>Significant Effects</b>			<b>Mitigation and Monitoring Possibilities</b>			
<ul style="list-style-type: none"> <li>Thermal impact of cooling water discharges (if this mode of cooling were to be adopted). This effect is of local and regional significance.</li> </ul>			<ul style="list-style-type: none"> <li>Thermal discharges will need to be consented by the EA. The discharge quality will need to comply with existing standards or meet the no deterioration standard.</li> </ul>			

<b>Water – Water supply and Demand</b>	
<b>AoS objective:</b>	16. To avoid adverse impacts on the supply of water resources.
<b>Guide questions:</b>	Will it adversely affect water supply as a result of abstraction? Will it increase demand for water?
<b>Potential Receptors:</b>	
Local and district resident population and tourists. Local and district ecosystems dependent surface water features.	
<b>Potential Significant Effects and Mitigation Possibilities:</b>	
<b>International/National/Transboundary</b>	Not significant.
<b>Regional/Local</b>	<ol style="list-style-type: none"> <li>1. The site lies within the Denge Gravel aquifer. This groundwater body is currently used for water supply. There are two irregular shaped inner and outer groundwater source protection zones enclosed by one total groundwater catchment source protection zone in very close vicinity to the existing site. The total groundwater catchment source protection zone borders and marginally overlaps the northern boundary of the existing site, and also encompasses several lakes and surface water features. Current use of the groundwater within the Denge Gravel aquifer is thought by the EA to be unsustainable due to potentially conflicting water level requirements of the Dungeness Special Area of Conservation, together with future climate change induced sea level rise. The proposed development is potentially expected to have an impact on water resources in the area.</li> <li>2. The construction and operation of the proposed nuclear power station 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 small; it may be more significant during the construction period when a substantial increase in the local population is likely.</li> </ol>

Water – Water supply and Demand						
<p>3. Increased water supply in the longer term may not be available from the “Denge” WRZ, and may have to be derived from outside this WRZ with water transferred from the adjacent “Hills” WRZ or as bulk supplies from adjacent Water Companies, hence additional water supply could impact District aquatic ecosystems within and downstream of aquifers or catchments used to provide additional water.</p>						
<b>Summary of Significant Effects:</b>			Timescale	C	O	D
			Significance	-	-	O
			Likelihood	H	H	M
<p><b>Significant Effects</b></p> <ul style="list-style-type: none"> <li>Increased demand during the construction phase. The potential magnitude and duration of increased water demand will depend on the timing of the new Dungeness 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.</li> </ul>			<p><b>Mitigation and Monitoring Possibilities</b></p> <ul style="list-style-type: none"> <li>Studies to ensure that capacity of water and wastewater infrastructure in WRZ is sufficient.</li> </ul>			



<b>Water - Groundwater Quality and Flow</b>																
<b>AoS Objective:</b> 18. To avoid adverse impacts on groundwater quality, distribution and flow and to help meet the objectives of the Water Framework Directive.																
<b>Guide questions:</b> 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?																
<b>Potential Receptors:</b>																
Local and district resident population and tourists, local and district ecosystems with connections to groundwater.																
<b>Potential Significant Effects and Mitigation Possibilities:</b>																
<b>International/National/Transboundary</b> Not significant.																
<b>Regional/ Local</b>																
<p>1. There is a locally important aquifer beneath the site and a groundwater source protection zone in close vicinity of the site. The geology and hydrogeology at the site provide connectivity between activities at the site and the aquifer, with high infiltration rates through the gravels. Current use of the groundwater within the Denge Gravel aquifer is thought by the EA to be unsustainable due to potentially conflicting water level requirements of the Dungeness Special Area of Conservation, together with sea level rise. Discharges from this groundwater body 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 in the major aquifer.</p> <p>2. Increased water supply in the longer term may not be available from the “Denge” WRZ, and may have to be derived from outside this WRZ with water transferred from the adjacent “Hills” WRZ or as bulk supplies from adjacent Water Companies. Additional water supply could impact groundwater bodies used to provide additional water. Increased groundwater abstraction could lead to impacts on groundwater dependent surface water features and aquatic ecosystems.</p>																
<b>Summary of Significant Effects:</b>			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Timescale</td> <td style="text-align: center;">C</td> <td style="text-align: center;">O</td> <td style="text-align: center;">D</td> </tr> <tr> <td style="text-align: center;">Significance</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> <td style="text-align: center;">O</td> </tr> <tr> <td style="text-align: center;">Likelihood</td> <td style="text-align: center;">H</td> <td style="text-align: center;">H</td> <td style="text-align: center;">M</td> </tr> </table>		Timescale	C	O	D	Significance	-	-	O	Likelihood	H	H	M
Timescale	C	O	D													
Significance	-	-	O													
Likelihood	H	H	M													
<b>Significant Effects</b>			<b>Mitigation and Monitoring Possibilities</b>													
<ul style="list-style-type: none"> <li>Potential impacts on local groundwater bodies.</li> </ul>			<ul style="list-style-type: none"> <li>Studies to ensure that local groundwater bodies are investigated and suitable design is adopted to mitigate potential impacts.</li> </ul>													

Flood Risk						
<p><b>AoS Objective:</b> 14. To avoid increased flood risk (including coastal flood risk) and seek to reduce risks where possible</p> <p><b>Guide questions:</b> Will it result in demand for higher defence standards?</p>						
<b>Potential Receptors:</b>						
Site workers. Local, District ecosystems in coastal waters and on foreshore.						
<b>Potential Significant Effects and Mitigation Possibilities:</b>						
<p><b>International/ National/ Transboundary</b> The potential effects</p>						
<p><b>Regional/ Local</b> The site is located in a combination of Flood Zone 1, Flood Zone 2 and Flood Zone 3.</p> <p>Flood risk is likely to increase to the site as a result of climate change and sea level rise.</p> <p>The site is currently protected by natural defences which should be maintained/managed for the lifetime of the development to mitigate against current and future flood risk, this may affect coastal processes, but the effects are unknown without detailed assessment.</p> <p>It is recommended that the development is located in the areas of the site at lowest flood risk, e.g. Flood Zone 1.</p>						
<b>Summary of Significant Effects:</b>			Timescale	C	O	D
			Significance	-	-	-
			Likelihood	M	M	M
<p><b>Significant Effects</b></p> <ul style="list-style-type: none"> <li>Main effects are through the continued management of existing natural defences which could affect coastal processes.</li> </ul>			<p><b>Mitigation and Monitoring Possibilities</b></p> <ul style="list-style-type: none"> <li>It may be possible to mitigate these effects through appropriate management of the existing defences.</li> </ul>			

## Appendix 3: Plans and Programmes Review (Regional)

### **Draft Regional Spatial Strategy - A clear vision for the South East (March 2006) (South East England Regional Assembly), revoked July 2010<sup>4</sup>**

The South East Plan is a full revision of the Regional Planning Guidance 9 (RPG9 - the current Regional Spatial Strategy for the South East) and covers the period to 2026.

This draft plan was submitted to the government after two years of consultation. “The plan provides a framework for the region for the next 20 years to 2026”. The core objectives of the plan include the balance between economic and housing growth, high environmental standards and lower levels of social exclusion and natural resource consumption. The plan includes a dynamic and robust economy that has a sustainable development pattern.

#### **The Vision**

Through the Plan and other measures, the South East will show a sustained improvement in its quality of life over the period to 2026, measured by the wellbeing of its citizens, the vitality of its economy, the wealth of its environment and the prudent use of natural resources.

#### **Core Strategy**

The South East is a region of economic opportunity with attractive countryside but it is also a region with considerable social inequalities, environmental conflicts and development tensions. The Strategy will seek to meet its needs through a sustainable programme of better management of assets, efficiency of resource use and increased adaptation and mitigation.

Development will be focused on the urban areas of the region to reduce travel distances. A network of 21 regional hubs has been identified; highly accessible urban centres providing higher-order economic, social and cultural activities. Particular efforts will be made to improve the attractiveness of those towns and cities, to improve quality of life and achieve effective urban renaissance.

<sup>4</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

**Draft Regional Spatial Strategy - A clear vision for the South East (March 2006) (South East England Regional Assembly), revoked July 2010<sup>4</sup>**

**Spatial Strategy**

The three main policies include a continuation of the existing regional guidance policies, maximisation of economic potential in areas expected to experience the highest population and employment growth and the reduction of inter-regional disparities but promoting growth in the south and east. The spatial strategy includes promoting sustainable development of communities and ensuring that development only takes place where necessary with an emphasis on urban development. The regional assembly will continue to use green belt designations as a tool for controlling urban growth and looks to protect and enhance the region's key environmental, cultural and heritage assets.

**East Kent and Ashford Sub Region**

This region encompasses Canterbury, Thanet, Dover, Shepway and parts of Swale and Ashford. Priority has been given to the regeneration of the coastal towns and the continued development of Ashford. This will be implemented partly through the introduction of a new high-speed domestic rail service. The urban area of Dover has been selected for concentrated growth with 6,100 new proposed dwellings installed over 20 years.

**D7 Countryside and the Historic Environment D8:**

- Manage public access to the countryside and rights of way network.
- Management of the urban fringe and suburban changes.

**D5 Sustainable Natural Resource Management:**

- Maintain the quality of the environment.
- Continue sustainable growth and development by conducting sustainable natural resource management.

**D10 Tourism:**

- SEEDA will assist with the skills development, marketing, research and communications of the Tourism ExSEllence: The Strategy for Tourism in the South East.
- Comprehensive long term local vision to be established within the south east.

**D3 Housing:**

- Make better use of land, provide the right type of housing.

**Draft Regional Spatial Strategy - A clear vision for the South East (March 2006) (South East England Regional Assembly), revoked July 2010<sup>4</sup>**

- Make better use of existing housing and cater for the needs of future generations.
- Secure a step change in affordable housing.

D4 Transport:

- Strategy focused on: Managing and investing, communications technology, mobility management, freight, the gateways airports and ports, regional hubs and spokes, road pricing and charging and the rural dimension.

D11 Social, Cultural and Health:

- Strengthen economic and social cohesion and reduce disparities by facilities appropriate patterns of development.
- Local community document will embrace measures to address the causes of ill health.
- Local authorities and the NHS should work together to facilitate joint planning within the strategic process.

LINK: [http://www.southeast-ra.gov.uk/sep\\_submitted.html#exec\\_sum](http://www.southeast-ra.gov.uk/sep_submitted.html#exec_sum)

**The Regional Economic Strategy (2006-2016) (South East England Development Agency- SEEDA), revoked July 2010<sup>5</sup>**

The Regional Economic Strategy for the South East outlines regional policy and guidance for the, transport, sustainability and sustainable development growth within the South East region. SEEDA uses the South East as an example of a world class region which aims to invest in the success of the region and uplift the underperforming sub-regions. A smart growth pattern will be established effectively utilising scarce resources and productivity gains to deliver sustainable growth for the South East.

Three main Objectives of this policy include:

1. Global competitiveness – investing in success - ensuring the South East maintains its competitiveness against international competition, increasing the percentage of total South East business turnover attributable to new and improved products and services;

<sup>5</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

**The Regional Economic Strategy (2006-2016) (South East England Development Agency- SEEDA), revoked July 2010<sup>5</sup>**

and securing the infrastructure needed to secure continued prosperity.

2. Smart growth – lifting underperformance – by increasing level of business and available employment, increase affordable housing stock, reducing road congestion and pollution levels by, improving travel choice, create the right climate for long term investment, and improving the productivity of the workforce and increasing economic activity.
3. Sustainable prosperity – supporting quality of life through reducing CO2 emissions attributable to the South East and increasing the contribution of renewable energy to overall energy supply in the region; achieving improvements to quality, biodiversity and accessibility; and enabling more people to benefit from sustainable prosperity across the region.

The Vision: By 2016 the South East will be a world class region achieving sustainable prosperity

For each of the above Objectives, a set of measurable targets is identified that demonstrate progress towards the goal.

4 Infrastructure:

- Secure investment in infrastructure priorities to maintain international economic competitiveness
- Secure funding for Heathrow Terminal 5

5 Enterprise:

- Increase the business stock by 35% from 35 businesses per 1,000 inhabitants in 2005 to 44 per 1,000 inhabitants by 2016, including 10,000 new businesses run by women by 2010

6 Skills:

- Maximise the number of people ready for employment at all skill levels
- ensure they are continually equipped to progress in the labour market

7 Competition and Business Regulation:

- Increase the level of participation of South East businesses tendering for public sector contracts

8 Transport:

- Reduce pollution levels and road congestion by promoting public transport and improving travel choice

**The Regional Economic Strategy (2006-2016) (South East England Development Agency- SEEDA), revoked July 2010<sup>5</sup>**

- Promoting public transport
- Manage demand and facilitating modal shifts

9 Physical Development:

- Ensure sufficient and affordable housing and employment space of the right quality, type and size to meet the needs of the region and support its competitiveness, and create the climate for long-term investment through the efficient use of land resources, including mixed-use developments.

10 Employment:

- Improve the productivity of the workforce and increase economic activity from 82% to 85%

11 Climate Change:

- Reduce CO<sub>2</sub> by 20% from the 2003 baseline
- Increase the contribution of renewable energy to at least 10% of the energy supply in the South East

12 Sustainable Consumption and Production:

- Reduce per capita water consumption in the South East by 20% from 169 litres per day in 2003/04 to 135 litres per day by 2016, and
- Achieve a 30% increase over the 2003 baseline in GVA generated per tonne of materials entering the waste stream by 2016.

13 Natural Resources and the Environment

- Achieve measurable improvements in the quality, biodiversity and accessibility of green and open space
- To safeguard the natural resources of the South East as a critical regional asset now and in the future
- Integrated approach to land management and the provision of green infrastructure
- Improve and secure social, economic and environmental benefits

14 Sustainable Communities.

- Enable more people to benefit from sustainable prosperity across the region and reduce polarisation between communities.

LINK: [http://www.seeda.co.uk/RES for the South East 2006-2016/](http://www.seeda.co.uk/RES_for_the_South_East_2006-2016/)

### **SEEDA Corporate Plan (2008-2011) (SEEDA), revoked July 2010<sup>6</sup>**

The corporate plan defines SEEDA's contribution towards the Regional Economic Strategy for the South East over the next three years.

Three baseline global indicators will measure success against the Regional Economic Strategy. These three indicators are as follows:

- Average annual increase in Gross Value Added (GVA) per capita of at least 3%.
- Increase productivity per worker of an average 2.4% annually from £39,000 in 2005 to at least £50,000 in 2016.
- Reduce the rate of increase in the regions ecological footprint, stabilising it and aiming to reduce it overall by 2016.

SEEDA created a implementation plan to achieve these targets and has set the following objectives to ensure the Regional Economic Strategy is followed through:

- Pan-regional working across the greater South East, especially the Thames Gateway and Milton Keynes South Midlands Growth Area.
- Using economic contours to identify how Regional Economic Strategy actions connect with the particular needs of each area.
- Promoting the priority of the eight regions (Southampton/Portsmouth, Brighton, Ashford, Ebbsfleet, Basingstoke, Reading, Oxford, Buckinghamshire/Milton Keynes) for investment and growth.
- Lifting underperformance for regeneration programmes in Dover, Ashford, Margate, Hastings and Bexhill.

LINK: [http://www.seeda.co.uk/Corporate\\_Plan\\_2008-2011/](http://www.seeda.co.uk/Corporate_Plan_2008-2011/)

<sup>6</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.



### **SEEDA Rural Action Plan 2008 (SEEDA), revoked July 2010<sup>7</sup>**

This action plan encompasses the Regional Economic Strategy but goes above this strategy and encompasses environmental, economic and social actions.

The following are objectives within this plan:

- More economically dynamic and socially inclusive villages and market towns.
- Increased business competitiveness in rural areas through entrepreneurship and enterprise.
- Dynamic food, farming and forestry sectors, enhancing and exploiting the countryside's assets and with increased adaptability and resilience.
- Increased value of premium local products from South East land-based industries, with effective supply chains.
- The quality and bio-diversity of the landscape preserved and enhanced, providing a high quality life-style offer to those who work, live in and visit it.

LINK: [http://www.seeda.co.uk/RES\\_for\\_the\\_South\\_East\\_2006-2016/](http://www.seeda.co.uk/RES_for_the_South_East_2006-2016/)

### **Adapting to Climate Change: a checklist for Development (2005) (The South East Climate Change Partnership (SECCP) ) , revoked July 2010<sup>8</sup>**

Climate South East is a partnership between the public, private and voluntary sectors and has been going since 2002. The mission of the SECCP is to investigate, inform and advise on the impacts and opportunities resulting from the impacts of climate change in the South East. Adaptive planning in this region is to be promoted. SECCP's programme of work includes a workshop for members and stakeholders to address specific aspects of adapting to climate change. Tools for adaptation will be developed and awareness of climate change issues will be supported.

<sup>7</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

<sup>8</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

The partnership aims to:

- Identify the potential impacts of climate change.
- Raise awareness of the need to adapt to and mitigate against climate change.
- Develop integrated responses to climate change.
- Identify potential opportunities that may arise.
- Co-ordinate with national and regional organisations to address related issues.

LINK: <http://www.climatesoutheast.org.uk/>

### **Sustainable Communities Regional Economic Strategy Detailed Action Plan (April 2008 - 2016) (SEEDA), revoked July 2010<sup>9</sup>**

This report is a detailed action plan outlining the actions of SEEDA to achieve the sustainable community's target. SEEDA will work alongside its partners to take the lead on the development, social, culture and health research. SEEDA will work with its partners to analyse and advise on emerging government policy and the implications of this for the Regional Economic Strategy.

Activities carried out by SEEDA will include the following:

- Regional index of sustainable well being.
- Develop the equalities and diversity inclusion, health and social economy and deprived areas evidence base.
- Work readiness in young people, tackling barriers to wordlessness.
- Develop the cultural evidence base and create community cohesion.
- Develop and implement a regional inclusion strategy that addresses regional infrastructure requirements.
- Contribute towards marginalised groups and international work including carbon offsetting schemes.

LINK: [http://www.seeda.co.uk/RES\\_for\\_the\\_South\\_East\\_2006-2016/](http://www.seeda.co.uk/RES_for_the_South_East_2006-2016/)

<sup>9</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

### Section D6 Waste and Minerals: South East Plan (2006) (South East England Regional Assembly), revoked July 2010<sup>10</sup>

This waste and minerals plan is part of the overall clear vision for the South East as set out by the South East Regional Assembly. The plan outlines the requirement for rapid development of new infrastructure in line with the European and national policies that state the need for the recovery of more waste.

Policy areas within the plan include:

- Regional self sufficiency of waste – Changes to the amount of waste exported to landfill. Reduction in the amount of waste and reuse recycle and recovery are all objectives within the plan. A regional working group is to be established to look at waste reduction and examples of good practise.
- Sustainable design, construction and demolition - Look at the reuse of demolition material and the promotion of site design to facilitate recycling and reuse facilities.
- Regionally significant facilities – Need for recovery parks and collection and bulking facilities in line with the growth in the economy and the amount of waste produced.
- County Councils to increase waste collection, segregation, composting and recycling facilities and to create new recycling markets. Biomass should be collected and used as a fuel source where appropriate.
- Hazardous waste – Identify and safeguard suitable sites for storage, treatment and remediation of demolition waste and contaminated soil. Identify criteria for large scale hazardous waste sites and access available landfill provision and create hazardous waste cells on site where possible.

LINK: [http://www.southeast-ra.gov.uk/sep\\_submitted.html#exec\\_sum](http://www.southeast-ra.gov.uk/sep_submitted.html#exec_sum)

<sup>10</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and polices set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

### **South East Biodiversity Strategy (2009) (South East England Biodiversity Forum)**

The environment is one of the reasons for the high quality of life that residents value within the South East region. The environment supports the following industrial activities; agriculture, forestry, mineral extraction and tourism. These activities create 230,000 jobs and £7bn Gross Value Added to the South East regional economy. The South East Biodiversity Forum (SEBF) was created in 1998 to champion biodiversity within the South East region. SEEDA is a member of SEBF.

The overall aim of SEBF is to; raise awareness and understanding of the importance of biodiversity to people throughout the south east and to safeguard the regions biodiversity for future generations in order to achieve sustainable development.

This objective will be conducted by:

- Protecting the best wildlife sites.
- Promoting the recovery of declining species and habitats.
- Embedding biodiversity in all sectors of policy making.
- Enthusing people.
- Developing the evidence base.

Priority habitats exist within the South East with the following objectives; maintain extent of existing habitat, achieving condition of current habitat, restoration targets of different habitat, expansion or creation targets of different habitats. Species action plans include that of the common skate, commercial fish, large fish mammals and reptiles, native oyster and sea anemones, sand worms and sand shrimps. The SEBF follow the national biodiversity strategy for both species and habitat action plans.

LINK: <http://www.sebiodiversity.org.uk/>

### **River Basin Management Plan for the South East : Water for Life and Livelihoods (2009) (Environment Agency)**

This plan describes how the region will meet the challenge of the Water Framework Directive to improve the quality of every aspect of the water environment in the South East. The plan proposes new actions to manage the water environment in the South East river basin district.

The key targets of the plan are:

- By 2015, 18% of surface waters (rivers, lakes, estuaries and coastal waters) will improve for at least one biological, chemical or physical element
- 23% of surface waters will be at good or better ecological status/potential and 33% of groundwater bodies will be at good status by 2015

- At least 47% of assessed surface waters will be at good or better biological status by 2015

The plan identifies the following targets for the Rother catchment (in which the nominated site sits):

- 23% at good ecological status or potential
- 69% assessed at good or high biological status (36 water bodies assessed)
- 100% assessed at good chemical status (4 water bodies assessed)
- 23% at good status overall (chemical and ecological)
- 25% improving for one or more elements in rivers

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
- diffuse pollution from urban sources
- water abstraction

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

### **Coastal South East: A Framework for Action (March 2008) (SEEDA), revoked July 2010<sup>11</sup>**

The Coastal South East Framework is providing support transforming the coastal contour as defined by the Regional Economic Strategy. The south east coastline has underperformed in comparison to the south east region creating three main drivers for the current action plan.

These drivers include:

- Adaptation to demographic change over the next 20 years with increases in the working age and elderly population.
- Higher flexibility of living/working arrangements with use of the internet and choice to live in more affluent areas.
- The increased susceptibility of the coast due to flooding as a result of climate change.

<sup>11</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

The vision of this report is to “Significant progress will be made in advancing a growth model that is consistent with carbon neutrality and in which the distinctive character of particular coastal places both urban and rural is enhanced and maintained”.

The three main priorities include:

- A creative and inspirational coast with high quality of places to live, learn and invest.
- An inclusive and connected coast with confident communities and businesses.
- A competitive coast with a strong economy.

LINK: [http://www.seeda.co.uk/Sustainable\\_Prosperty/Sustainable\\_Developments/Coastal\\_Strategy/](http://www.seeda.co.uk/Sustainable_Prosperty/Sustainable_Developments/Coastal_Strategy/)

### **South East England Health Strategy (February 2008) (Government Office for the South East), revoked July 2010<sup>12</sup>**

The England Health Strategy has been produced by the Public Health Group in collaboration with SHAs, GOSE, SEEDA and SEERA. The health of the south east population is generally good with the second highest life expectancy in the UK. Early deaths are low compared with the English average with people in the south east generally living healthier lifestyles than those elsewhere in the country however there are inequalities in healthcare across the region.

The objective of the health strategy is to improve the health of the population and the inequalities across it by:

- Reducing health inequalities
- Promoting a sustainable region
- Developing safer communities
- Increasing the positive relationship between employment and health
- Improving outcomes for children and young people
- Improving outcomes in later life

LINK: <http://www.go-se.gov.uk/gose/publicHealth/?a=42496>

<sup>12</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and polices set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

### **Water Resources Management Plan (2009) (Veolia Water South East)**

Veolia Water Southeast, previously known as Folkestone and Dover Water, has produced a Water Resources Management Plan (WRMP) to set out how it will deliver a secure and sustainable water supply to 2035.

There are no major rivers or reservoirs in the WRMP area, with water instead sourced from groundwater in local chalk (North Downs) and gravel beds (Denge peninsula). The Company operates in one of the driest areas of England and was in March 2006 the first water company in the Country to be granted “Area of Water Scarcity” status by the Government.

Demand for water is set to rise in line with forecasted economic growth in the area and an increasing population, along with major housing development in Ashford and the Thames Gateway, the fast rail link from Folkestone to London and nominations for a new nuclear power station at Dungeness.

The key aims of the WRMP in responding to increased demand are:

- 96% meter penetration by April 2012
- Socially-responsible stepped basis of charging to encourage savings in non-essential use of water from 2013
- Introduce an enhanced bill, with clearer information on consumption, to encourage behavioural change
- Offer water efficiency advice and services
- Reduce leakage further by 1Ml/d over the next 10 years
- Prolong current arrangements to import water from neighbouring water companies
- Work with other water companies to bring forward schemes for significant new resources
- Improve performance of existing water resources and protect them from pollution
- Minimise CO<sub>2</sub> emissions

LINK: <http://www.veoliawater.co.uk/articles1/folkestone.htm>

### **Folkestone to Rye Coastal Defence Strategy Study (2001) (Environment Agency)**

The Folkestone to Rye Coastal Defence Strategy Plan provides a framework for the sustainable management of the coastal defences between Folkestone and Rye. The Strategy identifies broad-brush opportunities and constraints for coastal management over the next fifty years as well as a more detailed Coastal Defence Implementation Plan for the next five years based on need.

The study area is at significant risk from flood and erosion hazards. If a 'do nothing' approach is adopted, approximately £260million of damage would be incurred over the next 50 years (up to £331million with sea level rise). The study estimates an additional £100million damage related to the two existing nuclear power stations, as well as £400million in damage to amenity (beaches, tourism), as well as potential damage to the internationally important habitats at Dungeness.

Large scale, long term shoreline change of the Dungeness cusped foreland is constrained by the two existing nuclear power stations at Dungeness. The need to maintain a high standard of defence to the power station site and to accommodate natural change where possible in the surrounding internationally designated habitat, restricts both the type and form of management options available.

To overcome these and other constraints, a series of Capital and Operational Implementation activities have been identified:

- Priority Action 1 - Dungeness Foreland
- Priority Action 2 - Littlestone Road to Jesson Outfall
- Priority Action 3 - High Knocke to Dymchurch Redoubt
- Priority Action 4 - Fisherman's Beach to Folkestone West Pier
- Priority Action 5 - Romney Sands
- Priority Action 6 - Hythe Ranges
- Priority Action 7 - Coronation Parade

LINK: <http://www.folkestone-rye.net/index2.htm>



## Appendix 4: Baseline Information

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

### Air

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Air</b>				
<b>South East Air Quality</b>	1	<p>Air quality in the South East is generally good to moderate. Areas of poor air quality tend to concentrate around major route corridors (roads) and congestion areas, whilst elevated levels of ozone have been an issue in the region, particularly in rural areas. In 2006 there were 22 air pollution incidents deemed by the Environment Agency to have a 'serious' impact on air quality.</p> <p>There are 121 Air Quality Management Areas (AQMA) in the South East region of England, none of which are within the Shepway District Council boundary area.</p>		<p>Air quality in the South Eastern region has generally been improving over the last decade, where levels of pollutants such as sulphur dioxide in rural and urban areas, and pollutants from regulated activities (benzene, lead, dioxins and furans) have reduced since the 1990s.</p> <p>Emissions of greenhouse gases and nitrogen oxide however, have slowly been increasing in the South East region since 1998. Levels of ozone, have exceeded the National Air Quality Strategy objective levels and, in 2006, exceeded the 'alert threshold' at three sites in the region.</p> <p>In 2006 there were 90 days in the region where the air pollution was moderate or higher: the number of days where air pollution was moderate or higher in urban areas was over 2.5 times greater than that in rural areas. No overall trend is obvious, but the increase tends to reflect the national trend.</p>


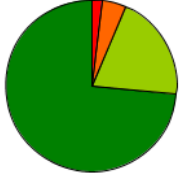
## Key to Data Sources

1	South East Regional Assembly (2007). Regional Monitoring Report 2007 <a href="http://www.southeast-ra.gov.uk/success_monitoring_reports.html">http://www.southeast-ra.gov.uk/success_monitoring_reports.html</a> [accessed 03 March 2009] ) <sup>13</sup>
2	UK Air Quality Archive. <a href="http://www.airquality.co.uk/archive/laqm/laqm.php">http://www.airquality.co.uk/archive/laqm/laqm.php</a> [accessed 03 March 2009].
3	DEFRA (March 2009). South East Regional Sustainable Development Indicators Factsheet. <a href="http://www.defra.gov.uk/sustainable/government/progress/regional/documents/south_east_factsheet.pdf">http://www.defra.gov.uk/sustainable/government/progress/regional/documents/south_east_factsheet.pdf</a> [accessed 03 March 09]
4	Environment Agency (2007). State of the Environment 2007: An Assessment of the Environment in South East England, Environment Agency <a href="http://www.environment-agency.gov.uk/research/library/publications/34103.aspx">http://www.environment-agency.gov.uk/research/library/publications/34103.aspx</a> [accessed 03 March 09]

<sup>13</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

## Biodiversity and Ecosystems

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Biodiversity and Ecosystems</b>				
<b>South East Biodiversity Strategy – in Consultation stage</b>	1	<p>The first consultation of the South East Biodiversity Strategy is underway, the elements that are held on this site for consultation are as follows:</p> <ul style="list-style-type: none"> <li>• The description of the opportunity map and the Biodiversity Opportunity Areas (BOAs)</li> <li>• The BOAs themselves</li> <li>• Regional BAP targets for habitats</li> <li>• The definitions for these targets; maintenance, restoration, creation and achieving condition</li> </ul> <p>This consultation will run until 10 March 2009.</p> <p>The second stage of the consultation will run from early January until 6th Feb and will be web based. This will cover the following elements:</p> <ul style="list-style-type: none"> <li>• The formatting of the SE Biodiversity strategy website</li> <li>• The website text</li> <li>• The format in which the BOA map is held on the website</li> </ul>		
<b>Kent Biodiversity Action Plan</b>	2	<p>The Kent Biodiversity Action Plan was first produced in 1997, includes 28 Priority Habitat Action Plans, produced by the Kent Biodiversity Partnership. Each Habitat Action Plan sets out the steps needed to secure a healthy future for the habitat and for the wildlife that depends on the habitat for their survival.</p>		
<b>Natura 2000 designated sites (N2K)</b>	3	<p>There are 2 N2K designated sites within 20 km of the site:</p> <ul style="list-style-type: none"> <li>• Dungeness to Pett Level SPA</li> <li>• Dungeness SAC</li> </ul>		

Indicator	Data Source	Current Data	Comparators				Trend	
Ramsar	4	There is 1 proposed Ramsar wetland designated site within 20 km of the site: <ul style="list-style-type: none"> <li>Dungeness to Pett Levels</li> </ul>						
Sites of Special Scientific Interest (SSSI)	5	There are 705 SSSI within the South East of England of which 98 are situated within Kent.						
		<b>Region: South East</b>						
		% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	
		89.13%	46.40%	42.73%	4.63%	6.18%	0.06%	
		<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; padding: 5px;"> <p>■ % Area favourable</p> <p>■ % Area unfavourable recovering</p> <p>■ % Area unfavourable no change</p> <p>■ % Area unfavourable declining</p> <p>■ % Area destroyed / part destroyed</p> </div>  <div style="border: 1px solid black; padding: 5px;"> <p>■ % Area favourable</p> <p>■ % Area unfavourable recovering</p> <p>■ % Area unfavourable no change</p> <p>■ % Area unfavourable declining</p> <p>■ % Area destroyed / part destroyed</p> </div>  </div> <p>County: Kent (SSSI condition summary compiled 1 February 2009)</p>						
	% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed		
Kent	93.19%	73.30%	19.89%	4.76%	1.99%	0.06%		

Indicator	Data Source	Current Data	Comparators	Trend									
Dungeness, Romsey Marsh and Rye Bay SSSI	6	<p>Only 1 of the 98 SSSIs is situated within 20 kms of the site, this being Dungeness, Romsey Marsh and Rye Bay SSSI.</p> <p>This site is a nationally important due to its diverse range of biological and geological features, specifically the coastal geomorphology of Dungeness and Rye Harbour and the following nationally important habitats: saltmarsh, sand dunes, vegetated shingle, saline lagoons, standing waters, lowland ditch systems, and basin fens.</p> <p>This range of habitats and others within the site, support the following nationally important species interests: populations of 4 vascular plant species listed in Schedule 8 of the Wildlife and Countryside Act 1981 (as amended); an assemblage of Schedule 8, nationally rare and nationally scarce vascular plants; populations of the vulnerable Warne's thread-moss <i>Bryum warneum</i>; populations of water voles <i>Arvicola terrestris</i>; and assemblage of breeding birds associated with shingle beaches and saltmarsh, lowland damp grasslands, lowland open waters and their margins, and scrub; breeding numbers of 16 species of bird; assemblage of over 20,000 waterfowl in the non-breeding season; wintering numbers of 17 species of bird and 3 species during passage periods; metapopulations of great crested newts <i>Triturus cristatus</i>; endemic species and subspecies of invertebrates; populations of 2 invertebrate species listed in Schedule 5 of the W and CA; populations of 10 endangered, vulnerable and rare invertebrate species; assemblages of invertebrates occurring on 'dry' coastal habitats; and assemblages of wetland invertebrates.</p> <p>Currently 91.27% of the site is meeting PSA targets (SSSI condition summary compiled 1 February 2009):</p>											
		<div data-bbox="584 954 853 1094" data-label="Figure"> </div> <div data-bbox="893 938 1070 1118" data-label="Figure"> </div> <table border="1" data-bbox="584 1129 1760 1313"> <thead> <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> </thead> <tbody> <tr> <td>91.27%</td> <td>57.38%</td> <td>33.89%</td> <td>6.71%</td> <td>2.02%</td> <td>0.00%</td> </tr> </tbody> </table>	% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed	91.27%	57.38%	33.89%	6.71%	2.02%
% Area meeting PSA target	% Area favourable	% Area unfavourable recovering	% Area unfavourable no change	% Area unfavourable declining	% Area destroyed / part destroyed								
91.27%	57.38%	33.89%	6.71%	2.02%	0.00%								

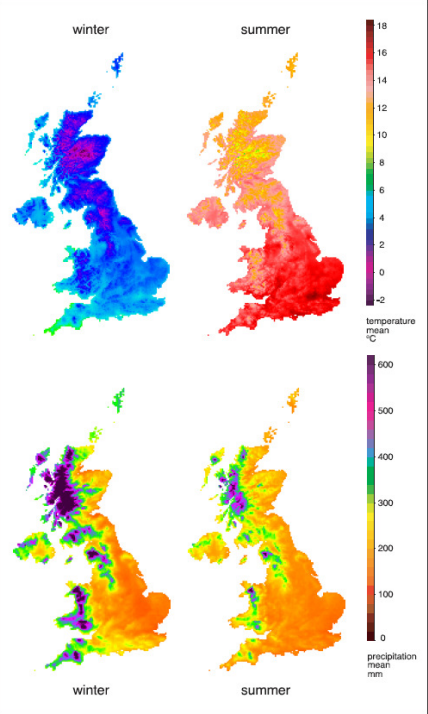
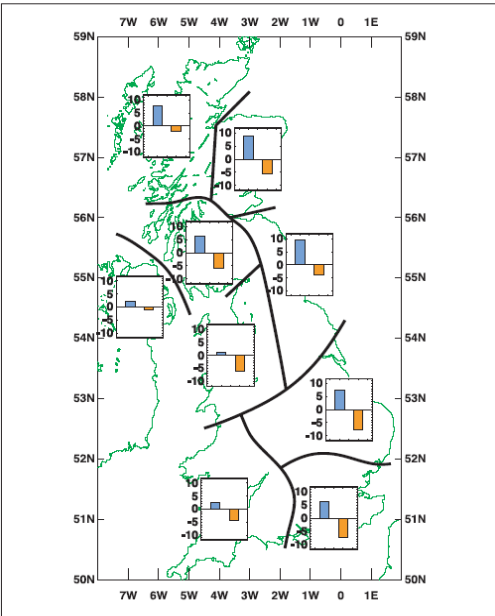
Indicator	Data Source	Current Data	Comparators	Trend
<b>National Nature Reserves (NNR)</b>	7	There are 11 NNR within the county of Kent. The following 2 NNRs are considered relevant, lying within 20km of the site: <ul style="list-style-type: none"> <li>• Dungeness, lies within 5km of the site.</li> <li>• Ham Street Woods</li> </ul>		
<b>Local Nature Reserves (LNR)</b>	8	There are 45 LNR within the county of Kent. The following 3 LNRs lie within 20 km of the site: <ul style="list-style-type: none"> <li>• Poulton Wood, Aldington</li> <li>• Romney Warren</li> <li>• Rye Harbour</li> </ul>		
<b>Local Wildlife Sites</b>	9	There are over 440 Local Wildlife Sites in Kent.		

### Key to Data Sources

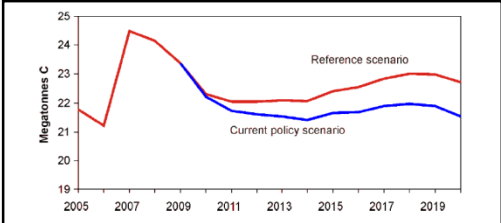
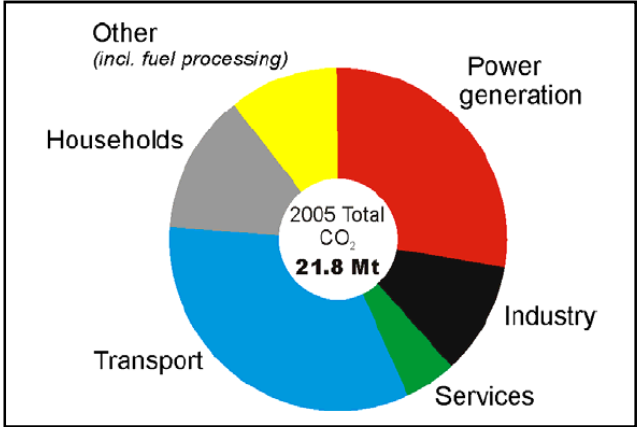
1	Sussex Biodiversity Record Center (2009). South East Biodiversity Strategy Consultation. <a href="http://sxbrc.org.uk/">http://sxbrc.org.uk/</a>
2	UK and National Biodiversity Action Plan (2002) Kent Biodiversity Action Plan <a href="http://www.ukbap.org.uk/lbap.aspx?ID=453">http://www.ukbap.org.uk/lbap.aspx?ID=453</a> Kent County Council (2003) Kent Biodiversity Action Plan <a href="http://www.kentbap.org.uk/">http://www.kentbap.org.uk/</a>
3	Joint Nature Conservation Committee (JNCC) SAC and SPA: <a href="http://www.jncc.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013059">http://www.jncc.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013059</a> JNCC (2006) UK SPA data form. <a href="http://www.jncc.gov.uk/pdf/SPA/UK9012091.pdf">http://www.jncc.gov.uk/pdf/SPA/UK9012091.pdf</a>
4	JNCC (2007) Designated and Proposed Ramsar sites in the UK and Overseas Territories and Crown Dependencies <a href="http://www.jncc.gov.uk/page-1389">http://www.jncc.gov.uk/page-1389</a>
5	Natural England (2009). Site of Special Scientific Interest <a href="http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdrt18&amp;Category=C&amp;Reference=1023">http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdrt18&amp;Category=C&amp;Reference=1023</a>

6	Natural England Site of Special Scientific Interest (2009) <a href="http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=2000533">http://www.sssi.naturalengland.org.uk/Special/sssi/sssi_details.cfm?sssi_id=2000533</a>
7	Natural England National Nature Reserves <a href="http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/nnr/default.aspx">http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/nnr/default.aspx</a> <a href="http://www.english-nature.org.uk/special">http://www.english-nature.org.uk/special</a>
8	Natural England. Local Nature Reserves <a href="http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_results.asp?N=&amp;C=23&amp;Submit=Search">http://www.lnr.naturalengland.org.uk/Special/lnr/lnr_results.asp?N=&amp;C=23&amp;Submit=Search</a>
9	Kent Wildlife Trust (November 2006). Local Wildlife Sites In Kent <a href="http://www.bwag.org.uk/What_are_Local_Wildlife_Sites_Nov2006.pdf">http://www.bwag.org.uk/What_are_Local_Wildlife_Sites_Nov2006.pdf</a>

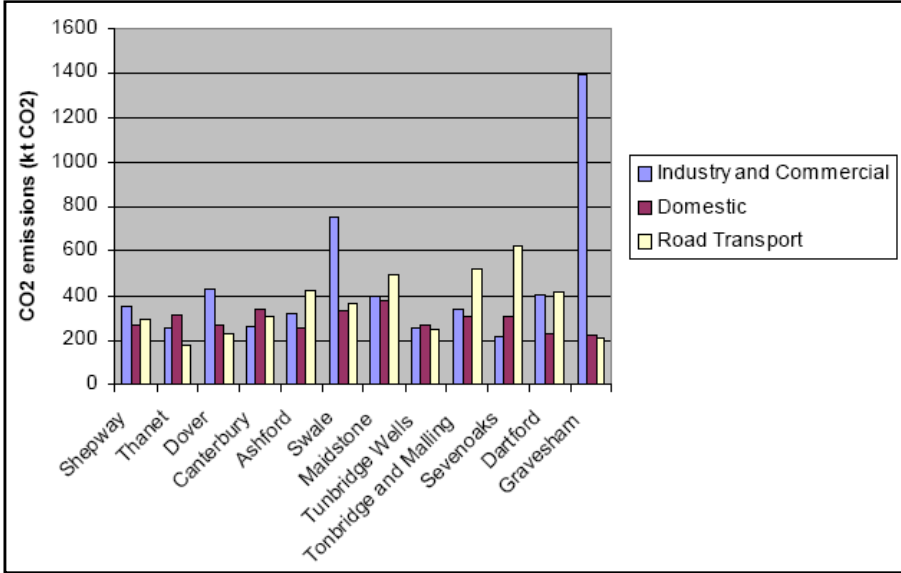
# Climate Change

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Climate Change</b>				
<p><b>South East England, Within The Wider Region (Precipitation and Temperatures)</b></p>	<p>4, 5</p>	<p>Working in tandem with the Government Office for the South East, the South East Regional Assembly has outlined in their 2007 Climate Change Mitigation and Adaptation Implementation Plan that by the 2050s the South East could experience the following:</p> <ul style="list-style-type: none"> <li>• Average summer temperatures could be around 3°C warmer</li> <li>• Average summer rainfall could decrease by as much as 40%</li> <li>• Average winter rainfall could increase by up to 20%</li> <li>• Sea level may rise by up to 40cm</li> </ul> <p>The predicted trend in decreasing average summer rainfall in the region will follow suit, as the data gathered from 1961-2000 illustrates in Figure 12.</p> <p>The expected temperature rise in the South East region shows a sensitivity to prevailing winds. This pronounced sensitivity is particularly applicable to Dungeness.</p>	 <p>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.</p>	 <p>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]</p>



Indicator	Data Source	Current Data	Comparators	Trend
<p><b>Greenhouse Gas Emissions</b></p>	<p>4</p>	<p>Temperature variation in the South East is expected to be higher than any other region, when combined with precipitation mean values. Flooding and drought are two extreme events that could affect the region.</p> <p>The South East Regional Assembly published a report entitled 'Reducing the South East's Ecological and Carbon Emission: A Route Map' in 2008.</p> <p>This outlines the following carbon dioxide emission targets:</p> <ul style="list-style-type: none"> <li>To reduce Carbon Dioxide emission by 20% below 1990 level by 2010 and by at least 20% below 1990 levels by 2015 (South East Plan).</li> <li>To reduce Carbon Dioxide emissions by 20% from the 2003 baseline by 2016 as a step toward the national target of achieving a 60% reduction on 1990 levels by 2050 (Regional Economic Strategy).</li> </ul> <p>The report also shows that the South East's total carbon emissions in 2005 totalled 21.8 million tons. The piechart below best demonstrates emissions by sector.</p>	<p>The South East England Regional Assembly together with Cambridge University has developed a prediction of the region's carbon emissions and the results, as presented in the graph below.</p>	
				

Indicator	Data Source	Current Data	Comparators	Trend
		<p>Transport accounted for the majority of the emissions in the region, amounting to almost a third of all regional emissions. The power generation sector was the next largest emitter, contributing just under 30%. Industry accounted for 10% and household energy use for 15% of emissions in the region.</p>		
<p><b>Kent County Council Greenhouse Gas Emissions</b></p>	<p>1,2</p>	<p>Shepway District Council is one of the 12 District Councils that come under Kent County Council. Kent County Council (KCC) recognises that it has a critical role in helping Kent's businesses, communities and individuals understand and prepare for the impacts of climate change. The Council aims to reduce their carbon emissions through the following:</p> <ul style="list-style-type: none"> <li>• Signing the Nottingham Declaration</li> <li>• Making a series of commitments in response to the recommendation of the Select Committee on Climate Change</li> <li>• Putting in place a Climate Change Action Plan, which includes the new Kent Agreement 2 targets to reduce carbon emissions and adapt to the opportunities/challenges presented by climate change</li> <li>• Leading in climate change by example</li> </ul> <p>In 2006, the Select Committee on Climate Change reported the following episodes of extreme weather in Kent:</p> <ul style="list-style-type: none"> <li>• The River Darent experienced low flows and ran dry in the 1980s and 1990s, combined with episodes of flooding in recent years.</li> <li>• Extensive and repeated winter flooding in 2000.</li> <li>• The heat wave of 2003, during which the highest UK temperature since records began of 38.5 degrees Celsius was recorded in Kent at Brogdale, near Faversham on 10 August 2003.</li> <li>• The drought of 2005-06, a result of successive dry winters, with hosepipe bans in force throughout the winter in certain areas of Kent.</li> <li>• Bewl Water, one of the main reservoirs serving Kent, was at a record low in January 2006 requiring it to be re-filled with water diverted from the River Medway.</li> </ul>		<p>.</p>

Indicator	Data Source	Current Data	Comparators	Trend																																																				
		<ul style="list-style-type: none"> <li>The heat wave of July 2006, which broke records for the hottest average temperature for the month of July and the record for the hottest July day.</li> <li>Unexpectedly heavy snowfall in spring 2006 in parts of Kent.</li> </ul>																																																						
<b>Shepway Local Authorities Greenhouse Gas Emissions</b>	1	<p>Dungeness falls within Shepway District Council's jurisdiction.</p> <p>The following graph from the Sustainability Appraisal Report published in January 2008 for Shepway District Council Local Development Framework, outlines county carbon emissions.</p>	 <p>The bar chart displays CO2 emissions in kilotons (kt) for three sectors: Industry and Commercial (blue), Domestic (maroon), and Road Transport (yellow). The x-axis lists ten Kent Local Authorities: Shepway, Thanet, Dover, Canterbury, Ashford, Swale, Maidstone, Tunbridge Wells, Tonbridge and Malling, Sevenoaks, Dartford, and Gravesend. The y-axis ranges from 0 to 1600 kt CO2. Shepway has the highest Industry and Commercial emissions at approximately 1400 kt CO2. Other notable emissions include Road Transport in Sevenoaks (~600 kt CO2) and Domestic in Sevenoaks (~300 kt CO2).</p> <table border="1"> <caption>Estimated CO2 Emissions (kt CO2) from Chart</caption> <thead> <tr> <th>Local Authority</th> <th>Industry and Commercial</th> <th>Domestic</th> <th>Road Transport</th> </tr> </thead> <tbody> <tr><td>Shepway</td><td>1400</td><td>200</td><td>200</td></tr> <tr><td>Thanet</td><td>300</td><td>250</td><td>250</td></tr> <tr><td>Dover</td><td>400</td><td>250</td><td>200</td></tr> <tr><td>Canterbury</td><td>300</td><td>300</td><td>300</td></tr> <tr><td>Ashford</td><td>300</td><td>300</td><td>400</td></tr> <tr><td>Swale</td><td>700</td><td>350</td><td>350</td></tr> <tr><td>Maidstone</td><td>350</td><td>350</td><td>450</td></tr> <tr><td>Tunbridge Wells</td><td>250</td><td>250</td><td>250</td></tr> <tr><td>Tonbridge and Malling</td><td>300</td><td>300</td><td>500</td></tr> <tr><td>Sevenoaks</td><td>200</td><td>300</td><td>600</td></tr> <tr><td>Dartford</td><td>400</td><td>200</td><td>400</td></tr> <tr><td>Gravesend</td><td>200</td><td>200</td><td>200</td></tr> </tbody> </table>	Local Authority	Industry and Commercial	Domestic	Road Transport	Shepway	1400	200	200	Thanet	300	250	250	Dover	400	250	200	Canterbury	300	300	300	Ashford	300	300	400	Swale	700	350	350	Maidstone	350	350	450	Tunbridge Wells	250	250	250	Tonbridge and Malling	300	300	500	Sevenoaks	200	300	600	Dartford	400	200	400	Gravesend	200	200	200	<p>The graph shows that Shepway does not have disproportionately high CO<sub>2</sub> emissions relative to other Kent Local Authorities. However, Shepway is one of the four Local Authorities with high carbon dioxide emissions from the Industry and Commercial sector.</p>
Local Authority	Industry and Commercial	Domestic	Road Transport																																																					
Shepway	1400	200	200																																																					
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Gravesend	200	200	200																																																					
		<p>*Note -These figures are not calculated per capita.</p>																																																						

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Energy</b>				
		<p><u>Electricity Consumption 2007 (Shepway)</u> Overall: 651.4 GWh (0.2% of UK) Average Domestic Consumption: 4,378 kWh Average Industrial Consumption: 85,789 kWh</p> <p><u>Total Energy Consumption 2006 (Shepway)</u> 2,660.7 GWh</p>	<p><u>Electricity Consumption 2007 (South East England)</u> Overall: 40,786.6 GWh Average Domestic Consumption: 4,741 kWh Average Industrial Consumption: 71,499 kWh</p> <p><u>Electricity Consumption 2007 (Great Britain)</u> Overall: 309,669.5 GWh Average Domestic Consumption: 4,392 kWh Average Industrial Consumption: 79,077 kWh</p> <p><u>Total Energy Consumption 2006</u> South East England: 225,534.5 GWh UK: 2,120,261.5 GWh</p>	<p>Shepway's electricity consumption accounts for 0.2% of Britain's electricity consumption.</p> <p>24% of Shepway's energy consumption comes from electricity.</p> <p>The Integrated Regional Framework sets the following objectives:</p> <ul style="list-style-type: none"> <li>To increase energy efficiency and the proportion of energy generated from renewable sources in the region.</li> <li>To address the causes of climate change through reducing emissions of greenhouse gases and ensure that the South East is prepared for its impacts (indicator: Emissions of greenhouse gases from energy consumption, transport and land use and waste management)</li> </ul>
<b>Renewable Energy</b>	6,8,11	<p><u>Energy Consumption from Renewable Sources 2006 (Shepway)</u> 4.6 GWh (0.2%)</p>	<p><u>Total Energy Consumption from Renewable Sources 2006</u> South East England: 722.7 GWh (0.3%) UK: 6,939.5 GWh (0.3%)</p>	<p>The Regional Policy Framework for the South East:</p> <p><b>POLICY CC2: CLIMATE CHANGE</b></p> <ul style="list-style-type: none"> <li>Mitigation, through reducing greenhouse gas emissions, will primarily be addressed by encouraging development and use of renewable energy.</li> </ul> <p><b>POLICY CC4: SUSTAINABLE CONSTRUCTION</b></p> <ul style="list-style-type: none"> <li>Designing to increase the use of natural</li> </ul>

Indicator	Data Source	Current Data	Comparators	Trend
				<p>lighting, heat and ventilation, and the provision of a proportion of the energy demand from renewable sources.</p> <p>The Energy Efficiency and Renewable Energy Strategy for the South East states:</p> <ul style="list-style-type: none"> <li>• By 2010 the South East region should generate at least 5.5% (620 MW) of its electricity from renewable sources and by 2026 at least 16% from renewable sources (1,750 MW).</li> <li>• Subregional targets: Kent is aiming to produce 111 MW of electricity by 2010 and 154 MW by 2016.</li> </ul>
<b>Current Capacity</b>	10,11	There are currently 5 power stations within an 80km radius of the site, with a combined capacity of 4785 MW. These are primarily wind, oil, gas and coal. The current nuclear power station at Dungeness B has a capacity of 1110 MW.		

### Key to Data Sources

1	Shepway District Council(Januray 2008) Scoping Report for Shepway LDF Sustainability Appraisal <a href="http://consult.shepway.gov.uk/portal/supporting_documents/sascoping?pointId=1201280650188">http://consult.shepway.gov.uk/portal/supporting_documents/sascoping?pointId=1201280650188</a>
2	Kent County Council (October 2006) Select Committee report on Climate Change. <a href="http://www.kent.gov.uk/NR/rdonlyres/042C019E-D3F2-42F2-BC13-F28D1B3A52E8/7278/climatechangereport.pdf">http://www.kent.gov.uk/NR/rdonlyres/042C019E-D3F2-42F2-BC13-F28D1B3A52E8/7278/climatechangereport.pdf</a>

<b>3</b>	Kent County Council (September 2008). Climate Change Action Plan Summary <a href="http://www.kent.gov.uk/NR/rdonlyres/BC817F15-5E97-4230-9ED4-70FFD1E003E1/17211/3CcActionssummarywheelAC1.pdf">http://www.kent.gov.uk/NR/rdonlyres/BC817F15-5E97-4230-9ED4-70FFD1E003E1/17211/3CcActionssummarywheelAC1.pdf</a>
<b>4</b>	South East England Regional Assembly <sup>14</sup> <a href="http://www.southeast-ra.gov.uk/index.html">http://www.southeast-ra.gov.uk/index.html</a>
<b>5</b>	DEFRA (April 2002) United Kingdom Climate Impact Programme UKCIP02 <a href="http://www.ukcip.org.uk/images/stories/Pub_pdfs/UKCIP02_tech.pdf">http://www.ukcip.org.uk/images/stories/Pub_pdfs/UKCIP02_tech.pdf</a>
<b>6</b>	South East Regional Assembly (March 2006). South East Plan <a href="http://www.southeast-ra.gov.uk/sep_submitted.html#core_doc">http://www.southeast-ra.gov.uk/sep_submitted.html#core_doc</a> <sup>14</sup>
<b>7</b>	BERR (March 2008). Electricity Consumption Data at Regional and Local Authority Level <a href="http://www.berr.gov.uk/energy/statistics/regional/regional-local-electricity/page36213.html">http://www.berr.gov.uk/energy/statistics/regional/regional-local-electricity/page36213.html</a>
<b>8</b>	BERR (March 2008). Total final energy consumption at regional and local authority level <a href="http://www.berr.gov.uk/energy/statistics/regional/total-final/page36187.html">http://www.berr.gov.uk/energy/statistics/regional/total-final/page36187.html</a>
<b>9</b>	BERR (2009), Nuclear Power Stations <a href="http://www.berr.gov.uk/energy/sources/nuclear/key-issues/power-stations/page47765.html/sources/nuclear/key-issues/power-stations/page47765.html">http://www.berr.gov.uk/energy/sources/nuclear/key-issues/power-stations/page47765.html/sources/nuclear/key-issues/power-stations/page47765.html</a>
<b>10</b>	Wikipedia (August 2008). Power Stations in England <a href="http://en.wikipedia.org/wiki/Category:Power_stations_in_England">http://en.wikipedia.org/wiki/Category:Power_stations_in_England</a>
<b>11</b>	South East Regional Assembly, Energy Strategy [online] available <sup>14</sup> <a href="http://www.southeast-ra.gov.uk/energy_strategy.html">http://www.southeast-ra.gov.uk/energy_strategy.html</a>

<sup>14</sup> Data from the Regional Spatial Strategies (RSS) and other regional plans and strategies were used to inform the AoS reports published in November 2009. On 6 July 2010, the Secretary of State for Communities and Local Government, announced the revocation of Regional Strategies and the other documents noted with immediate effect. However, the RSS and other revoked regional documents remain a useful source of background data on regional sustainability issues, so references to these documents have been retained in later revisions of the AoS. The strategies and policies set out in the revoked regional documents may in future be taken forward by other means in local or strategic planning and applicants will need to consider this in developing their future plans.

## Communities: Population and Economy

Indicator	Data Source	Current Data				Comparators	Trend
<b>Topic: Population</b>							
<b>Age of population</b>	1, 3		<b>Lydd</b>	<b>Shepway (Non-Metropolitan District)</b>	<b>South East of England</b>	<b>England</b>	<p>The South East had a population of 8.2 million in 2006. This was 214,000 more compared with mid-2001 which is an increase of 14%. The largest percentage change was a 78% increase in Milton Keynes.</p> <p>Key statistics:</p> <ul style="list-style-type: none"> <li>The population of Shepway is predicted to decrease, however the number of households is set to increase.</li> <li>Shepway has a population density of 2.70 (persons per hectare) which is below the English average of 3.77 (persons per hectare) and is significantly lower than the south east average of 4.20 (persons per hectare).</li> <li>The latest population estimate considers that 23% of the district's population is over retirement age compared to 18% nationally.</li> <li>Weekly pay is the third lowest in Kent and only higher than the districts of Canterbury and Thanet.</li> </ul>
		All People (Count)	5,782	96,238	8,000,645	49,138,831	
		People aged 0-4 (%)	5.66	5.52	5.91	5.96	
		People aged 5-7 (%)	4.48	3.70	3.73	3.74	
		People aged 8-9 (%)	2.94	2.65	2.59	2.61	
		People aged 10-14 (%)	7.04	6.51	6.46	6.57	
		People aged 15 (%)	1.31	1.14	1.24	1.27	
		People aged 16-17 (%)	2.35	2.39	2.47	2.51	
		People aged 18-19 (%)	1.83	1.99	2.34	2.40	
		People aged 20-24	4.36	4.78	5.77	6.01	

Indicator	Data Source	Current Data			Comparators		Trend
		(%)					
		People aged 25-29 (%)	5.15	5.33	6.25	6.65	
		People aged 30-44 (%)	20.34	20.56	22.69	22.65	
		People aged 45-59 (%)	19.92	19.77	19.46	18.88	
		People aged 60-64 (%)	5.74	5.60	4.82	4.87	
		People aged 65-74 (%)	11.31	9.77	8.36	8.35	
		People aged 75-84 (%)	5.97	7.42	5.80	5.60	
		People aged 85-89 (%)	1.11	1.89	1.44	1.30	
		People aged 90 and over (%)	0.48	0.98	0.75	0.64	
		Mean age of population in the area	40.17	41.33	38.08	38.60	
		Median age of population in the area	40.00	41.00	38.00	37.00	
		The population of Lydd and Shepway is older than the national and regional average. In Lydd approximately 7.6% of the population is aged over 75 years with 1.6% aged over 85.					



Indicator	Data Source	Current Data		Comparators		Trend
		People aged 65 years and older make up approximately 19% of Shepway's population, which is higher than the national average.				
<b>Topic: Employment</b>						
<b>Percentage Economically Active – Employed %</b>	1	<b>Lydd</b>	<b>Shepway (Non-Metropolitan District)</b>	<b>South East of England</b>	<b>England</b>	In the second quarter of 2007 the employment rate (for people of working age) in the South East of 79% was the highest in the UK where the overall rate was 74%. Full time employment levels at ward and district levels are lower than the regional and national average. Part time employment levels at ward levels are slightly lower than the regional and national average. District levels are similar to regional and national levels in 2007.  <b>Updated figures for 2009 show that 69.4% of the population of the Shepway District Council area was employed. This number compares unfavourably with figures for the South East (74.5%) and England as a whole (70.3%). See <a href="http://www.nomisweb.co.uk/reports/lmp/la/2038431812/report.aspx">www.nomisweb.co.uk/reports/lmp/la/2038431812/report.aspx</a> for more details</b>
		Full Time 36.43	38.65	43.22	40.81	
		Part Time 10.35	12.29	12.20	11.81	
<b>Percentage Economically Active – unemployed %</b>		2.29	3.37	2.31	3.35	Ward unemployment levels are below the regional and national levels. District levels are slightly higher than the national average.
<b>Industry of employment</b>		<b>Lydd 100%</b>	<b>Shepway (Non-Metropolitan District)</b>	<b>South East of England</b>	<b>England</b>	

Indicator	Data Source	Current Data		Comparators		Trend
<b>All persons</b>		<b>(2,351)</b>	<b>100% (41,815)</b>	<b>100% (3,888,756)</b>	<b>100% (22,441,498)</b>	
Agriculture/ Forestry (%)		2.64	1.76	1.45	1.45	
Fishing (%)		0.51	0.08	0.02	0.02	
Mining (%)		0.43	0.14	0.18	0.25	
Manufacturing (%)		0.74	9.33	12.13	14.83	
Electricity/Gas/W ater Supply (%)		7.32	2.29	0.72	0.71	
Construction (%)		10.00	8.98	7.13	6.76	
Wholesale/ Retail Trade (%)		14.50	15.36	16.35	16.85	
Hotels/ Restaurant (%)		6.38	5.45	4.30	4.73	
Transport/ Communications (%)		7.61	10.93	8.14	7.09	
Financial (%)		2.64	4.53	5.09	4.80	
Real Estate (%)		7.78	9.03	15.59	13.21	
Public Admin (%)		5.95	8.05	5.93	5.66	
Education (%)		5.49	7.80	7.85	7.74	
Health and Social Work (%)		14.12	12.08	9.83	10.70	
Other (%)		4.89	4.18	5.20	5.20	
Self Employed (%)		9.21	9.11	9.58	8.32	
<b>Socio- Economic</b>		<b>Lydd</b>	<b>Shepway (Non- Metropolitan District)</b>	<b>South East of England</b>	<b>England</b>	

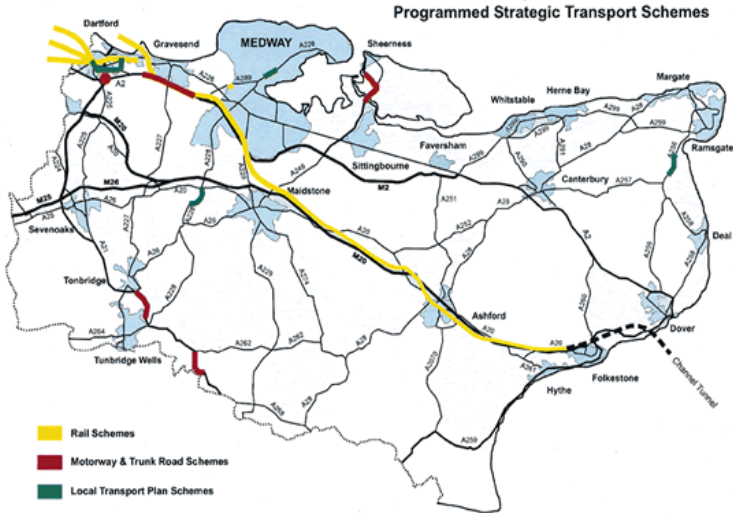
Indicator	Data Source	Current Data		Comparators		Trend
<b>Classifications 2001 (% Persons aged 16-74)</b>						
Large employers and higher managerial occupations		1.46	2.39	4.53	3.50	
Higher professional occupations		1.75	3.37	6.26	5.11	
Lower managerial and professional occupations		14.08	18.24	21.18	18.73	
Semi-routine occupations		13.83	12.20	10.63	11.65	
Routine occupations		11.25	8.84	7.35	9.02	
Never Worked		2.65	2.36	1.58	2.72	
Full-time students		3.68	4.72	6.72	7.03	

### Key to Data Sources

1	National Statistics (2001). Neighbourhood Statistics: Lydd (ward) <a href="http://neighbourhood.statistics.gov.uk/dissemination/LeadDatasetList.do;jsessionid=ac1f930c30d519d027f7b0924800a06a85857d39c042?a=7&amp;b=6099642&amp;c=TN29+9PX&amp;d=14&amp;q=459539&amp;i=1001x1003&amp;m=0&amp;r=0&amp;s=1241599521283&amp;enc=1&amp;domainId=15&amp;nsjs=true&amp;nsck=true&amp;nssvg=true&amp;nswid=1259">http://neighbourhood.statistics.gov.uk/dissemination/LeadDatasetList.do;jsessionid=ac1f930c30d519d027f7b0924800a06a85857d39c042?a=7&amp;b=6099642&amp;c=TN29+9PX&amp;d=14&amp;q=459539&amp;i=1001x1003&amp;m=0&amp;r=0&amp;s=1241599521283&amp;enc=1&amp;domainId=15&amp;nsjs=true&amp;nsck=true&amp;nssvg=true&amp;nswid=1259</a>
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2	National Statistics (2008). National Statistics (South East) <a href="http://www.statistics.gov.uk/cci/nugget.asp?id=1133">http://www.statistics.gov.uk/cci/nugget.asp?id=1133</a>
3	<a href="http://consult.shepway.gov.uk/portal/core_strategy/csioa?pointId=26765">Shepway (2008)</a> Core Strategy Issues and Options: Potential Objectives and District Development Path (Part A) <a href="http://consult.shepway.gov.uk/portal/core_strategy/csioa?pointId=26765">http://consult.shepway.gov.uk/portal/core_strategy/csioa?pointId=26765</a>

## Communities: Supporting Infrastructure

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Transport</b>				
<b>Regional freight Routes</b>	1	<p>Dungeness is located on the south coast in a remote area of Kent. Dungeness is accessible by B roads from the village of Lydd and Lydd on sea, the A259 and A2070 connect Lydd, Lydd on sea and the surrounding dispersed villages to the main M20 (Folkestone to London), a national and strategic transport route carrying high volumes of international traffic and commuters.</p> <p>No development plans identified in transport local plans that would increase accessibility of Dungeness other the M20 improvements, local road expansion is noted as being only considered on a safety basis for the existing development plan. The area of Dungeness is not deemed an area that has strategic transport concerns/ plans either currently or looking forward in the period covered by the local transport plans. However, British Energy is talking to the Highways Agency, Shepway District Council and Kent County Council about infrastructure and the impact that new build will cause and carrying out detailed surveys of traffic movements on key roads and junctions as part of the environmental impact assessment work.</p> <p>Lessons learnt from construction of Dungeness where a construction village was created are being considered to alleviate any additional loading development may cause.</p>		

Indicator	Data Source	Current Data	Comparators	Trend
		<p><b>Rail</b></p> <p>The site is supplied by a small railway which terminates close to the current site access road, there are no plans to extend this access due to potential environmental impact to a SSSI, it is not of strategic property either. There are proposals to improve the line between Hastings and Asford. Construction and operation of an additional nuclear power station would add to the transport burden.</p> <p>The proximity of the EuroTunnel is of benefit to future development and it is noted to have still has considerable potential to encourage a transfer of freight from road to rail.</p> <p><b>Ports</b></p> <p>The site is located in proximity to Folkestone and Dover (again linked by A roads), whilst Dover is an international port with substantial freight, car, coach and cruise activities, Folkestone is small. Again connections via road and rail are limiting factors to use of this transport route and would add burden to the local travel infrastructure.</p> <p><b>Air</b></p> <p>The Lydd (London Ashford) Airport is very close to Dungeness however its expansion to cater for any further development local is being constrained by safety concerns related to the Dungeness power station itself (a slightly increased risk associated with the existing reactors and new build).</p> <p>Proposals to improve the rail links with both Dover and Sheerness docks are in place under strategic development initiatives</p>		

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Waste</b>				
<b>Municipal Waste</b>	2,3	<p>Kent County Council was ranked 59th for the highest residual waste per head among the 397 disposal or unitary authorities. In 2006/2007 Kent County Council had a 33.2% recycling and composting rate.</p> <p>Landfill remains the principal method of waste disposal in Kent County. In total, 427,373 (53%) of municipal waste was sent to landfill in the region in 2006/2007, this was lower than the English average of 58% with a 16% decrease on total volume of waste disposed in landfill.</p> <p>Municipal waste in the region is managed through the Kent Waste Partnership. An Energy from Waste (EfW) plant, capable of handling 349,000 tonnes of waste per year, in addition to a Materials Recycling Facility (MRF) are operational at the Allington Quarry site, approximately 64 km from Dungeness. Waste diverted to landfill is disposed of at 5 sites across the region. No further information on their capacity was available at the time of writing.</p>		<p>Total municipal waste in the region has decreased by just under 0.05% since 2005/2006, from 810,763 to 810,325 tonnes in 2006/2007.</p> <p>Total household waste continues to decrease in the region and was 27% higher in 1999/2000 than in 2006/2007, decreasing from 700,000 tonnes to 507,560 tonnes.</p>
<b>Radioactive and Hazardous Waste</b>		<p>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 AoS Report.</p>		

**Key to Data Sources**

1	Kent County Council – Local Transport Plan <a href="http://www.kent.gov.uk/publications/transport-and-streets/ltp-provisional-plan.htm">http://www.kent.gov.uk/publications/transport-and-streets/ltp-provisional-plan.htm</a> Kent County Council (September 2003) Kent and Medway Structure Plan. <a href="http://www.kmsp.org.uk/contents.html">http://www.kmsp.org.uk/contents.html</a>
2	DEFRA (November 2007). Municipal Waste Management Statistics. <a href="http://www.defra.gov.uk/environment/statistics/wastats/bulletin07.htm">http://www.defra.gov.uk/environment/statistics/wastats/bulletin07.htm</a> [accessed 03 March 2009]
3	Kent County Council. (2007) Joint Municipal Waste Management Strategy, Kent Waste Partnership. <a href="http://www.kent.gov.uk/publications/environment/kent-joint-municipal-waste-management-strategy.htm">http://www.kent.gov.uk/publications/environment/kent-joint-municipal-waste-management-strategy.htm</a>



## Human Health and Well-Being

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Human Health and Well-being</b>				
<b>Community well-being</b>	1	<p>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, Shepway 013B to England as a whole as follows:</p> <ul style="list-style-type: none"> <li>• Income deprivation greater than average</li> <li>• Employment deprivation greater than average</li> <li>• Health deprivation greater than average</li> <li>• Education deprivation greater than average</li> <li>• Barriers to housing and services are much greater than average</li> <li>• Crime is much less than average</li> <li>• Living environment deprivation is less than average</li> </ul>		
<b>Index of multiple deprivation (2007)</b>	2	<p>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 Shepway District Council's area ranked as 123 out of 354 (where 1 is most deprived). This</p>	<p>Other district councils in Kent are ranked as follows:</p> <ul style="list-style-type: none"> <li>• Dover is 153</li> <li>• Sevenoaks is 295</li> <li>• Thanet is 65</li> </ul>	

Indicator	Data Source	Current Data	Comparators	Trend																
		ranking shows that Shepway is a reasonably deprived area.	As can be seen from the above, Kent is a very mixed county with district councils at both ends of the deprivation scale. Shepway, however, is more towards the deprived end of this scale.																	
<b>Age profile (mid 2006)</b>	1	<p>In the Super Output Area, Shepway 013B the age profile of the population is as follows:</p> <table border="1"> <thead> <tr> <th>Age Band (years)</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>0 – 15</td> <td>18.0</td> </tr> <tr> <td>16 – 64 (males) 16 – 59 (females)</td> <td>52.3</td> </tr> <tr> <td>65+ (males) 60+ (females)</td> <td>29.7</td> </tr> </tbody> </table>	Age Band (years)	Percentage	0 – 15	18.0	16 – 64 (males) 16 – 59 (females)	52.3	65+ (males) 60+ (females)	29.7	<p>These figures compare to the age profile for the UK as a whole in 2006 as follows:</p> <table border="1"> <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) 16 – 59 (females)</td> <td>61.6</td> </tr> <tr> <td>65+ (males) 60+ (females)</td> <td>18.3</td> </tr> </tbody> </table> <p>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, Shepway 013B than in the UK as a whole. There are also proportionately fewer people of working age in the area, therefore.</p>	Age Band (years)	Percentage	0 – 15	20.1	16 – 64 (males) 16 – 59 (females)	61.6	65+ (males) 60+ (females)	18.3	
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<b>General health (2001)</b>	1	<p>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, Shepway 013B were as follows:</p> <ul style="list-style-type: none"> <li>• Good – 58.0%</li> <li>• Fairly good – 28.6%</li> <li>• Not good – 13.4%</li> </ul>	<p>For comparison purposes, the same data for the overall Shepway area and England are as below:</p> <table border="1"> <thead> <tr> <th></th> <th>Shepway</th> <th>England</th> </tr> </thead> <tbody> <tr> <td>Good</td> <td>66.1</td> <td>68.8</td> </tr> <tr> <td>Fairly good</td> <td>24.6</td> <td>22.2</td> </tr> <tr> <td>Not good</td> <td>9.4</td> <td>9.0</td> </tr> </tbody> </table> <p>There are clearly less people reporting good health and more people reporting poor health</p>		Shepway	England	Good	66.1	68.8	Fairly good	24.6	22.2	Not good	9.4	9.0					
	Shepway	England																		
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Indicator	Data Source	Current Data	Comparators	Trend		
			in the Super Output Area, Shepway 013B than in both the rest of the Shepway area and England as a whole.			
<b>Life expectancy at birth (Jan 04 – Dec 06)</b>	1		Shepway	SE of England	England	Data from the same source for previous years show that these figures for life expectancy at birth in the Shepway District Council area have risen slightly for both males and females since January 2001.
		Males	77.20	78.50	77.32	
		Females	81.30	82.40	81.55	
			As can be seen from above, the life expectancy in the Shepway District Council area is very similar to the national average for England as a whole.			
<b>Infant mortality (Jan 03 – Dec 05)</b>	1	Infant mortality in the Shepway District Council area for the years in question was 7.1 persons in every 1000.	This shows that infant mortality in Shepway is high compared to the figures of 4.0 persons per thousand for the South-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 Shepway District Council area have increased from a low in 1999-2001.		
<b>Proximity to medical services</b>	3	<p>Medical services in the area of the site are as follows:</p> <ul style="list-style-type: none"> <li>• There are no General Practitioner (GP) practices within 5 km of the site but there are three GP practices within 10 km of the site (Dr Downie, Dr Kanegaonkar V G and Partners and Dr Cochrane P T and Partners)</li> <li>• Closest hospital is Rye Memorial Hospital (17.1 km) but this has no Accident and Emergency (Accident and Emergency)</li> </ul>				

Indicator	Data Source	Current Data	Comparators	Trend
		department <ul style="list-style-type: none"> <li>• Nearest hospital with an Accident and Emergency department is William Harvey Hospital (Ashford) in Kennington Road, Ashford which is 25.6 km away</li> <li>• The nearest hospital providing mental health services is Rye Memorial Hospital which is 17.1 km away</li> </ul>		
<b>Education - examination results for young people (2006 – 07)</b>	1	In the Super Output Area, Shepway 013B, 59% of pupils achieved 5 or more A*- C grade passes including English and Mathematics at GCSE or equivalent.	This compares to the figure of 44% of students for the Shepway District Council area and 46% of students for England as a whole.	
<b>Housing – total unfit dwellings (Apr 06)</b>	1	The total percentage of unfit dwellings in the Shepway District Council area for the year in question was 9.9%.	This compares to a percentage of 3.3% for the South-east of England region and 4.2% for England as a whole.	
<b>Radioactivity monitoring</b>	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: <ul style="list-style-type: none"> <li>• water, sediment, beach and terrestrial and marine food and</li> </ul>	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 Dungeness sampling were as follows: <ul style="list-style-type: none"> <li>• estimated dose from locally grown foodstuffs was 0.006 mSv</li> <li>• estimated dose to local fish and shellfish consumers was 0.007 mSv</li> </ul>	Trends in the data noted from sampling in previous years are as follows: <ul style="list-style-type: none"> <li>• a decrease in estimated dose from locally grown foodstuffs was observed from the 0.13 mSv value recorded in 2006</li> <li>• a decrease in estimated dose to local fish and shellfish consumers was observed from the 0.13</li> </ul>

Indicator	Data Source	Current Data	Comparators	Trend
		<p>animal samples were collected from around the site in 2007</p> <ul style="list-style-type: none"> <li>analysis of tritium, carbon-14 and sulphur-35 in milk, crops and fruit all showed low concentrations of artificial radionuclides although some slightly enhanced levels were found in peas</li> <li>concentrations of radioactivity in freshwater were low</li> <li>concentrations of artificial radionuclides in seafood, sediment, sand and seawater were generally low</li> <li>no tritium was detected in seafood</li> </ul>	<ul style="list-style-type: none"> <li>the total dose from all sources, including direct radiation, was assessed as being 0.28 mSv</li> </ul>	<p>mSv value recorded in 2006</p> <ul style="list-style-type: none"> <li>a decrease in estimated dose from all sources, including direct radiation, was observed from the 0.55 mSv value recorded in 2006</li> </ul>
<b>Health related to nuclear installations</b>	5	<p>There has been, since 1965, a nuclear power station operating on the site. There are, therefore, historical data which can be analysed to correlate the incidence of disease reported around this site so that it can be compared to the average prevalence of the same disease in the British population as a whole. 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 Dungeness are as below:</p> <ul style="list-style-type: none"> <li>actual cases of childhood</li> </ul>	<p>For comparison purposes, the figures derived using statistics for Britain as a whole are as follows:</p> <ul style="list-style-type: none"> <li>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 22.80</li> <li>the expected number of cases of childhood tumours between 1969 and 1993 in a 25km area around the plant should have been 34.83</li> </ul> <p>It was concluded, from the above statistics, that there was no evidence of excess numbers of these cases in the 25 km area</p>	

Indicator	Data Source	Current Data	Comparators	Trend
		leukaemia and non-Hodgkin lymphoma between 1969 and 1993 in a 25km area around the plant were 21 <ul style="list-style-type: none"> <li>actual cases of childhood solid tumours between 1969 and 1993 in a 25km area around the plant were 35</li> </ul>	which would include either primary exposure to radioactive discharges or secondary exposure from re-suspended material.	

**Key to Data Sources**

1	Office of National Statistics on the web at: <a href="http://neighbourhood.statistics.gov.uk/dissemination/home.do;jessionid=ac1f930c30d607c6170cbe3146ada704c9cac1978fc7?m=0&amp;s=1236174480737&amp;enc=1&amp;bhpc=1&amp;nsjs=true&amp;nsck=true&amp;nssvg=false&amp;nswid=996">http://neighbourhood.statistics.gov.uk/dissemination/home.do;jessionid=ac1f930c30d607c6170cbe3146ada704c9cac1978fc7?m=0&amp;s=1236174480737&amp;enc=1&amp;bhpc=1&amp;nsjs=true&amp;nsck=true&amp;nssvg=false&amp;nswid=996</a>
2	Department of Communities and Local Government (2007) Indices of Deprivation. <a href="http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/">http://www.communities.gov.uk/communities/neighbourhoodrenewal/deprivation/deprivation07/</a>
3	NHS 'Find Services'. <a href="http://www.nhs.uk/servicedirectories/Pages/ServiceSearch.aspx">http://www.nhs.uk/servicedirectories/Pages/ServiceSearch.aspx</a>
4	Food Standards Agency (2007). Radioactivity In Food and the Environment (RIFE 13) report. <a href="http://www.food.gov.uk/science/surveillance/radiosurv/rife13">http://www.food.gov.uk/science/surveillance/radiosurv/rife13</a>
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. <a href="http://www.comare.org.uk/comare_docs.htm">http://www.comare.org.uk/comare_docs.htm</a>

## Cultural Heritage

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Cultural Heritage</b>				
<b>Scheduled Monuments</b>	1	There are 2 Scheduled Monuments within an approximate 5km distance of the site, the closest of which is Lade Fort which lies within 4km.		
<b>Conservation Areas</b>	2	A Conservation Area is located directly east of the existing nuclear power station.		
<b>Listed Buildings</b>	3	The Grade II listed Old Lighthouse exists just to the east of the existing nuclear power station. There are 58 listed buildings within an approximate 5km distance of the site.		
<b>Archaeological sites</b>	3	Dungeness Redoubt built in 1798 lies close to the existing nuclear power station as does the site of St Lawrence's Battery. Other archaeological sites of post medieval date may be present within the site as may layers of palaeo-environmental potential.		

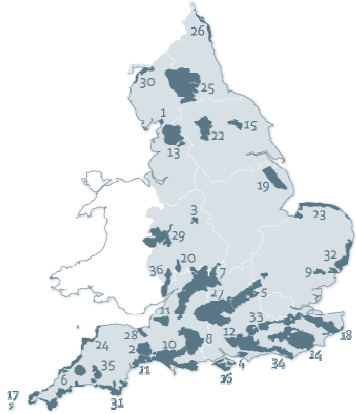
### Key to Data Sources


<b>1</b>	MAGIC <a href="http://www.magic.gov.uk">http://www.magic.gov.uk</a> [accessed 03 March 2009]
<b>2</b>	Shepway District Council Local Plan <a href="http://www.shepway.gov.uk">http://www.shepway.gov.uk</a> [accessed 03 March 2009]
<b>3</b>	Heritage gateway <a href="http://www.heritagegateway.org.uk">http://www.heritagegateway.org.uk</a> [accessed 03 March 2009]

## Landscape

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Landscape</b>				
<b>National Character Area (NCA)</b>	1	<p>The site is situated within the Romney Marshes (NCA 123) on the southern most tip of the shingle beach at Dungeness. Key Characteristics include:</p> <ul style="list-style-type: none"> <li>▪ A flat, open and agricultural landscape with distinctive drainage dykes, marshes and open skies.</li> <li>▪ Treeless, low-lying reclaimed marshland maintained by man-made drainage and river floodplain improvements.</li> <li>▪ High-quality agricultural land of extensive arable fields and some traditional open wet pasture land grazed by cattle and sheep. Narrow, straight roads and widely dispersed settlements with distinctive churches combine with the overall open character to provide a sense of remoteness.</li> <li>▪ Clumps of trees on pockets of higher ground around farmsteads, reed fringed ditches, patches of standing water and rush pasture, all contribute to local diversity in a relatively uniform landscape.</li> <li>▪ Area's of high nature conservation value concentrated in the wet grazing marshes, dykes, mudflats and the less extensive but distinct sand dunes and shingle ridges of Dungeness.</li> <li>▪ Former sea cliffs, mainly of sandstone, mark the post-glacial shoreline and form a notable feature overlooking Romney Marshes at Rye, Winchelsea, Hythe and Pett. The Napoleonic Royal Military Canal runs along the base of this degraded cliff line for much of its length.</li> <li>▪ 20th century development is evident in the towns along the coastal strip.</li> <li>▪ The landscape displays a sharp contrast between the shingle coastal promontories, the extensive open, low-lying agricultural land behind and the inland backdrop of well-wooded rising ground.</li> </ul> <p>Surrounding NCAs within the south east region include:</p> <ul style="list-style-type: none"> <li>▪ High Weald (NCA 122)</li> <li>▪ Low Weald (NCA 121)</li> <li>▪ Wealdon Greensand (NCA 120)</li> </ul>		



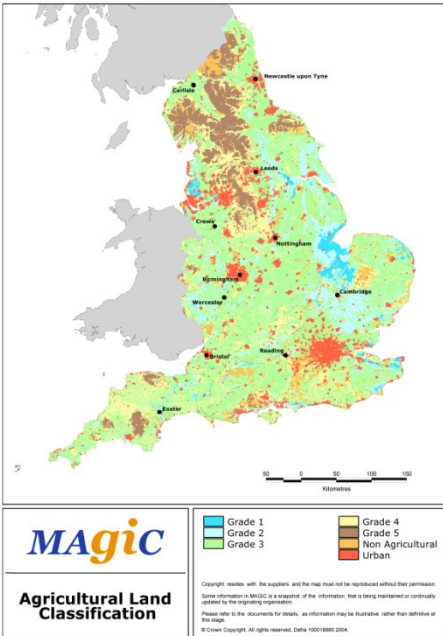
Indicator	Data Source	Current Data	Comparators	Trend
<b>Areas of Outstanding Natural Beauty (AONB)</b>	2	 <p data-bbox="533 922 819 1015"> <b>Map showing AONB</b>                      14 - High Weald AONB                      18 - Kent Downs AONB                 </p>		

Indicator	Data Source	Current Data	Comparators	Trend
<b>Heritage Coasts</b>	3	 <p data-bbox="533 799 909 858"><b>Map showing Heritage coast.</b> 9 – Dover – Folkestone</p>		

**Key to Data Sources**

1	Natural England. National Character Areas – Romney Marshes (NCA 123) <a href="http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/romney_marshes.aspx">http://www.naturalengland.org.uk/ourwork/landscape/englands/character/areas/romney_marshes.aspx</a> [accessed 03 March 2009]
2	Natural England – Areas of Outstanding Natural Beauty [online] available <a href="http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/aonb/default.aspx">http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/aonb/default.aspx</a> [accessed 03 March 2009]
3	Natural England – Heritage Coasts [online] available <a href="http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/heritagecoasts/default.aspx">http://www.naturalengland.org.uk/ourwork/conservation/designatedareas/heritagecoasts/default.aspx</a> [accessed 03 March 2009]

## Soils, Geology, Land Use

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Soils</b>				
<b>Agricultural Land Classification</b>  <b>Soils</b>	1	<p>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.</p> <p>National Soils Research Institute (Report available)</p> <ul style="list-style-type: none"> <li>• Sandwich Soils.</li> <li>• Mainly deep well drained calcareous and non-calcareous sandy soils.</li> <li>• Dune sand and marine shingle.</li> <li>• Free draining permeable soils in unconsolidated sands or gravels with relatively high permeability and high storage capacity.</li> <li>• Sand dune and some wetland habitats; recreation; very limited agriculture and coniferous woodland; some gravel extra.</li> </ul>		
				
<b>Topic: Geology</b>				
<b>Geological SSSIs</b>	3	There is no geological SSSI's within the local vicinity		

Indicator	Data Source	Current Data	Comparators	Trend
<p><b>Geology and Land Quality</b></p>	<p>2</p>	<p>Envirocheck Report (Report available)</p> <ul style="list-style-type: none"> <li>• Geological Risks: The local Geology is Storm Beach Deposits underlain by Hastings Beds.</li> </ul> <p>No mineral abstraction has been recorded locally.</p> <p>Based on the information within the Envirocheck report the geological risks are;</p> <ul style="list-style-type: none"> <li>• Very low risk for the potential for Landslide Ground Stability Hazards.</li> </ul> <p>Based on the Envirocheck report the main environmental Hazards are;</p> <ul style="list-style-type: none"> <li>• There are two Integrated Pollution Control Registered Waste Sites. The nearest being approximately 350 m north of the site.</li> </ul> <p>Historic Land Use:</p> <ul style="list-style-type: none"> <li>• Historic maps ranging from the 1870's to current were studied. In addition to the existing nuclear power station, there is a gravel pit, which is no longer in use, located 0.5km to the north east of the Dungeness site (Reference: Envirocheck Map 1899).</li> </ul>		

### Key to Data Sources

<b>1</b>	National Soils Research Institute Report 27374228 – (Report available on request). Purchased 3 <sup>rd</sup> March 2009
<b>2</b>	Envirocheck Report 27374228_1 – (Report available on Request) Purchased 2 <sup>nd</sup> March 2009
<b>3</b>	Natural England Nature on the Map web site accessed on the 05 <sup>th</sup> March 2009-03-05 <a href="http://www.natureonthemap.org.uk/map.aspx?m=nreserves">http://www.natureonthemap.org.uk/map.aspx?m=nreserves</a>

## Water Quality and Resources

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Water</b>				
<b>Current State of the Waters in the South East River Basin District</b>	1, 2, 3	<p>In the South East (SE) River Basin District (RBD), 8% of rivers (by length) meet the requirements for good ecological status or good ecological potential. A greater number of groundwater bodies (33% by number) meet the requirements for good quantitative status, while 6% (by number) of coastal waters meet the requirements for good chemical status or good chemical potential. There are no estuaries or lakes at good status or potential. The South East RBD River Basin Management Plan (RBMP) predicts that by 2015, 18% of rivers (by length) will reach good ecological status or good ecological potential.</p> <p>The majority of surface water bodies that fail to meet good status fail because of the current impacts on fish or invertebrates or because of elevated phosphorous concentrations. The status of fish is useful to assess the impact of abstraction of water and morphological alterations to water bodies; invertebrates help to assess the impact of organic enrichment, pollution by toxic chemicals and abstraction of water. The SE RBD proposes that 34 per cent of all surface waters should be designated as heavily modified and 9 per cent designated as artificial.</p> <p>The SE RBD has 17 coastal and 20 estuarine (also called 'transitional') water bodies. Currently there is one coastal water, the Isle of Wight East, at good potential. By 2015, 59 per cent of coastal waters and 35 per cent of estuaries are predicted to be at good chemical status. Improvements to sewage discharges and urban diffuse pollution will address eight bathing waters that are at risk of failing new Bathing Water Directive standards. There is also major investment planned to treat discharges that might otherwise affect the importance of the 25 Shellfish Waters.</p>		

Indicator	Data Source	Current Data	Comparators	Trend
		<p>Groundwater is an important resource in the SE RBD, as 72% 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, saline intrusion and contamination with nitrates, pesticides and solvents. In the SE RBD, it will take time to address the legacy of pollution in groundwater. In the Chalk, it can take pollutants such as nitrate 50 years or more to move from the surface to groundwater. In addition, rising sea levels will increase the risk of saline water entering coastal groundwater bodies. Limiting pumping rates in supply boreholes can control 'saline intrusion', but this may mean less water is available for abstraction from these aquifers.</p> <p>The site is located in the Rother catchment where 10 per cent of rivers (by length) achieve ecological good status. In addition, two thirds of the surface waters in this catchment are artificial or heavily modified, and are managed to facilitate drainage and flood risk management. This can hinder the movement of fish and increases the challenge for providing good ecology.</p> <p>In the Rother catchment, groundwater bodies suffer from high nitrate concentrations caused by urban and agricultural activities. The aquifer in the Romney Marsh area is suffering from the effects of sewage effluent discharges, and is at risk from nitrates, pesticides and saline intrusion. The closest groundwater source to the site is the Denge Gravels. Current use of the groundwater within the Denge Gravels by Folkestone and Dover Water is thought by the Environment Agency (EA) to be unsustainable due to potentially conflicting water level requirements of the Dungeness Special Area of Conservation (SAC), together with future predicted sea level rise. Dungeness is an internationally important wildlife site, valuable aquifer and location of an existing nuclear power station. Proposed actions include potential modification of abstraction licenses to ensure no adverse impact on the internationally important biodiversity at Dungeness.</p>		

Indicator	Data Source	Current Data	Comparators		Trend																								
		<p>Local information for the area around the site from the EA web site relevant to Water Framework Directive (WFD) is summarised in the table below:</p>																											
		<table border="1"> <thead> <tr> <th data-bbox="517 464 730 560" rowspan="2">Sector</th> <th colspan="2" data-bbox="730 464 1104 496">Ecological Quality</th> <th colspan="2" data-bbox="1104 464 1453 496">Chemical Quality</th> </tr> <tr> <th data-bbox="730 496 920 560">Current</th> <th data-bbox="920 496 1104 560">Predicted 2015</th> <th data-bbox="1104 496 1294 560">Current</th> <th data-bbox="1294 496 1453 560">Predicted 2015</th> </tr> </thead> <tbody> <tr> <td data-bbox="517 560 730 655">Rivers : Romney Marsh</td> <td data-bbox="730 560 920 655">Moderate</td> <td data-bbox="920 560 1104 655">Moderate</td> <td data-bbox="1104 560 1294 655">Not Assessed</td> <td data-bbox="1294 560 1453 655">Not Assessed</td> </tr> <tr> <td data-bbox="517 655 730 719">Groundwater</td> <td data-bbox="730 655 920 719">(Quantitative) Poor</td> <td data-bbox="920 655 1104 719">(Quantitative) Poor</td> <td data-bbox="1104 655 1294 719">Poor</td> <td data-bbox="1294 655 1453 719">Poor</td> </tr> <tr> <td data-bbox="517 719 730 815">Coastal</td> <td data-bbox="730 719 920 815">Moderate</td> <td data-bbox="920 719 1104 815">Moderate</td> <td data-bbox="1104 719 1294 815">High (west), Moderate (east)</td> <td data-bbox="1294 719 1453 815">Good (west) Moderate (east)</td> </tr> </tbody> </table>			Sector	Ecological Quality		Chemical Quality		Current	Predicted 2015	Current	Predicted 2015	Rivers : Romney Marsh	Moderate	Moderate	Not Assessed	Not Assessed	Groundwater	(Quantitative) Poor	(Quantitative) Poor	Poor	Poor	Coastal	Moderate	Moderate	High (west), Moderate (east)	Good (west) Moderate (east)	
Sector	Ecological Quality		Chemical Quality																										
	Current	Predicted 2015	Current	Predicted 2015																									
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Groundwater	(Quantitative) Poor	(Quantitative) Poor	Poor	Poor																									
Coastal	Moderate	Moderate	High (west), Moderate (east)	Good (west) Moderate (east)																									
		<p>The closest river water quality location to the site is at Romney Marsh (2 km north and west of the site). The ecological water quality is moderate and is predicted (2015) to remain in this state. The chemical water quality has not been assessed. There are no estuarine water quality locations in the vicinity of the site.</p>																											
		<p>The coastal waters around the site are currently of moderate ecological water quality. The predictions for 2015 are that these waters will remain at moderate status. The coastal waters are currently of high chemical water status at the existing site to the west, and moderate chemical status to the east. The predictions are that by 2015 the quality will deteriorate to reach a good chemical status at the existing site to the west, and moderate chemical status to the east.</p>																											
		<p>The site is located within the Kent Romney Marsh water body. The current quantitative groundwater quality is poor and is predicted (2015) to remain in</p>																											



Indicator	Data Source	Current Data	Comparators	Trend
		<p>this state. The current chemical groundwater quality is poor and is predicted (2015) to remain in this state. There are two irregular shaped inner and outer groundwater source protection zones enclosed by one total groundwater catchment source protection zone in very close vicinity to the existing site. The total groundwater catchment source protection zone borders and marginally overlaps the northern boundary of the existing site, and also encompasses several lakes and surface water features.</p>		
<p><b>Current State of the Waters in the Southern CAMS</b></p>	<p>4</p>	<p>The site is located within the Rother Catchment Management Abstraction Strategy area. The Final Rother CAMS was published in Spring 2006. An annual update was produced in October 2007 reporting progress on strategy options. The site is located within the Kent Romney Marsh water body. In relation to the Denge gravels at the site, three actions were identified in the CAMS and progress to 2007 is summarised below:</p> <ul style="list-style-type: none"> <li>• Action 10: Investigate the potential for augmenting water levels in the drains from old gravel working lakes. Started in 2006 and due to end in 2009.</li> <li>• Action 11: Review the impact of all activities in the area on the recharge to the gravels. Investigation between Natural England, Folkestone and Dover Water and RSBP. Started in 2006 and due to end in 2010.</li> <li>• Action 12: The above organisations will also carry out a review to assess the importance of the gravel 'seepage' on the water levels within the Denge marsh Sewer. Started in 2006 and due to end in 2010.</li> </ul>		<p>.</p>
<p><b>Water Demand and Availability Projected to 2035</b></p>	<p>5</p>	<p>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 hence the zone in which all customers experience the same risk of supply failure from a resource shortfall'. The site is located in Folkestone and Dover Water Services (FDWS) 'Denge' WRZ.</p>		

Indicator	Data Source	Current Data	Comparators	Trend
		<p>The forecast for the FDWS supply area shows household demand per capita consumption for unmetered households is expected to fall from 164 litres per head per day (l/h/d) in the base year to 157 l/h/d in 2023, after which demand will increase back to 164 l/h/d by 2035. For metered households, average demand is forecast to decline from 136 l/h/d in the base year to 125 l/h/d in 2035.</p> <p>The forecast for the Denge WRZ shows household demand per capita consumption for unmetered households is expected to fall from 131 l/h/d in the base year to 121 l/h/d in 2035. For metered households, average demand is forecast to decline from 103 l/h/d in the base year to 89 l/h/d in 2035.</p> <p>Demand for water is set to rise in an area where there is likely to be significant economic growth and an increasing population. Climate change is expected to reduce water available for use by about 20% by 2035, population is expected to increase by 20% by 2035, and the number of dwellings which FDWS have a statutory duty to supply on request will increase by 35% by 2035. The Government has approved major housing developments in Ashford and the Thames Gateway and pressure is mounting for further significant new housing stock in the South-East. Approximately 23,000 new houses have been allocated for the area over the next 30 years in the latest South East Plan.</p> <p>The forecast for non-household demand, which is composed of services and industry and manufacturing consumptions, show similar overall reductions (-1.1% per annum and -0.9% per annum on average respectively). There are significant step changes in the industry and manufacturing consumption forecast over the periods 2006/07 to 2009/10 and 2018/19 to 2021/22. There are also significant drops in demand at Dungeness A and Dungeness B power stations as a result of projected closure dates (2020), and at Kent</p>		

Indicator	Data Source	Current Data	Comparators	Trend
		<p>Salads as a result of the implementation of a more water efficient mode of operation.</p> <p>FDWS operate in one of the driest areas of England and in March 2006 were the first water company in the Country to be granted “Area of Water Scarcity” status by the Government. This enabled the introduction of compulsory metering to nearly all customers by the end of 2012.</p> <p>Groundwater in local chalk and Denge gravel beds is the main source of water due to there being no major rivers or reservoirs in the area that can provide a reliable supply. FDWS has no surface water resources and imports water from Southern Water and South-East Water (previously Mid Kent Water). Both imports are based on groundwater sources. Boreholes in the Chalk of the North Downs provide a major source of water and additional water is obtained from the gravels in the Denge peninsula on Romney Marsh. These water sources are of good quality and provide sufficient water to meet all the current needs of customers.</p> <p>The Denge is sensitive to potential impacts of climate change such as future changes in rainfall and sea level rise. Climate change may decrease both summer and winter rainfall, and saline intrusion may increase due to sea level rise. In the case of the Denge gravel aquifer, summer rainfall does contribute significantly to recharge, as there is very little soil and the large cobbles have only a small capillary flux capability. Thus once into the groundwater system, rainfall can only leave by lateral transfer to either the sea or the lakes, or outflow through the Denge Marsh sewer.</p> <p>In the Denge Zone, the current baseline supply/demand balance is in surplus throughout the 25-year planning period, both in the dry year annual average balance (DYAA) and in the dry year critical period (DYCP). The overall supply/demand balance for FDWS during average conditions demonstrates that there is a deficit (0.32 MI/d) from 2010 onwards. A deficit is observed at</p>		

Indicator	Data Source	Current Data	Comparators	Trend
		company level under critical period from 2023 onwards. The progressive decline of the Water Available for Use (WAFU) is mainly due to the impact of climate change. The step change in WAFU occurring in 2014/15 is due to the expiration of the bulk import agreement with South-East Water.		
<b>Sensitive Areas – Urban Waste Water Directive</b>	<b>6</b>	There are no identified Shellfish Waters in close proximity to the site. The nearest identified Bathing Waters are at Camber to the west and Littlestone to the north.		
<b>Coastal Processes and Sediments</b>		<p>The east coast of England, including the site at Dungeness, is influenced by the semi-diurnal tide of the Atlantic Ocean which transfers energy to the North Sea from both the north and the south (via the English Channel). The general direction of transport by both waves and tidal currents is towards the south. The southern part of the east coast has a higher tidal range and greater tidal currents than locations further north.</p> <p>The site is located on Dungeness Foreland, a huge expanse of single deposited by the sea over 10,000 years. The Foreland contains an active shingle ridge face which is subject to the erosion and deposition, and a series of relict shingle ridges on the landward side. The Foreland is an active landscape subject to rapid and ongoing evolution.</p>		

## Key to Data Sources

1	Environment Agency (2008) Draft River Basin Management Plans: South East River Basin District. : <a href="http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/southeast/Intro.aspx">http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/southeast/Intro.aspx</a> [accessed March 2009] <sup>15</sup>
2	Environment Agency (2008) Draft River Basin Management Plans: Current State of Waters <a href="http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/southeast/Intro.aspx">http://wfdconsultation.environment-agency.gov.uk/wfdcms/en/southeast/Intro.aspx</a> [accessed March 2009] <sup>13</sup>
3	Environment Agency (2009) What's In Your Backyard: <a href="http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&amp;lang=e">http://maps.environment-agency.gov.uk/wiyby/wiybyController?ep=maptopics&amp;lang=e</a> [accessed March 2009]
4	Environment Agency ( April 2008), Rother CAMS Annual Update <a href="http://publications.environment-agency.gov.uk/pdf/GENE0408BNYZ-E-E.pdf">http://publications.environment-agency.gov.uk/pdf/GENE0408BNYZ-E-E.pdf</a>
5	Folkestone and Dover Water Services Limited (April 2008) Water Resources Management Plan, Draft for Consultation [accessed March 2009] <a href="http://www.fdws.co.uk/pdfs/final-business-plan-section-a.pdf">http://www.fdws.co.uk/pdfs/final-business-plan-section-a.pdf</a> <sup>16</sup>
6	DEFRA (October 2007). Water Quality – Sewage treatment in the UK: Sensitive Area <a href="http://webarchive.nationalarchives.gov.uk/20080305115859/http://www.defra.gov.uk/environment/water/quality/uwwtd/sensarea/shellfish/index.htm">http://webarchive.nationalarchives.gov.uk/20080305115859/http://www.defra.gov.uk/environment/water/quality/uwwtd/sensarea/shellfish/index.htm</a>

<sup>15</sup> 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.

<sup>16</sup> The data used in this assessment are taken from Folkestone and Dover Water Services Limited (April 2008) Water Resources Management Plan, Draft for Consultation, which was the most up to date plan available at the time of writing. The Water Resources Management Plan has since been finalised and Folkestone and Dover Water Services have become Veolia Water Southeast. Veolia Water Southeast operates one Water Resource Zone. The Water Resource Management Plan can be accessed here: <http://www.veoliawater.co.uk/articles1/folkestone.htm>

## Flood Risk

Indicator	Data Source	Current Data	Comparators	Trend
<b>Topic: Flood Risk</b>				
<b>Flood Risk</b>	1	<p>The site is situated in an area that the EA considers to be at risk from fluvial and coastal flooding. The eastern part of the existing site is shown to be at risk from fluvial flooding. There are no fluvial or coastal flood defences shown on the EA web site at or in close proximity to the existing site. Any extension to the existing site or development of a new site close by is likely to need fluvial and coastal flood defences. These defences may have the potential to modify existing river hydrodynamics and associated movement of sediment, which may have secondary effects on river and marine ecosystem structure and functioning.</p> <p>Map available separately.</p>		<p>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.</p> <p>‘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:</p> <ul style="list-style-type: none"> <li>• Global sea level rise has accelerated between mid 19th century and mid 20th century and is now about 3mm per year</li> <li>• 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</li> <li>• 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</li> </ul>

Indicator	Data Source	Current Data	Comparators	Trend
				<p>Most recently in June 2009, UKCIP launched the 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:</p> <ul style="list-style-type: none"> <li>• All areas of the UK get warmer, and the warming is greater in summer than in winter.</li> <li>• 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.</li> </ul> <p>Sea levels rise and the rise is greater in the south of the UK than in the north.</p>

### Key to Data Sources

1	Environment Agency (2009). What is in your backyard? <a href="http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=floodmap&amp;layerGroups">http://maps.environment-agency.gov.uk/wiyby/wiybyController?topic=floodmap&amp;layerGroups</a>
2	Kent County Council (October 2006) Select Committee report on Climate Change. <a href="http://www.kent.gov.uk/NR/rdonlyres/042C019E-D3F2-42F2-BC13-F28D1B3A52E8/7278/climatechangereport.pdf">http://www.kent.gov.uk/NR/rdonlyres/042C019E-D3F2-42F2-BC13-F28D1B3A52E8/7278/climatechangereport.pdf</a>

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