

# Thurrock Proposed Submission Core Strategy and Policies for Management of Development Plan Document

## Habitats Regulations Assessment

Final Report  
August 2010



## Revision Schedule

### Thurrock Core Strategy HRA August 2010

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	09/02/10	Final HRA Report	<b>Dr Graeme Down</b> Assistant Ecologist	<b>Dr James Riley</b> Principal Ecologist	<b>Dr James Riley</b> Principal Ecologist
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03	13/08/10	Updated final HRA Report	<b>Dr Graeme Down</b> Assistant Ecologist	<b>Dr James Riley</b> Principal Ecologist	<b>Dr James Riley</b> Principal Ecologist

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## Table of Contents

<b>Executive Summary .....</b>	<b>1</b>
<b>1 Introduction .....</b>	<b>4</b>
1.1 Current Legislation .....	4
1.2 Scope and Objectives .....	4
<b>2 Methodology .....</b>	<b>6</b>
2.1 Introduction.....	6
2.2 A Proportionate Assessment.....	6
2.3 The Process of HRA.....	7
2.4 Evidence gathering.....	8
2.5 Task 1: Likely Significant Effects (Screening) .....	11
2.6 Task 2: Appropriate Assessment .....	11
<b>3 Pathways of Impact.....</b>	<b>12</b>
3.1 Introduction.....	12
3.2 Pathway of Impact: Recreational Pressure .....	12
3.3 Pathway of Impact: Air Quality .....	15
3.4 Pathway of Impact: Water Quality .....	19
3.5 Pathway of Impact: Coastal Squeeze .....	20
3.6 Policies Screened into the Assessment .....	20
<b>4 Thames Estuary and Marshes SPA and Ramsar.....</b>	<b>22</b>
4.1 Introduction.....	22
4.2 Reasons for Designation .....	22
4.3 Historical Trends and Current Pressures .....	23
4.4 Effects of the Core Strategy .....	24
4.5 Conclusion.....	36
<b>5 The Mid-Essex Estuaries .....</b>	<b>37</b>
5.1 Introduction.....	37
5.2 Reasons for Designation .....	38
5.3 Historical Trends and Current Pressures .....	41
5.4 Effects of the Core Strategy .....	42
5.5 Conclusion.....	45
<b>6 North Kent Estuaries.....</b>	<b>46</b>
6.1 Introduction.....	46

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6.2	Reasons for Designation .....	47
6.3	Historical Trends and Current Pressures .....	48
6.4	Effects of the Core Strategy .....	49
6.5	Conclusions .....	50
<b>7</b>	<b>Overall Conclusion.....</b>	<b>51</b>
	<b>Appendix 1 – Core Strategy Policies Screening Table .....</b>	<b>52</b>

## Executive Summary

Scott Wilson was appointed by Thurrock Council to assist in undertaking a Habitat Regulations Assessment (HRA) of the potential effects of their Core Strategy (CS) Proposed Submission document, on the *Natura 2000* network.

It was established that the following European designated sites required consideration because of the presence of 'pathways' by which development within the district could conceivably affect the designated sites. These sites are:

- Thames Estuary and Marshes Special Protection Area (SPA) and Ramsar site;
- Mid-Essex Estuaries (Essex Estuaries Special Area of Conservation (SAC) and associated SPA and Ramsar sites); and
- North Kent Estuaries (Medway Estuary and Marshes, The Swale and Thanet Coast designations)

Other sites were considered at earlier stages of HRA in 2007 but were able to be discounted (largely because water supply issues that were unresolved in 2007 have now been resolved). Spatial development plans and projects can have effects on European designated sites through a number of 'pathways' or mechanisms and in the case of Thurrock, the relevant pathways are:

- Recreational pressure and disturbance;
- Reduced air quality;
- Reduced water quality; and
- Coastal squeeze

These are the pathways by which Thurrock's Core Strategy has been assessed for potential adverse effects on the European designated sites listed above.

### HRA Screening

Thurrock CS Proposed Submission document presents a range of policies defining the focus for development. Screening of these options has generated the conclusion that the following policies required screening in for full Appropriate Assessment:

- CSSP1: Sustainable Housing and Locations
- CSSP2: Sustainable Employment Growth
- CSSP3: Sustainable Infrastructure
- CSSP4: Sustainable Green Belt
- CSSP5: Sustainable Green Grid
- CSTP1: Strategic Housing Provision
- CSTP6: Strategic Employment Provision
- CSTP7: Network of Centres
- CSTP9: Wellbeing: Leisure and Sports

- CSTP10: Community Facilities
- CSTP13: Emergency Services and Utilities
- CSTP15: Transport in Greater Thurrock
- CSTP17: Strategic Freight Movement and Access to Ports
- CSTP26: Renewable or Low Carbon Energy Generation
- CSTP28: River Thames

## Appropriate Assessment

### Thames Estuary and Marshes SPA and Ramsar

The CS was not considered to create a Likely Significant Effect (LSE) on the SPA/Ramsar through coastal squeeze. No employment or residential development was included within 700m of the site, and future potential for any waste or renewable energy schemes under policies CSTP26 and CSTP29 included caveats that would avoid LSE by ensuring compliance with the Habitats Directive.

The CS was not considered to pose LSE through unsustainable recreational pressure. The CS includes provision for alternative recreational facilities, including a country park that should deflect users from the SPA/Ramsar. There are also commitments to management of existing green assets. Thurrock's Green Grid strategy sets out access restrictions, green space maintenance, and creation strategies that will ensure mitigation is adequate.

Thurrock Council have committed to working with the Thames Estuary Partnership (TEP) in order to manage recreation and monitoring disturbance, such that the need for any enhanced measures to manage waterborne access can be delivered at the appropriate time. These should be developed further in conjunction with the TEP in a cohesive management strategy and may need to be informed by visitor surveys of the SPA to determine patterns of recreational use, which will reduce pressure and prevent adverse effects upon the European site integrity. Thurrock's contribution should be commensurate with its population size, since Thurrock can only be considered responsible for mitigating their contribution to an "in combination" effect. Developer contributions would be a mechanism by which Thurrock could contribute.

Air quality reductions were not considered to pose a LSE on the Thames Estuary and Marshes SPA/Ramsar. A consented power station at Tilbury (Tilbury Green Power) has been assessed and found not to require HRA. Nonetheless, policies CSTP26 and CSTP29 do allow for the possibility of further renewable energy and/or waste sites, especially at Tilbury or London Gateway. Therefore, further or alternative schemes that come forward will need to be subject to environmental assessment that should include consideration of the need for project-level HRA.

In relation to water quality, the SPA/Ramsar is not considered to be particularly vulnerable to the effects of smothering macro-algal growth that nutrient enrichment has created in south coast waters. However, it was considered that reference should be included in the Core Strategy to the Thurrock Water Cycle Study and in particular to phasing of development in line with the WCS, in order to provide security that adverse effects on European sites will not result.

The development of London Gateway Port was considered as an 'in combination' factor with the policies of the CS. Mitigation measures have been approved for this scheme, and it has been concluded that provided that these are adopted, there is no residual in combination impact likely through disturbance, reduced air quality reduced water quality or coastal squeeze.

With these measures in place it can be concluded that an adequate policy framework exists within the CS to enable the delivery of measures to avoid adverse effects on the Thames Estuary & Marshes SPA & Ramsar site.

### **Mid-Essex Estuaries**

The CS was not considered to pose LSE through unsustainable recreational pressure. Plans and strategies already exist to manage recreation at some of the designated SPAs/Ramsars and parts of the Essex Estuaries SAC. Thurrock Council have committed to working with the Thames Estuary Partnership in order to manage recreation and monitoring disturbance, such that the need for any enhanced measures to manage waterborne access can be delivered at the appropriate time.

The SAC/SPAs/Ramsar sites are not considered to be particularly vulnerable to the effects of smothering macro-algal growth that nutrient enrichment has created in south coast waters. In addition, the Essex estuary sites are lie several kilometres from Thurrock, such that large dilution factors will apply to any nutrients added to the Thames at Thurrock. However, it was considered that reference should be included in the Core Strategy to the Thurrock Water Cycle Study and in particular to phasing of development in line with the WCS, in order to provide security that adverse effects on European sites will not result.

Having made this amendment, it can therefore be concluded that an adequate policy framework exists within the CS to enable the delivery of measures to avoid adverse effects on the Essex Estuaries SAC and associated SPA & Ramsar sites.

### **North Kent Estuaries**

The SAC/SPAs/Ramsar sites are not considered to be vulnerable to the effects of smothering macro-algal growth that nutrient enrichment has created in south coast waters. In addition, the North Kent estuary sites are lie several kilometres from Thurrock, such that large dilution factors will apply to any nutrients added to the Thames at Thurrock. However, it was considered that reference should be included in the Core Strategy to the Thurrock Water Cycle Study and in particular to phasing of development in line with the WCS, in order to provide security that adverse effects on European sites will not result.

Having made this amendment, it can be concluded that an adequate policy framework exists to avoid adverse water quality impacts on European sites.

### **Conclusion**

It has been concluded that an adequate policy framework exists (when considered within the context of the existing legal safeguards) to enable the delivery of measures to avoid adverse effects on European sites.

# 1 Introduction

## 1.1 Current Legislation

- 1.1.1 The need for Appropriate Assessment is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by the Conservation of Habitats and Species Regulations 2010. Under these Regulations, land use plans must be subject to Appropriate Assessment if they are likely to have a significant [adverse] effect on a Natura 2000 site (Special Areas of Conservation, SAC and Special Protection Areas, SPA). It is Government policy (as described in Planning Policy Statement 9: Biodiversity & Geological Conservation) for sites designated under the Convention on Wetlands of International Importance (Ramsar sites) to be treated as having equivalent status to Natura 2000 sites. As such, Appropriate Assessments should also cover these sites.
- 1.1.2 The Habitats Directive applies a precautionary approach to protected areas; plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. In the case of the Habitats Directive, plans and projects may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.
- 1.1.3 In recent years the term Habitat Regulations Assessment (HRA) has been coined to describe the entire assessment process required to comply with the Regulations, including the specific Appropriate Assessment stage. In order to ascertain whether or not site integrity will be affected, an HRA should therefore be undertaken of the plan or project in question.

### **Habitats Directive 1992**

Article 6 (3) states that:

*“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives.”*

### **Conservation of Habitats and Species Regulations 2010**

The Regulations state that:

*“A competent authority, before deciding to ... give any consent for a plan or project which is likely to have a significant effect on a European site ... shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives”.*

## 1.2 Scope and Objectives

- 1.2.1 Scott Wilson has been appointed by Thurrock Council to assist in undertaking a Habitats Regulations Assessment of the potential effects of its LDF Core Strategy (CS) on the Natura 2000 network. Scott Wilson previously assessed CS policies in 2007 at the Preferred Options

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stage of their development. However, these policies have now been revised and this report seeks to update the HRA recommendations based on the CS Proposed Submission stage policies.

- 1.2.2 Chapter 2 of this report describes the methodology followed in carrying out the HRA. Chapter 3 outlines the possible pathways by which adverse effects on European protected sites could arise as a result of a document such as the Core Strategy. Chapters 4-6 contain the Habitat Regulations Assessment, organised by European site (or cluster of related sites), based on key environmental conditions required to maintain the integrity of these sites. The policies of the Core Strategy (CS) are summarised in Appendix 1.

## 2 Methodology

### 2.1 Introduction

2.1.1 This section sets out our approach and methodology for undertaking the HRA.

### 2.2 A Proportionate Assessment

2.2.1 Project-related HRA often requires bespoke survey work and novel data generation in order to accurately determine the significance of adverse effects; in other words, to look beyond the risk of an effect to a justified prediction of the actual likely effect and to the development of avoidance or mitigation measures.

2.2.2 However, the draft CLG guidance<sup>1</sup> makes it clear that when implementing HRA of land-use plans, the Appropriate Assessment (AA) should be undertaken at a level of detail that is appropriate and proportional to the level of detail provided within the plan itself:

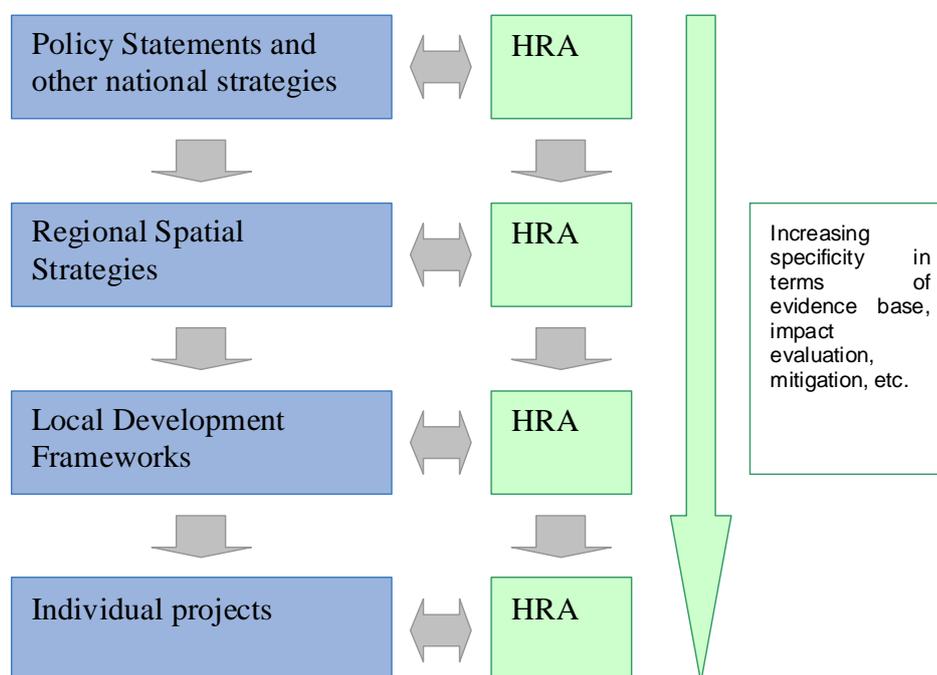
2.2.3 *“The comprehensiveness of the [Appropriate] assessment work undertaken should be proportionate to the geographical scope of the option and the nature and extent of any effects identified. An AA need not be done in any more detail, or using more resources, than is useful for its purpose. It would be inappropriate and impracticable to assess the effects [of a strategic land use plan] in the degree of detail that would normally be required for the Environmental Impact Assessment (EIA) of a project.”*

2.2.4 In other words, there is a tacit acceptance that appropriate assessment can be tiered and that all impacts are not necessarily appropriate for consideration to the same degree of detail at all tiers (**Figure 1**). This HRA was therefore undertaken using existing data and without undertaking bespoke surveys or detailed modelling.

2.2.5 Inevitably, there will be an absence of fine detail in the Core Strategy since the purpose of such a document is to provide a broad framework. The most robust and defensible approach to the absence of fine grain detail at this level is to make use of a precautionary approach in assessing the policies of the Core Strategy. In other words, the plan is never given the benefit of the doubt; it must be assumed that an objective/policy is likely to have an impact leading to a significant adverse effect upon a European site unless it can be clearly established otherwise.

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<sup>1</sup> CLG (2006) Planning for the Protection of European Sites, Consultation Paper

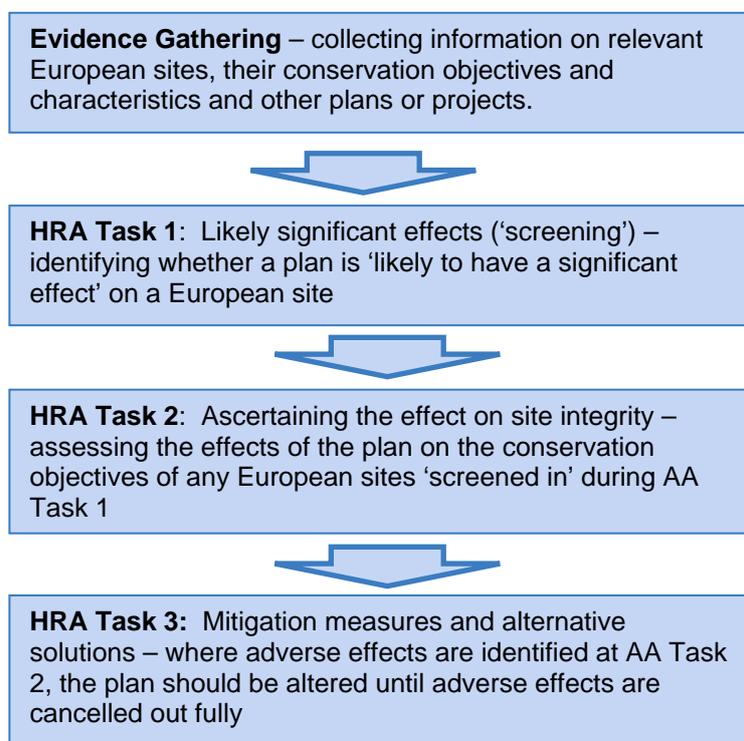


**Figure 1: Tiering in HRA of Land Use Plans**

## 2.3 The Process of HRA

- 2.3.1 The HRA has been carried out in the continuing absence of formal Government guidance. CLG released a consultation paper on AA of Plans in 2006<sup>2</sup>. As yet, no further formal guidance has emerged.
- 2.3.2 **Figure 2** below outlines the stages of HRA according to current draft CLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

<sup>2</sup> CLG (2006) Planning for the Protection of European Sites, Consultation Paper



**Figure 2: Four-Stage Approach to Habitat Regulations Assessment**

2.3.3 In practice, this broad outline requires some amendment in order to feed into a developing land use plan such as a Core Strategy.

## 2.4 Evidence gathering

2.4.1 Sources of evidence that we have accessed for this Appropriate Assessment include:

- The East of England Plan (Government Office for the East of England, 2008);
- HRA of the East of England Plan including Proposed and Further Proposed Changes (RPS, 2007);
- The East of England Plan First Review (draft policies, 2010);
- The London Plan (GLA, 2004);
- The HRA of the South East RSS (including Proposed Changes);
- Site Specific Allocations DPD (Thurrock Unitary Authority, 2007);
- Thurrock Local Plan (1997);
- Greengrid Strategy 2006-2011 (Thurrock Unitary Authority);
- Municipal Waste Strategy for Thurrock 2008-2020;
- Sustainable Development Strategy and Framework 2007-2021 (Thurrock Unitary Authority);

- England Leisure Visits: the Results of the 2005 Survey (Countryside Agency, 2006);
- Thames Gateway South Essex Business Plan for Transport (2005);
- Thames Gateway South Essex Greengrid Strategy (2005);
- Thurrock Strategic Housing Land Availability Assessment (2010);
- Thurrock Employment Study (2005) and Employment Land Review (2007);
- Thurrock Infrastructure Prioritisation and Implementation Programme 2006-2021;
- Thurrock Transport Strategy 2008 – 2021;
- Stage 3 Review of Consents Appropriate Assessments (Environment Agency);
- Impact of East of England Housing and Economic Growth Scenarios on Regional Water Supplies (EA response to EERA consultation, 2009);
- Impacts of Growth on Water Quality in the East of England: Interim Report to Support the RSS Review (Entec/Anglian Water/EA, 2009);
- Water Companies Water Resource Management Plans (Essex & Suffolk Water; Thames Water; Anglian Water, 2009);
- Coastal Habitat Management Plans (Essex Coast and Estuaries; North Kent Coast and Estuaries, 2002);
- River Basin Management Plans (Thames; Anglian, 2009);
- Thames Estuary 2100 (EA);
- South Essex Catchment Flood Management Plan (EA, 2009);
- Catchment Abstraction Management Strategies (Combined Essex, 2007);
- Blackwater Estuary Management Plan (Maldon District Council and Colchester Borough Council, 1996);
- Colne Estuary Strategy;
- Crouch and Roach Estuaries Management Plan (2005);
- European Site Management and Access Management Plans where available;
- Nature on the Map and its links to SSSI citations and the JNCC website ([www.natureonthemap.org.uk](http://www.natureonthemap.org.uk)).

### Physical Scope of the HRA

2.4.2 Thirty-four European sites were included within the scope of the HRA of the Preferred Options in 2007 (including overlapping designations). For the Proposed Submission Stage HRA circumstances have changed which means that we are able to screen out the following sites:

- Deben Estuary SPA/Ramsar
- Stour and Orwell Estuaries SPA/Ramsar
- Abberton Reservoir SPA/Ramsar
- The Wash SAC/SPA/Ramsar

- Ouse Washes SAC/SPA/Ramsar
- 2.4.3 Stour & Orwell Estuaries SPA and Deben Estuary SPA were screened into the original HRA because there were concerns that increased abstraction to supply Thurrock's growing population (when considered in combination with surrounding authorities) could lower water levels within the Rivers Deben, Stour and Orwell, or from tributaries and thereby reduce freshwater inputs into these sites. Abberton Reservoir was screened because of a proposed scheme to meet the future potable water requirements of Thurrock and other parts of Essex by raising the top water level of Abberton Reservoir by 3.2 metres to increase the storage capacity by 60%. This could involve increased abstraction from the Great Ouse at Denver, which led to The Wash or Ouse Washes SAC's, SPA's or Ramsar sites being screened in.
- 2.4.4 However, since the 2007 HRA, the Abberton Reservoir dam raising scheme has been given planning permission by Colchester Borough Council and has been subject to its own Appropriate Assessment. Essex and Suffolk Water (ESW) plan to start construction in January 2010 and the scheme is due to come online in 2014/15. As such, it can be concluded that the use of Abberton Reservoir to provide potable water for Thurrock in the future is confirmed and does therefore not need consideration within this Appropriate Assessment.
- 2.4.5 Until the scheme comes online ESW will continue to operate with a supply/demand shortfall and will seek to address this through demand management measures. However, it is expected that during this period there will be no need to increase the existing Groundwater and/or surface water licenses which currently supply water to Thurrock. Moreover, the existing spare capacity in these consents, which may be required to serve the new development up to 2014/15, has already been evaluated for its potential to result in adverse effects on European sites through the Environment Agency's Review of Consents process (which always assesses the full licensed volume irrespective of whether the current actual volume is lower) and therefore does not need to be reconsidered as part of this HRA. As such, impacts on the Stour & Orwell Estuaries SPA and Deben Estuary SPA can also be screened out of this HRA.
- 2.4.6 Therefore, twenty-two sites remain to be assessed within this HRA. These are (overlapping designations are grouped under each bullet point):
- Thames Estuary and Marshes SPA and Ramsar. These are the only internationally designated sites within Thurrock.
  - Essex Estuaries SAC, Blackwater Estuary SPA and Ramsar, Colne Estuary SPA and Ramsar, Crouch and Roach Estuaries SPA and Ramsar, Foulness SPA and Ramsar, Dengie SPA and Ramsar.
  - Benfleet and Southend Marshes SPA and Ramsar
  - Medway Estuary and Marshes SPA and Ramsar
  - The Swale SPA and Ramsar
  - Thanet Coast SAC, Thanet Coast and Sandwich Bay SPA and Ramsar.
- 2.4.7 No European sites in London have been identified as being vulnerable to Core Strategy development in Thurrock. The European sites considered in this document are shown on Map 1.

## 2.5 Task 1: Likely Significant Effects (Screening)

2.5.1 The first stage of any Habitat Regulations Assessment is a Likely Significant Effect (LSE) test - essentially a risk assessment to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

2.5.2 *"Is the Plan, either alone or in combination with other relevant projects and plans, likely to result in a significant effect upon European sites?"*

2.5.3 The objective is to 'screen out' those plans and projects that can, without any detailed appraisal, be said to be unlikely to result in significant adverse effects upon European sites, usually because there is no mechanism for an adverse interaction with European sites.

2.5.4 This screening process was undertaken on the original preferred options in 2007 but has been repeated (see Appendix 1) for this Proposed Submission Stage HRA since policies have changed.

## 2.6 Task 2: Appropriate Assessment

2.6.1 The level of detail concerning developments that will be permitted under Core Strategies (and to an extent, knowledge concerning the sensitivities and vulnerabilities of European sites) is generally insufficient to make a detailed assessment of significance of effects, beyond levels of risk. As such, individual policies are evaluated against the environmental conditions necessary to maintain the integrity of the European site with consideration being given to the timing, duration, reversibility and scale of any adverse effect. In evaluating significance, Scott Wilson has relied on professional judgement as well as stakeholder consultation. Importantly, use is made of the precautionary approach where uncertainty over significance exists such that the effect will be considered significant unless there is considerable certainty that it can be ruled out. The Appropriate Assessment is the focus of Chapters 4 – 6 of the report.

### Other Plans and Projects

2.6.2 It is neither practical nor necessary to assess the 'in combination' effects of the CS within the context of all other plans and projects within Essex, London and the wider South East and East of England. In practice therefore, in combination assessment is of most relevance when the plan would otherwise be screened out because its individual contribution is inconsequential. For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects relate to the additional housing, transportation and commercial/industrial allocations proposed for neighbouring authorities over the lifetime of the Plan.

2.6.3 In addition to relevant documents already listed within section 2.4, the following plans and projects were identified for consideration 'in combination':

- London Gateway Port
- Kent Local Development Frameworks (especially Medway, Gravesham and Dartford)
- Essex Local Development Frameworks including the Castle Point LDF Core Strategy

## 3 Pathways of Impact

### 3.1 Introduction

3.1.1 In carrying out an HRA it is important to determine the various ways in which land use plans can impact on European sites by following the pathways along which development can be connected with European sites, in some cases many kilometres distant. Briefly defined, pathways are routes by which a change in activity associated with a development can lead to an effect upon a European site.

3.1.2 Based on the HRA carried out for the Preferred Options and taking account of the now consented scheme to increase water resource capacity at Abberton Reservoir, the following pathways require consideration for their potential to impact on relevant internationally designated sites.

### 3.2 Pathway of Impact: Recreational Pressure

3.2.1 All types of terrestrial European site, including vegetation associated with estuaries, can be affected by trampling, which in turn causes soil compaction and erosion. Motorcycle scrambling and off-road vehicle use can cause more serious erosion, as well as disturbance to sensitive species.

3.2.2 All of the estuaries considered within this HRA are extensively used for recreational activity by people from a wide-ranging catchment that includes the whole of Essex and also draw visitors from further afield. Activities of walkers (particularly dog walkers) and water-borne recreation can, if carried out in winter, have a significant disturbing effect upon wintering waterfowl thus increasing energetic expenditure (as birds have to take flight more frequently) and competition on the less disturbed mudflats<sup>3</sup>.

3.2.3 The latest England Day Visits Survey<sup>4</sup> indicates that people typically travel:

- 10.8 miles (17.2 km) to visit a countryside site for the day;
- 11.3 miles (18.1 km) to visit a woodland site for the day; and
- 16 miles (25.5 km) to visit a coastal site for the day.

3.2.4 In all cases, more journeys were made by car than on foot. It should be noted that these are generalised figures; individual European sites may draw the majority of their visitors from a much smaller catchment (e.g. Thames Basin Heaths SPA, which draws 96% of its visitors from within 5 km<sup>5</sup>) or a much larger one (e.g. the New Forest SAC, for which 55% of visitors are holidaymakers rather than locals<sup>6</sup>).

3.2.5 However, if we take the England Day Visits data as broadly 'typical' of the distances that residents of Thurrock may travel to visit European sites, this means that all of those sites within

<sup>3</sup> West, A.D., et al. 2002. Predicting the impacts of disturbance on shorebird mortality using a behaviour-based model. *Biological Conservation* 106:3, 319-328

<sup>4</sup> Various. 2006. England Leisure Visits: the Results of the 2005 Survey. Countryside Agency

<sup>5</sup> Liley, D. et al. 2005. Visitor access patterns on the Thames Basin Heaths. *English Nature Research Report*, English Nature, Peterborough

<sup>6</sup> Forestry Commission. 2005. New Forest Visitor Survey.

these distances could be affected by trampling or (in the case of Special Protection Areas) disturbance of sensitive wildlife as a result of the population increase in Thurrock from the minimum of 13,550 new homes that the Council are currently required to deliver between 2010 and 2021.

### Disturbance of Wildlife

3.2.6 Concern regarding the effects of disturbance on birds in particular, stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding<sup>7</sup>. Disturbance therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds. In addition, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds.<sup>8</sup> Moreover, the more time a breeding bird spend disturbed from its nest, the more its eggs are likely to cool and the more vulnerable they are to predators. Finally, regular disturbance can also render some areas of otherwise suitable habitat unavailable for nesting such that breeding territories fail to be established or are limited to sub-optimal habitat.

3.2.7 The potential for disturbance may be less in winter than in summer, in that there are often a smaller number of recreational users and birds are not breeding. However, winter activity can still cause important disturbance, especially as birds are particularly vulnerable at this time of year due to food shortages. Several empirical studies have, through correlative analysis, demonstrated that out-of-season recreational activity can result in quantifiable disturbance:

- Tuite et al<sup>9</sup> found that during periods of high recreational activity, bird numbers at Llangorse Lake decreased by 30% over a time period correlating with an increase in recreational activity. During periods of low recreational activity, however, no such correlation was observed. In addition, all species were found to spend less time in their 'preferred zones' (the areas of the lake used most in the absence of recreational activity) as recreational intensity increased.
- Underhill et al<sup>10</sup> counted waterfowl and all disturbance events on 54 water bodies within the South West London Water bodies Special Protection Area and clearly correlated disturbance with a decrease in bird numbers at weekends in smaller sites and with the movement of birds within larger sites from disturbed to less disturbed areas.
- Evans & Warrington<sup>11</sup> found that on Sundays total water bird numbers (including shoveler and gadwall) were 19% higher on Stocker's Lake LNR in Hertfordshire, and attributed this to displacement of birds resulting from greater recreational activity on surrounding water bodies at weekends relative to week days. However, recreational activity was not quantified in detail, nor were individual recreational activities evaluated separately.

<sup>7</sup> Riddington, R. et al. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

<sup>8</sup> Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72

<sup>9</sup> Tuite, C. H., Owen, M. & Paynter, D. 1983. Interaction between wildfowl and recreation at Llangorse Lake and Talybont Reservoir, South Wales. *Wildfowl* 34: 48-63

<sup>10</sup> Underhill, M.C. et al. 1993. *Use of Waterbodies in South West London by Waterfowl. An Investigation of the Factors Affecting Distribution, Abundance and Community Structure.* Report to Thames Water Utilities Ltd. and English Nature. Wetlands Advisory Service, Slimbridge

<sup>11</sup> Evans, D.M. & Warrington, S. 1997. The effects of recreational disturbance on wintering waterbirds on a mature gravel pitlake near London. *International Journal of Environmental Studies* 53: 167-182

- Tuite et al<sup>12</sup> used a large (379 site), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They found that shoveler was one of the most sensitive species to disturbance. The greatest impact on winter wildfowl numbers was associated with sailing/windsurfing and rowing.

3.2.8 Human activity can affect birds either directly (e.g. through causing them to flee) or indirectly (e.g. through damaging their habitat). The most obvious direct effect is that of immediate mortality such as death by shooting, but human activity can also lead to behavioural changes (e.g. alterations in feeding behaviour, avoidance of certain areas *etc.*) and physiological changes (e.g. an increase in heart rate) that, although less noticeable, may ultimately result in major population-level effects by altering the balance between immigration/birth and emigration/death.

3.2.9 The degree of impact that varying levels of noise will have on different species of bird is poorly understood except that a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al (1995) examined the distribution of 43 passerine species (i.e. 'songbirds'), of which 60% had a lower density closer to the roadside than further away. By controlling vehicle usage they also found that the density generally was lower along busier roads than quieter roads .

3.2.10 Activity will often result in a flight response (flying, diving, swimming or running) from the animal that is being disturbed. This carries an energetic cost that requires a greater food intake. Research that has been conducted concerning the energetic cost to wildlife of disturbance indicates a significant negative effect.

3.2.11 Disturbing activities are on a continuum. The most disturbing activities are likely to be those that involve irregular, infrequent, unpredictable loud noise events, movement or vibration of long duration. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable, quiet patterns of sound or movement or minimal vibration. The further any activity is from the birds, the less likely it is to result in disturbance.

3.2.12 The factors that influence a species response to a disturbance are numerous, but the three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.

### **Sensitivity of species – waterfowl**

3.2.13 The distance at which a species takes flight when approached by a disturbing stimulus is known as the 'tolerance distance' (also called the 'escape flight distance') and differs between species to the same stimulus and within a species to different stimuli. These are given in Table 1, which compiles 'tolerance distances' from a literature review. It is reasonable to assume from this that disturbance is unlikely to be experienced more than a few hundred metres from the birds in question. In addition, the regular mechanized noise that is associated with waste sites is likely to be less disturbing than the presence of visible human activity in areas in which the birds are not used to observing such activity.

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<sup>12</sup> Tuite, C.H., Hanson, P.R. & Owen, M. 1984. Some ecological factors affecting winter wildfowl distribution on inland waters in England and Wales and the influence of water-based recreation. *Journal of Applied Ecology* 21: 41-62

**Table 1 - Tolerance distances of 21 water bird species to various forms of recreational disturbance, as described in the literature. All distances are in metres. Single figures are mean distances; when means are not published, ranges are given. <sup>1</sup>Tydeman (1978), <sup>2</sup> Keller (1989), <sup>3</sup> Van der Meer (1985), <sup>4</sup> Wolff et al (1982), <sup>5</sup> Blankestijn et al (1986).<sup>13</sup>**

Species	Type of disturbance		
	Rowing boats/kayak	Sailing boats	Walking
Little grebe		60 – 100 <sup>1</sup>	
Great crested grebe	50 – 100 <sup>2</sup>	20 – 400 <sup>1</sup>	
Mute swan		3 – 30 <sup>1</sup>	
Teal		0 – 400 <sup>1</sup>	
Mallard		10 – 100 <sup>1</sup>	
Shoveler		200 – 400 <sup>1</sup>	
Pochard		60 – 400 <sup>1</sup>	
Tufted duck		60 – 400 <sup>1</sup>	
Goldeneye		100 – 400 <sup>1</sup>	
Smew		0 – 400 <sup>1</sup>	
Moorhen		100 – 400 <sup>1</sup>	
Coot		5 – 50 <sup>1</sup>	
Curlew			211 <sup>3</sup> ; 339 <sup>4</sup> ; 213 <sup>5</sup>
Shelduck			148 <sup>3</sup> ; 250 <sup>4</sup>
Grey plover			124 <sup>3</sup>
Ringed plover			121 <sup>3</sup>
Bar-tailed godwit			107 <sup>3</sup> ; 219 <sup>4</sup>
Brent goose			105 <sup>3</sup>
Oystercatcher			85 <sup>3</sup> ; 136 <sup>4</sup> ; 82 <sup>5</sup>
Dunlin			71 <sup>3</sup> ; 163 <sup>2</sup>

### 3.3 Pathway of Impact: Air Quality

3.3.1 Current levels of understanding of air quality effects on semi-natural habitats are not adequate to allow a rigorous assessment of the likelihood of significant effects on the integrity of key European sites.

<sup>13</sup> Tydeman, C.F. 1978. *Gravel Pits as conservation areas for breeding bird communities*. PhD thesis. Bedford College

Keller, V. 1989. Variations in the response of Great Crested Grebes *Podiceps cristatus* to human disturbance - a sign of adaptation? *Biological Conservation* 49:31-45

Van der Meer, J. 1985. *De verstoring van vogels op de slikken van de Oosterschelde*. Report 85.09 Deltadienst Milieu en Inrichting, Middelburg. 37 pp.

Wolf, W.J., Reijnders, P.J.H. & Smit, C.J. 1982. The effects of recreation on the Wadden Sea ecosystem: many questions but few answers. In: G. Luck & H. Michaelis (Eds.), *Schriftenreihe M.E.L.F., Reihe A: Agnew. Wissensch* 275: 85-107

Blankestijn, S. et al. 1986. *Seizoensverbreding in de recreatie en verstoring van Wulp en Scholkester op hoogwatervluchplaatsen op Terschelling*. Report Projectgroep Wadden, L.H. Wageningen. 261 pp.

**Table 2. Main sources and effects of air pollutants on habitats and species**

Pollutant	Source	Effects on habitats and species
Acid deposition	SO <sub>2</sub> , NO <sub>x</sub> and ammonia all contribute to acid deposition. Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased N emissions may cancel out any gains produced by reduced S levels.	Can affect habitats and species through both wet (acid rain) and dry deposition. Some sites will be more at risk than others depending on soil type, bed rock geology, weathering rate and buffering capacity.
Ammonia (NH <sub>3</sub> )	Ammonia is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but levels have increased considerably with expansion in numbers of agricultural livestock. Ammonia reacts with acid pollutants such as the products of SO <sub>2</sub> and NO <sub>x</sub> emissions to produce fine ammonium (NH <sub>4</sub> <sup>+</sup> )- containing aerosol which may be transferred much longer distances (can therefore be a significant trans-boundary issue.)	Adverse effects are as a result of nitrogen deposition leading to eutrophication. As emissions mostly occur at ground level in the rural environment and NH <sub>3</sub> is rapidly deposited, some of the most acute problems of NH <sub>3</sub> deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides NO <sub>x</sub>	Nitrogen oxides are mostly produced in combustion processes. About one quarter of the UK's emissions are from power stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes.	Deposition of nitrogen compounds (nitrates (NO <sub>3</sub> ), nitrogen dioxide (NO <sub>2</sub> ) and nitric acid (HNO <sub>3</sub> )) can lead to both soil and freshwater acidification. In addition, NO <sub>x</sub> can cause eutrophication of soils and water. This alters the species composition of plant communities and can eliminate sensitive species.
Nitrogen (N) deposition	The pollutants that contribute to nitrogen deposition derive mainly from NO <sub>x</sub> and NH <sub>3</sub> emissions. These pollutants cause acidification (see also acid deposition) as well as eutrophication.	Species-rich plant communities with relatively high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication, due to its promotion of competitive and invasive species which can respond readily to elevated levels of N. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O <sub>3</sub> )	A secondary pollutant generated by photochemical reactions from NO <sub>x</sub> and volatile organic compounds (VOCs). These are mainly released by the combustion of fossil fuels. The increase in combustion of fossil fuels in the UK has led to a large increase in background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O <sub>3</sub> above 40 ppb can be toxic to humans and wildlife, and can affect buildings. Increased ozone concentrations may lead to a reduction in growth of agricultural crops, decreased forest production and altered species composition in semi-natural plant communities.
Sulphur Dioxide SO <sub>2</sub>	Main sources of SO <sub>2</sub> emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO <sub>2</sub> emissions have	Wet and dry deposition of SO <sub>2</sub> acidifies soils and freshwater, and alters the species composition of plant and associated animal communities. The significance of impacts depends on levels of deposition and the buffering capacity of

Pollutant	Source	Effects on habitats and species
	decreased substantially in the UK since the 1980s.	soils.

- 3.3.2 The main pollutants of concern for European sites are oxides of nitrogen (NO<sub>x</sub>), ammonia (NH<sub>3</sub>) and sulphur dioxide (SO<sub>2</sub>). NO<sub>x</sub> can have a directly toxic effect upon vegetation. In addition, greater NO<sub>x</sub> or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.
- 3.3.3 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil as well (particularly on a local scale) shipping. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO<sub>2</sub> or NH<sub>3</sub> emissions will be associated with Local Development Frameworks. NO<sub>x</sub> emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NO<sub>x</sub> (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison<sup>14</sup>. Emissions of NO<sub>x</sub> could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the LDF.
- 3.3.4 According to the World Health Organisation, the critical NO<sub>x</sub> concentration (critical threshold) for the protection of vegetation is 30 µgm<sup>-3</sup>; the threshold for sulphur dioxide is 20 µgm<sup>-3</sup>. In addition, ecological studies have determined 'critical loads'<sup>15</sup> of atmospheric nitrogen deposition (that is, NO<sub>x</sub> combined with ammonia NH<sub>3</sub>).
- 3.3.5 The National Expert Group on Transboundary Air Pollution (2001)<sup>16</sup> concluded that:
- In 1997, critical loads for acidification were exceeded in 71% of UK ecosystems. This was expected to decline to 47% by 2010.
  - Reductions in SO<sub>2</sub> concentrations over the last three decades have virtually eliminated the direct impact of sulphur on vegetation.
  - By 2010, deposited nitrogen was expected to be the major contributor to acidification, replacing the reductions in SO<sub>2</sub>.
  - Current nitrogen deposition is probably already changing species composition in many nutrient-poor habitats, and these changes may not readily be reversed.
  - The effects of nitrogen deposition are likely to remain significant beyond 2010.
  - Current ozone concentrations threaten crops and forest production nationally. The effects of ozone deposition are likely to remain significant beyond 2010.
  - Reduced inputs of acidity and nitrogen from the atmosphere may provide the conditions in which chemical and biological recovery from previous air pollution impacts can begin,

<sup>14</sup> Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. <http://www.airquality.co.uk/archive/index.php>

<sup>15</sup> The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

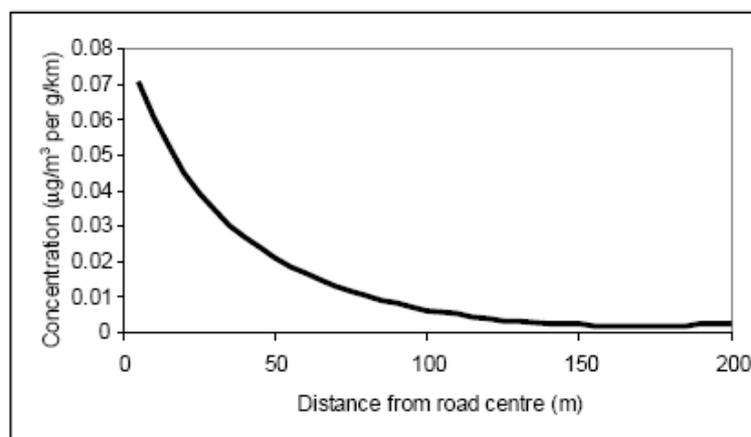
<sup>16</sup> National Expert Group on Transboundary Air Pollution (2001) Transboundary Air Pollution: Acidification, Eutrophication and Ground-Level Ozone in the UK.

but the timescales of these processes are very long relative to the timescales of reductions in emissions.

- 3.3.6 Grice et al<sup>17 18</sup> do however suggest that air quality in the UK will improve significantly over the next 15 years due primarily to reduced emissions from road transport and power stations.

### Local air pollution

- 3.3.7 According to the Department of Transport's Transport Analysis Guidance, "Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"<sup>19</sup>.



**Figure 3. Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT)**

- 3.3.8 This is therefore the distance that has been used throughout this HRA in order to determine whether internationally designated sites are likely to be significantly affected by development under the Core Strategy.

### Diffuse air pollution

- 3.3.9 In addition to the contribution to local air quality issues, development can also contribute cumulatively to an overall change in background air quality across an entire region (although individual developments and plans are – with the exception of large point sources such as power stations – likely to make very small individual contributions). In July 2006, when this issue was raised by Runnymede District Council in the South East, Natural England advised that their Local Development Framework '*can only be concerned with locally emitted and short range locally acting pollutants*'<sup>20</sup> as this is the only scale which falls within a local authority remit. It is understood that this guidance was not intended to set a precedent, but it inevitably

<sup>17</sup> Grice, S., T. Bush, J. Stedman, K. Vincent, A. Kent, J. Targa and M. Hobson (2006) Baseline Projections of Air Quality in the UK for the 2006 Review of the Air Quality Strategy, report to the Department for Environment, Food and Rural Affairs, Welsh Assembly Government, the Scottish Executive and the Department of the Environment for Northern Ireland.

<sup>18</sup> Grice, S., J. Stedman, T. Murrells and M. Hobson (2007) Updated Projections of Air Quality in the UK for Base Case and Additional Measures for the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007, report to the Department for Environment, Food and Rural Affairs, Welsh Assembly Government, the Scottish Executive and the Department of the Environment for Northern Ireland.

<sup>19</sup> [www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf](http://www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf)

<sup>20</sup> English Nature (16 May 2006) letter to Runnymede Borough Council, 'Conservation (Natural Habitats &c.) Regulations 1994, Runnymede Borough Council Local Development Framework'.

does so since (as far as we are aware) it is the only formal guidance that has been issued to a Local Authority from any Natural England office on this issue.

- 3.3.10 In the light of this and our own knowledge and experience, it is considered reasonable to conclude that it must be the responsibility of higher-tier plans to set a policy framework for addressing the cumulative diffuse pan-authority air quality impacts, partly because such impacts stem from the overall quantum of development within a region (over which individual districts have little control), and since this issue can only practically be addressed at the highest pan-authority level. Diffuse air quality issues will not therefore be considered further within this HRA.

## 3.4 Pathway of Impact: Water Quality

- 3.4.1 Increased amounts of housing or business development can lead to reduced water quality of rivers and estuarine environments. Sewage and industrial effluent discharges can contribute to increased nutrients on European sites leading to unfavourable conditions. In addition, diffuse pollution, partly from urban run-off has been identified during an Environment Agency Review of Consents process, as being a major factor in causing unfavourable condition of European sites.

- 3.4.2 The quality of the water that feeds European sites is an important determinant of the nature of their habitats and the species they support. Poor water quality can have a range of environmental impacts:

- At high levels, toxic chemicals and metals can result in immediate death of aquatic life, and can have detrimental effects even at lower levels, including increased vulnerability to disease and changes in wildlife behaviour.
- Eutrophication, the enrichment of plant nutrients in water, increases plant growth and consequently results in oxygen depletion. Algal blooms, which commonly result from eutrophication, increase turbidity and decrease light penetration. The decomposition of organic wastes that often accompanies eutrophication deoxygenates water further, augmenting the oxygen depleting effects of eutrophication. In the marine environment, nitrogen is the limiting plant nutrient and so eutrophication is associated with discharges containing available nitrogen.
- Some pesticides, industrial chemicals, and components of sewage effluent are suspected to interfere with the functioning of the endocrine system, possibly having negative effects on the reproduction and development of aquatic life.

- 3.4.3 For sewage treatment works close to capacity, further development may increase the risk of effluent escape into aquatic environments. In many urban areas, sewage treatment and surface water drainage systems are combined, and therefore a predicted increase in flood and storm events could increase pollution risk.

- 3.4.4 However, the Environment Agency<sup>21</sup> have commented that, while nutrient levels within the Thames Estuary are high, this does not result in the smothering macroalgal growth that is having an adverse effect upon other European marine sites (such as The Solent), due to a combination of tidal energy and erosion. As a result, it is considered that the Thames Estuary & Marshes SPA is not vulnerable to adverse effects as a result of an increase in nutrients in the

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<sup>21</sup> Dave Lowthion, Environment Agency Supra-Area Marine Team Leader, Southern Region, personal communication

Estuary due to increased volume of effluent discharged into the Estuary from Tilbury Sewage Treatment Works (STW).

## 3.5 Pathway of Impact: Coastal Squeeze

- 3.5.1 Rising sea levels can be expected to cause intertidal habitats (principally saltmarsh and mudflats) to migrate landwards. However, in built-up areas, such landward retreat is often rendered impossible due the presence of the sea wall and other flood defences.
- 3.5.2 In addition, development frequently takes place immediately behind the sea wall, so that the flood defences cannot be moved landwards to accommodate managed retreat of threatened habitats. The net result of this is that the quantity of saltmarsh and mudflat adjacent to built-up areas will progressively decrease as sea levels rise. This process is known as 'coastal squeeze'. In areas where sediment availability is reduced, the 'squeeze' also includes an increasingly steep beach profile and foreshortening of the seaward zones.
- 3.5.3 Along large stretches of the UK coastline, high and low watermarks on the beaches are moving landwards by more than a metre a year. Intertidal habitat loss is mainly occurring in the south and east of the country, particularly between the Humber and Severn. Northwest England, south Wales, the Solent in Hampshire, the southeast around the Thames estuary and large parts of East Anglia are also affected. The south coast has experienced the greatest steepening.
- 3.5.4 Defra's current national assessment is that the creation of an annual average of at least 100 ha of intertidal habitat associated with European sites in England that are subject to coastal squeeze, together with any more specifically identified measures to replace losses of terrestrial and supra-tidal habitats, is likely to be sufficient to protect the overall coherence of the Natura 2000 network. This assessment takes account of intertidal habitat loss from European sites in England that is caused by a combination of all flood risk management structures and sea level rise. The assessment will be kept under review taking account of the certainty of any adverse effects and monitoring of the actual impacts of plans and projects.

## 3.6 Policies Screened into the Assessment

- 3.6.1 All Policies contained within the Core Strategy were screened for the likelihood of their resulting in significant adverse effects upon any European sites. These are detailed in Appendix 1. It can be seen that by taking a precautionary approach fifteen policies could not be screened out of the assessment and these were therefore the policies that were subject to formal Appropriate Assessment against European sites. These policies were:
- CSSP1: Sustainable Housing and Locations
  - CSSP2: Sustainable Employment Growth
  - CSSP3: Sustainable Infrastructure
  - CSSP4: Sustainable Green Belt
  - CSSP5: Sustainable Green Grid
  - CSTP1: Strategic Housing Provision
  - CSTP6: Strategic Employment Provision

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- CSTP7: Network of Centres
  - CSTP9: Wellbeing: Leisure and Sports
  - CSTP10: Community Facilities
  - CSTP13: Emergency Services and Utilities
  - CSTP15: Transport in Greater Thurrock
  - CSTP17: Strategic Freight Movement and Access to Ports
  - CSTP26: Renewable or Low Carbon Energy Generation
  - CSTP28: River Thames

## 4 Thames Estuary and Marshes SPA and Ramsar

### 4.1 Introduction

4.1.1 Thames Estuary & Marshes is both a Ramsar site and a Special Protection Area (SPA) due to the nationally and internationally important numbers of wintering wildfowl and wading birds. The majority of this site is situated within Kent but one element is situated within Thurrock. The part of the site within Kent is South Thames Estuary & Marshes SSSI, while the part within Thurrock is the Mucking Flats & Marshes SSSI.

4.1.2 Mucking Flats & Marshes is an internationally important feeding habitat for birds, particularly during the overwintering period. Mucking Flats & Marshes is by far the most important part of the SPA for feeding avocets and has supported a single flock in March 2003 of 1395 birds. This is the largest single count of avocet ever recorded in the UK and represents 1.9% of the international population. Mucking Flats & Marshes is also the most important location in the Thames Estuary for grey plover, black-tailed godwit and redshank. Over the 3 year period from 99/00 to 01/02 Mucking Flats & Marshes supported a peak mean count of 16,435 birds, during which time even the mean number of birds was over 11,000.

4.1.3 There is anecdotal evidence for the movement of species between the Thames and habitats inland, emphasising the crucial importance of land outwith the SPA boundary to the functioning of the European site. Lapwing roost on the Thames foreshore during the day and then move inland to feed at night; species including Golden Plover, Ringed Plover and Dunlin have are known to use the inland rough grazing and cultivated areas in significant numbers. Common Snipe feed and roost in fields inside the sea wall, and also utilise the intertidal zone of the Thames. Migrating waders such as Green Sandpiper and Greenshank can be present in both habitats, but seem to favour the dykes and ditches inside the sea wall.

### 4.2 Reasons for Designation

4.2.1 The Thames Estuary and Marshes is designated as a SPA for its wintering bird populations, specifically:

- 21.7% of the British population of avocet *Recurvirostra avosetta*
- 0.9% of the British population of hen harrier *Circus cyaneus*
- 1.1% of the European/North African population of ringed plover *Charadrius hiaticula*

The SPA is also designated for its populations on passage of:

- 1.1% of the European/North African population of ringed plover *Charadrius hiaticula*

The SPA also qualifies as a wetland of international importance for birds by regularly supporting 33,433 waterfowl over winter.

4.2.2 The reasons for designation of the Thames Estuary and Marshes as a Ramsar site are illustrated in Table 3.

**Table 3: The Thames Estuary and Marshes Ramsar site criteria**

Ramsar criterion	Description of Criterion	Thames Estuary and Marshes Ramsar site
2	A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities	The site supports one endangered plant species and at least 14 nationally scarce plants of wetland habitats. The site also supports more than 20 British Red Data Book invertebrates.
5	A wetland should be considered internationally important if it supports bird assemblages of international importance	The site regularly supports 45118 waterfowl (5 year peak mean 1998/99-2002/2003)
6	A wetland should be considered internationally important if it supports species/populations occurring at levels of international importance.	The site supports internationally important populations of ringed plover and black tailed godwit in Spring/Autumn, and grey plover, red knot, dunlin and common redshank over winter.

4.2.3 In addition, Holehaven Creek SSSI is situated on the opposite side of Shell Haven from Mucking Flats and Marshes and effectively serves as southeast boundary of Thurrock. Although it is not part of any European site, the tidal creek system acts as the principal drain for the surrounding grazing marshes, which are important supporting habitat for waterfowl for which the SPA was designated, and forms a confluence at Holehaven with the River Thames. The site is therefore linked geographically and functionally with the wider Thames Estuary and thus the Thames Estuary & Marshes SPA.

4.2.4 The intertidal mudflats and saltmarsh habitats of Holehaven Creek regularly support an assemblage of over 8,000 waterfowl during the winter, with black-tailed godwit, curlew *Numenius arquata* and dunlin *Calidris alpina* occasionally occurring in nationally important numbers. Furthermore, Holehaven Creek supports two of the three basic saltmarsh communities characteristic of south-east and east England. These are formerly grazed saltmarshes with saltmarsh-grass *Puccinellia maritima* and sea aster *Aster tripolium* often in extensive pioneer mid-marsh zones, and ungrazed or lightly grazed saltmarshes, typically with sea-purslane *Atriplex portulacoides* being dominant.

## 4.3 Historical Trends and Current Pressures

4.3.1 Issues that have been highlighted in the Natura 2000 site description for the SPA/Ramsar as affecting condition include dredging, erosion, eutrophication and general disturbance. Erosion risk is addressed through strategies that include the North Kent Coastal Habitat Management Plan (CHaMP) and a Flood Defence Strategy for the Thames (Thames 2100). There have been studies of sediment transport and hydrodynamics within Thames estuary and investigation of beneficial use of dredgings for mudflat recharge and creation of compensatory habitat. Water quality has been investigated through the Environment Agency Round 3 Review of Consents process.

4.3.2 Yachting, angling, wildfowling, jet-skiing, water-skiing and birdwatching occur throughout the year, but wildfowling is restricted to the period September to February. Disturbance from these activities is addressed through research, negotiation and information dissemination.

4.3.3 The most recent condition assessment process carried out by Natural England (1999-2009)<sup>22</sup> has found that 94% of Mucking Flats and Marshes SSSI is in favourable condition, with small

<sup>22</sup> <http://www.sssi.naturalengland.org.uk/Special/sssi/>

areas of the SSSI in unfavourable condition, partly due to disturbance. Data results from assessment of SSSIs, rather than internationally designated features, but nonetheless, provides a relevant understanding on the habitat status.

4.3.4 The key environmental conditions required to maintain site integrity include:

- Minimal disturbance
- Maintenance of grazing regime
- Freshwater inputs are of value for providing a localised increase in prey biomass for certain bird species, specific microclimatic conditions and are used for preening and drinking;
- Sufficient space between the site and development to allow for managed retreat of intertidal habitats and avoid coastal squeeze;
- Unpolluted water;
- Absence of nutrient enrichment;
- Absence of non-native species;
- Continuance of existing pattern of hydrodynamics and sediment movements;
- Balance of saline and non-saline conditions.

## 4.4 Effects of the Core Strategy

### Coastal Squeeze

4.4.1 The majority of the development of 13,550 new dwellings (2009-2021) and economic development under the Core Strategy (policies CSTP1, CSTP6, CSTP7, CSSP1 and CSSP2) will be brownfield, with 92% on previously developed land, and will be focussed on Grays, West Thurrock, Purfleet, Tilbury and Ockenden and Aveley north of the A13, all of which are existing urban areas more than 2 km from the SPA boundary. East Tilbury would be a focus for provision for 910 additional homes, with 330 new dwellings planned for green field sites on the urban fringe of Corringham and Stanford-le-Hope. A further indicative capacity of 250 new dwellings for 2021-2025 is identified at Corringham and Stanford-le-Hope. There will be no planned release of Green Belt land for housing at East Tilbury.

4.4.2 The London Gateway Port, although mentioned in policy CSSP2 has already received planning permission and was subject to its own project-level HRA (see below). It therefore does not require additional consideration as part of the Core Strategy.

4.4.3 Given a distance of 700 m from the European site boundary at East Tilbury, and the fact that the urban fringe of Corringham and Stanford-le-Hope is at least 1km distant, and considering the small area and largely previously developed nature of land concerned, it is considered that the development identified within the LDF will not encroach on land available for managed retreat of the key habitats within the SPA as a response to climate change. As a result, coastal squeeze as a result of the policies listed above is screened out as an impact of the Core Strategy upon this site.

## Other plans and projects

### London Gateway Port

- 4.4.4 Shell Haven constitutes a large expanse of low-lying land immediately adjacent to the European site and would theoretically be a suitable location for the managed realignment of the European site in response to rising sea levels. The Shell Haven redevelopment would create the UK's largest container port and 10m sq ft of commercial development over a period of 10-15 years.
- 4.4.5 However, the "London Gateway Minded View" letter of the Secretary of State for Transport (July 2005) discusses the proposals for redevelopment of Shell Haven and their environmental impact:
- 4.4.6 *"The [Planning] Inspector agreed that mitigation measures were required for preserving the nature conservation status of affected designated sites ... He had concluded that there were no reasons to object in principle on nature conservation grounds to the HEO either alone or in combination with other applications... Adverse effects were expected to remain for visual impact, noise and road access."*
- 4.4.7 Assuming that the mitigation and compensation measures detailed within the Environmental Impact Assessment (EIA) and Appropriate Assessment for the Shell Haven development are implemented in full, the Thurrock LDF can be screened out as having an adverse coastal squeeze impact on the Thames Estuary & Marshes SPA in combination with the Shell Haven redevelopment.

## Recreational Pressure and Disturbance

- 4.4.8 Although much of Mucking Marshes is inaccessible to the public, there is a footpath that runs along the seawall adjacent to Mucking Flats. For the following reasons, recreational disturbance by walkers is considered to be relatively low at present:
- The route along the concrete seawall is unscreened for most of its length. However, over most stages of the tidal cycle this is relatively unimportant as most species are generally concentrated along the shoreline at distances greater than 200-300m from the seawall. Birds are therefore unlikely to be disturbed by activity on the seawall during most of the tidal cycle;
  - The greatest potential for disturbance is restricted to times close to high tide when birds are concentrated along the water's edge in relatively close proximity to the seawall at distances of 100 m or less. During most of the day, they are further out to sea;
  - In addition, the steep bank profile and very rough saltmarsh habitats do not make it easy for unrestrained dogs (which are particularly disturbing to waterfowl) to approach the open mudflats;
  - The majority of walkers seem to use the footpath behind the sea wall rather than walk along the sea wall itself and are therefore not visible to birds on the Flats;
  - The number of recreational walkers recorded during one day in summer (small-scale surveys for another project in July 2005, Scott Wilson), was small. Although it must be born in mind that this was on a weekday and weekend activity may be greater, it is likely that the number of walkers present during winter, when the bird numbers are highest, is lower than that in summer. However, it is acknowledged that this was a 'snapshot' survey and that a

significant increase in the population of Thurrock may well substantially increase recreational usage of the SPA to damaging levels. Moreover, some areas of grassland used for informal dog walking correspond with SSSI Unit 1, which is currently regarded as 'unfavourable condition' partly due to recreational disturbance.

4.4.9 Public access to sites of European importance should not be generally discouraged. There are measures within the Core Strategy that would partially offset recreational impacts on the SPA from terrestrial sources through the provision of alternative recreational facilities, and through careful management of existing green and designated assets:

- CSTP18 (Green Infrastructure) - the Council will require a net gain in green infrastructure. This will contribute to addressing the existing and developing deficiencies, ensuring connectivity and relieving pressure on designated biodiversity sites such as SSSIs. The Council will lead in green infrastructure management through developing best practice biodiversity enhancement throughout both urban-amenity and infrastructure land. This will be coordinated by programmes of education and community engagement and will support the development of environmental skills training in the region;
- CSTP19 (Biodiversity) - the Council will ensure that all designated sites are managed appropriately and will ensure that access will be balanced against biodiversity interest;
- CSTP20 (Open Space) - proposals for new development must ensure the adequate provision of a range of accessible, high quality, open space, including natural and semi-natural greenspace. One consideration for provision should be biodiversity;
- CSTP28 (River Thames) - New development will improve recreational interaction with the river and its setting. The following exceptions to this may apply: Where unrestricted public access is likely to result in unacceptable adverse impacts on riverside habitat or biodiversity;
- CSSP4 (Sustainable Green Belt) and PMD6 (Development in the Green Belt) – commits to maintaining the current extent of the Green Belt, aside from proposed Urban Extension Broad Locations;
- CSSP5 (Sustainable Greengrid) - Across the borough, considerations will include semi-natural green space and safeguards for biodiversity;
- PMD2 (Design and Layout) - development proposals must provide adequate public and private amenity space in accordance with Thurrock's relevant adopted standards. Features contributing to the natural landscape in the borough, will be protected and where appropriate enhanced to maintain their landscape and wildlife value.
- PMD5 (Open Space, Outdoor Sports and Recreational Facilities) – except in exceptional circumstances, the Council will safeguard all existing open spaces, outdoor sports and recreational facilities from loss. Proposed development must ensure that new open spaces, outdoor sports and recreational facilities are provided in accordance with adopted standards to meet the needs of the development and to address deficiencies.
- PMD7 (Biodiversity and Development) - The Council will not permit development that would result in the loss, or partial loss, of a designated biodiversity site, except in exceptional circumstances where it can be demonstrated that there is no alternative and where appropriate mitigation measures are guaranteed by planning obligations or conditions. Compensation measures will be considered as an alternative to mitigation, but only where it can be demonstrated that all possible approaches to mitigation through design have been exhausted.

- PMD16 (Developer Contributions) – seeks to ensure developers contribute financially, where appropriate, to the delivery of strategic infrastructure to enable the cumulative impact of development to be managed. This could include recreational facilities.
- 4.4.10 In terms of a specific framework to enable the strategic delivery of measures to protect the Thames Estuary & Marshes SPA from recreational pressure, while there is no single policy that covers these issues a necessary framework is in place and this will be discussed below. In general, experience elsewhere in the country (such as on the South Hampshire coast) informs us that a combination of access management of the European site and the provision of suitable alternative greenspace is necessary in order to enable the avoidance of adverse recreational pressure impacts on coastal sites from land and water based sources. Natural England indicated in their consultation response on the HRA of the 2007 Core Strategy that both land-based and water-based recreation present likely significant effects on the SPA and Ramsar site. Impacts from both these sources are considered below, first land-based, then water-based.

#### **Land-based recreation**

- 4.4.11 The Core Strategy allows for the delivery of a large country park (measuring approximately 250ha) from 2010 (i.e. at the beginning of housing delivery) on the site of Mucking landfill. It is understood that this will incorporate Thames terrace grasslands, a bird loafing area, a scrape and a sand martin nesting cliff. This will result in recreational activities being more evenly spread and reduce the recreational pressure upon Mucking Flats & Marshes SSSI.
- 4.4.12 Due to the limitations of the assessment tools and data available at this time (and in particular the inability to quantify the number of residents of each allocated site that will be making use of the European sites in question and what proportion of the total cumulative load this represents), it is not possible to specify an exact quantity of alternative natural greenspace that will need to be provided for individual developments in order to absorb recreational visitors to such an extent that they will not materially contribute towards land-based recreational pressure within the SPA.
- 4.4.13 Natural England's more general Accessible Natural Greenspace Standards (ANGSt) provide a set of benchmarks for ensuring access to places of wildlife interest and were specifically developed to provide size and distance criteria to provide natural spaces that will contribute most towards sustainable use of recreational resources. While the criteria were not developed with the specific intention of mitigating for adverse impacts on European sites, they were intended to specify a level of semi-natural greenspace provision that would meet the needs of a development's population.
- 4.4.14 The Natural England ANG standard would require accessible natural green space at a rate of 1ha/1000 population<sup>23</sup>, which assuming a delivery figure of approximately 13,550 homes within Thurrock and 2.2 occupants per home, would require a minimum of 13.6 ha of accessible natural greenspace to be delivered in parallel with the occupation of the 13,550 new homes in the Thurrock (and in advance of the majority of those to be delivered at East Tilbury, the closest settlement to the SPA). Even if one adopts the higher 8ha/1000 population standard that has been used for some inland European sites such as the Thames Basin Heaths SPA, the country park will still far exceed the standard.

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<sup>23</sup> The 1ha/1000 people ratio contained within Natural England's ANG standard was based upon experience studying small reserves that combine local biodiversity with high levels of use in a well-designed and managed natural setting

- 4.4.15 The value of any accessible natural greenspace in 'spreading the recreational load' will be determined as much (if not more) by the experience that it provides (i.e. opportunities for dog walking and the appreciation of nature rather than more formal recreational activities), its location, the extent to which its use is 'promoted' and the timeliness of its delivery (i.e. it will need to be delivered in parallel (or in advance of) significant housing delivery), than by sheer quantity. The country park that will be provided in this case would certainly be able to meet all of these requirements.
- 4.4.16 In order to control recreational pressure from land-based sources, access management of the Mucking Flats & Marshes SSSI may be required (particularly regarding Management Unit 1 which has been identified as being in unfavourable condition due to recreational pressure from the footpath which currently runs through the Management Unit). The Core Strategy does make a clear reference to interaction with the Thurrock Greengrid Strategy. The Greengrid Strategy adopts the following principles:
- Promote and enhance the special character of Thurrock through conservation and enhancement of its bio-diversity wherever possible;
  - Deliver multi-functional enhancements to the Greengrid network through new development in areas of opportunity and need;
  - Create new greenspace that links to other community facilities, reflects local character and heritage, and incorporates urban green infrastructure;
  - Protect the integrity and functioning of natural systems (hydrology, soils, bio and geo-diversity) and seek to improve it wherever possible through both development and sustainable management systems;
  - Deliver naturalistic strategic flood management elements, such as Sustainable Urban Drainage Systems (SUDS), water storage or other features wherever possible;
  - Provide opportunities for skills development, education and Life-long learning
  - Involve the community in the design and management of Greengrid to encourage sense of place and pride;
  - Enhance and celebrate the historic environmental character of the borough wherever possible;
  - Seek to deliver sustainable development objectives;
  - Seek to enhance the intrinsic landscape and townscape character;
  - Contribute to an accessible and vibrant river frontage; and
  - Enhance access to existing open space where needed.
- 4.4.17 There are two key elements of the Greengrid Strategy that will serve to control recreational activity within Mucking Flats & Marshes SSSI:
- While public access will still be allowed to the SSSI, it is not actively encouraged within the Strategy. While the mapping included within the Greengrid Strategy does show a riverside path, it is marked as indicative only and we understand it will be subject to access management, which could be targeted at Management Unit 1. Access restrictions (for example, periods of footpath closure during the winter period) will enable recreational pressure along the foreshore to be managed, particularly since the SPA and Ramsar site is

designated primarily for its wintering interest, whereas most recreational pressure will be experienced during summer. In combination with the rather exposed nature of the area, this measure should be enough to control large groups of recreational walkers; and

- Alongside such access restrictions the Greengrid Strategy contains the twin aims of maintenance of existing green infrastructure and creating “new areas of biodiversity importance”. As identified in the Green Infrastructure Framework Plan, creation of new areas of semi-natural habitat adjacent to Mucking Flats will effectively buffer the Natura 2000 site from the potential impacts of disturbance. Moreover, recreational activity, such as dog walking, could be actively promoted (creation of paths etc) within these new areas of habitat reducing the potential for adverse affects on the integrity of the SPA associated with disturbance of bird species.
- 4.4.18 During consultation with Natural England on the HRA for the South East Thurrock Masterplan Natural England<sup>24</sup> commented that: ‘*We can confirm that public access to areas adjacent to the foreshore will be limited to late spring/summer/early autumn months with alternative winter permissive paths routed away from the foreshore to control directly potential human/dog disturbance*’ .
- 4.4.19 Moreover, the delivery of the Greengrid will be accompanied by appropriate signage and promotion for the new areas of open space which will be essential to ensure that they are used by residents.
- 4.4.20 The implementation of the new country park and the Thurrock Core Strategy will between them:
- Provide a large quantity of alternative accessible natural greenspace (including appropriate signage and promotion) delivered in parallel with the delivery of housing; and
  - Enable delivery of improved access management of Mucking Flats & Marshes
- 4.4.21 Adverse effects of the Core Strategy as a result of land-based recreation are therefore unlikely because a framework for the delivery of necessary access management and the timely provision of alternative natural greenspace in a location adjacent to the SPA is in place.

#### **Water-based recreation**

- 4.4.22 Water-based recreation does occur extensively throughout the Thames Estuary – sailing, wind surfing, power boating, rowing, deep-sea angling and sub aqua all occur. However, it is understood that this activity is confined primarily to the main shipping channel, which lies approximately 400 m beyond the seaward boundary of the European site (which represents the limit of low tide mudflat exposure). Although data have been sought from both RSPB and the Thames Estuary Partnership none of the data obtained was able to clarify this impact.
- 4.4.23 In order to strengthen and support mitigation already in existence within the CS, the Council will need to engage with other Essex authorities and Natural England to input into delivery of those actions of the Thames Estuary Partnership that are linked to managing recreation and monitoring disturbance, such that the need for any enhanced measures to manage waterborne access can be delivered at the appropriate time. These should be developed further in conjunction with the TEP in a cohesive management strategy and may need to be informed by visitor surveys of the SPA to determine patterns of recreational use, which will reduce pressure

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<sup>24</sup> Letter from Phil Sturges, Planning Conservation Advisor for Natural England's Four Counties Area dated 14/09/09

and prevent adverse effects upon the European site integrity. Thurrock's contribution should be commensurate with its population size, since Thurrock can only be considered responsible for mitigating their contribution to an "in combination" effect.

- 4.4.24 It is understood that Thurrock Council have agreed to participate with the Thames Estuary Partnership and Natural England as described. Natural England has been supportive of the need to increase research on the impacts of water-borne recreation on the Thames Estuary and Marshes, and participation in the TEP provides an appropriate vehicle for Thurrock Council to commit to this.
- 4.4.25 Policy PMD16 (Developer Contributions) would enable a levy to be placed on developers that would enable Thurrock to contribute to the Partnership. However, whatever method is decided upon for funding local authority contributions must be agreed across the whole Essex area (in order to avoid putting some authorities at a disadvantage) and this report is therefore not the place to go into further details.
- 4.4.26 Given that Thurrock Council have agreed to participate in this collaborative engagement to deliver the access management remit of the Thames Estuary Partnership it can be concluded that the framework for delivery of measures to manage waterborne recreational impacts in such a way as to avoid an adverse effect on the Thames Estuary & Marshes is in place.

#### **Other plans and projects**

##### Essex Local Development Frameworks

- 4.4.27 It is likely that the Thames Estuary & Marshes SPA has a recreational catchment that extends beyond Thurrock and includes other Essex authorities such as Basildon, Rochford, Castle Point and Southend (collectively delivering 25,800 homes). There is thus potential for an 'in combination' impact associated with the delivery of housing on the north side of the estuary.
- 4.4.28 Although land-based recreational pressure can be avoided and minimised through focussing development on existing urban areas and providing alternative recreational facilities, the estuarine nature of the Thames Estuary & Marshes SPA means that the provision of alternative open space will only partially avoid disturbance effects. Many impacts on this site will relate to waterborne activities and the provision of alternative locations is not possible. However, it is understood that Thurrock Council are already aware of the need to engage with other relevant Essex authorities to input into delivery of those actions of the Thames Estuary Partnership that are linked to managing recreation and monitoring disturbance and the matter is being more fully explored and a policy framework devised through the development of the Thurrock Core Strategy and its associated HRA.
- 4.4.29 Since it is outside the remit of the South East Thurrock Masterplan to set out details of estuarine management in Thurrock, and given that a process of developing a policy framework in order to achieve this is already underway, no recommendations are made for any changes to the South East Thurrock Masterplan and it can be concluded that no adverse effects on the Thames Estuary & Marshes SPA and Ramsar site will in fact result due to waterborne recreation.

#### Kent Local Development Frameworks

- 4.4.30 Most of Thames Estuary and Marshes SPA and Ramsar site actually lies on the opposite side of the estuary within Kent. The impacts of greatest potential magnitude on the site as a whole are therefore likely to emanate from Kent, rather than Thurrock. An appropriate assessment that was recently concluded for the final South East Plan (2009) highlighted a series of impacts of development within Kent upon the site. These include:
- 4.4.31 *“Development of 41,300 new homes in Medway, Gravesham and Dartford (the majority of which will be north of the A2/M2) [under the South East Plan] may result in increased recreational pressure, although visitor patterns on the RSPB reserves are considered manageable.”*
- 4.4.32 However, since the avoidance and mitigation measures detailed within the assessment are contained within the South East Plan and will subsequently be applied by the relevant local authorities, the impact will not be significant.

#### London Gateway Port

- 4.4.33 The “London Gateway Minded View” letter of the Secretary of State for Transport (July 2005) discusses the proposals for redevelopment of London Gateway Port and their environmental impact:
- 4.4.34 *“The [Planning] Inspector agreed that mitigation measures were required for preserving the nature conservation status of affected designated sites ... He had concluded that there were no reasons to object in principle on nature conservation grounds to the HEO either alone or in combination with other applications... Adverse effects were expected to remain for visual impact, noise and road access.”*
- 4.4.35 There may therefore be an ‘in combination’ effect when the disturbance impacts of the London Gateway Port are considered alongside the increased number of residents. However, the measures outlined to control recreational pressure arising from development within Thurrock in preceding sections (either directly via the provision of the new country park or indirectly through the Greengrid Strategy and engagement of Thurrock Council in the management of estuarine recreation) will ensure that the contribution of the Thurrock Core Strategy can be adequately mitigated. Moreover, Policy CSSP4 provides some potential mitigation in committing 70.3 hectares of previously safeguarded land adjacent to the former Shell Haven refinery site that was identified as oil refinery expansion land to maintaining a strategic gap between the residential settlements of Stanford and Corringham and the oil refinery site.
- 4.4.36 Natural England noted in their comments on the 2007 HRA that any future HRA’s for the London Gateway Port Shell Haven development should take into account the findings of this HRA for the Core Strategy as part of their in combination assessment. This would particularly relate to any new rail freight terminal to be delivered at London Gateway Port (referenced in Policy CSSP3 of the Proposed Submission Core Strategy) and whether this would result in noise impacts on the SPA beyond those likely to be generated by the permitted port.

#### **Atmospheric Pollution**

- 4.4.37 The level of atmospheric nitrogen deposition at which the key habitats at the Mucking Flats component of Thames Estuary & Marshes SPA will be deleteriously affected are shown in Table 4.

**Table 4. Calculated minimum critical loads<sup>25</sup> of nitrogen deposition (in kg/Nha<sup>-1</sup>yr<sup>-1</sup>) for the only habitats within Mucking Flats & Marshes for which critical loads have been calculated<sup>26</sup>.**

	Grazing marsh	Saltmarsh
<b>Critical load</b>	20	30
<b>Current rate of nitrogen deposition</b>	13.6	

- 4.4.38 A NO<sub>x</sub> level in excess of 30 µgm<sup>-3</sup> (the limit value considered to cause harm to vegetation according to the World Health Organisation) or a nitrogen load in excess of 20 kg/Nha<sup>-1</sup>yr<sup>-1</sup> (the minimum load below which there should be no significant harmful effects on those habitats that support the birds for which the SPA and Ramsar was designated and for which critical loads have been calculated) can be assumed to have a deleterious effect on the habitats within the Thames Estuary & Marshes SPA (Mucking Flats & Marshes).
- 4.4.39 The current rate of nitrogen deposition at the Mucking Flats & Marshes SSSI is 13.6 kg/Nha<sup>-1</sup>yr<sup>-1</sup>. Therefore, it can be assumed that the Mucking Flats & Marshes SSSI is within the limits of the levels of atmospheric pollution that can be experienced without a deleterious effect.
- 4.4.40 Additionally, the CS does not contain any policy that promotes the development of new roads within 200m of the internationally designated sites, while the policy CSTP16 (National and Regional Transport Networks) contains a number of measures to improve key routes across the district (particularly the A13 and A1014), which should have a positive effect by reducing traffic congestion.
- 4.4.41 The CS also includes mitigating strategies regarding freight movement, in particular policy PMD11 that states:
- Applicants for development with a need for freight movements exceeding the equivalent of 200 daily HGV movements will be required, as part of their planning applications, to produce a Sustainable Distribution Plan. This should include evidence that commercially viable opportunities for freight carried by rail, water, pipeline or conveyor have been maximised, and that air quality impacts have been minimised.
- 4.4.42 Most of Thames Estuary and Marshes SPA and Ramsar site lies within Kent. The impacts of greatest potential magnitude on the site as a whole are therefore likely to emanate from Kent, rather than Thurrock. Provided that the avoidance and mitigation measures detailed within the South East Plan are subsequently applied by the relevant local authorities, the impact will not be significant.
- 4.4.43 Nonetheless, there are a number of policies that could lead to a reduction in air quality on the SPA/Ramsar. These are:
- CSTP17 (Strategic Freight Movement and Access to Ports) – this policy will facilitate the provision of 24 hour lorry parks at Tilbury Port and London Gateway. Other lorry parks will be considered in locations where demand can be shown to exist, which are located away from residential areas and have good access to the Strategic Road Network.

<sup>25</sup> Taken from the UK Air Pollution Information System. Critical loads are given as ranges – on a precautionary basis the critical load used here is the minimum figure in the range.

<sup>26</sup> Critical loads have not been determined for rivers and marine habitats, but a figure is available for saltmarsh and grazing marsh

- Policy CSSP3 (Sustainable Infrastructure) – includes reference to a new power station at Tilbury.
  - Policy CSSP5 (Sustainable Green grid) - the Council and Partners will promote productive land and natural systems opportunities (soils, bio and geo diversity), including potential co-firing using biomass fuels in the Tilbury area.
  - Policy CSTP26 (Renewable or Low Carbon Energy Generation) - the Council will promote and facilitate proposals for centralised renewable or low-carbon energy schemes at appropriate locations and standards, including at Priority Locations at Tilbury and London Gateway.
- 4.4.44 Tilbury Green Power has obtained consent for the construction of a 60MW biomass and energy from waste plant at the Port of Tilbury. In consideration of the proposed scheme, and taking on board advice from Natural England, the Secretary of State concluded that, if planning conditions were implemented accordingly, there would be no impact of the scheme on the integrity of European designated sites<sup>27</sup>. Given this and the fact that we have identified there will be no air quality impact arising from traffic associated with new housing (see above) there will be no pathway for any cumulative effect.

- 4.4.45 Any alternative or additional power stations or renewable energy schemes, particularly at Tilbury and London Gateway, will need to be subject to HRA and the Environment Agency permit process in order to specifically to ensure that no adverse effects result. Policy CSTP26 makes it clear that technologies such as Energy from Waste will only be supported where they do not cause unacceptable impacts, including on the environment, which cannot be mitigated. As such, these policies are unlikely to lead to significant adverse air quality impacts on the SPA & Ramsar site.

#### **Other plans and projects**

##### London Gateway Port

- 4.4.46 The “London Gateway Minded View” letter of the Secretary of State for Transport (July 2005) discusses the proposals for redevelopment of Shell Haven and their environmental impact:
- 4.4.47 *“The [Planning] Inspector agreed that mitigation measures were required for preserving the nature conservation status of affected designated sites ... He had concluded that there were no reasons to object in principle on nature conservation grounds to the HEO either alone or in combination with other applications... Adverse effects were expected to remain for visual impact, noise and road access.”*
- 4.4.48 Assuming therefore that the mitigation and compensation measures detailed within the Environmental Impact Assessment and Appropriate Assessment for the Shell Haven development are implemented in full, the Thurrock Core Strategy can be screened out as having an adverse air quality impact in combination with the Shell Haven redevelopment.

##### South East Plan and Kent Local Development Frameworks

- 4.4.49 Most of Thames Estuary and Marshes SPA and Ramsar site lies within Kent. The impacts of greatest potential magnitude on the site as a whole are therefore likely to emanate from Kent, rather than Thurrock. An appropriate assessment that was recently conducted for the draft

<sup>27</sup> <https://www.og.decc.gov.uk/EIP/pages/projects/TilburyDecision.pdf>

South East Plan by Scott Wilson highlighted a series of impacts of development within Kent upon the site. These include:

- 4.4.50 *“Housing development under the South East Plan [including 122,000 new homes and 5 million sq m of new business floorspace within Kent], and associated increased car use may lead to increased atmospheric pollution and nitrogen enrichment, resulting in changes to the habitats for on which the species of European importance depend”*
- 4.4.51 However, provided that the avoidance and mitigation measures detailed within the assessment are contained within the South East Plan and are subsequently applied by the relevant local authorities, the impact in combination with that of Thurrock will not be significant.

#### Isle of Grain

- 4.4.52 There are plans for a new waste incinerator and gas power station on the Isle of Grain. While this is on the opposite side of the Thames Estuary, the operation of these facilities could nonetheless affect air quality over the Thames Estuary and Marshes SPA, since the majority of this site is also on the opposite side of the Thames Estuary. Adverse effects could therefore arise from this development, but for the reasons stated above the measures contained within the Core Strategy to control Thurrock’s contribution to changes in air quality will avoid any ‘in combination’ effect.

### **Water Quality and Sediment Regimes**

- 4.4.53 According to the Environment Agency’s Stage 3 Appropriate Assessment for this SPA/Ramsar site, current consented discharges (from either side of the Estuary or further upstream e.g. Crossness STW and Beckton STW, the main sewage treatment works in London) do not have a significant adverse impact upon the Thames Estuary & Marshes SPA, with the exception of slightly elevated levels of elemental copper (Cu) derived from pipes at Reading and Slough.
- 4.4.54 The majority of sewage in Thurrock is treated at the Tilbury Sewage Treatment Works (STW). The treated effluent is then discharged into the River Thames. The sewage treatment needs of the housing to be delivered under the Thurrock Core Strategy are likely to lead to an increase in the volume of treated effluent (and potentially nutrients) discharged into the Thames Estuary<sup>28</sup>. The CS policy CSTP13 advocates potential upgrades to Tilbury STW to treat and discharge additional wastewater flow generated by development.
- 4.4.55 Despite this increase in volumes, the Environment Agency<sup>29</sup> have commented in the past that, while nutrient levels within the Thames Estuary are high, this does not result in the smothering macroalgal growth that is having an adverse effect upon other European marine sites (such as The Solent), due to a combination of existing tidal energy and erosion. As a result, it is considered that the interest features of the Thames Estuary & Marshes SPA and Ramsar site are not particularly vulnerable to adverse effects as a result of an increase in nutrients in the Estuary even if such an increase does arise from increased volumes of effluent discharged from Tilbury STW.

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<sup>28</sup>If the Sewage Treatment Works was close to capacity and unable to expand to cope with the increased volumes of sewage, there might also be a concomitant decrease in the quality of the effluent that is discharged by the Works. However, at this stage there is no indication that this situation will arise.

<sup>29</sup> Dave Lowthion, Environment Agency Supra-Area Marine Team Leader, Southern Region, personal communication during the preparation of the Appropriate Assessment of the draft South East Plan in 2006

- 4.4.56 Moreover, the development of housing within Thurrock will take place at a time when a range of water quality improvements to the Thames Tideway as a whole will be implemented through various Thames Water/Environment Agency schemes including the interception and storage of wastewater from a large number of Combined Sewer Overflows (CSO's) in London which currently discharge directly to the River Thames during periods of heavy rainfall and expansions to the treatment capacity of Thames Water's Crossness, Riverside, Long Reach and Beckton Sewage Treatment Works which will enable them to treat greater quantities of wastewater to a higher standard than is currently the case. As such, the overall water quality of the River Thames should actually improve over the delivery period.
- 4.4.57 Increased volumes of effluent being discharged to rivers can have an effect on local sediment regimes principally through increased erosion. However, this effect as a result of development in Thurrock is likely to be very locally restricted to the immediate vicinity of the Tilbury STW outfall. Given the inherently high sediment load of the Tidal Thames, its tidal nature (such that sediment mobilisation is also naturally high) and the relatively small additional volume that the increased treated effluent will contribute to the overall volume and flows of the Tidal Thames, it is considered unlikely that a significant adverse effect on the SPA would be experienced, even when considered in combination with the discharges from Beckton, Long Reach and Crossness Sewage Treatment Works which also discharge into the Tidal Thames.
- 4.4.58 Consultation with Natural England has identified that in their view it would be insufficiently precautionary to rely on a combination of natural hydrodynamic processes and the quality improvements to be delivered by Thames Water in concluding that a significant adverse effect is unlikely. As such, some additional wording for the Core Strategy was proposed.
- 4.4.59 A Water Cycle Study is currently being undertaken, in stages, for Thurrock. Policy CSTP13 is informed by the Scoping Study (2009) and Outline Study (2010) stages. When the Detailed Study stage is completed, the Water Cycle Study as a whole will fully analyse the impacts of delivering the Core Strategy housing within the borough on flood risk, water resources and water quality and will identify any necessary constraints in terms of treatment infrastructure or consented discharge volumes. If such constraints are identified, the completed Water Cycle Study will also identify the necessary solutions which will be required in order to deliver the housing within the constraints imposed by the Water Framework Directive and Habitats Directive.
- 4.4.60 The completed Water Cycle Study will therefore ensure that any residual possibility of an adverse effect on European sites, through increased wastewater produced in Thurrock, is avoided. To provide adequate certainty that adverse water quality effects on European sites will not occur, Thurrock Council has proposed amendments to the wording of the Submission Core Strategy. These amendments strengthen references to the Thurrock Water Cycle Study to ensure that the Council's commitment to phasing the delivery of waste water infrastructure, necessary to safeguard the water quality of European sites in parallel with new development (as set out on CSTP13, 1 (VII)), is clear.

#### **Other Plans and projects**

##### London Gateway Port

- 4.4.61 The "London Gateway Minded View" letter of the Secretary of State for Transport (July 2005) discusses the proposals for redevelopment of London Gateway Port and their environmental impact:

4.4.62 *“The [Planning] Inspector agreed that mitigation measures were required for preserving the nature conservation status of affected designated sites ... He had concluded that there were no reasons to object in principle on nature conservation grounds to the HEO either alone or in combination with other applications... Adverse effects were expected to remain for visual impact, noise and road access.”*

4.4.63 Assuming that the mitigation and compensation measures detailed within the Environmental Impact Assessment and Appropriate Assessment for the London Gateway Port development are implemented in full, no ‘in combination’ effect with the Thurrock Core Strategy will result.

#### South East Plan and Kent Local Development Frameworks

4.4.64 Most of Thames Estuary & Marshes SPA and Ramsar site actually lies within Kent. The impacts of greatest potential magnitude on the site as a whole are therefore likely to emanate from Kent, rather than Thurrock. An appropriate assessment that was recently conducted for the draft South East Plan by Scott Wilson highlighted a series of impacts of development within Kent upon the site. These included the statement that:

4.4.65 *“Environment Agency advice is that, while nutrient levels within the Thames Estuary are high, this does not result in the smothering macroalgal growth that is having an adverse effect upon the Solent European sites. Therefore, development of 41,300 new homes and 2.1 million sq m of new business floorspace in Medway, Gravesham and Dartford and associated increased volumes of effluent disposal into the SPA are not expected to lead to an adverse effect on the site.”*

4.4.66 It is therefore concluded that no ‘in combination’ adverse effect will result.

#### Lower Thames Crossing

4.4.67 The Lower Thames Crossing is still under investigation as a proposal. As such, there is little definite information available concerning it. However, concern has been expressed by Natural England and the Environment Agency among other groups that the location of the crossing may alter patterns of sediment movements within the Thames Estuary and therefore potentially within the Thames Estuary & Marshes. This should be noted, but until more data are available about the Crossing, the ‘in combination’ effect cannot be assessed.

## 4.5 Conclusion

4.5.1 It can be concluded that an adequate policy framework exists to enable the delivery of measures to avoid adverse effects on the Thames Estuary & Marshes SPA & Ramsar site.

## 5 The Mid-Essex Estuaries

### 5.1 Introduction

5.1.1 The Mid-Essex Estuaries (Benfleet and Southend Marshes SPA & Ramsar site, Dengie SPA & Ramsar site, Colne Estuary SPA & Ramsar site, Crouch & Roach Estuaries SPA & Ramsar site, Foulness SPA & Ramsar site, Blackwater Estuary SPA & Ramsar site and Essex Estuaries SAC) have many features in common:

- They all require very similar environmental conditions for maintenance of favourable conservation status;
- They are all likely to be subject to similar pressures from development within Thurrock; and,
- They form an interconnected complex of sites with internationally important bird populations and mobile marine organisms moving from estuary to estuary.

5.1.2 As a result, and to avoid undue repetition, they are treated together within this chapter.

#### **Benfleet and Southend Marshes SPA and Ramsar**

5.1.3 Benfleet and Southend Marshes comprise an extensive series of salt marshes, mudflats, scrub and grassland which support a diverse flora and fauna. The south-facing slopes of the downs, composed of London Clay capped by sand, represent the line of former river cliffs with several re-entrant valleys. At their foot lies reclaimed marshland, with its associated dyke system, based on alluvium. Outside the sea walls there are extensive salt marshes and mud-flats, on which wintering wildfowl and waders reach both nationally and internationally important numbers. Nationally uncommon plants occur in all of the habitats and parts of the area are of outstanding importance for scarce invertebrates.

#### **Dengie SPA and Ramsar / Essex Estuaries SAC**

5.1.4 Dengie is located on the coast of Essex in eastern England. It is a large and remote area of tidal mud-flats and saltmarshes at the eastern end of the Dengie peninsula, between the adjacent Blackwater and Crouch Estuaries. The saltmarsh is the largest continuous example of its type in Essex.

#### **Foulness SPA and Ramsar / Essex Estuaries SAC**

5.1.5 Foulness is located on the coast of Essex, on the east coast of England north of the mouth of the Thames estuary. The site is part of an open coast estuarine system comprising grazing marsh, saltmarsh, intertidal mud-flats, cockle-shell banks and sand-flats.

#### **Crouch and Roach Estuaries / Essex Estuaries SAC**

5.1.6 The Crouch and Roach Estuaries are located on the coast of south Essex in eastern England. The intertidal zone along the Rivers Crouch and Roach is 'squeezed' between the sea walls along both banks and the river channel. Unlike more extensive estuaries elsewhere in Essex, this leaves a relatively narrow strip of tidal mud which, nonetheless, is used by significant numbers of birds.

## Colne Estuary SPA and Ramsar / Essex Estuaries SAC

5.1.7 The Colne Estuary is a comparatively short and branching estuary, with five tidal arms that flow into the main channel of the River Colne. The estuary has a narrow intertidal zone predominantly composed of flats of fine silt with mud-flat communities typical of south-eastern English estuaries. The estuary is of importance for a range of wintering wildfowl and waders, in addition to breeding Little Tern *Sterna albifrons* which nest on shell, sand and shingle spits. There is a wide variety of coastal habitats which include mud-flat, saltmarsh, grazing marsh, sand and shingle spits, disused gravel pits and reedbeds which provide feeding and roosting opportunities for the large numbers of waterbirds that use the site.

## Blackwater Estuary SPA and Ramsar / Essex Estuaries SAC

5.1.8 The Blackwater Estuary is the largest estuary in Essex and is one of the largest estuarine complexes in East Anglia.

## Essex Estuaries SAC

5.1.9 This site comprises the non-avian interest features of the Blackwater, Colne, Crouch and Roach estuaries and is important as an extensive area of contiguous estuarine habitat. Essex Estuaries contains a very wide range of characteristic marine and estuarine sediment communities and some diverse and unusual marine communities in the lower reaches, including rich sponge communities on mixed, tide-swept substrates. Sublittoral areas have a very rich invertebrate fauna, including the reef-building worm *Sabellaria spinulosa*, the brittlestar *Ophiothrix fragilis*, crustaceans and ascidians. The site also has large areas of saltmarsh and other important coastal habitats.

## 5.2 Reasons for Designation

5.2.1 The Essex Estuaries and associated SPAs and Ramsars are designated for the reasons illustrated in Table 5.

**Table 5. The Mid-Essex Estuaries SAC, SPA and Ramsar Criteria**

Site	SAC / SPA Interest Features
Essex Estuaries SAC	<ul style="list-style-type: none"> <li>• Estuaries;</li> <li>• Intertidal mudflats and sandflats;</li> <li>• Glasswort and other annuals colonising mud and sand;</li> <li>• Cord-grass swards;</li> <li>• Atlantic salt meadows;</li> <li>• Mediterranean saltmarsh scrub;</li> <li>• Subtidal sandbanks</li> </ul>
Benfleet and Southend Marshes SPA	<p>Populations of European importance of the following migratory species:</p> <ul style="list-style-type: none"> <li>• Ringed Plover</li> <li>• Dark-bellied Brent Goose</li> <li>• Grey Plover</li> <li>• Knot</li> </ul> <p>The site also supports a bird assemblage of international importance by regularly supporting 34,789 waterfowl</p>
Benfleet and Southend	The site supports an internationally important assemblage of wintering birds.

Marshes Ramsar	<p>The following species occur at levels of international importance:</p> <ul style="list-style-type: none"> <li>• Dark-bellied brent goose</li> <li>• Grey plover</li> <li>• Red knot</li> <li>• Dunlin</li> </ul>
Blackwater Estuary SPA	<p>Populations of European importance of the following migratory species:</p> <ul style="list-style-type: none"> <li>• Avocet</li> <li>• Golden plover</li> <li>• Hen Harrier</li> <li>• Ruff</li> <li>• Ringed plover</li> <li>• Back-tailed godwit</li> <li>• Dark-bellied Brent goose</li> <li>• Dunlin</li> <li>• Grey plover</li> <li>• Redshank</li> <li>• Shelduck</li> </ul> <p>The site also supports a bird assemblage of international importance by regularly supporting 109,815 waterfowl</p>
Blackwater Estuary Ramsar	<p>The site qualifies by virtue of the extent and diversity of saltmarsh habitat present. This site, and the four others in the Mid-Essex Coast complex, includes a total of 3,237 ha that represent 70% of the saltmarsh habitat in Essex and 7% of the total area of saltmarsh in Britain.</p> <p>The invertebrate fauna is well represented and includes at least 16 British Red Data Book species.</p> <p>This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in Britain.</p> <p>The site supports a wintering waterbird assemblage of international importance</p> <p>Species occurring at levels of international Importance:</p> <ul style="list-style-type: none"> <li>• Dark-bellied brent goose</li> <li>• Grey plover</li> <li>• Dunlin</li> <li>• Black-tailed godwit</li> <li>• Common shelduck</li> <li>• European golden plover</li> <li>• Common redshank</li> </ul>
Crouch & Roach Estuaries SPA	Populations of European importance of dark-bellied Brent goose
Crouch & Roach Estuaries Ramsar	<p>The site supports a wintering waterbird assemblage of international importance</p> <p>Dark-bellied brent goose occurs at levels of international importance</p>
Colne Estuary SPA	<p>Little Tern <i>Sterna albifrons</i>, 38 pairs representing at least 1.6% of the breeding population in Great Britain (5 year mean, 1992-1996)</p> <ul style="list-style-type: none"> <li>• Avocet</li> </ul>

	<ul style="list-style-type: none"> <li>• Golden Plover</li> <li>• Hen Harrier</li> <li>• Dark-bellied Brent Goose</li> <li>• Redshank</li> </ul> <p>The site also supports a bird assemblage of international importance by regularly supporting 38,548 waterfowl</p>
Colne Estuary Ramsar	<p>The site is important due to the extent and diversity of saltmarsh present. This site, and the four other sites in the Mid-Essex Coast complex, includes a total of 3,237 ha, that represent 70% of the saltmarsh habitat in Essex and 7% of the total saltmarsh in Britain.</p> <p>The site supports 12 species of nationally scarce plants and at least 38 British Red Data Book invertebrate species.</p> <p>This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in Britain.</p> <p>The site supports a wintering waterbird assemblage of international importance</p> <p>The following species occur at levels of international importance:</p> <ul style="list-style-type: none"> <li>• Dark-bellied brent goose</li> <li>• Common redshank</li> <li>• Black-tailed godwit</li> </ul>
Dengie SPA	<p>Populations of European importance of the following species:</p> <ul style="list-style-type: none"> <li>• Bar-tailed godwit</li> <li>• Hen harrier</li> <li>• Grey plover</li> <li>• Knot</li> </ul>
Dengie Ramsar	<p>Qualifies by virtue of the extent and diversity of saltmarsh habitat present. Dengie, and the four other sites in the Mid-Essex Coast Ramsar site complex, includes a total of 3,237 ha, that represent 70% of the saltmarsh habitat in Essex and 7% of the total area of saltmarsh in Britain.</p> <p>Dengie supports a number of rare plant and animal species. The Dengie has 11 species of nationally scarce plants</p> <p>The invertebrate fauna includes three Red Data Book species.</p> <p>This site supports a full and representative sequence of saltmarsh plant communities covering the range of variation in Britain.</p> <p>The site also supports a wetland bird assemblage of international importance.</p> <p>The following species occur at levels of international importance:</p> <ul style="list-style-type: none"> <li>• Dark-bellied brent goose</li> <li>• Grey plover</li> <li>• Red knot</li> <li>• Bar-tailed godwit</li> </ul>
Foulness SPA	<p>Populations of European importance of the following migratory species:</p> <ul style="list-style-type: none"> <li>• Avocet</li> <li>• Common Tern</li> </ul>

	<ul style="list-style-type: none"> <li>• Little Tern</li> <li>• Sandwich Tern</li> <li>• Bar-tailed Godwit</li> <li>• Golden Plover</li> <li>• Hen Harrier</li> <li>• Redshank</li> <li>• Dark-bellied Brent goose</li> <li>• Grey Plover</li> <li>• Knot</li> <li>• Oystercatcher</li> </ul> <p>The site also supports a bird assemblage of international importance by regularly supporting 107,468 waterfowl</p>
Foulness Ramsar	<p>Qualifies by virtue of the extent and diversity of saltmarsh habitat present. This site, and the four other sites in the Mid-Essex Coast Ramsar site complex, includes a total of 3,237 ha, that represent 70% of the saltmarsh habitat in Essex and 7% of the total area of saltmarsh in Britain.</p> <p>The site supports a number of rare plant and animal species.</p> <p>This site supports a full and representative sequence of saltmarsh plant communities covering the range of variation in Britain.</p> <p>The site also supports a wetland bird assemblage of international importance.</p> <p>The following species occur at levels of international importance:</p> <ul style="list-style-type: none"> <li>• Common redshank</li> <li>• Dark-bellied brent goose</li> <li>• Eurasian oystercatcher</li> <li>• Grey plover</li> <li>• Red knot</li> <li>• Bar-tailed godwit</li> </ul>

## 5.3 Historical Trends and Current Pressures

5.3.1 With regard to the SAC, the Natura 2000 form for this series of estuaries notes that these habitats are vulnerable to plans or projects (onshore and offshore) which have impacts on sediment transport, while saltmarsh erosion and intertidal coastal squeeze are affecting many areas of the SAC.

5.3.2 At Benfleet and Southend Marshes, the majority of the SSSI is reported as having a favourable condition, however 26% is recorded as either 'unfavourable no change' or 'unfavourable declining'. One of the reasons given for this is public access to both onshore and offshore areas. In the most recent condition assessment, an area of saltmarsh was in unfavourable condition due to effects of pollution from discharge. The Natura 2000 form for this site notes that dredging of the Thames and inputs of herbicides to the mudflats may be having indirect effects on the loss of intertidal habitat and viability of the eelgrass *Zostera* beds. Evidence indicates the saltmarsh is still decreasing in extent at a significant rate and the draft Thames Estuary CHaMP (2008) indicates this trend will continue. The saltmarsh is subject to coastal squeeze - which is being addressed strategically through CHAMPs/SMPs/TE2100 project and other national policy interventions.

5.3.3 At the Blackwater Estuary, the HRA of the Uttlesford CS notes that nutrient enrichment occurs from agricultural run-off and treated sewage effluent. The saltmarsh is eroding and degrading, and the intertidal foreshore is subject to coastal squeeze. This is also noted for the Crouch and Roach, Colne and Dengie areas of the coast. The Natura 2000 form for the Crouch and Roach estuary also notes that many borrow dykes and drainage ditches remain vulnerable to run off and seepage of chemicals from adjacent farm land. Although many of these estuaries are used for recreational purposes, there is little evidence of adverse impacts on internationally designated features to date.

5.3.4 The key environmental conditions required to maintain site integrity include:

- Minimal disturbance
- Maintenance of grazing / mowing regimes
- Freshwater inputs are of value for providing a localised increase in prey biomass for certain bird species, specific microclimatic conditions and are used for preening and drinking
- Sufficient space between the site and development to allow for managed retreat of intertidal habitats and avoid coastal squeeze
- Unpolluted water
- Absence of nutrient enrichment
- Absence of non-native species
- Continuance of existing pattern of hydrodynamics and sediment movements;
- Balance of saline and non-saline conditions

## 5.4 Effects of the Core Strategy

### Recreational Disturbance

5.4.1 Public access to sites of European importance should not be generally discouraged. There are measures within the Core Strategy that would partially offset recreational impacts on the SPA from terrestrial sources through the provision of alternative recreational facilities, and through careful management of existing green and designated assets:

- CSTP18 (Green Infrastructure) - the Council will require a net gain in green infrastructure. This will contribute to addressing the existing and developing deficiencies, ensuring connectivity and relieving pressure on designated biodiversity sites such as SSSIs. The Council will lead in green infrastructure management through developing best practice biodiversity enhancement throughout both urban-amenity and infrastructure land. This will be coordinated by programmes of education and community engagement and will support the development of environmental skills training in the region;
- CSTP20 (Open Space) - proposals for new development must ensure the adequate provision of a range of accessible, high quality, open space, including natural and semi-natural greenspace. One consideration for provision should be biodiversity;
- CSSP4 (Sustainable Green Belt) and PMD6 (Development in the Green Belt) – commits to maintaining the current extent of the Green Belt, aside from proposed Urban Extension Broad Locations;

- CSSP5 (Sustainable Greengrid) - Across the borough, considerations will include semi-natural green space and safeguards for biodiversity;
  - PMD2 (Design and Layout) - development proposals must provide adequate public and private amenity space in accordance with Thurrock's relevant adopted standards. Features contributing to the natural landscape in the borough, will be protected and where appropriate enhanced to maintain their landscape and wildlife value.
  - PMD5 (Open Space, Outdoor Sports and Recreational Facilities) – except in exceptional circumstances, the Council will safeguard all existing open spaces, outdoor sports and recreational facilities from loss. Proposed development must ensure that new open spaces, outdoor sports and recreational facilities are provided in accordance with adopted standards to meet the needs of the development and to address deficiencies.
  - PMD7 (Biodiversity and Development) - The Council will not permit development that would result in the loss, or partial loss, of a designated biodiversity site, except in exceptional circumstances where it can be demonstrated that there is no alternative and where appropriate mitigation measures are guaranteed by planning obligations or conditions. Compensation measures will be considered as an alternative to mitigation, but only where it can be demonstrated that all possible approaches to mitigation through design have been exhausted.
  - PMD16 (Developer Contributions) – seeks to ensure developers contribute financially, where appropriate, to the delivery of strategic infrastructure to enable the cumulative impact of development to be managed. This could include recreational facilities.
- 5.4.2 The Crouch & Roach Estuaries and Blackwater Estuary both have Management Plans, while the Colne Estuary has the “Colne Estuary Strategy”. One of the purposes of these management plans and strategies is to direct and control recreational activity. For example, enforcement of speed limits under the Crouch & Roach Estuaries Management Plan should ensure that roosting birds are not subjected to disturbance and that saltmarsh habitats are protected from damage by jet-skis.
- 5.4.3 The most recent England Day Visits Survey indicates that people travel an average of 25km to visit coastal sites. If we use this as an indicator the Essex Estuaries SAC, Crouch & Roach Estuaries SPA, Benfleet & Southend Marshes SPA, Dengie SPA and Foulness SPA all lie within 25km of the main urban centres in Thurrock, where further development will be located. It is therefore considered impossible to rule out significant adverse effects when development within Thurrock is considered in combination with that to be delivered over similar timescales in the Essex coastal authorities.
- 5.4.4 Although land-based recreational pressure can be offset through focussing development on existing urban areas and providing alternative recreational facilities, the estuarine nature of the Mid-Essex Estuaries means that the provision of alternative open space will only partially avoid disturbance effects. Many impacts on this site will relate to waterborne activities or simply the appeal of an estuarine site and the provision of alternative locations is not possible.
- 5.4.5 In order to strengthen and support mitigation already in existence within the CS, the Council will need to engage with other Essex authorities and Natural England to input into delivery of those actions of the Essex Estuaries Initiative and partners that are linked to managing recreation and monitoring disturbance, such that the need for any enhanced measures to manage waterborne access can be delivered at the appropriate time. These should be developed further in conjunction with the Essex Estuaries Initiative in a cohesive management strategy

and may need to be informed by visitor surveys of the SPA to determine patterns of recreational use, which will reduce pressure and prevent adverse effects upon the European site integrity. Thurrock's contribution should be commensurate with its population size, since Thurrock can only be considered responsible for mitigating their contribution to an "in combination" effect. It is understood that Thurrock Council have agreed to participate with the Thames Estuary Partnership and Natural England as described. Natural England has been supportive of the need to increase research on the impacts of water-borne recreation on the Thames Estuary and Marshes, and participation in the Essex Estuaries Initiative provides an appropriate vehicle for Thurrock Council to commit to this.

- 5.4.6 Policy PMD16 (Developer Contributions) would enable a levy to be placed on developers that would enable Thurrock to contribute to the Partnership. However, whatever method is decided upon for funding local authority contributions must be agreed across the whole Essex area (in order to avoid putting some authorities at a disadvantage) and this report is therefore not the place to go into further details.
- 5.4.7 Given that Thurrock Council have agreed to participate in this collaborative engagement to deliver the access management remit of the Essex Estuaries Initiative it can be concluded that the framework for delivery of measures to manage waterborne recreational impacts in such a way as to avoid an adverse effect on the Essex Estuaries complex of European sites is in place.

### Water Quality

- 5.4.8 The majority of sewage in Thurrock is treated at the Tilbury Sewage Treatment Works (STW). The treated effluent is then discharged into the River Thames approximately 20 km upstream of Benfleet Estuary & Marshes SPA. The sewage treatment needs of the 13,550 new dwellings that are required in Thurrock by 2021, are likely to lead to:
- An increase in the volume of treated effluent (and therefore nutrients) discharged into the Thames Estuary; and
  - If the Sewage Treatment Works is close to capacity and it cannot be reasonably assumed that the Works can be expanded to cope with the increased volumes of sewage, there may be a concomitant decrease in the quality of the effluent that is discharged by the Works.
- 5.4.9 The CS policy CSTP13 advocates potential upgrades to Tilbury STW to treat and discharge additional wastewater flow generated by development.
- 5.4.10 The Environment Agency have commented that, while nutrient levels within the Thames Estuary are high, this does not result in the smothering macroalgal growth that is having an adverse effect upon the other European marine sites. The Environment Agency has confirmed that the same situation can be found in the Mid-Essex Estuaries. There is thus a low risk of macroalgal smothering, particularly when the large dilution factor that would be experienced, are taken into consideration.
- 5.4.11 Consultation with Natural England has identified that in their view it would be insufficiently precautionary to rely on a combination of natural hydrodynamic processes and the quality improvements to be delivered by Thames Water in concluding that a significant adverse effect is unlikely. As such, some additional wording for the Core Strategy was proposed.

- 5.4.12 A Water Cycle Study is currently being undertaken, in stages, for Thurrock. Policy CSTP13 is informed by the Scoping Study (2009) and the Outline Study (2010) stages. When the Detailed Study stage is completed, the Water Cycle Study as a whole will fully analyse the impacts of delivering the Core Strategy housing within the borough on flood risk, water resources and water quality and will identify any necessary constraints in terms of treatment infrastructure or consented discharge volumes. If such constraints are identified, the completed Water Cycle Study will also identify the necessary solutions which will be required in order to deliver the housing within the constraints imposed by the Water Framework Directive and Habitats Directive.
- 5.4.13 The completed Water Cycle Study will therefore ensure that any residual possibility of an adverse effect on European sites through increased wastewater produced in Thurrock is avoided. To provide adequate certainty that adverse water quality effects on European sites will not occur, Thurrock Council has proposed amendments to the wording of the Submission Core Strategy. These amendments strengthen references to the Thurrock Water Cycle Study to ensure that the Council's commitment to phasing the delivery of waste water infrastructure, necessary for safeguarding the water quality of European sites in parallel with new development (as set out on CSTP13, 1 (VII)), is clear.

## 5.5 Conclusion

- 5.5.1 It can be concluded that an adequate policy framework exists to enable the delivery of measures to avoid adverse effects on the Essex Estuaries SAC and associated SPA & Ramsar sites.

## 6 North Kent Estuaries

### 6.1 Introduction

- 6.1.1 This chapter covers seven coastal/marine European sites (Medway Estuary & Marshes SPA and Ramsar, The Swale SPA and Ramsar, Thanet Coast & Sandwich Bay SPA and Ramsar, and Thanet Coast SAC) which could potentially be affected by increased discharges of treated sewage effluent into the River Thames, since they are all hydraulically connected to the Thames Estuary.

#### Medway Estuary and Marshes

- 6.1.2 The Medway Estuary feeds into and lies on the south side of the outer Thames Estuary. It forms a single tidal system with the Swale and joins the Thames Estuary between the Isle of Grain and Sheerness. It has a complex arrangement of tidal channels, which drain around large islands of saltmarsh and peninsulas of grazing marsh. The mud-flats are rich in invertebrates and also support beds of *Enteromorpha* and some Eelgrass *Zostera* spp. Small shell beaches occur, particularly in the outer part of the estuary. Grazing marshes are present inside the sea walls around the estuary. The complex and diverse mixes of coastal habitats support important numbers of waterbirds throughout the year. In summer, the estuary supports breeding waders and terns, whilst in winter it holds important numbers of geese, ducks, grebes and waders. The site is also of importance during spring and autumn migration periods, especially for waders.

#### The Swale

- 6.1.3 The Swale is located on the south side of the outer part of the Thames Estuary. The Swale is an estuarine area that separates the Isle of Sheppey from the Kent mainland. To the west it adjoins the Medway Estuary. It is a complex of brackish and freshwater, floodplain grazing marsh with ditches, and intertidal saltmarshes and mud-flats. The intertidal flats are extensive, especially in the east of the site, and support a dense invertebrate fauna. These invertebrates, together with beds of algae and Eelgrass *Zostera* spp., are important food sources for waterbirds. Locally there are large Mussel *Mytilus edulis* beds formed on harder areas of substrate.
- 6.1.4 The SPA contains the largest extent of grazing marsh in Kent (although much reduced from its former extent). There is much diversity both in the salinity of the dykes (which range from fresh to strongly brackish) and in the topography of the fields. The wide diversity of coastal habitats found on the Swale combine to support important numbers of waterbirds throughout the year. In summer, the site is of importance for Marsh Harrier *Circus aeruginosus*, breeding waders and Mediterranean Gull *Larus melanocephalus*. In spring and autumn migration periods, as well as during winter, the Swale supports very large numbers of geese, ducks and waders.

#### Thanet Coast

- 6.1.5 Thanet Coast is a Special Area of Conservation, a Special Protection Area and a Ramsar site (the latter two are known as Thanet Coast and Sandwich Bay). These are located at the north-eastern tip of Kent, with the Thanet section comprising a coastal site consisting of a long stretch of rocky shore, adjoining areas of estuary, sand dune, maritime grassland, saltmarsh and grazing marsh. The site holds important numbers of Turnstone *Arenaria interpres*, and is

also used by large numbers of migratory birds as they make landfall in Britain in spring or depart for continental Europe in autumn.

## 6.2 Reasons for Designation

6.2.1 The North Kent Estuaries are designated for the reasons illustrated in Table 6.

**Table 6. The North Kent Estuaries SAC, SPA and Ramsar Criteria**

Site	SAC / SPA/ Ramsar Interest Features
Medway Estuary & Marshes SPA	<p>Population of European importance of the following migratory species:</p> <ul style="list-style-type: none"> <li>• Avocet</li> <li>• Little tern</li> <li>• Ringed plover</li> <li>• Black-tailed godwit</li> <li>• Dark-bellied brent goose</li> <li>• Dunlin</li> <li>• Grey plover</li> <li>• Pintail</li> <li>• Redshank</li> <li>• Shelduck</li> </ul> <p>The site also supports a bird assemblage of international importance by regularly supporting 65,274 waterfowl</p>
Medway Estuary and Marshes Ramsar	<p>The site supports a number of species of rare plants and animals. The site holds several nationally scarce plants, including sea barley, curved hard-grass, annual beard-grass, Borrer's saltmarsh-grass, slender hare`s-ear, sea clover, saltmarsh goose-foot, golden samphire, perennial glasswort and one-flowered glasswort. A total of at least twelve British Red Data Book species of wetland invertebrates have been recorded on the site. A significant number of non-wetland British Red Data Book species also occur.</p> <p>The site supports a wintering waterbird assemblage of international importance</p> <p>Species occurring at levels of international importance:</p> <ul style="list-style-type: none"> <li>• Grey plover</li> <li>• Redshank</li> <li>• Dark-bellied brent goose</li> <li>• Shelduck</li> <li>• Pintail</li> <li>• Ringed plover</li> <li>• Red knot</li> <li>• Dunlin</li> <li>• Black-tailed godwit</li> </ul>
The Swale SPA	<p>Population of European importance of the following migratory species:</p> <ul style="list-style-type: none"> <li>• Avocet</li> <li>• Marsh harrier</li> <li>• Mediterranean gull</li> <li>• Black-tailed godwit</li> <li>• Golden plover</li> <li>• Ringed plover</li> <li>• Grey plover</li> </ul>

	<ul style="list-style-type: none"> <li>• Knot</li> <li>• Pintail</li> <li>• Redshank</li> <li>• Shoveler</li> </ul> <p>The site also supports a bird assemblage of international importance by regularly supporting 65,390 waterfowl</p>
The Swale Ramsar	<p>The site supports nationally scarce plants and at least seven British Red data book invertebrates.</p> <p>The site supports a wintering waterbird assemblage of international importance</p> <p>Species occurring at levels of international importance:</p> <ul style="list-style-type: none"> <li>• Grey plover</li> <li>• Redshank</li> <li>• Dark-bellied brent goose</li> <li>• Wigeon</li> <li>• Pintail</li> <li>• Ringed plover</li> <li>• Shoveler</li> <li>• Black-tailed godwit</li> </ul>
Thanet Coast & Sandwich Bay SPA	<p>Populations of European importance of the following migratory species:</p> <p>Turnstone</p>
Thanet Coast & Sandwich Bay Ramsar	<p>Supports 15 British Red Data Book wetland invertebrates.</p> <p>Species occurring at levels of international importance:</p> <p>Turnstone</p>
Thanet Coast SAC	<ul style="list-style-type: none"> <li>• Reefs</li> <li>• Sea caves</li> </ul>

## 6.3 Historical Trends and Current Pressures

6.3.1 During the most recent condition assessment process, almost 99% of Medway Estuary and Marshes SSSI was in favourable condition. 98% of The Swale SSSI was in favourable condition. Small areas were unfavourable due to inappropriate management, disturbance, or urbanisation effects (e.g. litter).

6.3.2 At the Thanet Coast SSSI, features forming part of the SAC do not appear to be under significant current pressure. The vast majority of the SSSI is recovering from unfavourable status caused by disturbance to turnstone. In their most recent condition assessment report, Natural England state that a 3 year study (2001-4) showed that a number of human activities disturb these birds while they are roosting, causing them to lose condition. Dog walking was particularly significant. Since winter 2002-3, a number of measures have been taken to reduce this disturbance: major roost sites are signposted each winter; the Thanet Coast Project has worked with local coastal users to produce the Thanet Coastal Codes (a series of voluntary codes of conduct, launched in 2002 and recently revised; Winter Bird Wardens were appointed in 2002-3 and 2003-4 to speak to local people on the beaches and explain how they could reduce disturbance to the roosting birds. Significant reductions in disturbance were noted at

many of the beaches immediately following this wardening. More recently, the Thanet Coast Project has launched the Thanet Coastal Warden Scheme; where over 70 volunteer Wardens have 'adopted' stretches of coastline and monitor the activities that go on there. This will help to provide even more detail on bird disturbance, so that measures to reduce it can be targeted to the most vulnerable areas.

6.3.3 The key environmental conditions required to maintain site integrity include:

- Sufficient space between the site and development to allow for managed retreat of intertidal habitats and avoid coastal squeeze
- No dredging or land-claim of coastal habitats
- Unpolluted water
- Absence of nutrient enrichment
- Absence of non-native species
- Maintenance of freshwater inputs
- Balance of saline and non-saline conditions
- Minimal disturbance
- Minimal activities that alter sediment characteristics

## 6.4 Effects of the Core Strategy

### Water Quality

6.4.1 The majority of sewage in Thurrock is treated at the Tilbury Sewage Treatment Works (STW). The treated effluent is then discharged into the River Thames approximately 20 km upstream of Medway Estuary & Marshes SPA and on the opposite side of the estuary. The sewage treatment needs of the 13,550 new dwellings that are required in Thurrock by 2021, are likely to lead to:

- An increase in the volume of treated effluent (and therefore nutrients) discharged into the Thames Estuary; and
- If the Sewage Treatment Works is close to capacity and it cannot be reasonably assumed that the Works can be expanded to cope with the increased volumes of sewage, there may be a concomitant decrease in the quality of the effluent that is discharged by the Works.

6.4.2 The CS policy CSTP13 advocates potential upgrades to Tilbury STW to treat and discharge additional wastewater flow generated by development.

6.4.3 The Environment Agency have commented that, while nutrient levels within the Thames Estuary are high, this does not result in the smothering macroalgal growth that is having an adverse effect upon the other European marine sites. The Environment Agency has confirmed that the same situation can be found in the north Kent estuaries. There is therefore a low risk of macroalgal smothering, particularly when the large dilution factor that would be experienced is taken into consideration.

- 6.4.4 Consultation with Natural England has identified that in their view it would be insufficiently precautionary to rely on a combination of natural hydrodynamic processes and the quality improvements to be delivered by Thames Water in concluding that a significant adverse effect is unlikely. As such, some additional wording for the Core Strategy was proposed.
- 6.4.5 A Water Cycle Study is currently being undertaken, in stages, for Thurrock. Policy CSTP13 is informed by the Scoping Study (2009) and the Outline Study (2010) stages. When the Detailed Study stage is completed, the Water Cycle Study as a whole will fully analyse the impacts of delivering the Core Strategy housing within the borough on flood risk, water resources and water quality and will identify any necessary constraints in terms of treatment infrastructure or consented discharge volumes. If such constraints are identified, the completed Water Cycle Study will also identify the necessary solutions which will be required in order to deliver the housing within the constraints imposed by the Water Framework Directive and Habitats Directive.
- 6.4.6 The completed Water Cycle Study will therefore ensure that any residual possibility of an adverse effect on European sites, through increased wastewater produced in Thurrock, is avoided. To provide adequate certainty that adverse water quality effects on European sites will not occur, Thurrock Council has proposed amendments to the wording of the Submission Core Strategy. These amendments strengthen references to the Thurrock Water Cycle Study, to ensure that the Council's commitment to phasing the delivery of waste water infrastructure, necessary for safeguarding the water quality of European sites in parallel with new development (as set out on CSTP13, 1 (VII)), is clear.

## 6.5 Conclusions

- 6.5.1 It can be concluded that an adequate policy framework exists to enable the delivery of measures to avoid adverse effects on the North Kent Estuary sites.

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## 7 Overall Conclusion

- 7.1.1 The HRA screening exercise carried out on Thurrock Council's LDF Core Strategy Proposed Submission Document identified 15 policies that could not be screened out, and which therefore required Appropriate Assessment.
- 7.1.2 These policies have been scrutinised for potential for likely significant effects on the Thames Estuary and Marshes SPA/Ramsar site; Mid-Essex Estuaries SAC/SPAs/Ramsar sites; and North Kent Estuaries SACs/SPAs/Ramsar sites.
- 7.1.3 The policies have been assessed for potential to create impacts through coastal squeeze, recreational pressure, disturbance, reduced air quality, and reduced water quality. In combination effects have also been considered.
- 7.1.4 It has been concluded that an adequate policy framework exists (when considered within the context of the existing legal safeguards) to enable the delivery of measures to avoid adverse effects on European sites.

## Appendix 1 – Core Strategy Policies Screening Table

Policy Number	Policy Name	Summary of Policy with Relevance to HRA	Possible HRA Implications (Orange shading denotes screened in for further consideration)										
CSSP1	Sustainable Housing and Locations	<p>New residential development will be directed to previously developed land in the Thurrock Urban Area, Outlying Settlements and other existing built-up areas to protect the surrounding countryside and Green Belt.</p> <p>Development will only be permitted on greenfield and Green Belt land where it is specifically allocated for residential development and where it is required to maintain a five-year rolling housing land supply.</p> <p>The Council has and will continue to identify Broadly Defined Locations for the release of land within the Green Belt in accordance with Policies CSTP 1 and CSSP 4 to help maintain a rolling 5-year supply of available and deliverable housing land for the period 2009 –2021 and will maintain this rolling 5-year supply through an Annual Refresh of the SHLAA.</p> <p>The Authority aims to:</p> <p>Allocate at least 85% of new housing development in the 5-year period 2009-2014 inclusive to Previously Developed Land (PDL) locations in and around the Thurrock Urban Area, at the identified Outlying Settlements and within the Green Belt where appropriate.</p> <p>Identify and allocate Broadly Defined Locations for the release of land within the Green Belt in accordance with Policies CSTP 1 and CSSP 4 for the period 2009 –2021 to accommodate no more than 20% of new housing development.</p> <p>For 2009-2021, housing figures are</p> <table border="1"> <tbody> <tr> <td>Purfleet</td> <td>3180 dwellings</td> </tr> <tr> <td>West Thurrock/Lakeside</td> <td>3365 dwellings (subject to SIR)</td> </tr> <tr> <td>Grays</td> <td>2605 dwellings</td> </tr> <tr> <td>Tilbury including Town centre</td> <td>470 dwellings</td> </tr> <tr> <td>Chadwell St Mary</td> <td>390 dwellings</td> </tr> </tbody> </table>	Purfleet	3180 dwellings	West Thurrock/Lakeside	3365 dwellings (subject to SIR)	Grays	2605 dwellings	Tilbury including Town centre	470 dwellings	Chadwell St Mary	390 dwellings	<p>Yes – development, particularly at Stanford-le-Hope/Corringham could increase pressures (disturbance on the Thames estuary and Marshes).</p> <p>The distribution of housing is not a material consideration for sites beyond the district boundary – i.e. all housing could lead to increased recreational pressure on more distant sites.</p>
Purfleet	3180 dwellings												
West Thurrock/Lakeside	3365 dwellings (subject to SIR)												
Grays	2605 dwellings												
Tilbury including Town centre	470 dwellings												
Chadwell St Mary	390 dwellings												

		<b>TOTAL</b>	<b>10,010 dwellings</b>
		<p>Approximately 2100 new dwellings will be located north of the A13, with a focus on Ockenden and Aveley.</p> <p>Approximately 910 new dwellings will be south of the A13 with the focus on East Tilbury and Corringham/Stanford-le-Hope.</p> <p>330 new dwellings at Corringham/Stanford-le-Hope will be built on green field sites.</p> <p>PDL within the Green Belt will allow 460 new dwellings at Grays.</p> <p>Around 120 new dwellings will be allocated on Green Belt or PDL land at smaller settlements.</p> <p>From 2021-2025 the focus for new development will be around existing settlements – 250 new dwellings are proposed at Stanford-le-Hope/Corringham.</p>	
CSSP2	Sustainable Employment Growth	The Key Strategic Economic Hubs and other sites will supply approximately 456 Ha (gross) of employment land, including circa 245 Ha at the London Gateway development. Job growth for London Gateway is anticipated to be 11-13000 of 26,000 within Thurrock.	Yes – this policy controls overall location of development
CSSP3	Sustainable Infrastructure	<p>Key schemes include:</p> <ul style="list-style-type: none"> <li>• A1014 London Gateway Improvements</li> <li>• Rail-freight terminal at London Gateway</li> <li>• Improving links from the river to open areas in the Green Belt.</li> <li>• Improved public access to and along the riverfront.</li> <li>• New power station at Tilbury.</li> </ul>	Yes – some could have disturbance/impacts on the Thames Estuary and Marshes (e.g. rail freight interchange) while others (new power station at Tilbury) could have air quality implications.
CSSP4	Sustainable Green Belt	<p>The Council will:</p> <p>Maintain the permanence of the boundaries of the Green Belt, excepting the proposed Urban Extension Broad Locations Identified in this policy and CSSP 1</p> <p>Maximise opportunities for increased public access, leisure and biodiversity.</p> <p>The Council will support the principle of release of Green Belt land (26</p>	Development near Stanford-le-Hope is considered under CSSP1, but could have implications for Thames Estuary and Marshes.

	<p>Ha.) to the North of Tilbury for port-related employment use and a Strategic Lorry Park to facilitate expansion of Tilbury Port. The Council will require management arrangements to be put in place for the remainder of the Tilbury Marshes site that has important biodiversity interest and required mitigation measures to be implemented to replace lost habitat and flood storage areas.</p> <p>Green Belt release at Stanford-le-Hope will allow 328 new dwellings to 2021.</p> <p>The Council proposes to include 70.3 hectares of previously safeguarded land adjacent to the former Shell Haven refinery site that was identified as oil refinery expansion land. With the cessation of the refinery use at Shell Haven and recent decision of the Secretary of State to exclude the land for development purposes from the London Gateway scheme, the land will assist in the purposes of the Green Belt in maintaining a strategic gap between the residential settlements of Stanford and Corringham and the oil refinery site.</p>	
<p>CSSP5 Sustainable Green Grid</p>	<p>Across the borough, considerations will include:</p> <ul style="list-style-type: none"> <li>• Semi-natural green space</li> <li>• Safeguard for biodiversity and geology</li> <li>• Multifunctional greenspace</li> <li>• Ecosystem opportunities</li> <li>• Strategic links and bridging points</li> <li>• Flood Risk Management</li> <li>• Broad landscape management areas</li> </ul> <p>The Council and Partners will promote productive land and natural systems opportunities (soils, bio and geo diversity), including potential co-firing using biomass fuels in the Tilbury area</p>	<p>This policy is generally positive, but the inclusion of energy generation through co-firing of biomass fuels in the Tilbury area does require consideration of potential impacts upon the Thames Estuary and Marshes SPA and Ramsar (principally through the pathways of reduced air quality or water quality).</p>
<p>CSTP1 Strategic Housing Provision</p>	<p>For the period 1 April 2009 to 31 March 2021, an additional 13,550 dwellings are required to meet this policy aim. This equates to an average of 1130 dwellings per year.</p> <p>For the 4 year period 1 April 2021 to 31 March 2025, the Council has made an indicative provision for 3,800 dwellings subject to RSS Review.</p> <p>The SHLAA and future reviews will identify deliverable sites for 5yrs and developable sites within a 10yrs and 15yrs period that will underpin the AMR and Housing Trajectory</p>	<p>Yes, since this controls the quantum of new housing in Thurrock</p>

	<p>Housing Sites will be allocated as part of the Site Allocation Development Plan Document.</p> <p>The Council and partners will actively seek to increase the supply of deliverable housing sites where it appears that the five-year housing supply will not meet the required dwelling provision.</p> <p>New residential development will be led by the design standards set out in the Design and Sustainability SPD and the Core Strategy Policies.</p> <p>Supporting text notes: Thurrock has delivered 4,950 new dwellings between 2001 and 2009 at an average rate of 587 dwellings per year. In April 2009, there were 2,036 dwellings with outstanding planning permission (which has increased to 2,300 dwellings as at January 2010). Thurrock is therefore required to make provision for a minimum of 13,550 new dwellings between 2009 and 2021. 1070 of these are identified as due to come from greenfield sites. From April 2010 to March 2015, the Council aims to supply 4150 new dwellings, of which 595 will be allocated to greenfield locations.</p> <p>The Council will produce a Design and Sustainability SPD that will set out the design principles that will guide density levels in the Borough (currently envisaged at 30-75 dwellings per ha) and provide a character assessment of each area to provide area specific density guidance</p>	
<p>CSTP2 Provision of Affordable Housing</p>	<p>Sets requirements for affordable housing, including:</p> <p>The Council will seek the minimum provision of 35% of the total number of residential units built to be provided and maintained in perpetuity as affordable housing.</p> <p>In order to meet the overall target, the Council will seek to achieve where viable 35% Affordable Housing on all new housing developments capable of accommodating 10 or more dwellings or sites of 0.5 ha or more irrespective of the number of dwellings. Sites below threshold will make an equivalent financial contribution towards off-site provision.</p> <p>The affordable housing provision should seek to achieve a target of 70% social rented accommodation with the balance being provided as intermediate housing.</p>	<p>No, since this policy does not affect the quantum or location of housing in Thurrock</p>
<p>CSTP3 Gypsies and Travellers</p>	<p>Two options presented. Both include the requirement for adequate water resource and water quality provision.</p> <p>There is a requirement that gypsy/traveller sites should not conflict with</p>	<p>No – the caveats included, and the limited nature of development, mean that there is no likely significant impact</p>

		other development policies (some of which will seek to protect wildlife sites)	
CSTP4	Travelling Showpeople	Does not include the requirement for adequate water resource and water quality provision.  There is wording that specifically protects internationally dedicated sites.	No likely impacts
CSTP5	Neighbourhood Renewal	Identifies key areas for regeneration. Promotes green space and high quality sustainable housing (though does not set CSH targets).	No likely impacts – regeneration does not necessarily involve additional development; rather it promotes improvements for local residents. This will not lead to increased pressures on designated sites, and indeed, includes measures to improve building quality and access to open space. Such measures would lessen the likelihood of any significant adverse effects on European designated sites.
CSTP6	Strategic Employment Provision	<p>The Key Strategic Economic Hubs (identified in CSSP1) will provide <b>445 hectares</b> of Industrial and Commercial and Mixed-Use Land between 2009 and 2021.</p> <p>The proposed Primary and Secondary Industrial and Commercial sites (identified in the Site Allocations DPD) will provide approximately <b>372 hectares</b> of net employment land across the Borough between 2009 and 2021.</p> <p>Where proposals for new economic development are proposed outside the Primary and Secondary Industrial and Commercial areas, the Council will make an assessment against compatibility with uses in the area surrounding the proposal and potential impacts on those uses.</p> <p>In total, the Council has designated <b>75.4 hectares</b> of land throughout the Borough for mixed-use development between 2009 and 2021. The mixed-use development sites will be set out in the Site Allocations DPD</p> <p>The Council will seek to encourage and direct the development of environmental industries to the Key Strategic Economic Hubs. The Council will work with partners to bring forward the delivery of priority environmental industry projects at the preferred following locations:</p>	The policy contributes to the overall quantum of development within the area.

	<p>1. Tilbury 2. London Gateway</p> <p>The Council will support the sustainable growth of the tourist industry in Thurrock. Where appropriate, planning permission will be granted within the town centres and Key Strategic Economic Hubs for overnight tourist and visitor accommodation, including hotels, provided the proposed development would be compliant with other policies in the Core Strategy. Where appropriate, the Council will support development proposals that seek to support the development of the Olympic and Paralympic Games and legacy.</p>	
<p>CSTP7 Network of Centres</p>	<p>Consistent with emerging Policy ETG2, the Council supports the transformation of the northern part of the Lakeside Basin into a new regional centre. This will be achieved in policy through a Lakeside Area Action Plan. Expansion at the new Lakeside regional centre will include the following:</p> <ul style="list-style-type: none"> <li>(i) Up to 50,000 sqm of net comparison floorspace (by 2019)</li> <li>(ii) At least 4,000 sqm of net convenience floorspace</li> <li>(iii) At least 3,500 new dwellings</li> <li>(iv) Employment and other services floorspace to broaden the employment base</li> <li>(v) Commercial leisure floorspace, including food and drink uses, consistent with the function of a regional centre.</li> </ul> <p>The Council supports the regeneration of Grays town centre. It will become the focus for cultural, administrative and educational functions, whilst providing retail development that is complementary to the Lakeside Basin.</p> <p>Investigation into the potential of a new supermarket on an appropriate site in Stanford-Le-Hope to reduce convenience expenditure leakage from the east of the borough.</p> <p>A new local centre is designated at Purfleet. Two new neighbourhood centres are designated at West Thurrock and South Stifford and will be developed in conjunction with major residential development. The Council encourages the following development for these new local centres:</p> <ul style="list-style-type: none"> <li>(i) In Purfleet, a new foodstore of between 1,500-2,000 sqm (net) convenience retail floorspace and</li> </ul>	<p>Most of this development will not attract recreational pressure to sites considered within the HRA as it is drawing visitors to specific sites that are not in close proximity. It is not likely that visitors to retail centres in the west of Thurrock will additionally make a visit to remote estuarine/marsh nature sites in the east of or outside of Thurrock.</p> <p>This policy does however refer to a quantum of housing at Lakeside, and all housing developments within Thurrock have potential to add to recreational pressure on European designated sites; on this basis the policy is screened in and will be analysed along with policies CSSP1 and CSTP1.</p> <p>Development of a new superstore at Stanford-le-Hope could encourage greater numbers of shoppers to the facility, but there is no rationale for concluding that this will lead to significantly greater recreational pressure on Thames Estuary and Marshes SPA/Ramsar, since the Stanford-le-Hope is over 1km from the SPA/Ramsar – beyond the limits over</p>

		<p>complementary floorspace.</p> <p>(ii) In all new local centres, an appropriate mix of day to day services will be provided to accommodate the needs of the residential development.</p>	<p>which direct disturbance will be a material factor – and is not easily accessible by car for recreational visitors.</p>
CSTP8	Vitality and Viability of Existing Centres	<p>Measures to improve the vitality and viability of the network of centres will be encouraged in order to meet the needs of the borough’s residents and act as a focus for retail, leisure, cultural, business and residential uses.</p> <p>Subject to other Core Strategy policies, permitting additional residential development in appropriate locations and in particular on sites identified for mixed development.</p> <p>Improving the wider environment by ensuring new development protects and/or enhances the designated centres including historic character, townscape and biodiversity</p>	<p>No – although this policy advocates new development, the scale and location is not defined</p>
CSTP9	Wellbeing: Leisure and Sports	<p>Supporting text notes that natural greenspace is unevenly distributed across the borough.</p> <p>Council will safeguard existing leisure, sports facilities and open space provision, and will only allow its loss in circumstances where appropriate alternative facilities will become available.</p> <p>Council will ensure new or improved facilities in locations that are accessible to the local community and create or improve links to Thurrock’s network of green and historic infrastructure, including the Thames riverside.</p> <p>Where appropriate, encourage development proposals that seek to support the development of the Olympic and Paralympic Games and legacy.</p>	<p>Largely positive with commitment to maintaining and enhancing greenspace.</p> <p>However, improved links to Thames riverside could potentially affect Thames Estuary and Marshes and careful access management will therefore be needed.</p>
CSTP10	Community Facilities	<p>Part of the policy notes that:</p> <p>The Council will work with relevant partners to deliver tourism, festivals and attractions to support Thurrock assets including Coalhouse Fort, Tilbury Fort, Thames river front and the RSPB Nature Reserve.</p>	<p>As it stands, development could place extra recreational pressure on Thames Estuary and Marshes. It is assumed that ‘relevant partners’ will include conservation organisations, but the Council should make it clear that delivery will be in a sustainable manner with no negative environmental impacts</p>

CSTP11	Health Provision		Significant Effects unlikely
CSTP12	Education and Learning		Significant Effects unlikely
CSTP13	Emergency Services and Utilities	<p>New wastewater pipe serving Purfleet and West Thurrock Area - already planned by Anglian Water Services and due to be built during 2015.</p> <p>Potential upgrades to Tilbury sewage treatment works to treat and discharge additional wastewater flow generated by development.</p> <p>Where new or improved utilities or services are expected, the Council will require contributions in accordance with PMD16 policy and the Developer Contributions SPD.</p>	<p>The specific schemes mentioned will be distant from the Thames Estuary and Marshes SPA/Ramsar (the Tilbury WWTW is 3.5km away). However, an upgrade to Tilbury sewage treatment works could lead to increased volumes of wastewater entering the Thames which may lead to impacts on European sites.</p>
CSTP14	Transport in the Thurrock Urban Area: Purfleet to Tilbury		Does not cover an area of the district where implications for internationally designated sites are likely
CSTP15	Transport in Greater Thurrock	<p>Develop local walking and cycle routes that link to the Thurrock urban area and that link the National Cycle Network Route 13 to employment. Access to London Gateway will be a priority. These local routes will also form an integral part of the Greengrid strategic and local green links. Wherever possible the design and route selection will assist to deliver biodiversity enhancement and habitat corridors.</p>	Does not promote transport schemes or mechanisms with negative environmental implications although walking and cycling routes within the vicinity of Mucking Flats & Marshes SSSI will need to be sensitive to the international interest features of the site (i.e. wintering waterfowl)
CSTP16	National and Regional Transport Networks	<p>Seeks to improve passenger connections that make use of the River Thames, such as linking Tilbury and Gravesend.</p> <p>Seeks to improve capacity and connections between modes of transport at key transport interchanges such as rail stations.</p> <p>Aims to develop a high quality network of inter-urban public transport routes offering a minimum of a half hourly frequency during the day, linking the Thurrock Urban Area with other Regional Transport Nodes and London.</p> <p>Supports the delivery of additional highway capacity, including through the use of technology and information, but only where modal shift will be insufficient to address congestion. Opportunities will be taken to improve</p>	<p>Significant effects unlikely given locations and modes of transport involved.</p> <p>Specific improvements to highway capacities are described. None of these are within 200m of a European designated site, and so can be screened out as regards any impact via reduced local air quality.</p> <p>Since the nearest of the road improvement schemes is over 2km from a European designated site, there</p>

		<p>public transport as part of any enhancements. Priority will be given to routes that provide access, especially for freight, to Strategic Employment Sites, the ports at London Gateway, Tilbury and Purfleet, and regeneration areas. This will include:</p> <ul style="list-style-type: none"> <li>a. M25 between junctions 27 and 30</li> <li>b. M25 junction 30</li> <li>c. A13 from A128 to A1014</li> <li>d. A13 and A1089 junction improvement</li> <li>e. A1014 from A13 to London Gateway</li> </ul>	is no likelihood of direct water pollution or disturbance.
CSTP17	Strategic Freight Movement and Access to Ports	Facilitating a shift to rail freight and freight carried on the River Thames. Promoting the use of rail and water borne freight facilities by supporting the development of appropriate infrastructure. Supporting improvements to facilitate sustainable freight movements, including the rail hub at London Gateway. Facilitating the provision of 24 hour lorry parks at Tilbury Port, London Gateway. Other lorry parks will be considered in locations where demand can be shown to exist, which are located away from residential areas and have good access to the Strategic Road Network.	Lorry parks have potential to create air quality reductions; however, it is understood that none will be within 200m of the Thames Marshes and estuary SPA/Ramsar
CSTP18	Green Infrastructure	<p>The Council, with its partners, will restore, protect, enhance and where appropriate create its green assets.</p> <p>The Council will require a net gain in green infrastructure. This will contribute to addressing the existing and developing deficiencies, ensuring connectivity and relieving pressure on designated biodiversity sites such as SSSI's.</p>	No likely adverse impacts – policy is positive
CSTP19	Biodiversity	<p>Development will be encouraged to include measures to contribute positively to the overall biodiversity in the borough.</p> <p>The Council will create a robust network of ecological sites centring on the designated sites.</p> <p>The Council will ensure that all designated sites are managed appropriately.</p> <p>Access will be balanced against biodiversity interest</p>	No likely adverse impacts – policy is positive
CSTP20	Open Space	The Council will seek to ensure that a diverse range of accessible public open spaces, including natural spaces is provided and maintained to meet the needs of the local community.	No likely adverse impacts – policy is positive

		<p>Proposals for new development must ensure the adequate provision of a range of accessible, high quality, open space, including natural and semi-natural greenspace. One consideration for provision should be biodiversity.</p> <p>The Council and partners will pursue opportunities for external funding for open space improvement through developer contributions, the Council's capital funding streams or via successful bids to other funding bodies.</p>	
CSTP21	Productive Land	The Council recognises the importance of food security and will ensure the protection, conservation and enhancement of agriculture, productive land and soil in the borough.	No likely significant impacts
CSTP22	Thurrock Design	<p>The Council will promote high quality design in Thurrock and will progress opportunities to improve the quality of the environment throughout the borough and particularly in the Regeneration Areas and Key Strategic Employment Hubs.</p> <p>Development must embrace the use of high quality design including sustainable, renewable resources of energy and low-emissions technology, and enhance green infrastructure.</p> <p>The Council will require that developments address the particular sensitivities and capacity of the places within which they occur, including how adverse impacts are mitigated.</p>	No likely adverse impacts
CSTP23	Thurrock Character and Distinctiveness	The Council requires the retention and enhancement of significant natural features which contribute to the character of the borough as defined by their value, quality, cultural association and meaning or their relationship to the setting and local context.	No likely adverse impacts
CSTP24	Heritage Assets and the Historic Environment	The Council will preserve or enhance the historic environment.	No likely adverse impacts
CSTP25	Addressing Climate Change	<p>Developers must consider the potential effects of climate change on their development, including:</p> <p>Water conservation and drainage Flood risk from tidal, fluvial and surface water</p>	No likely adverse impacts
CSTP26	Renewable or Low Carbon Energy Generation	The Council will promote and facilitate proposals for centralised renewable or low-carbon energy schemes at appropriate locations and standards, including at Priority Locations at Tilbury and London Gateway.	Renewable energy schemes may have implications for internationally designated sites but the policy states they will not be permitted if they cannot

		The Council will only view an application as unacceptable where it produces a significant adverse impact that cannot be mitigated.	be adequately mitigated.
CSTP27	Management and Reduction of Flood Risk	<p>The Council will ensure that flood risk management is implemented and supported through effective land use planning. The Sequential, and where necessary Exception Test, as set out in PPS25 will be employed when allocating sites for development and an Emergency Plan for the Borough will be completed.</p> <p>The Council will also continue to work collaboratively with the Environment Agency by supporting the area based policy approach adopted in the Thames Estuary 2100 Project. In particular the Council will seek to safeguard existing flood defences and new areas for flood defences, water storage and drainage areas, as well as seeking secondary defences for key assets.</p> <p>The Council will work with the Environment Agency and other main stakeholders to ensure that fluvial and surface water flood risk is managed within Thurrock.</p>	No likely adverse impacts
CSTP28	River Thames	<p>Safeguarding additional adjacent land required for further port development, including expansion. For port development onto additional land to be acceptable however, it will be necessary to substantiate the need for it over and above land that is already available for operational port uses</p> <p>Development Proposals will be required to undertake appropriate level of flood risk assessment as set out by PPS25 and take account of the need for flood mitigation measures and to accommodate any necessary flood defence measures.</p> <p>New development will also maintain or enhance views, particularly of key features including heritage and landscapes, and will improve recreational interaction with the river and its setting. The following exceptions to this may apply: Where unrestricted public access is likely to result in unacceptable adverse impacts on riverside habitat or biodiversity.</p>	<p>Port expansion could have impacts on Thames Estuary and Marshes SPA and Ramsar site depending on scale and how it is managed and delivered. However, this policy only <i>safeguards</i> land for potential future port expansion (i.e. it prohibits other conflicting development). The policy does not permit or promote/commit to further expansion. Proposals for port expansion will be required by law to be subject to HRA when they are further developed; as such it is not necessary for this to be explicitly stated in policy.</p> <p>On this basis, the policy can be screened out.</p>
CSTP29	Waste Strategy	<p>The Council will seek to minimise waste at source and maximise recycling. Biodegradable waste to landfill will be reduced. Waste will be used to produce energy where practicable.</p> <p>The Council will identify 1 or 2 strategic sites for the co-location of a range</p>	The policy contains a number of approaches that will minimise the likelihood of negative impacts on designated conservation sites. Waste issues and detailed policy will be

	<p>of waste management activities within the broad locations of Tilbury – Purfleet and the London Gateway. These sites will be located within appropriate employment and industrial/port locations.</p> <p>Where it is demonstrated that the strategic site allocations are proven to be undeliverable, or where the waste management capacity requirements cannot be met on the allocated sites, planning permission in non-strategic areas will be considered where the site/s are situated within:</p> <ul style="list-style-type: none"> <li>• existing waste management facilities, except landfill sites, where this does not lead to a reduction in the existing waste management capacity;</li> <li>• appropriate employment locations; or</li> <li>• appropriate port locations; and,</li> <li>• Where the sites meet the specific environmental criteria set out in this plan and the MWDPD and cross cutting development management policies.</li> </ul> <p>New non-hazardous or inert landfill capacity will only be considered where it can be demonstrated to contribute to the capacity requirements set out in the sub text to this policy or the regional import approach set out in Policy CSTP30.</p> <p>Proposals for landraising above approved restoration levels will not be supported.</p> <p>The Council will reduce, as far as practicable, any negative environmental impacts that may arise from waste management proposals.</p> <p>All proposals for waste management use will be required to conform with the policies and site allocations set out in the Minerals and Waste DPD.</p> <p>The supporting text for the policy notes that on 27 August 2009 Tilbury Green Power were granted planning permission by the Secretary of State for a biomass and energy from waste power station run on a combination of cleaned and waste wood. A condition of the consent allows for 300,000tpa of waste (80,000tpa of municipal solid waste, 220,000tpa of Commercial and Industrial Waste) and 50,000tpa of waste wood. It is anticipated that the plant will be operational in 2012</p>	<p>covered in a Waste DPD so this policy can be screened out and will be dealt with in the Waste DPD HRA</p>
<p>CSTP30 Regional Waste Apportionment</p>	<p>Thurrock will only make provision for London's waste imports equivalent to the following cumulative tonnages across the Plan period (from 2009):</p>	<p>Seeks to ensure a reduction in waste imports, so no likely adverse effects.</p>

	<p>1,947,000 tonnes.</p> <p>Thurrock will not allocate or grant planning permission for new landfill capacity to accommodate London's waste arisings where the above capacity requirements have been met.</p> <p>Allowance for new non-landfill waste facilities will only be made for waste not included within the above apportionment where a facility has a clear benefit to the region, such as the provision of specialist processing or treatment which would not be viable without a wider catchment and which would enable recovery of more locally generated wastes and contribute to meeting the capacity requirements set out in CSTP29</p> <p>The supporting text for the policy notes that after 2015, the region is only required to plan for residual waste which has been subject to the maximum practicable level of treatment, exported from London, through the availability landfill capacity.</p>	
<p>CSTP31 Provision of Minerals</p>	<p>The Council will maintain at least a 7-year landbank and aim to meet the sub-regional apportionment of 0.14mt per annum of sand and gravel throughout the Plan period or meet any subsequent change in apportionment as a result of a review of the RSS. The MWDPD will identify 'Preferred Areas' located within the MSA (Policy CSTP32).</p> <p>The Council will encourage the use of facilities for recycling aggregate or secondary materials, or processing of such materials, as alternatives to land won aggregate.</p> <p>The supporting text for the policy notes that Thurrock is required to plan for a sub-regional apportionment of 0.14 mtpa (as part of the overall combined figure of 4.55 mtpa for Essex, Thurrock and Southend) of land won sand and gravel per annum throughout the East of England Plan period.</p> <p>There are a limited number of ports and wharves in the region able to receive marine sand and gravel imports to England and these include wharves and combined wharves and rail depots on the River Thames in Thurrock.</p> <p>If no new sites are permitted during the Plan period, sand and gravel reserves would be exhausted by 2019 and would fall below the 7-year landbank requirement during 2012.</p>	<p>The policy identifies a potential future need for land won minerals that may require new site allocation. Minerals issues and detailed policy will be covered in a Minerals DPD so this policy can be screened out and will be dealt with in the Minerals DPD HRA</p>

		Thurrock is therefore required to plan for an additional 0.28mt before the end of the Plan period	
CSTP32	Safeguarding Mineral Resources	<p>All site allocations for mineral extraction identified in the MWDPD will be based on the MSA.</p> <p>The current aggregate recycling capacity will be safeguarded from non-mineral related development, unless the proposals meet the criteria outlined in the MWDPD.</p> <p>All existing aggregate wharves will be safeguarded against proposals which prejudice their use for the importation of Marine Dredged Sand and Gravel. The Council will favour proposals which contribute to the importation of Marine Dredged Sand and Gravel where they accord with the policies in the MWDPD. New sites for possible aggregate wharves will be encouraged through policies in the MWDPD.</p>	Policy devolves actual site decisions to the MWDPD, so in itself has no likely significant impacts.
CSTP33	Strategic Infrastructure	The Council and Partners will adopt the Strategic Infrastructure Delivery Plan as the basis for the Core Strategy Infrastructure Trajectory.	<p>The key message seems to be that timely investment in infrastructure is required to ensure sustainable development.</p> <p>The policy has no direct mechanism for causing adverse impacts, as it merely sets out a management framework</p>
PMD1	Minimising Pollution and Impacts on Amenity	<p>The Council will require assessments to accompany planning applications where it has reasonable grounds to believe that a development may cause a breach of standards relating to:</p> <ul style="list-style-type: none"> <li>Air pollution;</li> <li>Noise pollution;</li> <li>Light pollution;</li> <li>Water pollution;</li> <li>Visual intrusion</li> </ul>	No likely adverse impacts
PMD2	Design and Layout	<p>The Council requires all design proposals to respond to the sensitivity of the site and its surroundings, to fully investigate the magnitude of change that would result from the proposals, and mitigate against negative impacts.</p> <p>Development proposals must provide adequate public and private amenity space in accordance with Thurrock's relevant adopted standards, particularly in areas with identified deficiencies.</p>	Contains a number of positive measures

		<p>Features contributing to the natural landscape in the borough, such as woods, hedges, specimen trees, unimproved grassland, ponds and marshes, will be protected and where appropriate enhanced to maintain their landscape and wildlife value. Provision and enhancement of landscape features will also be required to contribute to multiple uses and/or eco-system services, including amenity, recreation, flood alleviation and Sustainable Urban Drainage Systems.</p> <p>Development proposals must accommodate public services and utilities without compromising design and layout. This includes providing suitable access to maintenance, waste and emergency service vehicles.</p> <p>Development should be designed to minimise energy and resource use. This includes integrating sustainable construction techniques, siting and orientation of buildings to maximise energy and water efficiency.</p>	
PMD3	Tall Buildings		No concerns
PMD4	Historic Environment		No concerns
PMD5	Open Space, Outdoor Sports and Recreational Facilities	<p>The Council will safeguard all existing open spaces, outdoor sports and recreational facilities from loss, except where it can be demonstrated that:</p> <p>conveniently located and accessible alternative facilities of a higher standard are being provided to serve the same community; and alternative and improved facilities will be available for use before existing facilities are lost; or</p> <p>proposals would not negatively affect the character of the area or the green grid, or create deficiency in the area.</p> <p>Proposed development must ensure that:</p> <p>New open spaces, outdoor sports and recreational facilities are provided in accordance with adopted standards to meet the needs of the development and to address deficiencies.</p>	Positive – ensures provision of amenity areas for recreation
PMD6	Development in the Green Belt	The Council will maintain, protect and enhance the open character of the Green Belt in Thurrock in accordance with the provisions of PPG2.	The policy does not allow significant encroachment on the Green Belt
PMD7	Biodiversity and Development	All developers will be required to show that their proposals mitigate within the local area, or compensate for, any loss of biodiversity habitat, such that there is no overall net loss of biodiversity habitat in Thurrock.	Contains measures to protect biodiversity

	<p>The Council will not permit development that would result in the loss, or partial loss, of a designated biodiversity site, except in exceptional circumstances where it can be demonstrated that there is no alternative and where appropriate mitigation measures are guaranteed by planning obligations or conditions. To enable the Council to determine an application in such circumstances, the developer will be required to submit a detailed justification setting out:</p> <p>why the loss is considered to be unavoidable  an assessment of what species and habitat would be lost or adversely affected as a result of development (including an ecological survey where appropriate)  how the loss or adverse effect would be mitigated: either on site through habitat restoration or creation; through the acquisition of a suitable site within the area and its appropriate management; or a contribution towards the purchase of land and funding towards its management to bring it up to standard.</p> <p>Compensation measures will be considered as an alternative to mitigation, but only where it can be demonstrated that all possible approaches to mitigation through design have been exhausted.</p> <p>Thurrock Council will require development proposals to incorporate biodiversity features into the design as far as possible. These may include green roofs, brown roofs and the creation of green corridors for wildlife.</p>	
<p>PMD8      Parking Standards</p>	<p>Development will be required to facilitate more equitable access and sustainable transport modes through the provision of at least the minimum levels of parking, as specified in the Thurrock Parking Standards Guidance, for:  Cycles  Electric and other low emission vehicles</p>	<p>Some provision for reducing air quality impacts</p>
<p>PMD9      Road Network Hierarchy</p>	<p>The council will only permit the development of new accesses or increased use of existing accesses where measures are taken to mitigate all adverse air quality impacts in or adjacent to Air Quality Management Areas.</p> <p>There is a presumption against new accesses or the increased use of an existing direct access onto a Corridor of Movement. Development served by side roads connecting to a Corridor of Movement will only be permitted where it can be demonstrated that the Corridor of Movement will not be</p>	<p>Little HRA impact, but does contain some measures to reduce air quality impacts</p>

		adversely affected in terms of highway safety and traffic capacity.	
PMD10	Transport Assessments and Travel Plans		No likely significant impacts
PMD11	Freight Movement	Applicants for development with a need for freight movements exceeding the equivalent of 200 daily HGV movements will be required, as part of their planning applications, to produce a Sustainable Distribution Plan. This should include evidence that commercially viable opportunities for freight carried by rail, water, pipeline or conveyor have been maximised, and that air quality impacts have been minimised.	Seeks to reduce air quality impacts
PMD12	Sustainable Buildings	<p>Proposals for new or conversion to residential development must be consistent with the “Code for Sustainable Homes” (or equivalent) level 3 targets from 2010, level 4 targets from 2013 and zero carbon from 2016 (Level 6).</p> <p>Proposals for non-residential development must achieve, as a minimum, the following BREEAM standards (or equivalent), where appropriate:</p> <ul style="list-style-type: none"> <li>• BREEAM Very Good up to 2016;</li> <li>• BREEAM Excellent from 2016;</li> <li>• BREEAM Outstanding from 2019.</li> </ul> <p>All development proposals will be required to submit an Energy and Water Statement in support of planning applications. The detailed requirements of these statements will be set out in the forthcoming Design and Sustainability SPD, but will be expected to show how the applicant would:</p> <ul style="list-style-type: none"> <li>• Minimise water consumption;</li> <li>• Maximise water efficiency and water recycling</li> <li>• Maximise the use of recycled materials and sustainably sourced materials; and</li> <li>• Minimise waste and maximise recycling during construction and after completion.</li> </ul>	Seeks to minimise impacts on water resources, water quality and air quality
PMD13	Decentralised Renewable and Low Carbon Energy Generation	New development of 5 or more residential dwellings, or 1,000m <sup>2</sup> or more of non-residential floorspace, must secure, as a minimum, the following proportions of their predicted energy from	No likely adverse impacts

		<p>decentralised and renewable or low-carbon sources, unless it can be demonstrated to the Council's satisfaction that this is not feasible or viable:</p> <p>10% from 2010; 15% from 2015; and 20% from 2020.</p> <p>Supporting text notes that:</p> <p>An Energy Study will be completed by summer 2010 and this will enable the Council to identify priority areas for increased levels of renewable energy and decentralised energy networks.</p>	
PMD14	Carbon Neutral Development		No likely adverse impacts
PMD15	Flood Risk Assessment	<p>Sites not covered by the Thurrock Sequential Test will be required to provide a site- specific Sequential Test to demonstrate compliance with PPS25, to be provided by the applicant.</p> <p>Only those applications classified under the 'minor development' or 'changes of use' categories will be exempt from applying the Sequential Test.</p> <p>Development proposals subject to the Exception Test in Thurrock must provide evidence that surface water management schemes, and other flood defence measures that are required on-site in order to allow a development to take place will be adequately maintained for the lifetime of that development by the site owner.</p> <p>All new developments will be expected to incorporate Sustainable Drainage Systems (SUDS) to reduce the risk of surface water flooding, both to the site in question and to the surrounding area. Where the potential for surface water flooding has been identified, site-specific Flood Risk Assessments should ensure that suitable SUDS techniques are incorporated as part of the redevelopment.</p>	Incorporates measures to reduce risk of water quality issues
PMD16	Developer Contributions	Where needs would arise as a result of development, the Council will seek to secure planning obligations under Section 106 of the	Allows means of provision of infrastructure that could mitigate

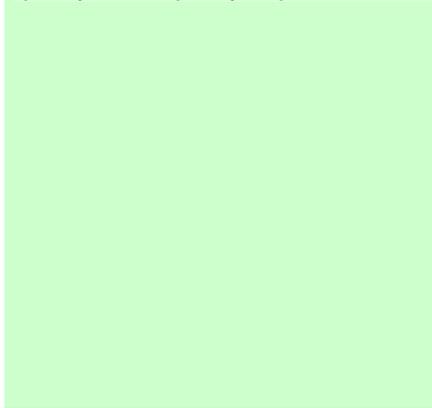
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Town and Country Planning Act 1990 and in accordance with Circular 05/05, the Council's Developer Contributions SPD, PPG17 and any other relevant guidance.

Through such obligations, the council will seek to ensure that development proposals:

- Where appropriate contribute to the delivery of strategic infrastructure to enable the cumulative impact of development to be managed
- Meet the reasonable cost of new infrastructure made necessary by the proposal.
- Mitigate or compensate for the loss of any significant amenity or resource.
- Provide for the ongoing maintenance of facilities provided as a result of the development.

recreational, water resource, water quality or air quality impacts.

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NOTES

-  Ramsar Sites
-  Special Areas of Conservation
-  Special Protection Areas

1. Thames Estuary & Marshes SPA/Ramsar
2. Benfleet & Southend Marshes SPA/Ramsar
3. Dengie SPA & Ramsar
4. Colne Estuary SPA & Ramsar
5. Crouch & Roach Estuaries SPA & Ramsar
6. Foulness SPA & Ramsar
7. Blackwater Estuary SPA & Ramsar
8. Essex Estuaries SAC
9. Medway Estuary & Marshes SPA and Ramsar
10. The Swale SPA and Ramsar
11. Thanet Coast & Sandwich Bay SPA and Ramsar
12. Thanet Coast SAC

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Revision Details	By	Date	Suffix
	Check		

Drawing Status: **FINAL**

Job Title: **THURROCK**

Drawing Title: **EUROPEAN SITES**

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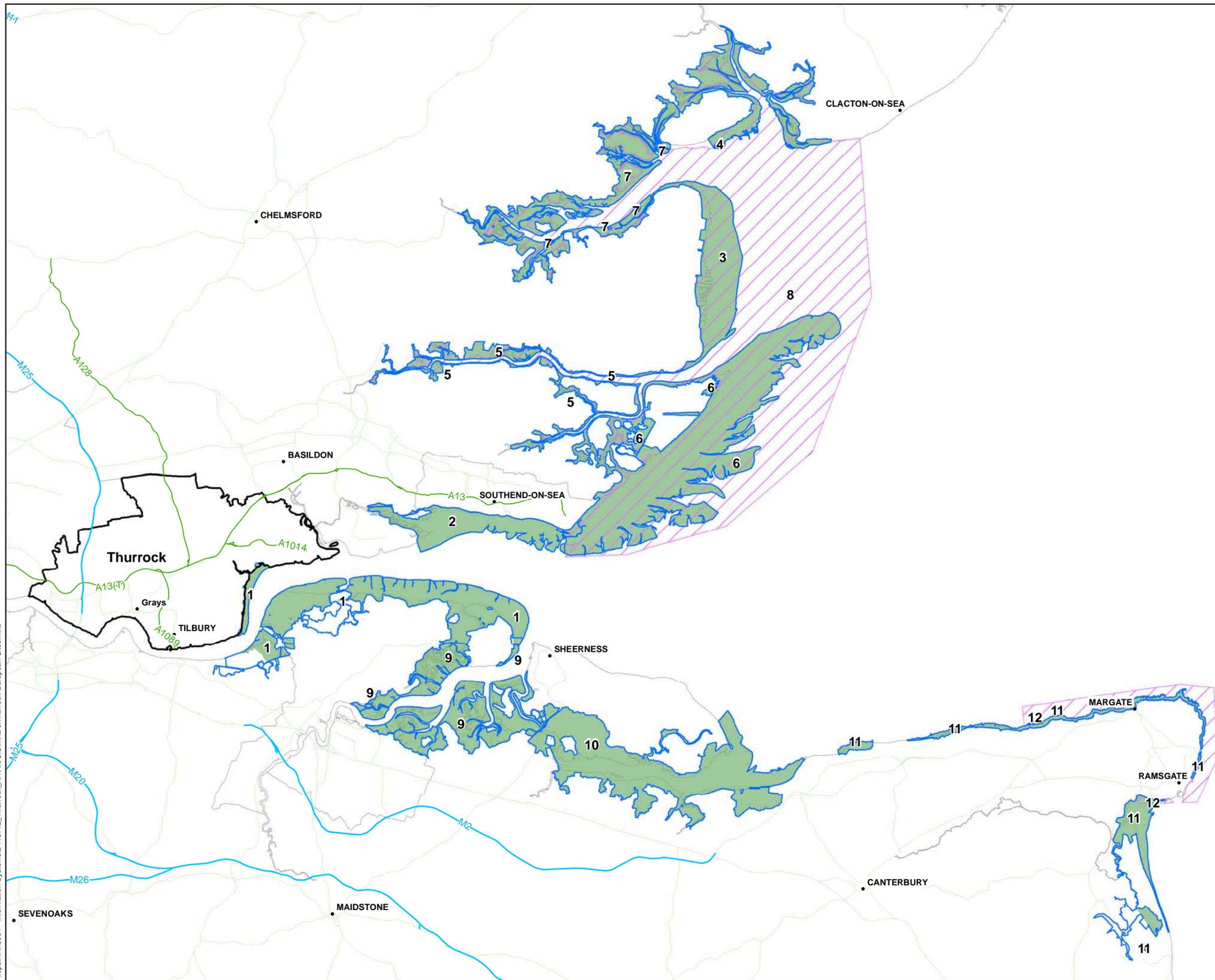
Drawn: JM Approved: JR

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Drawing Number: **MAP 1**



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