

Local Development Framework

Site Allocations Regulation 27

Appropriate Assessment Report

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Colchester Borough Council
(September 2009)**

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Introduction

The Habitats Regulations Assessment of land use plans relates to Special Protection Areas (SPAs), Special Areas of Conservation (SAC) and Ramsar Sites. SPAs are sites classified in accordance with Article 4 of the EC Directive on the conservation of wild birds (79/409/EEC), more commonly known as the Birds Directive. They are classified for rare and vulnerable birds, listed in Annex I to the Birds Directive, and for regularly occurring migratory species. SACs are classified in accordance with EC Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive). Article 3 of this Directive requires the establishment of a European network of important high-quality conservation sites that will make a significant contribution to conserving the 189 habitat types and 788 species identified in Annexes I and II of the Directive. These sites are known as the Natura 2000 network and are commonly referred to as European sites. Ramsar Sites are designated under the International Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention, Iran 1971 and amended by the Paris Protocol 1992). Although Ramsar Sites are not protected in law by the Birds and Habitats Directives as a matter of policy government has decreed that unless otherwise specified procedures relating to SPAs and SACs will also apply to Ramsar Sites. Therefore the term 'international sites' is used in this report to refer to all three of these designated sites.

Structure of report

This report begins by outlining the background to the need for appropriate assessment and summarises the status of the international sites in the Borough. It then addresses each of the key issues in turn, looking at the direct, indirect and in-combination effects. Three sites in Mersea were identified at the screening stage as likely to have adverse effects and these are discussed. The report concludes with details of the site survey and monitoring work the Council will put in place to assist in future Habitat Regulations Assessment work and help to ensure that if increased disturbance is taking place appropriate mitigation measures can be introduced.

Background

Article 6(3) of the Habitats Directive requires 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. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it

will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”

On 20 October 2005 the European Court of Justice ruled that the UK had failed to transpose the Habitats Directive into UK law in the proper manner. Land use plans were incorrectly described under the UK Habitat Regulations as not requiring an appropriate assessment to determine the impacts of the plan on sites designated under the Habitats Directive and Birds Directive (under Regulation 48 appropriate assessments are required for a plan or project, which either alone or in-combination with other plans or projects, is likely to have a significant impact on an international site).

Following this ruling the UK Habitat Regulations were revised and paragraph 85B of Part IVA of Schedule 1 of the Habitat Regulations 1994 (as amended) now states that:

“(1) Where a land use plan—

(a) is likely to have a significant effect on a European site in Great Britain or a European offshore marine site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of the site, the plan-making authority for that plan shall, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives.

(2) The plan-making authority shall for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority specifies.

(3) They shall also, if they consider it appropriate, take the opinion of the general public, and if they do so, they shall take such steps for that purpose as they consider appropriate.

(4) In the light of the conclusions of the assessment, and subject to regulation 85C (considerations of overriding public interest), the plan-making authority or, in the case of a regional spatial strategy, the Secretary of State shall give effect to the land use plan only after having ascertained that it will not adversely affect the integrity of the European site or the European offshore marine site (as the case may be).”

An appropriate assessment is a decision by the competent authority, in this case Colchester Borough Council, as to whether a proposed plan or project can be determined as not having a significant adverse effect on the integrity of an international site. The integrity of a site is defined as the “*coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified*” (Circular 06/05 paragraph 20). A fundamental element of the appropriate assessment is that the precautionary principle must be applied. In the Waddenzee judgment (ECJ Case C-127/02) the European Court of Justice ruled that a plan or project may be authorised only if a competent authority has

made certain that the plan or project will not adversely affect the integrity of the site. *“That is the case where no reasonable scientific doubt remains as to the absence of such effects”* (Circular 06/05 paragraph 21). This case signals that the competent authority must be absolutely convinced that a project or plan will not result in any adverse effects.

Owing to the number of international sites within the Borough and the scale of development proposed it cannot be ascertained that the Site Allocations DPD will not adversely affect the integrity of an international site and therefore an appropriate assessment is required. The scope of this appropriate assessment will be related to the level of this DPD within the LDF hierarchy; bearing in mind that the adopted East of England Plan sets regional level policy, which the LDF must comply with and itself was subject to an appropriate assessment; the Core Strategy, which this DPD must comply with, has been subject to an appropriate assessment; revisions to abstractions and discharge licenses will be subject to appropriate assessment; and notwithstanding the appropriate assessment of this DPD, planning applications will continue to be subject to the Habitat Regulations. Although the appropriate assessment of the Core Strategy concluded that there will be no adverse impacts on the integrity of international sites within the Borough and the Site Allocations DPD is an extension to this document, specifically it will not allocate more housing than is set out in the Core Strategy, the Council acknowledged that the appropriate assessment of the Core Strategy had some shortcomings and are taking this opportunity to expand on the appropriate assessment work already undertaken, particularly in light of the findings of the Haven Gateway Water Cycle Study.

It is important to recognise that the Habitat Regulations Assessment does not necessarily restrict growth, it can be a positive tool to ensure that new development in the Borough has a positive impact on the environment and negative impacts are avoided or mitigated, through for example, increased provision of open space, ; sustainable urban drainage systems and high quality design.

Methodology for Habitat Regulations Assessment

The Habitat Regulations Assessment has been prepared internally by members of the Spatial Policy team at Colchester Borough Council. An attempt has been made to link the Habitat Regulations Assessment and Sustainability Appraisal as closely as possible. Although the assessments have a different focus part of the assessments can overlap and carrying out the Habitat Regulations Assessment alongside the Sustainability Appraisal has ensured that all sites are fully considered early on in the plan preparation.

The EU methodological guidance (‘Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article

6(3) and (4) of the Habitats Directive 92/43/EEC') identifies the stages to be taken within the appropriate assessment process as follows:

- Stage 1: Screening
- Stage 2: Appropriate assessment
- Stage 3: Assessment of alternative solutions
- Stage 4: Assessment where no alternative solutions existing and where adverse impacts remain (the imperative reasons of overriding public interest test) and compensatory measures

This report is the second stage, the appropriate assessment. A screening opinion was published in the SA Revised Scoping Report in January 2009. As part of the SA Revised Scoping Report each site was considered in terms of its direct impact on an international site. Three sites were identified as likely to have a direct impact and these are considered in this report. Although only three sites were identified as likely to have a direct impact on international sites there are likely to be indirect effects on international sites from the amount of new housing and employment land that the Site Allocations DPD will allocate. The appropriate assessment considers each of the key issues in detail in order to ascertain whether the DPD will adversely affect the integrity of the international sites, either alone or in-combination. Where adverse effects are likely as a result of the DPD avoidance or mitigation measures are identified, which will enable the Council to conclude no adverse effects. Failure to secure appropriate avoidance or mitigation measures will mean the Council will have to consider alternatives before applying the test of imperative reasons of overriding public interest.

In making this assessment the Council has had regard to European guidance, national guidance (including guidance from Natural England and the RSPB) on appropriate assessments; data from a variety of sources, including JNCC and Wetland Bird Survey; the appropriate assessment of the Core Strategy, which was carried out by Royal Haskoning; expert advice from Natural England and the Environment Agency; and expert and local knowledge within the spatial policy team.

The appropriate assessment report will be finalised prior to submission to take into account any changes to the Water Cycle Study stage 2 report when this is finalised, comments received on this report and any minor changes made to the Site Allocations DPD.

Feedback from consultation

As part of the Regulation 25 consultation comments were received from the Environment Agency stating that at the time of writing (February 2009), they are of the view that there is insufficient baseline evidence for the competent authority to draw any firm conclusions on the potential impact of the Site Allocations DPD on European designated sites. It is understood that this comment was made prior to the Agency reviewing the draft Water Cycle Study stage 2 report.

Following this consultation period officers met separately with officers from the Environment Agency and Natural England. The planning liaison officer from the Environment Agency agreed to send the Council their response to the Water Cycle Study to assist the Council in their understanding of the issue and perceived limitations in the evidence base. Council officers explained several of the avoidance and mitigation measures they are planning to implement, which were met with support.

The officer from Natural England confirmed that they were supportive of the Council's methodology for the Site Allocations Habitat Regulations Assessment and reaffirmed that this is a strategic level document, which has to deliver the level of housing and job growth set out in the RSS.

The Environment Agency and Natural England were sent a draft copy of the appropriate assessment report in July 2009. The Environment Agency commented that whilst the report seems to be soundly based the Agency would prefer to comment once the stage 2 of the Water Cycle Study has been finalised. No response was received from Natural England.

International sites and their features

The following international sites are located within Colchester Borough and may be affected by the Site Allocations DPD:

Designated under the Birds Directive:

- Abberton Reservoir Special Protection Area;
- Blackwater Estuary (Mid Essex Coast Phase 4) Special Protection Area; and
- Colne Estuary (Mid Essex Coast Phase 2) Special Protection Area.

These sites are also designated under the Ramsar Convention on wetlands and the conservation features of this designation must also be considered.

Designated under the Habitats Directive:

- Essex Estuaries Special Area of Conservation.

In accordance with the appropriate assessment of the East of England Plan distances were applied in relation to certain types of development to check whether there are any sites outside of the district that may also be affected by the Core Strategy. These distances are as follows:

- 200m – for road schemes (Highways Agency, 2007 'Design Manual for Roads and Bridges (DMRB) Volume 11, Section 3, Part 1 (HA207/07) Air Quality');

- 5km – for increases in recreational use as a result of new residential developments (English Nature, 2006 'Thames Basin Heaths Special Protection Area: Mitigation standards for residential development'. [version dated 26th May 2006] English Nature, Newbury.); and
- 10km - for IPPC processes other than major emitters such as large power stations, refineries or iron and steelworks (Environment Agency, 2002 'Integrated Pollution Prevention and Control (IPPC) - Environmental Assessment and Appraisal of BAT. Horizontal Guidance Note IPPC H1 ').

No additional sites outside of the Borough were identified.

Appendix A includes a full summary of each of the international sites and their features. The tables include general site information and for each of the qualifying features the conservation objectives, qualification, season, status, attributes, sensitivity, possible effects and significant effects as a result of the Site Allocations DPD. It was considered sensible to include the likely effects of the DPD on each qualifying feature, even though there is repetition within the table, to ensure that every single qualifying feature is carefully assessed.

Maintaining sites in favourable condition

The conservation objectives for the designated sites include maintaining qualifying features (habitats and species) in favourable condition. Natural England has identified targets in order to maintain the favourable condition of the designated sites as outlined within the report on Essex Estuaries European Marine Site (English Nature, 2000). In summary these targets are as follows:

In relation to qualifying species:

- No significant displacement of birds due to human disturbance.
- No significant reduction in waterfowl assemblage numbers.

In relation to qualifying habitats (subject to natural change):

- No decrease in extent or change in distribution of the qualifying habitats.
- No change in creek density or morphology.
- No change in the surface level of the saltmarsh and foreshore relative to sea level rise.

No significant deviations in:

- Vegetation structure.
- Algal mat cover.
- Temperature and salinity of estuaries.
- Particle size analysis parameters and organic carbon content of mud and sand.
- Shore profile.
- Abundance of prey species.

Much of the data available for assessing international site condition relates to the nature conservation interests of the Site of Special Scientific Interest (SSSI) and

not to the condition of the specific features the international site was designated for. However, SACs and SPAs are generally based on SSSI designations and so it is considered that this data is highly relevant. The data in the table below was taken from Natural England's November 2008 update of SSSI site condition.

SSSI	% area favourable	% area unfavourable recovering	% area unfavourable no change	% area unfavourable declining	% area destroyed / partly destroyed
Abberton Reservoir	100	0	0	0	0
Blackwater Estuary	28.46	10.80	1.72	59.02	0
Colne Estuary	47.16	0	0	52.84	0

Data on SSSI site condition was collected in 2006 for the appropriate assessment of the Core Strategy. With the exception of the Blackwater Estuary site condition has remained the same for all of the sites since this time. The Blackwater Estuary has shown an improvement; the percentage of the area classed as 'unfavourable but recovering' has increased from 6.8% to 10.8% with a decrease in area classed as 'unfavourable declining' reducing from 63.01% to 59.02%.

Potential effects of the Site Allocations DPD on international sites

Many human activities have the effect of degrading parts of estuarine ecosystems through for example, over-exploitation of their natural resources and excessive discharge of wastes and pollution. However, over a third of the population nationally live in towns and cities around estuaries and so a balance has to be struck between the need to protect these environmentally important sites and managing the increasing recreation impacts associated with a growing population.

Natural England (when they were English Nature) has produced a number of Habitat Regulations guidance notes to help ensure consistency in applying the Habitat Regulations. Habitat Regulations Guidance Note 3 includes a list of examples of types of effects which are likely to be significant; although this list is not exhaustive it will be used when looking at the likely effects of the Site Allocations DPD:

1. Causing change to the coherence of the site or to the Natura 2000 series (e.g. presenting a barrier between isolated fragments, or reducing the ability of the site to act as a source of new colonisers).
2. Causing reduction in the area of habitat or of the site.
3. Causing direct or indirect change to the physical quality of the

- environment (including the hydrology) or habitat within the site.
4. Causing ongoing disturbance to species or habitats for which the site is notified.
 5. Altering community structure (species composition).
 6. Causing direct or indirect damage to the size, characteristics or reproductive ability of populations on the site.
 7. Altering the vulnerability of populations etc to other impacts.
 8. Causing a reduction in the resilience of the feature against external change (for example its ability to respond to extremes of environmental conditions).
 9. Affecting restoration of a feature where this is a conservation objective.

In compiling the tables of information for each of the sites the following threats were identified:

- Recreational fishing.
- Pollution.
- Recreational/ human disturbance.
- Cold winter weather.
- Water levels.
- Water quality.
- Water quantity.
- Water based recreation.
- Predation.
- Intensive agriculture.
- Erosion.
- Flooding.
- Wetland drainage.
- Habitat fragmentation.
- Coastal squeeze.
- Loss of habitats.
- Sea level rise.

Notwithstanding the above list, from the appropriate assessment of the Core Strategy, a review of appropriate assessments carried out by other local planning authorities and comments from Natural England, the following are identified as the key issues that may affect site integrity as a result of the Site Allocations DPD:

- Water quality.
- Water resources.
- Non-physical disturbance.
- Physical disturbance.
- Habitat fragmentation.
- Habitat loss.

- Predation.
- Flooding.
- Coastal squeeze.

Water quality

Direct effects

No direct effects on water quality are likely as a result of the Site Allocations DPD.

Indirect effects

A growth in population resulting from an increase in housing will result in increased demands on the wastewater treatment system and will likely necessitate increased discharge consents and possibly even the establishment of new sewage treatment works (STWs). Population expansion has the potential to increase nutrient loading to the international sites, with the potential for impacts on site integrity through eutrophication.

The appropriate assessment of the Core Strategy referred to the regional report on the adequacy of the existing wastewater treatment system for population growth planned under the East of England Regional Spatial Strategy (RSS14) (Halcrow, 2007). This report did not identify any specific concerns as a result of growth rates outlined in RSS14. It did however suggest that expansion of Colchester STW may be required in 2011-2016 if projected housing growth rates are to be met, particularly if a tightened ammonia standard is required.

Since the adoption of the Core Strategy the Haven Gateway draft Water Cycle Study (WCS) stage 2 report has been produced. This forms a key part of the evidence base for the Local Development Framework and has informed this appropriate assessment. The WCS will be finalised prior to submission, which provides the opportunity to modify this appropriate assessment report if necessary.

Colchester Borough is serviced by fifteen STWs of which two (Dedham and Tiptree) also receive discharges from adjacent local authorities. Four STWs are currently at or above their consented dry weather flows (DWF); these are Colchester, Copford, Dedham and Langham. Tiptree STW is also reported as likely to have negative headroom towards the end of the plan period.

The majority of the growth within Colchester will be located in the catchment area of the Colchester STW. Anglian Water Services (AWS) has applied for an increase in consented dry weather flows (DWF) for the Colchester STW, although this is only predicted to accommodate growth up to 2013/4. However, in considering housing alone there is sufficient headroom to cope with housing

development throughout the plan period and the levels of capacity apparent within the environmental parameters suggest that increasing discharges will not have a major impact. An increase in discharge will be necessary to accommodate both housing and employment development, which may affect the River Colne in terms of biological oxygen demand (BOD) and nitrogen levels, although current discharges are significantly more diluted than consents allow for. The table below shows the current consented DWF, the increased DWF and how this relates to planned growth.

Water Quality: Colchester STW

	Current consented dry weather flow	Current proposed increase in consent	Projected dry weather discharge in 2020/21	Projected dry weather discharge in 2020/21 - Housing only	Sampling of discharge, percentage of consented limit
	29,284 m ³ per day – limit of 76,400 m ³	36,288 m ³ per day (discharge would exceed consent limit in 2013/4. Increase of 5,771 m ³ – 16% - needed up to 2020/1)	42,059 m ³ per day (exceeds current consent by 12,775 m ³ , 44%)	35,522 m ³ per day by 2020/1 (headroom of 766 m ³ – 2% on current proposed increase in consent, exceeds current consent by 6,238 m ³ , 21%)	
BOD 35 milligrammes per litre of BOD			BOD of River Colne may be altered	BOD of River Colne may be altered	
Ammoniacal nitrogen 15 milligrammes per litre of ammonical nitrogen		86.6 kg	192 kg	94 kg	50% but frequently exceeding 50%
Suspended solids 60 milligrammes per litre of suspended solids		346 kg	767 kg	374 kg	20%

So, if the increased consent is granted the Council can be certain that wastewater can be dealt with up to 2013/4 without adversely affecting the integrity of any international sites, as the Environment Agency as regulator would have carefully considered the impact on international sites as part of the

increased licence consent. However, the Council must be certain that wastewater can be dealt with, with no impact on the integrity of international sites, up until the end of the plan period.

At present no estuarine water bodies are achieving overall good ecologist status in line with Water Framework Directive, and the Environment Agency has set a target in the draft River Basin Management Plan for these water bodies to reach overall good status by 2027. This is a long term aim, which goes beyond the plan period, and more detail on how this will be achieved will be included in the next River Basin Management Plan. The current draft River Basin Management Plan states that water quality has improved greatly in recent years due to significant investment in several large STWs. Whilst the appropriate assessment must adopt the precautionary principle and cannot make assumptions without evidence to back it up, by looking at past trends it is likely that increased investment in STWs, particularly those that are reaching their discharge consent limits, will continue, which will lead to further improvements in water quality.

AWS recognise in their Strategic Direction Statement that investment in wastewater treatment facilities and major new sewers will be needed to accommodate planned growth and that work will need to start in the next asset management period to meet the requirements of growth. Although AWS plan for the long term in their Water Resource Management Plan their Business Plan only covers a five year period. Therefore, the improvements that the WCS has identified will be necessary to accommodate Colchester's proposed growth will be considered in later business plans. AWS' Strategic Direction Statement states that £150 million will be required over the next 30 years to renew cast iron and uPVC wastewater rising mains and £300 million will be required to refurbish pumping stations, which indicates the levels of investment. During the period 2000 – 2005 water companies nationally invested £5bn in quality improvements in sewerage and river water quality is now the best since the industrial revolution.

Although the Council cannot be absolutely certain at this stage that there will be no impacts on site integrity the Environment Agency will need to grant a licence for increased DWF and so the impact on international sites will be looked at in detail as part of this licence application. If adverse impacts are likely consent will not be granted and so regardless of whether or not sites are allocated in this DPD, statutory processes outside of the planning system will ensure that discharges which would adversely affect international sites will not be allowed. Colchester Borough Council is therefore confident that wastewater will be dealt with within the plan period without adversely affecting international sites. As a further caveat, inline with the precautionary principle embodied in the Habitats Directive, either the Development Policies DPD or the Site Allocations DPD could include a policy, as an avoidance measure, stating that:

“Planning permission will not be granted for development where it cannot be demonstrated that the sewerage treatment infrastructure can accommodate the development within the confines of existing consents.”

As a further point, with the exception of Abberton Reservoir SPA/ Ramsar site all international sites in the Borough are in 'unfavourable' condition due to coastal squeeze. The unfavourable condition of these sites is not due to water quality issues.

The WCS reports that the Copford STW is at consented capacity. Only two allocations are proposed within this catchment area; land between the A12 and London Road (residential) and Andersons site, Marks Tey (a small extension to an existing employment site). Whilst the Council are confident that AWS will apply for increased consent within the plan period for this STW as it already exceeds capacity, on a precautionary basis it has been made clear in the DPD that development of these sites cannot come forward until there is capacity to cope with the development at this STW (policy SA STA1).

The WCS concludes that based on likely development in Tiptree within the plan period it is likely that there will be a lack of headroom in 2016/17. As with the Copford STW the Council is confident that AWS will apply for an increased consent to accommodate additional discharges and on a precautionary basis it has been made clear in the DPD that all sites within the catchment area of the Tiptree STW will only be granted planning permission if the STW has capacity to cope with the development (policy SA TIP1). Tiptree STW also receives discharges from a neighbouring authority and this authority will also need to consider increased discharges to this STW as a result of their Local Development Framework.

Finally, one of the aims of the WCS was to identify where adequate water supply and wastewater infrastructure is needed to support planned growth in the Haven Gateway sub-region up to 2021. It was not expected that it would demonstrate that there were no water issues; the study is intended to inform the water companies of where infrastructure improvements are needed.

In-combination effect

Increases in population elsewhere in the region may also have an effect on international sites in terms of unsustainable increases in wastewater. The draft River Basin Management Plan (dRBMP) recognises that effects on waterbodies as part of the proposed scale and distribution of new housing and infrastructure should be considered at the regional level. The appropriate assessment of the RSS recognised that in parts of the region existing wastewater treatment infrastructure operates at the limits of current discharge consents. The report states that where capacity limits have been identified and additional infrastructure is required new development may need to be phased to ensure it does not exceed the capacity/ environmental limits of the infrastructure. It also says that additional capacity for wastewater treatment included in water company

investment plans will be delivered within the regulatory framework provided by OFWAT and the Environment Agency.

Mitigation measures

Either the Development Policies DPD or the Site Allocations DPD could include a policy stating that:

“Planning permission will not be granted for development where it cannot be demonstrated that the sewerage treatment infrastructure can accommodate the development within the confines of existing consents.”

Water Resources

Direct effects

No direct effects on water resources are likely as a result of the Site Allocations DPD.

Indirect effects

Unsustainable rates of abstraction reduce water flows and may result in lower flow velocities, reduced depths and reduced flow continuity that may alter ecological status. Restricted or low flows can lead to higher residence time along some river stretches. These, combined with higher concentrations of nutrients such as phosphate and nitrate may lead to algal blooms. More frequent periods of summer low rainfall are expected under current climate change prediction scenarios which may increase the environmental impact of flow problems. The largest demand for water comes from the public water supply and in order to reduce abstraction, abstractors have been tasked to use water more efficiently. The Future Water Strategy (2008) vision for water consumption is for a daily limit of between 120l - 130l/person/day by 2030 while level 3 of the Code for Sustainable Homes sets daily water usage targets at 130l/person/day.

The Water Cycle Study reports that Anglian Water Services (AWS) are confident that they can supply demand within their area until at least 2035 (the end of the draft Water Resource Management Plan). They do recognise that there are potential supply deficits either against dry year averages or critical peak period forecasts; however they have proposed solutions to address these deficits over the next 27 years.

Within Colchester Borough there are three planning zones; PZ 55 - Bures, PZ 56 - Colchester and PZ 63 - Tiptree. In order to meet predicted demand AWS propose that for PZ 55 they will need to implement general demand management measures in 2025 – 2030 and consider water transfers from adjacent planning zones in the period 2030 – 2035. For PZ 56 they will need to implement general demand management measures in 2010 – 2015, expand Ardleigh Reservoir in

2020 – 2025 and transfer from a planning zone in Ipswich in 2025 – 2030. For PZ 63 they will need to transfer water from a neighbouring planning zone in the period 2010 – 2015. Anglian Water Services Water Resource Management Plan also states that there is the potential to utilise water from unused licenses. The Environment Agency requires further information from AWS regarding effects on international sites as a result of increasing licenses.

The Environment Agency is required to undertake a review of licenses influencing international sites by 2015 and SSSIs by 2021 as part of the Water Framework Directive (Restoring Sustainable Abstraction Programme). However, the draft River Basin Management Plan states that the deadline may be extended due to disproportionate costs and technical infeasibility. The Environment Agency has powers to revoke licenses if abstraction or discharges are shown to be affecting international sites. This could have implications for both existing and planned development within the Borough, which can be addressed through the annual monitoring of the Core Strategy and the review of the Core Strategy. Water issues are constantly evolving and there is a degree of uncertainty; indeed the Environment Agency state in the draft River Basin Management Plan that at present they do not know precisely how the aim to achieve 'good' status in all waters by 2027 will be achieved in all water bodies. It is likely that the Water Framework Directive will provide a robust and effective way of achieving future development without adversely affecting sites.

The draft River Basin Management Plan states that demand for development growth in the South East and East of England will impact highly on the Anglian River Basin District. This will provide challenges to ensure that a high level of sustainable construction and resource use is incorporated in these developments as well as an active recognition of the future challenges posed by climate change. Demand management improves the ability to manage water resources and whilst this is principally the responsibility of the Environment Agency and water companies Colchester Borough Council can contribute to this through the planning system. Policy DP20 of the Development Policies DPD refers to water conservation and states:

"All development proposals shall incorporate measures for the conservation and sustainable use of water. These measures shall include appropriate SuDS for managing surface water runoff within the overall design and layout of the site and measures to conserve water within individual building designs."

In-combination effects

As with water quality if Colchester Borough Council and other authorities do not address the issue significant in-combination effects will occur. However, as detailed above, Colchester has addressed this issue and so no in-combination effects will occur.

Mitigation measures

Policy DP20 of the Development Policies DPD requires water conservation to be incorporated into development, which will reduce the amount of water used in future developments.

Non-physical and physical disturbance

Direct effects

The primary source of non-physical disturbance resulting from the Site Allocations DPD relates to an increase in the number of visitors to the international sites due to increases in housing, an associated increase in demand for recreation and tourism facilities near to these sites.

Physical disturbance relates to actual damage or degradation of habitat from direct human activities. Examples in the context of this assessment relate to damage to habitat from walking (trampling of vegetation) and the abrasion of intertidal or freshwater habitat from boat wash/anchoring. This issue is relevant to the habitats for which international sites are designated (e.g. damage to saltmarsh communities on the Essex Estuaries SAC) or habitat which supports designated species (e.g. sand and gravel shores on the Colne Estuary SPA). Recreational users can damage habitat and cause severe disturbance to wildlife, particularly nesting birds in summer and feeding and roosting waterfowl in winter.

Following discussions with Natural England as part of the appropriate assessment of the Core Strategy it was established that the issue of disturbance should be looked at in terms of weekend and weekday disturbance.

Weekday disturbance relates to the visitation of international sites during the week, for walking, exercising, dog walking etc. It was considered that during the week (and especially during winter) the vast majority of people will use local green space for this purpose. Most people want such facilities in close proximity to their houses, and are less inclined to drive to an international site. In this respect, the provision of green space as part of new development can be seen as an effective measure in reducing overall disturbance to international sites. Policy PR1 of the Core Strategy states that:

"The provision of public open space in developments should be informed by an appraisal of local context and community need, with a particular regard to the impact of site development on biodiversity. New development must provide for the recreational needs of new communities and mitigate impacts on existing communities. This open space provision also needs to alleviate recreational pressure on sites of high nature conservation value (e.g. Natura 2000 sites) from the growing population."

Therefore, there will be no direct effects on international sites in the Borough as a result of weekday disturbance.

At the weekend however people will be more inclined to travel to international sites, due to their generally more established attractive nature, and the 'pull of the sea'. In this regard, the provision of new green space within new development is not as effective. The Haven Gateway Green Infrastructure Strategy sets targets for the provision of Accessible Natural Greenspace (ANG) at the local, district, sub-regional and regional level. Larger scale ANG i.e. sub-regional and regional sites such as Alton Water are identified as providing viable alternative opportunities for recreation to sensitive coastal areas. For Colchester however, the strategy identified the current lack of suitable regional scale ANG to provide this function. Whilst the strategy identified potential in developing such a resource around Abbots Hall and neighbouring sites this is not likely to come forward in the immediate future and so mitigation measures are needed to address this issue.

Indirect effects

No indirect effects are likely; increased disturbance will be a direct effect on the international sites.

In-combination effects

The appropriate assessment of the RSS, which sets the numbers of new dwellings and jobs to be provided over the plan period and therefore the level of population growth, concluded that existing initiatives to manage the Essex coast would ensure that the population increase would not affect the international sites.

The appropriate assessment of Chelmsford's Core Strategy identifies that the increase in housing and employment land in the Borough could impact on the Essex Estuaries SAC, however the area identified as likely to be affected (Crouch and Roach Estuaries) is some distance from Colchester Borough and therefore Colchester's growth in-combination with Chelmsford's growth is unlikely to have an adverse effect on the integrity of this site.

The in-combination impact of Colchester's population growth and Maldon's population growth, which will be set out in their Core Strategy, could affect the integrity of the Colne Estuary SPA/ Ramsar site and the Blackwater Estuary SPA/ Ramsar site, and the Essex Estuaries SAC.

The Essex coast is frequently visited by residents of London and so providing suitable accessible natural green space within the Borough will not have any impact on visitors from outside of the Borough.

Mitigation measures

Whilst not a mitigation measure as such the Council proposed, as part of the appropriate assessment of the Core Strategy, to undertake a programme of survey and monitoring of visitors to international sites. The spatial policy team has devised a methodology which involves surveying visitors to sites over the lifetime of the DPD over the breeding season and over-wintering season and comparing this data to SSSI site condition (which is monitored by Natural England) and housing completions. This programme will highlight if and where adverse impacts are occurring, which will enable the Council, Natural England and any other relevant stakeholders to implement site management measures to avoid/mitigate the impacts. This could include, for example, geographical or spatial restrictions to the sites or signage to make visitors aware of the sensitivity of the area. The spatial policy team submitted the proposed methodology to Natural England in May 2009 and are involved in early discussions with Tendring District Council and Braintree District Council regarding joint working. Once Natural England has agreed the methodology the Council, possibly in partnership with neighbouring authorities, can instigate the programme.

Habitat fragmentation

Habitat fragmentation results in the loss of wildlife across a range of habitats and it is widely understood that isolated habitats are less species rich than those that are linked together. In addition to a reduction in the mass and diversity of species ecological processes are also altered when continuous habitats are turned into sets of isolated fragments. Habitat fragmentation is likely to become an issue in the future, in terms of restricting species to adapt to changing climatic conditions.

Direct effects

The DPD will not increase habitat fragmentation as it will not lead to the loss of habitat.

Indirect effects

Indirectly the DPD will reduce habitat fragmentation by helping to deliver the Haven Gateway Green Infrastructure Study, which will help to increase connectivity along wildlife corridors.

In-combination effects

The DPD, in-combination with the Haven Gateway Green Infrastructure Strategy, will reduce habitat fragmentation.

Mitigation measures

Mitigation measures are not necessary as the DPD alone and in-combination will not result in habitat fragmentation.

Habitat loss

Habitat loss, even just a small loss of protected land, will affect the whole ecosystem through a reduction in the overall biomass and productivity of the ecosystem. The abundance of some bird species, which are the key features of the designated sites, will also lessen.

Direct effects

This DPD will not result in habitat loss.

Indirect effects

This DPD will not result in habitat loss.

In-combination effects

This DPD will not result in habitat loss and so no in-combination effects will occur.

Mitigation measures

Mitigation measures are not necessary as the DPD alone and in-combination will not result in habitat loss.

Predation

Direct effects

Predation of ground nesting birds by cats is potentially a significant issue on international sites. This is particularly relevant where new housing allocations are provided within 0.5 - 1km of an international site, which is the distance recommended by the RSPB as being the typical range of influence for domestic cats. This issue in Colchester Borough relates to the predation of ground nesting species such as Little Tern and Ringed Plover. Following discussions with Natural England as part of the appropriate assessment of the Core Strategy it was considered that cat predation was unlikely to be an issue, for this strategic level assessment. Most sites are in themselves more than 1km wide, and for coastal sites, this therefore provides an adequate buffer for foreshore nesting birds, even if development abutted the site. It is considered therefore that this issue will not result in any direct effects on international sites.

Indirect effects

No indirect effects will occur.

In-combination effects

No in-combination effects will occur.

Mitigation measures

Mitigation measures are not necessary as the DPD alone and in-combination will not result in adverse impacts on international sites as a result of predation.

Flooding

Estuaries generally develop in low lying areas; by their very nature they are susceptible to flooding as a result of tidal incursion. The enclosure of saltmarsh with sea walls increases the risk of tidal incursion as the wall reduces the natural buffer.

Direct effects

No direct effects will occur.

Indirect effects

There is a slight risk of flooding sewage from burst pipes if the foul sewerage system cannot cope with levels of development. This could drain into a watercourse that discharges or flows into an international site; adversely affecting the integrity of the site.

In-combination effects

Current predictions suggest that increasing sea level rise, and increased levels of erosion as a response to climate change will make more coastal frontages vulnerable to erosion and loss of habitat.

Mitigation measures

The potential impact of sewage flooding can be mitigated against by requiring sewerage infrastructure to be upgraded where necessary before development commences and by requiring SuDS as part of all development.

Coastal squeeze

The sea level is rising at a predicted rate of 6mm a year in south-east England. This, coupled with the sinking of the land due to isostatic rebound, will exacerbate the erosion of wetlands and coastal frontages.

Coastal ecosystems, particularly saltmarsh, retreat inland to compensate for sea level rise. However, sea defences impede this retreat, which is known as coastal squeeze. Sea walls both block off natural retreat and deprive the coastal waters of the sediment from coastal erosion that is necessary to help create new structures. Saltmarsh support a variety of populations of wildfowl and waders and if defences are maintained and reinforced, the losses of saltmarshes could be substantial in many places, which has the potential to impact on bird counts. Coastal squeeze is an issue affecting all of the international sites in the Borough and the JNCC have recorded that the main sensitivity for the Essex Estuaries SAC is coastal squeeze.

The Shoreline Management Plan for Essex will set the long term policy approach for managing the county's coastal defences over the next 100 years. Funding mechanisms may alter in the future, which will influence decision making about which sea walls are managed and how the work is funded and this may result in the withdrawal of management along certain stretches of the Borough's coastline. Future developments at the coast will need to demonstrate the ability to adopt a roll back programme in response to changing climatic conditions as set out in Development Policy DP23, which states that:

"Within the Coastal Protection Belt and along the undeveloped coast an integrated approach to coastal management will be promoted and, development will only be supported where it can be demonstrated that it:

- (i) Requires a coastal location and is located within the developed area of the coast;*
- (ii) Will not be significantly detrimental to conserving important nature conservation, historic environment assets, maritime uses and the landscape character of the coast;*
- (iii) Will deliver or sustain social and economic benefits considered important to the well being of the coastal communities; and*
- (iv) Provides opportunities and scope for adaptation to climate change."*

Direct effects

The DPD will not have any direct effects on international sites in terms of coastal squeeze as it does not allocate any development directly adjacent to the coast.

Indirect effects

The DPD will not have any indirect effects on international sites in terms of coastal squeeze; the only sites that are allocated close to an international site

(Waldegraves Holiday Park and Coopers Beach Holiday Park, Mersea Island) will not involve permanent structures. These allocations are considered in more detail further on in this report.

In-combination effects

The appropriate assessment of the RSS recognises that the Essex Coast and Estuaries Coastal Habitat Management Plan (CHaMP) concluded that changes to the extent and distribution of protected habitats are inevitable if flood defences are largely maintained as set out in the current Shoreline Management Plan. An appropriate assessment is being carried out for the new Shoreline Management Plan for the Essex coast. Therefore, the Council is confident that the Shoreline Management Plan in-combination with the DPD will not result in any adverse effects to international sites.

Mitigation measures

Mitigation measures are not necessary as the DPD alone and in-combination will not result in adverse impacts on international sites as a result of coastal squeeze.

Avoidance and mitigation measures

An understanding of the potential effects of the Site Allocations DPD has enabled the spatial policy team to consider the requisite mitigation measures, which will ensure that there is no adverse effect on site integrity. Appropriate assessment guidance from the RSPB acknowledges that setting out mitigation measures in a plan ensures that potential developers are fully aware of the requirements to deliver mitigation measures as part of the development in accordance with both the plan and the Habitat Regulations.

Summary Table of preventative/ precautionary actions to ensure no adverse effects on the integrity of international sites

Issue	Action
Water quality	The following could be included in the Development Policies DPD or the Site Allocations DPD: "Planning permission will not be granted for development where it cannot be demonstrated that the sewerage treatment infrastructure can accommodate the development within the confines of existing consents."
Water quality	It will be stated within the Site Allocations DPD under the sections concerning the site between the A12 and London Road, Andersons site, Marks Tey and sites in Tiptree that planning permission will only be granted where it can be demonstrated that the STW can accommodate the increased discharges from the development.
Water quality	It will be stated in the Stanway sections in the Site Allocations DPD that sewerage infrastructure will need to be upgraded where necessary before development commences.
Water quality	The Development Policies DPD includes a policy promoting SuDS as part all new development.
Water	Policy DP23 of the Development Policies DPD states that: "All development

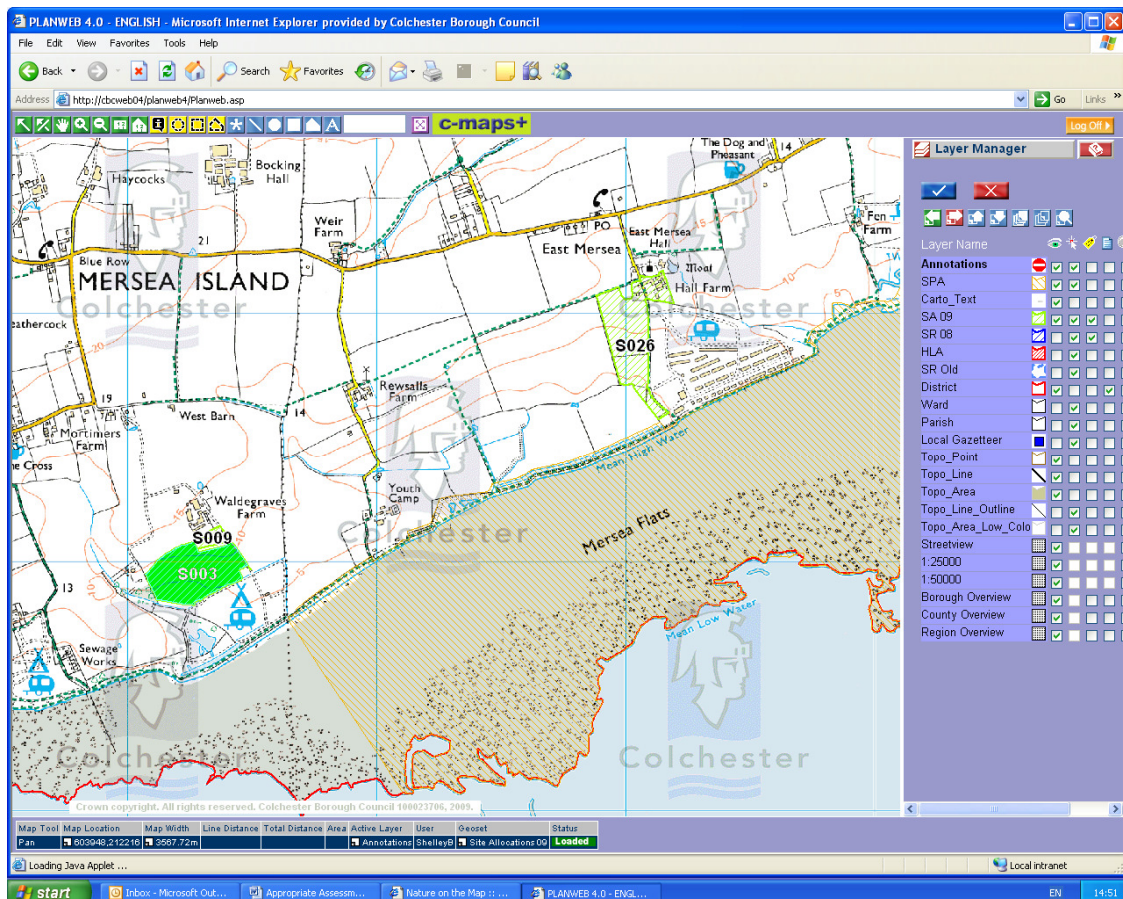
resources	proposals shall incorporate measures for the conservation and sustainable use of water. These measures shall include appropriate SuDS for managing surface water runoff within the overall design and layout of the site and measures to conserve water within individual building designs.”
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Sites likely to have direct impacts

As part of the Habitat Regulations Assessment screening process three sites were identified as likely to have a significant effect on the integrity of the Blackwater Estuary SPA/ Ramsar site:

- S003 Waldegraves Holiday Park – extension to holiday park
- S009 Waldegraves Business Park – extension to business park
- S026 Coopers Beach Holiday Park – extension to holiday park

The map, below, shows the location of the sites and the Blackwater Estuary; the SPA/ Ramsar site is hatched in orange.



These sites are adjacent to the Blackwater Estuary SPA/ Ramsar site and it was therefore concluded that development would likely result in increased disturbance to these sites. However, although these allocations are sought the Waldegraves sites are already established for the proposed uses.

The SSSI units closest to all of the sites are units 1 and 12 and both are in unfavourable condition, although this is not due to adverse impacts from disturbance. Unit 12, which runs parallel to the shore, is subject to coastal squeeze and unit 1, which is beyond unit 12, is subject to coastal squeeze and water pollution from agricultural run-off.

Whilst it would be desirable to direct all development away from the coast holiday parks is a use that is expected to be located along the coast. As already stated the Waldegraves sites are already used for their proposed use and the unfavourable condition of the adjacent SSSI units is not due to adverse effects from disturbance. Furthermore, the Waldegraves sites are not directly adjacent to the SPA/Ramsar site. It is therefore concluded that the Waldegraves sites will not adversely affect the integrity of the Blackwater Estuary SPA/ Ramsar site and should be allocated for the proposed use. Whilst the proposed site at Coopers Beach is not currently in use land adjacent is an established holiday park and it is considered that a small extension, providing it is not directly adjacent to the estuary, will not significantly affect the Blackwater Estuary SPA/ Ramsar site. The following should be required as part of the future planning application on a precautionary basis to ensure that the Blackwater Estuary will not be adversely affected:

- A code of conduct should be agreed between the Council, Natural England and the caravan park operators to minimise disturbance.
- Occupancy restrictions should be conditioned as part of the planning consent to restrict occupancy during the sensitive over-wintering period.
- Any future expansion should consider any upgrades needed to manage increasing sewage from the site. The location of any new STW infrastructure should be located away from areas of flood risk to reduce the risk of pollution and future-proof such assets against climate change impacts in the future.

Climate Change

Climate change has the potential to affect over-wintering waterfowl in two ways. Firstly rising sea levels will directly affect the availability of the habitats favoured by these birds, especially within an estuarine context, and secondly there will be the direct effect of changed meteorological conditions on the birds, their habitats and their food.

In order to understand the potential future impact of climate change on wildlife and geophysical features conservation agencies in the UK and Ireland commissioned the study Modelling Natural Resource Responses to Climate Change (MONARCH) to provide quantitative evidence of the potential. The study looked at the potential impacts on species and habitats in four different environments; coastal, terrestrial, freshwater and marine. The project used a complex computer program to characterise the currently suitable climate space for 50 species associated with 12 habitats. Climate scenarios (the 1998

scenarios from UKCIP) were then used to estimate likely changes in spatial distribution in the future.

A number of likely impacts were identified and those that are relevant to the international sites within the Borough are:

- The alteration of the shape of many estuaries from rising tides will interfere with the marine processes that cycle sediment and maintain saltmarshes, and reduce habitat for the invertebrates on which most waterbirds feed, which will affect the entire ecosystem.
- Less rainfall in the summer and increased levels of evapotranspiration will adversely affect wetlands.
- Saltmarshes are expected to contract as sea levels rise.
- The common saltmarsh grass (*Puccinellia maritima*), a pioneering species which is currently found on the seaward side of salt marshes is expected to disappear.
- Managed realignment of sea defences may result in more extensive intertidal flats at the expense of marshes. In such cases intertidal sediments are likely to become sandier, improving the habitat quality for species such as oystercatcher but reducing it for species such as redshank and dunlin. Case studies suggest that detrimental changes in habitat quality may occur for most species. In some cases changes in estuary extent may be sufficient to compensate for this. Loss of salt and freshwater marshes due to coastal squeeze is likely to be a more serious problem for waterbirds, in particular for those species that do not feed on the intertidal flats.
- The distributions of six of the seven studied species of non-estuarine wader present in internationally important numbers have shifted northwards between 1984-85 and 1997-98. The distributions of two species also shifted eastwards and one westwards. These distributional shifts coincide with changes in regional weather patterns during this period. Cold weather, rain and wind increase the energy requirements of waders, decrease prey availability and lead to decreased wader survival. Therefore, warmer weather expected with climate change is likely to drive further changes in wader distributions.
- Fluctuations of wader numbers on individual estuaries can be partly explained by between-winter variation in weather conditions. This indicates that long-term climatic trends are likely to have a direct impact on waterbird distributions.

Conceptual modelling was able to clarify the multitude of potential impacts of climate change on saltmarsh, sand dune, vegetated shingle, rocky coastal platform and seagrass beds around the British and Irish coasts. Results showed that:

- Increases in sea level will encourage erosion of many saltmarsh, sand dune and vegetated shingle areas, especially if coupled with increases in

storm activity. Climate change is likely to introduce an additional stress on these coastal habitats, especially within the southern part of Britain.

- Rocky coastal platforms will be affected in geomorphological terms by climate change only where rock is soft and erodible and predicted sea level rise is high. Impacts on seagrass beds are less certain, but will be greatest in areas where predicted sea level rise is greatest and if increased storm activity occurs.
- Coastal systems are dynamic and individual, thus they will not respond simply or homogeneously to climate change and detailed predictions can only feasibly be made on a case by case basis.
- More data is required from monitoring on which impacts are likely to be most important and how they are likely to interact. There is also a lack of information on future changes in some key climate variables which have a great impact on these coastal types, e.g. wind direction and storminess. Such gaps in knowledge hamper our ability to predict changes in geomorphology and ecology.

The densities of curlew, dunlin and redshank are predicted to reduce as a result of rising sea levels. However, these species have moved eastwards and northwards over previous years owing to milder winters and so climate change may increase species abundance as eastern areas tend to be muddier and contain higher levels of prey. The MONARCH study also concluded that these estuaries would continue to have sufficient capacity to hold any increase in the number of birds resulting from a changing climate as measures would be taken to protect the estuarine habitat from sea-level rise.

It is clear from the above that climate change will affect the international sites within the Borough and at present there is uncertainty over the effects and timing of effects. Various measures are being implemented by the Council, partly through the LDF, to address climate change in terms of mitigation and adaptation, some of which may benefit international sites.

In-combination Assessment

This report has already outlined the in-combination effects on each of the key issues. Appendix B includes further in-combination appraisal work and identifies likely in-combination effects as a result of neighbouring authorities DPDs and other projects within the Borough.

The key finding of the assessment is that the in-combination effect of a population increase in Maldon, Tendring and Braintree visiting the Colne SPA/ Ramsar, Blackwater SPA/ Ramsar and Essex Estuaries SAC for recreational purposes could, in-combination with the increase in population in Colchester, result in an adverse impact on the integrity of these sites. However, adverse effects can be avoided and mitigated through the implementation of site

monitoring, which is something that Colchester Borough Council are keen to progress.

Coastal squeeze in Maldon may impact on the areas of the designated sites within Colchester as species may be forced to move along the coast, thus potentially upsetting the balance of micro-habitats and causing habitat fragmentation. This is something that should be considered in the Shoreline Management Plan and furthermore adverse effects can potentially be identified through site monitoring.

The in-combination assessment also identified some positive effects in relation to green infrastructure, climate change and water issues, as set out below.

The Haven Gateway Green Infrastructure Study and local open space strategy will provide additional areas for the dispersal of species; reducing the impact of habitat fragmentation. The LDF will help to ensure, through relevant policies in DPDs, that existing green infrastructure is protected and new areas/linkages are delivered. Green infrastructure will also act as a 'Suitable Accessible Natural Green Space' and will reduce the amount of visitors visiting the international sites and thereby will result in less disturbance.

All sites are likely to be affected by climate change and whilst some species are likely to be positively affected (i.e. by extending their over-wintering range) impacts are generally likely to be adverse. The Council has a number of initiatives to tackle the causes of climate change and these are linked to several national indicators. The LDF seeks to tackle climate change through a series of measures and these, in-combination with the Council's climate change initiatives, will reduce negative effects on the international sites.

The Draft River Basin Management Plan sets out detailed proposals for the next 6 years to protect the water environment of the Anglian River Basin District. This plan in-combination with the DPD will reduce adverse effects on international sites in terms of water resources and water quality.

Conclusion

Spatial plans may not have all the answers about the detailed effects upon international sites and this appropriate assessment is appropriate considering the strategic level of the Site Allocations DPD. Whilst it is vitally important for the Council, as competent authority under the Habitat Regulations, to be certain that the DPD will not adversely affect the integrity of an international site this issue will also be considered as part of the development control process. The Council has focussed on the key strategic issues and has demonstrated that none of them will result in adverse impacts. It must be remembered that impacts on international sites will largely become apparent through the design stage and so cannot be fully known and addressed at this strategic level. Through this

process the Council has addressed the strategic issues and has highlighted relevant issues for the development control stage. Whilst a number of uncertain impacts remain adverse effects on the integrity of international sites can be avoided or mitigated through the proper application of policy safeguards within and outside the planning process.

Having considered likely effects and avoidance and mitigation measures Colchester Borough Council is able to conclude that the Site Allocations DPD will not have adverse effects on the integrity of international sites. Discussions with Natural England and the Environment Agency during the course of the assessment helped to inform this decision.

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Appendix A: Sites likely to be affected by Colchester's Local Development Framework

Abberton Reservoir SPA

Abberton Reservoir is a large, shallow freshwater storage reservoir and lies in the Layer Brook valley just before the Brook joins with the Roman River. It is the largest freshwater body in Essex. It is one of the most important reservoirs nationally for wintering wildfowl, with a key role as a roost for wildfowl and waders feeding in adjacent estuarine areas. The site is also important for winter feeding and autumn moulting of waterbirds. The margins of the reservoir have well developed plant communities that provide important opportunities for feeding, nesting and shelter.

Site Name	Abberton Reservoir
Designation	Special Protection Area & Ramsar Site
Qualification	The site qualifies as an SPA under Article 4.1 and 4.2 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance listed on Annex 1 of the Directive and of regularly occurring migratory species and under Article 4.2 of the Birds Directive by regularly supporting at least 20,000 waterfowl. The site qualifies as a Ramsar Site under criterion 6 of the Convention on Wetlands of International Importance especially as Waterfowl Habitat.
Date designated	December 1991 (SPA) and July 1981 (Ramsar)
Area	726.2 hectares
General Site Cover	90% Inland water bodies 10% Improved grassland
Soil and geology	Clay, neutral
Geomorphology & landscape	Lowland, valley
Sensitivity	Abberton Reservoir is a public water supply reservoir. Reduced water availability, and increased demand, in recent years has led to generally low water levels; greater numbers of waders therefore use the site, and as a result no decrease in wildfowl has been attributed to low water levels. Water entering the site has elevated nitrate levels, leading in most summers to algal blooms, but there is no evidence of impacts on wildlife. The Water Company has a consultative committee which addresses conservation issues at all its sites, and the Abberton Reservoir Committee (involving Essex Wildlife Trust and Natural England) addresses local issues.
General ecological features of Ramsar designation	Abberton Reservoir is a large storage reservoir. The main habitat type is freshwater; there are no important vegetated habitats.
Key Issues for the DPD to assess	Water resources, water quality

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Key Features	Conservation objectives	Qualifies under	Season	SPA Status	Attributes	Sensitivity	Effects	Significant effects as a result of the DPD?
Cormorant (sea bird) (Phalacrocorax carbo)	To maintain in favourable condition, the habitats for the populations of cormorant with particular reference to open water and surrounding marginal habitats.	Article 4.2	Breeding	Abberton Reservoir is the largest inland colony for Cormorants nationally with 490 pairs representing at least 7% of the breeding national population (5 year mean 1993-7)	Numbers of the species have increased in recent years, which are thought to result from relaxation in former persecution & increased provision of food sources such as fish farms and hatcheries.	Increased recreational fishing	This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation and recreational pursuits such as fishing.	No, the Abberton Reservoir committee can control the amount of licenses given for fishing.
Gadwall (waterfowl) (Anas strepera)	To maintain in favourable condition, the habitats for the populations of gadwall with particular reference to open water and surrounding marginal habitats.	Article 4.2 & criterion 6 of the Ramsar Convention	Over winter (SPA) Spring/autumn (Ramsar)	550 representing at least 6.3% of the national population (5 year mean 1998/9-2002/3) The latest WeBS has triggered a medium alert.	Gadwall inhabit inland, eutrophic, still waters in lowland areas, including reservoirs & flooded gravel pits as well as marshy grassland/flood meadows. In winter, they tend to concentrate locally in suitable habitats within larger wetland areas. The population has increased significantly in recent years as new habitats have been created.	Recreational disturbance	This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage and to disturbance of feeding and roosting waterfowl. The DPD, cumulatively with the proposal to enlarge the reservoir, will likely result in an even greater number of visitors to this site.	No, visitors to the site will be managed by the Abberton Reservoir Committee. Furthermore survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.

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<p>Shoveler (waterfowl) (Anas clypeata)</p>	<p>To maintain in favourable condition, the habitats for the populations of shoveler with particular reference to open water and surrounding marginal habitats.</p>	<p>Article 4.2 & criterion 6 of the Ramsar Convention</p>	<p>Over winter (SPA) Spring/autumn (Ramsar)</p>	<p>Abberton Reservoir and the Ouse Washes are consistently the most important sites for this species, with peak counts regularly in excess of 600 and occasionally over 1,000. 654 average, representing at least 6.5% of the national population (5 year mean 1993-7). The latest WeBS has triggered a medium alert.</p>	<p>The distribution of Shoveler is predominantly coastal, although they also occur inland along major river systems & elsewhere where they can find suitable wetland habitats. Britain is the most northerly part of their winter range.</p>	<p>Cold winter weather, water levels, water quality</p>	<p>The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures. The in-combination effect of the plan and the proposal to raise the water level at Abberton Reservoir could affect the species, which favour shallow waters. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in adverse effects on the integrity of this site.</p>	<p>No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects. In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.</p>
<p>Teal (waterfowl) (Anas crecca)</p>	<p>To maintain in favourable condition, the habitats for the populations of teal with particular reference to open water and surrounding marginal habitats.</p>	<p>Article 4.2</p>	<p>Over winter</p>	<p>5,326 representing at least 3.9% of the national population (5 year mean 1993-7). The latest WeBS has triggered a high alert.</p>	<p>In winter the species occur across much of Europe, wherever there are suitable wetland (inland and coastal) habitats. They favour areas of shallow freshwater.</p>	<p>Increased water levels, pollution, cold winter weather.</p>	<p>The in-combination effect of the plan and the proposal to raise the water level at Abberton Reservoir could affect the species, which favour shallow waters. Pollution could affect the species if the composition of freshwater is altered dramatically. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in pollution. Additionally, an increase in motor sports could result in pollution. The in-combination effect of climate change could result</p>	<p>No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects. In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report. The Abberton Reservoir committee has the power to control the amount of water sports, which will ensure that</p>

							in an increase to the over-wintering population if the area experiences warmer temperatures.	pollution does not reach unacceptable levels.
Coot (Fulica atra)		Article 4.2	Over winter	<p>Abberton Reservoir holds by far the largest non-breeding numbers of this species – approximately double that of any other UK site. 12,602 representing at least 11% of the national population.</p> <p>The latest WeBS has triggered a medium alert.</p>	Coots favour large, slow moving, shallow water bodies.	Increased water levels, cold winter weather.	<p>The in-combination effect of the plan and the proposal to raise the water level at Abberton Reservoir could affect the species, which favour shallow waters.</p> <p>The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures.</p>	<p>No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects.</p> <p>In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.</p> <p>The Abberton Reservoir committee has the power to control the amount of water sports, which will ensure that</p>

								pollution does not reach unacceptable levels.
Tufted Duck (Aythya fuligula)		Article 4.2	Over winter	1,864 representation 3.1% of the national population. The latest WeBS has triggered a medium alert.	Tufted ducks winter in temperate climates. They prefer large freshwater lakes and feed by diving.	Cold winter weather, pollution	The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures. Pollution could affect the species if the composition of freshwater is altered dramatically. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in pollution. Additionally, an increase in motor sports could result in pollution.	No, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects in terms of water quality. This key issue is discussed in detail in the main body of the appropriate assessment report. The Abberton Reservoir committee has the power to control the amount of water sports, which will ensure that pollution does not reach unacceptable levels.

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Goldeneye (Bucephala clangula)		Article 4.2	Over winter	463 representing 2.7% of the national population	During the winter, this species favours coastal areas in the northern part of its range and large rivers, lakes, reservoirs and coastal lagoons further south. There is some indication that during periods of harsh weather birds move from frozen inland waters to the coast.	Cold winter weather, reduced food numbers	<p>The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures.</p> <p>The proposal to raise the water level of the reservoir could reduce food numbers for this species as the composition of the reservoir will inevitably be altered.</p>	No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects.
Wigeon (Anas Penelope)		Article 4.2 & criterion 6 of the Ramsar Convention	Over winter	<p>2,888 representing 1% of the national population.</p> <p>The latest WeBS has triggered a high alert.</p>	In winter, Wigeon occur in large, mobile flocks that rapidly move to other areas should conditions change for the worse. Wigeon is largely a coastal species, feeding on mud-flats, coastal flooded grassland & saltmarsh pastures. In the UK, the species is also widespread on inland flooded grassland. The use of inland sites appears to have increased in recent years, as birds have adapted their feeding habits in response to changes in the availability of food.	Cold winter weather, human disturbance	<p>The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures.</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage and to disturbance of feeding and roosting waterfowl. The DPD, cumulatively with the proposal to enlarge the reservoir, will likely result in an even greater number of visitors to this site. Additionally, the proposal to raise the water level of the reservoir may affect the species if food availability is altered.</p>	<p>No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects.</p> <p>In terms of disturbance, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p>

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<p>Pochard (Aythya ferina)</p>	<p>Article 4.2 (& future consideration under criterion 6 of the Ramsar Conventions)</p>	<p>Over winter</p>	<p>1,901 representing 4.4% of the national population.</p>	<p>They are widespread in winter forming large flocks on lakes, reservoirs, brackish coastal lagoons, tidal estuaries and inshore coastal waters. They prefer water bodies less than 3 metres deep.</p>	<p>Increased water levels, water based recreation, eutrophication</p>	<p>The in-combination effect of the plan and the proposal to raise the water level at Abberton Reservoir could affect the species, which favour shallow waters.</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation and water based recreation. The DPD, cumulatively with the proposal to enlarge the reservoir, will likely result in an even greater number of visitors to this site.</p> <p>Pollution could affect the species if the composition of freshwater is altered dramatically. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in pollution. Additionally, an increase in motor sports could result in pollution.</p>	<p>No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects.</p> <p>Survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.</p>
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<p>Great crested Grebe (Podiceps cristatus)</p>		<p>Article 4.2</p>	<p>Over winter</p>	<p>132 representing 1.4% of the national population</p>	<p>Some Great Crested Grebes move immediately after breeding to large lakes & reservoirs & certain coastal areas to moult.</p>	<p>Cold winter weather, water based recreation</p>	<p>The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures.</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation and water based recreation. The DPD, cumulatively with the proposal to enlarge the reservoir, will likely result in an even greater number of visitors to this site.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p>
<p>Golden Plover (wader) (Pluvialis apricaria)</p>	<p>To maintain in favourable condition, the habitats for the populations of golden plover with particular reference to open water and surrounding marginal habitats.</p>	<p>Article 4.1</p>	<p>Over winter</p>	<p>3,714 individuals representing at least 1.5% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)</p> <p>The latest WeBS has triggered a high alert.</p>	<p>The Golden Plover is partially migratory in Great Britain. They occur at traditional wintering grounds and are seldom found inland. Grassland and the inter-tidal zone are the most important feeding habitats.</p>	<p>Afforestation, predation and intensive agricultural practices, coastal squeeze</p>	<p>Effects from afforestation are unlikely for this site.</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population and a population increase close to the international site will result in an increased risk of predation from domestic cats.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p>	<p>No, research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue.</p>

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<p>39763 waterfowl (5 year peak mean 01/04/1998)</p>	<p>To maintain in favourable condition, the habitats for the populations of waterfowl assemblage with particular reference to open water and surrounding marginal habitats.</p>	<p>Article 4.2 (a wetland of international importance regularly supporting at least 20,000 waterfowl)</p>	<p>Over winter</p>	<p>Species include: Podiceps cristatus , Anas penelope , Anas strepera , Anas crecca , Anas clypeata , Aythya ferina , Aythya fuligula , Bucephala clangula , Fulica atra</p>		<p>Changing water levels, pollution</p>	<p>The in-combination effect of the plan and the proposal to raise the water level at Abberton Reservoir could affect the species, which favour shallow waters.</p> <p>Pollution could affect the species if the composition of freshwater is altered dramatically. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in pollution. Additionally, an increase in motor sports could result in pollution.</p>	<p>No, mitigation measures have been identified as part of the proposal to raise the water level of Abberton Reservoir, which will ensure no adverse effects.</p> <p>In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.</p>
<p>Bird assemblages of international importance</p>		<p>Criterion 5 of the Ramsar Convention</p>	<p>Over winter</p>	<p>23787 waterfowl (5 year peak mean 1998/99-2002/2003)</p>		<p>Erosion and pollution from agricultural fertilisers, run-off, pesticides</p>	<p>Pollution could affect the species if the composition of freshwater is altered dramatically. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in pollution. Additionally, an increase in motor sports could result in pollution.</p> <p>Effects from agriculture will not be able to be addressed through this DPD as they are outside the control of the LPA.</p>	<p>No, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects in terms of water quality. This key issue is discussed in detail in the main body of the appropriate assessment report.</p>

Blackwater Estuary SPA

The Blackwater Estuary is the largest estuary in Essex north of the Thames and is one of the largest estuarine complexes in East Anglia. Its mudflats, fringed by saltmarsh on the upper shores, support internationally and nationally important numbers of overwintering waterfowl. Shingle and shell banks and offshore islands are also a feature of the tidal flats. The

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surrounding terrestrial habitats; the sea wall, ancient grazing marsh and its associated fleet and ditch systems, plus semi-improved grassland are also of high conservation interest. This rich mosaic of habitats supports an outstanding assemblage of nationally scarce plants and a nationally important assemblage of rare invertebrates. There are 16 British Red Data Book species and 94 notable and local species.

Site Name	Blackwater Estuary (Mid-Essex Coast Phase 4)
Designation	Special Protection Area and Ramsar Site
Qualification	The site qualifies as an SPA under Article 4.1 and 4.2 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance listed on Annex 1 of the Directive and of regularly occurring migratory species and under Article 4.2 of the Birds Directive by regularly supporting at least 20,000 waterfowl. The site qualifies as a Ramsar Site under criteria 1, 2, 3, 5 and 6 of the Convention on Wetlands of International Importance especially as Waterfowl Habitat.
Date designated	May 1995
Area	4395.15 hectares
General Site Cover	50% Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) 33% Salt marshes. Salt pastures. Salt steppes 5% Bogs. Marshes. Water fringed vegetation. Fens 12% Humid grassland. Mesophile grassland
Soil and geology	Clay, Mud, Neutral, Nutrient-rich, Sedimentary, Shingle
Geomorphology & landscape	Coastal, Estuary, Intertidal sediments (including sandflat/mudflat), Islands, Lowland, Shingle bar, Subtidal sediments (including sandbank/mudbank)
Sensitivity	<p>Coastal erosion The main threat to the site is erosion of intertidal habitats due to a combination of sea level rise and isostatic forces operating on the land mass of Great Britain. The situation is worsened with increasing winter storm events, whilst the hard sea walls along this coastline are preventing the saltmarsh and intertidal areas from migrating inland. This situation is starting to be addressed by alternative flood defence techniques. A shoreline management plan has been prepared for the Essex coast which seeks to provide a blueprint for managing the coastline sustainably and a new SMP is currently being prepared.</p> <p>Nutrient enrichment Nutrient enrichment occurs from agricultural run-off and treated sewage effluent. This problem will be addressed through the Essex Estuaries SAC scheme of management as well as review of discharge consents under the Habitats Regulations.</p> <p>Water-based recreation The control of motorised craft (with particular reference to jet-skis) is being addressed through the Blackwater Estuary Management Plan. Enforcement of speed limits should ensure that roosting birds are not subjected to disturbance and saltmarsh habitats are protected from damage by jet-skis.</p> <p>Drought The droughts over the last five years have resulted in lowered water tables in grazing marshes. Attempts are being made to restore this by pumping water from adjacent ditches and use of tertiary treated sewage effluent.</p>
General ecological features of Ramsar designation	At low tide a vast expanse of intertidal mud is exposed from shore to shore. This enriched mud is a feeding ground for variety of molluscs, crustaceans and worms, and encourages the growth of the green algae <i>Enteromorpha</i> , and eelgrass <i>Zostera</i> spp. at the seaward edges of the saltings. Wildfowl and waders amass to exploit this rich food supply in numbers over twice the maximum required to confer international status to the site. On arrival in October, brent geese feed in the estuary on <i>Enteromorpha</i> and <i>Zostera</i> . All three species, <i>Zostera marina</i> , <i>Z. angustifolia</i> , <i>Z. noltei</i> , once formed large beds in the estuary but are

now scarce. This decline in eelgrasses combined with a recovery in brent geese numbers in the 1970s, prompted a change in feeding habits and the geese now spend more time landward of the sea wall grazing on arable crops and improved grassland. Areas of improved, reseeded grassland are managed for brent geese at Old Hall, Goldhanger, Steeple, and Osea and Northey Islands. The inclusion of these established grassland feeding areas within the SSSI will continue to help ease the pressure on arable land. The Blackwater Estuary contains the largest area of saltmarsh in Essex (1,102.85 ha), representing the fifth-largest area in Great Britain; though, like other saltmarshes on this coastline, much of it is eroding at a rate of between 0.3-1 m each year. The saltings serve as important high tide wader roosts and support a specialised flora grazed by wigeon and brent geese. Large expanses of saltings exist at Tollesbury and Old Hall and along the northern shore of the Salcott Channel. At high tide, they accommodate large roosting populations of dunlin, grey plover and curlew. The inlet marshes of Gor Saltings, Cooper's and Steeple Creeks, and the saltings associated with Northey and Osea Islands, also act as high tide refuges for dense populations of waders. Ray Island, in the Strood Channel, is one of the few sites in Essex where the transition from saltmarsh to grassland has not been truncated by the imposition of a sea wall. However, elsewhere, the saltings fronting the sea wall also show distinct zones of vegetation. The lower marsh is comprised of the primary colonisers of mud - glassworts *Salicornia* spp., including the nationally scarce *S. perennis* and *S. pusilla* and the invasive common cord-grass *Spartina anglica*. The scarce native small cordgrass *Spartina maritima* can still be found in places, despite the incursions of the more vigorous hybrid form. Further up the marsh, where tidal immersions are less frequent, sea purslane *Atriplex portulacoides* and common saltmarsh-grass *Puccinellia maritima* predominate, with sea aster *Aster tripolium* and common sea lavender *Limonium vulgare*. The nationally scarce lax-flowered sea lavender *Limonium humile* is sometimes interspersed among the more common species, but the main site for this is at Old Hall. Scarce saltmarsh grasses usually associated with the higher zone of the marsh, such as stiff saltmarsh-grass *Puccinellia rupestris* and Borrer's saltmarsh grass *Puccinellia fasciculata*, are encountered growing behind the sea wall in wheel-ruts along the folding. Two Mediterranean plants at the northerly limit of their distributions, golden-samphire *Inula crithmoides* and shrubby sea blite *Suaeda vera*, in the absence of high marsh, having adapted to growing at the base and outer face of the sea wall. Shrubby sea-blite is also able to colonise unstable shingle along the drift line and large populations are present at West Mersea and Osea Island. The higher wave energies at creek mouths and the upper reaches of the estuary promote the deposition of shingle and sand. Where this has occurred on the foreshore at West Mersea the county rarity, sea spurge *Euphorbia paralias*, has been discovered along with sea mayweed *Tripleurospermum maritimum*, which has a limited distribution in Essex. The sandy parts of the beach have a typical plant community of sand couch *Elytrigia juncea*, marram *Ammophila arenaria* and the very local sea-holly *Eryngium maritimum*, while frosted orache *Atriplex laciniata* occurs on the drift line. This section of coastline shows a transition from saltmarsh to freshwater marsh backed by a sandy cliff face. The clay sea wall surrounding the estuary, as well as harbouring many of the species which would otherwise have colonised the sheltered, high-level marsh, also contains plants more typically associated with grazing marsh. This type of community develops where the topography and management of the grassland mimic conditions of the grazing marshes beyond - well-drained, grazed slopes and/or areas of disturbed ground. The nationally scarce slender hare's-ear *Bupleurum tenuissimum* is frequent along the footpath edge, and the uncommon strawberry clover *Trifolium fragiferum* is present in the close-cropped sward. The brackish-water borrow dykes also contain a similar species complement to the ditches of the land-claimed estuarine marsh. The extensive unmown stretches of the sea wall are dominated largely by sea couch *Elytrigia atherica*, common couch *E. repens*, with herbs such as wild carrot and the regionally notable grass vetchling and the nationally uncommon dittander *Lepidium latifolium*. The tall grasslands of the Essex coast are the British stronghold of the nationally uncommon Roesel's bush-cricket *Metrioptera roeselli*, whilst two other characteristic species, the short-winged conehead *Conocephalus dorsalis*, another bush-cricket, and the Essex skipper butterfly *Thymelicus lineola* are also abundant. Landward of the sea wall, extensive areas of grazing marsh have survived at Old Hall and Tollesbury, while, elsewhere, only fragments remain among the arable land and patches of improved, leveled pasture. Grazing of these ancient marshes since their enclosure in the Middle Ages, have created a characteristic undulating landscape, with the channels of the old saltmarsh creeks still evident. The ant hills of the yellow meadow ant *Lasius flavus* give credence to the antiquity of the landscape, their dry mounds of spoil providing a micro-habitat for common whitlowgrass *Erophila verna* and the nationally scarce upright chickweed *Moenchia erecta*. The grassy sward is dominated by creeping bent *Agrostis stolonifera*, perennial ryegrass *Lolium perenne* and, red fescue *Festuca rubra*, with abundant meadow barley *Hordeum secalinum* and meadow foxtail *Alopecurus pratensis*. Crested dog's-tail *Cynosurus cristatus* and yellow oat-grass *Trisetum flavescens*, grasses indicative of relict grassland, have a frequent distribution while marsh foxtail *Alopecurus geniculatus* is locally abundant in the wetter low-ways. Traditional plants of estuarine grazing marsh occur within the turf including hairy buttercup *Ranunculus sardous* and the nationally scarce divided sedge *Carex divisa* and a variety of leguminous species: spiny rest-harrow *Ononis spinosa*, narrow-leaved bird's-foot-trefoil *Lotus tenuis* and common bird's-foot-trefoil *Lotus corniculatus*, plus the nationally scarce sea clover *Trifolium squamosum* and bird's-foot clover *T. ornithopodioides*. Two further nationally scarce species, mouse-tail *Myosurus minimus* and red goosefoot *Chenopodium botryoides* occur on disturbed ground, the former frequently colonising sheep tracks and gateways. The ditch systems of the Blackwater's coastal marshes have a diverse range of plant species that mark the transition from saline to freshwater. A saline influence is indicated by stands of the saltmarsh rush *Juncus gerardii*, and the tasselweeds, beaked tasselweed *Ruppia maritima* and the nationally scarce spiral tasselweed *Ruppia cirrhosa*. Where the water is less saline, sea club-rush *Bolboschoenus maritimus*

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	becomes the dominant emergent species, along with several aquatics including two nationally scarce species, brackish water-crowfoot <i>Ranunculus baudotii</i> and soft hornwort <i>Ceratophyllum submersum</i> , which occur among the more frequent fennel pondweed <i>Potamogeton pectinatus</i> and spiked water-milfoil <i>Myriophyllum spicatum</i> . The transition to freshwater is demarcated by stands of common reed <i>Phragmites australis</i> and reedmace <i>Typha</i> spp. Farther inland, species characteristic of the swamp-fed community are encountered, such as reed sweet-grass <i>Glyceria maxima</i> and branched bur-reed <i>Sparganium erectum</i> .
Key Issues for the DPD to assess	Physical disturbance (including water based recreation), water quality and coastal squeeze

Key Features	Conservation objectives	Qualifies under	Season	SPA Status	Attributes	Sensitivity	Effects	Significant effects as a result of the DPD?
Little Tern (Sterna albatross)	To maintain in favourable condition the habitats for the populations of little tern, with particular reference to: <ul style="list-style-type: none"> - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand 	Article 4.1	Breeding	36 pairs representing at least 1.5% of the breeding population in Great Britain (5 year mean 1992-6)	Little Terns nest on the coast, utilising sand and shingle beaches and spits, as well as tiny islets of sand or rock close inshore. Feeding takes place close to the colony, no more than 1.5km offshore.	Human disturbance, predation and flooding	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>An increase in population close to the site will result in an increased risk of predation from domestic cats.</p> <p>Whilst flooding of nests is not likely to be a direct effect of the DPD, any increase in flooding could cumulatively, with the other effects, adversely affect the species. The DPD allocates land for further development and more urban development has the potential to increase the risk of</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>Research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue. Whilst there are proposed allocations in Mersea these are for holiday accommodation and business use and so predation is highly unlikely to be an issue.</p> <p>Colchester's LDF seeks to reduce the risk of flooding by directing development to areas</p>

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	<ul style="list-style-type: none"> - Shingle - Saltmarsh - Saltmarsh and shingle - Coastal lagoon and sea wall with borrow dyke 						<p>flooding by introducing more water users and reducing the amount of greenfield land.</p>	<p>at low/no risk of flooding and promoting the use of SuDS.</p>
<p>Hen Harrier (bird of prey) (Circus cyaneus)</p>	<p>To maintain in favourable condition the habitats for the populations of hen harrier, with particular reference to:</p> <ul style="list-style-type: none"> - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand - Shingle - Saltmarsh - Saltmarsh and shingle - Coastal lagoon and sea wall with borrow dyke 	<p>Article 4.1</p>	<p>Over winter</p>	<p>4 individuals representing at least 05.% and up to 2.5% of the wintering population in Great Britain (5 year mean 1994/5 - 1998/9) The adjacent sites of the Colne Estuary, Dengie and Foulness also contain a high number of Hen Harriers.</p>	<p>The winter distribution of Hen Harriers significantly differs from that during the breeding season. Hen Harriers hunt especially over saltmarshes taking small passerines, small mammals and waders.</p>	<p>Disturbance, nutrient enrichment</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of species, which will affect Hen Harriers who feed on species present on saltmarsh.</p> <p>An increase in population within the Borough will also result in an increase in water use, if water quality is not maintained new development could result in damage to saltmarsh, which will affect the species for the reasons above.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.</p>

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<p>Black-tailed Godwit (Limosa limosa islandica)</p>	<p>To maintain in favourable condition the habitats for the populations of regulatory occurring migratory black tailed godwit, with particular reference to: - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc. cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand - Shingle - Saltmarsh - Saltmarsh and shingle - Coastal lagoon and sea wall with borrow dyke</p>	<p>Article 4.2 & criterion 6 of the Ramsar convention</p>	<p>1,280 individuals representing at least 17.3% of the national population (5 yr peak mean 1991/2 – 1995/6) (SPA designation) 2174 individuals, representing an average of 6.2% of the population (5 year peak mean 1998/9-2002/3) (Ramsar designation)</p>	<p>Over winter</p>	<p>The main concentrations are on the muddy estuaries of the south coasts of Ireland and England, inland in the Shannon valley, on the Stour and Hamford Water in eastern England and on the Ribble and Dee in NW England. They feed on worms whilst the tide is out and normally roost on damp pasture, often inland. Peak numbers occur in the period from mid August to mid September. Nests in dispersed colonies to avoid predators.</p>	<p>Wetland drainage, intensive agricultural practices, habitat fragmentation, erosion, disturbance, sea level rise</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>Development on adjacent land may result in habitat fragmentation as species will not be able to move in order to adapt and may find themselves isolated. This may occur if the DPD allocates land for development adjacent to this site.</p> <p>The DPD is unlikely to have an effect in regards to wetland drainage/ land reclamation as it does not propose either.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p> <p>If the DPD does not tackle climate change it could, cumulatively with other land use plans, lead to a rise in sea levels, which will affect this species who feed on worms when the tide is out.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>The LDF seeks to mitigate the effects of climate change by directing development to mixed use and highly accessible locations, promoting sustainable travel and promoting renewable energy and sustainable construction methods. In terms of adaptation, the need for green infrastructure is recognised.</p>
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Grey Plover (Pluvialis squatarola)	To maintain in favourable condition the habitats for the populations of regulatory occurring migratory grey plover, with particular reference to: <ul style="list-style-type: none"> - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand - Shingle - Saltmarsh - Saltmarsh and 	Article 4.2 & Ramsar criterion 6	Over winter	5,090 individuals representing 11.8% of the national population (SPA designation) 4215 individuals, representing an average of 1.7% of the population (5 year peak mean 1998/9-2002/3) (Ramsar designation) The latest WeBS has triggered a medium alert.	Their over-winter habitat is principally the larger, muddier, estuaries and other soft-sediment coastlines. In Britain they occur on most coasts, with concentrations in the south-east and north-west.	Disturbance, erosion, pollution	This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl. An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in pollution. Additionally, development of greenfield land that does not include sustainable urban drainage systems (SuDS) could result in polluted surface water running off into drains and eventually ending up in rivers. Finally, an increase in motor sports could result in pollution.	No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space. In terms of water quality, increased investment in sewage treatment works, technological innovation and the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.

	shingle - Coastal lagoon and sea wall with borrow dyke						
Ringed Plover (Charadrius hiaticula)	Article 4.2	Over winter (SPA) Spring/ autumn (Ramsar)	955 individuals representing at least 3.2% of the wintering European/ Northern Africa wintering population (SPA designation).	Ringed Plovers migrate through Britain and Ireland in spring and autumn either to stay over winter or migrate to breeding grounds. Ringed Plovers are found on almost all coasts in Britain and there is evidence that they show fidelity to their wintering sites on British estuaries. They feed on invertebrates on sand and shingle shores, sandbanks and mudflats, saltmarshes, short grassland and flooded fields.	Erosion, disturbance, predation	This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl. A population increase close to the international site will result in an increased risk of predation from domestic cats.	No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space. Research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue. Whilst there are proposed allocations in Mersea these are for holiday accommodation and business use and so predation is highly unlikely to be an issue.

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<p>Dark-bellied Brent Goose (Branta bernicla)</p>	<p>To maintain in favourable condition the habitats for the populations of regulatory occurring migratory dark-bellied brent goose, with particular reference to:</p> <ul style="list-style-type: none"> - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand - Shingle - Saltmarsh - Saltmarsh and shingle - Coastal lagoon and sea wall with borrow dyke 	<p>Article 4.2 & Criteria 6 of the Ramsar Convention</p>	<p>Over winter</p>	<p>15,392 individuals representing at least 14.9% of the national population (SPA designation)</p> <p>8689 individuals, representing an average of 4% of the population (5 year peak mean 1998/9-2002/3) (Ramsar designation)</p> <p>The latest WeBS has triggered a medium alert.</p>	<p>The traditional wintering habitat is mostly shallow coasts and estuaries with extensive mudflats and intertidal areas, as Dark-bellied Brent Geese rarely occur far from the sea and feed on intertidal plants and a small range of littoral plants. Population growth during the 1980s resulted in more rapid seasonal depletion of natural food sources. Thus, since the late 1970s, the geese have adapted to use coastal grasslands and the early growth of cultivated cereal crops.</p>	<p>Erosion and pollution from agricultural fertilisers, run-off, pesticides, coastal squeeze</p>	<p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p> <p>Brent geese graze on arable crops and improved grassland landward of the sea wall, as sea levels rise if the DPD does not preserve land further inland this species will lose its habitat.</p>	<p>No, this DPD only allocates three small sites close to the Blackwater Estuary (two for holiday parks and one for business use). The allocation of these sites will not affect the ability of dark-bellied brent geese to graze on agricultural land.</p>
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<p>Dunlin (Calidris alpina)</p>	<p>To maintain in favourable condition the habitats for the populations of regulatory occurring migratory dunlin, with particular reference to:</p> <ul style="list-style-type: none"> - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand - Shingle - Saltmarsh - Saltmarsh and shingle - Coastal lagoon and sea wall with borrow dyke 	<p>Article 4.2 & criterion 6 of the Ramsar convention</p>	<p>Over winter</p>	<p>33,267 individuals representing 6.3% of the national population (SPA designation)</p> <p>27655 individuals, representing an average of 2% of the population (5 year peak mean 1998/9-2002/3) (Ramsar designation)</p> <p>The latest WeBS has triggered a medium alert.</p>	<p>After Lapwings, Dunlins are the most numerous wader in the UK in winter and are found on estuaries and open coasts throughout the country. They occur in particularly high densities in estuaries. They are loyal to their sites and move little within and between winters. Numbers have increased rapidly in the south and east over recent years, but have fell in the rest of the country.</p>	<p>Land reclamation disturbance, erosion, pollution, sea level rise</p>	<p>The spread of Common Cord-grass (Spartina anglica) on upper mud-flats has resulted in localised loss of habitat.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p> <p>Effects from land reclamation are unlikely as this DPD does not propose any.</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>Rising tides are predicted to reduce densities of dunlin.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>In terms of rising tides, the LDF seeks to mitigate the effects of climate change by directing development to mixed use and highly accessible locations, promoting sustainable travel and promoting renewable energy and sustainable construction methods. In terms of adaptation, the need for green infrastructure is recognised.</p>
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<p>109,964 waterfowl (5 year peak mean 01/04/1998)</p>	<p>To maintain in favourable condition the habitats for the populations of waterfowl that contribute to the wintering waterfowl assemblage, with particular reference to:</p> <ul style="list-style-type: none"> - Semi-improved grassland - Unimproved grazing marsh inc. ditches - Semi-improved grazing marsh - London clay with deep water fish fauna inc cliffs - Swamp with open water - Intertidal mud and saltmarsh - Intertidal mud - Intertidal mud with shingle and sand - Sand - Shingle - Saltmarsh - Saltmarsh and shingle - Coastal lagoon and sea wall with borrow dyke 	<p>Article 4.2 (a wetland of international importance regularly supporting at least 20,000 waterfowl)</p>	<p>Over winter</p>	<p>Species include: Branta bernicla bernicla , Charadrius hiaticula , Pluvialis squatarola , Calidris alpina alpina , Limosa limosa Islandica.</p>	<p>Pollution, erosion, coastal squeeze</p>	<p>Natural coastal processes are being exacerbated by sea defences and port development, which will affect waterfowl by changing their habitat. If the DPD proposes sea defences or port development effects on waterfowl at this site are likely.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p>	<p>No, sea defences and port development are not proposed in this DPD.</p>
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<p>The extent and diversity of saltmarsh habitat present.</p>	<p>Ramsar criterion 1</p>	<p>N/A</p>	<p>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>Pollution, erosion, coastal squeeze, sea level rise</p>	<p>Natural coastal processes are being exacerbated by sea defences and port development, which will cause erosion of the saltmarsh. If the DPD proposes sea defences or port development effects on saltmarsh at this site are likely.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p>	<p>No, sea defences and port development are not proposed in this DPD.</p>
<p>The invertebrate fauna is well represented and includes at least 16 British Red Data Book species.</p>	<p>Ramsar criterion 2</p>	<p>N/A</p>	<p>In descending order of rarity these are: Endangered: a water beetle <i>Paracymus aeneus</i>; Vulnerable: a damselfly <i>Lestes dryas</i>, the flies <i>Aedes flavescens</i>, <i>Erioptera bivittata</i>, <i>Hybomitra expollicata</i> and the spiders <i>Heliophanus auratus</i> and <i>Trichopterna cito</i>; Rare: the beetles <i>Baris scolopacea</i>, <i>Philonthus punctus</i>, <i>Graptodytes bilineatus</i> and <i>Malachius</i></p>		<p>Pollution, erosion, coastal squeeze</p>	<p>Natural coastal processes are being exacerbated by sea defences and port development, which will affect invertebrates by changing their habitat. If the DPD proposes sea defences or port development effects on invertebrates at this site are likely.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.</p>	<p>No, sea defences and port development are not proposed in this DPD.</p>

			vulneratus, the flies Campticemus magius and Myopites eximia, the moths Idaea ochrata and Malacosoma castrensis and the spider Euophrys.				
This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in Britain.	Ramsar criterion 3	N/A			Pollution, erosion, coastal squeeze	Natural coastal processes are being exacerbated by sea defences and port development, which will affect plant communities through the erosion of saltmarsh. If the DPD proposes sea defences or port development effects on plant communities at this site are likely. Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.	No, sea defences and port development are not proposed in this DPD.
Assemblage of species of international importance	Ramsar criterion 5	Over winter	105061 waterfowl (5 year peak mean 1998/99-2002/2003)		Pollution, erosion, coastal squeeze	Natural coastal processes are being exacerbated by sea defences and port development, which will affect species by changing their habitat. If the DPD proposes sea defences or port development effects on species at this site are likely. Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.	No, sea defences and port development are not proposed in this DPD.

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Shelduck (Tadorna tadorna)	Possible designation under Ramsar criterion 6	Over winter	3141 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3) The latest WeBS has triggered a medium alert.	Shelduck wintering in the UK are found at the coast and favour muddy estuaries.	Habitat loss	If the DPD allocates land for development on the international site this will result in habitat loss, which will effect this species.	None of the allocated sites result in the loss of any part of the SPA.
Golden Plover (wader) (Pluvialis apricaria)	Possible designation under Ramsar criterion 6	Over winter	16083 individuals, representing an average of 1.7% of the population (5 year peak mean 1998/9-2002/3)	The Golden Plover is partially migratory in Great Britain. They occur at traditional wintering grounds and are seldom found inland. Grassland and the inter-tidal zone are the most important feeding habitats.	Afforestation, predation and intensive agricultural practices, coastal squeeze	Effects from afforestation are unlikely for this site. This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population and a population increase close to the international site will result in an increased risk of predation from domestic cats. Discharges from intensive agriculture cannot be controlled via the planning system; however they should be considered in-combination with the DPD.	Research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue. Whilst there are proposed allocations in Mersea these are for holiday accommodation and business use and so predation is highly unlikely to be an issue.
Redshank (wader) (Tringa totanus)	Possible designation under Ramsar criterion 6	Over winter	4169 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3)	Over winter Redshank appear at most coastal areas and some inland wet grassland. Approximately 70% occur at estuaries.	Loss of wetlands, agricultural intensification, sea level rise	The DPD is unlikely to have an effect in regards to wetland drainage/ land reclamation as it does not propose either. Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD.	No, in terms of rising tides the LDF seeks to mitigate the effects of climate change by directing development to mixed use and highly accessible locations, promoting sustainable travel and promoting renewable energy and sustainable construction methods. In terms of adaptation, the need

						Rising tides are likely to reduce densities of redshank.	for green infrastructure is recognised.
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Colne Estuary SPA

The catchment area of the River Colne is approximately 250 km² to the tidal limit. Being a long and narrow catchment it has few tributaries, with most contributions being from field drains or minor watercourses. The Colne Estuary is located in the southern end of Colchester's coastal area. It 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 southeastern English estuaries. The estuary is of importance for a range of wintering wildfowl and waders, in addition to breeding Little Tern which nest on shell, sand and shingle spits. There is a wide variety of coastal habitats which include mudflat, 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 (JNCC, 2008).

Site Name	Colne Estuary (Mid Essex Coast Phase 2)
Designation	Special Protection Area and Ramsar Site
Qualification	The site qualifies as an SPA under Article 4.1 and 4.2 of the Birds Directive (79/409/EEC) by supporting populations of European species of importance listed on Annex 1 of the Directive and of regularly occurring migratory species and under Article 4.2 of the Birds Directive by regularly supporting at least 20,000 waterfowl. The site qualifies as a Ramsar Site under criterion 6 of the Convention on Wetlands of International Importance especially as Waterfowl Habitat.
Date designated	July 1994
Area	2719.93 hectares
General Site Cover	52% Tidal rivers, estuaries, mudflats, sandflats, lagoons 25% salt marshes, salt pastures, salt steppes 15% humid grassland, mesophile grassland 5% improved grassland 2% shingle, sea cliffs islets 1% coastal sand dunes, sand beaches
Soil and geology	Alluvium, clay, gravel, mud, sand, shingle
Geomorphology & landscape	Coastal, Estuary, Intertidal sediments (including sandflat/mudflat), Islands, Lagoon, Lowland, Open coast (including bay), Shingle bar, Subtidal sediments (including sandbank/mudbank), Valley

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Sensitivity	The Colne Estuary encompasses a diversity of soft coastal habitats, dependent upon natural coastal processes. The vulnerability of these habitats is linked to changes in the physical environment: the intertidal zone is threatened by coastal squeeze and changes to the sediment budget , especially up drift of the site. Limited beach feeding is under way to alleviate the sediment problem. The site is vulnerable to recreational pressures which can lead to habitat damage (saltmarsh and sand dunes) and to disturbance of feeding and roosting waterfowl. Pressures for increased use and development of recreational facilities are being addressed through the planning system and under the provisions of the Habitat Regulations. Jet and water-skiing are largely contained by the Harbour Authorities. Most grazing marshes are managed under ESA/ Countryside Stewardship Agreements, but low water levels are of great concern, and low freshwater flows into the estuary, may be affecting bird numbers and/or distribution. This is being addressed through reviews of consents under the Habitats Regulations. Unregulated samphire harvesting is being addressed by notifying all pickers of the legal implications of uprooting plants without the consent of landowners. To secure protection of the site, an Estuarine Management Plan is in preparation, which will work alongside the Essex Shoreline Management Plan and the emerging Marine Scheme of Management. The Environment Agency's Local Plan aims to reduce the nutrient enrichment arising from sewage and fertiliser run-off .
General ecological features of Ramsar designation	The Colne Estuary has a narrow intertidal zone predominantly composed of flats of fine silt with mudflat communities typical of south-eastern estuaries. The fauna is dominated by <i>Hydrobia ulvae</i> with <i>Macoma balthica</i> , <i>Scrobicularia plana</i> , <i>Hediste diversicolor</i> , and <i>Nephtys hombergii</i> . Towards the mouth of the estuary the substratum becomes more sandy; <i>Zostera noltei</i> and <i>Zostera marina</i> have been recorded at Sandy Point. Saltmarsh has colonised a large proportion of the estuary at Geedon Saltings, Colne Point and the Strood. The majority of this is high-level marsh dominated by saltmarsh grass <i>Puccinellia maritima</i> , sea purslane <i>Atriplex portulacoides</i> and annual seablite <i>Suaeda maritima</i> while the creek edges and disused oyster pits have been colonised by glasswort <i>Salicornia</i> spp, sea aster <i>Aster tripolium</i> , and cord grass <i>Spartina</i> spp. There are extensive saltpans on Geedon Saltings and Colne Point where there is a shorter sward of saltmarsh grass, thrift <i>Armeria maritima</i> and common sea-lavender <i>Limonium vulgare</i> . Nationally uncommon species such as golden samphire <i>Inula crithmoides</i> and shrubby sea blite <i>Suaeda vera</i> occur frequently in the upper marsh and at the foot of the sea-walls. Shrubby sea blite is particularly extensive at Colne Point where there is a transition from saltmarsh to sand dune and shingle. This transition habitat is also important for the nationally uncommon rock sea-lavender <i>Limonium binervosum</i> and is one of the few East Anglian sites for sea heath <i>Frankenia laevis</i> .
Key Issues for the DPD to assess	Water resources, water quality, physical disturbance, coastal squeeze

Key Features	Conservation objectives	Qualifies under	Season	SPA Status	Attributes	Sensitivity	Effects	Significant effects as a result of the DPD?
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<p>Little Tern (Sterna albatross)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of the regularly occurring Annex 1 bird species in favourable conditions, in particular: - Sand & gravel shores - Shallow coastal waters</p>	<p>Article 4.1</p>	<p>Breeding</p>	<p>38 pairs representing at least 1.6% of the breeding population in Great Britain (5 year mean 1992-6)</p>	<p>Little Terns nest on the coast, utilising sand and shingle beaches and spits, as well as tiny islets of sand or rock close inshore. Feeding takes place close to the colony, no more than 1.5km offshore.</p>	<p>Human disturbance, predation and flooding, coastal squeeze</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>A population increase close to the international site will result in an increased risk of predation from domestic cats.</p> <p>Whilst flooding of nests is not likely to be a direct effect of the Core Strategy, any increase in flooding could cumulatively, with the other effects, adversely effect the species.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>Research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue.</p> <p>Colchester's LDF seeks to reduce the risk of flooding by directing development to areas at low/no risk of flooding and promoting the use of SuDS.</p>
<p>Hen Harrier (bird of prey) (Circus cyaneus)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of the regularly occurring Annex 1 bird species in favourable conditions, in particular: - Sand & gravel shores - Shallow coastal waters</p>	<p>Article 4.1</p>	<p>Over winter</p>	<p>4 individuals representing at least 0.5% and up to 2.5% of the wintering population in Great Britain (5 year mean 1994/5 - 1998/9) The adjacent sites of the Blackwater Estuary, Dengie and Foulness also contain a high number of Hen Harriers.</p>	<p>The winter distribution of Hen Harriers significantly differs from that during the breeding season. Hen Harriers hunt especially over saltmarshes taking small passerines, mammals and waders.</p>	<p>Disturbance, coastal squeeze</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of species, which will affect Hen Harriers who feed on species present on saltmarsh.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p>

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<p>Avocet (wader) (Recurvirostra avosetta)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of the regularly occurring Annex 1 bird species in favourable conditions, in particular: - Sand & gravel shores - Shallow coastal waters</p>	<p>Article 4.1</p>	<p>Over winter</p>	<p>75 individuals representing at least 5.9% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)</p>	<p>The over-wintering population has increased over recent decades. The preferred non-breeding habitat is estuaries where the substrate is largely composed of fine silt.</p>	<p>Cold winter weather, changes to the sediment budget and coastal squeeze</p>	<p>The in-combination effect of climate change could result in an increase to the over-wintering population if the area experiences warmer temperatures. Development on adjacent land may result in habitat fragmentation as species will not be able to move in order to adapt and may find themselves isolated. This may occur if the DPD allocates land for development adjacent to this site.</p>	<p>No, there are no sites allocated close to the site and the SSSI is located between the SPA and existing development.</p>
<p>Golden Plover (wader) (Pluvialis apricaria)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of the regularly occurring Annex 1 bird species in favourable conditions, in particular: - Sand & gravel shores - Shallow coastal waters</p>	<p>Article 4.1</p>	<p>Over winter</p>	<p>2,530 individuals representing at least 1.0% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)</p>	<p>The Golden Plover is partially migratory in Great Britain. They occur at traditional wintering grounds and are seldom found inland. Grassland and the inter-tidal zone are the most important feeding habitats.</p>	<p>Afforestation, predation and intensive agricultural practices, coastal squeeze</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population and a population increase close to the international site will result in an increased risk of predation from domestic cats. Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD. Effects from afforestation are unlikely for this site.</p>	<p>No, research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue.</p>

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<p>Dark-bellied Brent Goose (Branta bernicla bernicla)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of regularly occurring migratory bird species in favourable conditions, in particular: - Saltmarsh - Intertidal mudflats & sand flats - Boulder and cobble shores</p>	<p>Article 4.2 & Criteria 6 of the Ramsar Convention</p>	<p>Over winter</p>	<p>4,907 individuals representing at least 1.6% of the wintering Western Siberia/ Western Europe population (5 year peak mean 1991/2 - 1995/6) The latest WeBS has triggered a medium alert.</p>	<p>The traditional wintering habitat is mostly shallow coasts and estuaries with extensive mudflats and intertidal areas. Dark-bellied Brent Geese rarely occur far from the sea and feed on intertidal plants such as <i>Zostera</i>, <i>Enteromorpha</i> and a small range of littoral plants.</p>	<p>Disturbance, sea level rise, coastal squeeze</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl. Brent geese graze on arable crops and improved grassland landward of the sea wall, as sea levels rise if the DPD does not preserve land further inland this species will lose its habitat.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space. No land is allocated adjacent to the site.</p>
<p>Redshank (wader) (Tringa totanus)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of regularly occurring migratory bird species in favourable conditions, in particular: - Saltmarsh - Intertidal mudflats & sand flats - Boulder and cobble shores</p>	<p>Article 4.2</p>	<p>Over winter</p>	<p>2,077 individuals representing at least 1.2% of the wintering Eastern Atlantic wintering population (5 year peak mean 1991/2 - 1995/6)</p>	<p>Over winter Redshank appear at most coastal areas and some inland wet grassland. Approximately 70% occur at estuaries.</p>	<p>Loss of wetlands, agricultural intensification, sea level rise, coastal squeeze</p>	<p>The DPD is unlikely to have an effect in regards to wetland drainage/ land reclamation as it does not propose either. Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in-combination with the DPD. Rising tides are predicted to reduce densities of redshank.</p>	<p>The LDF seeks to mitigate the effects of climate change by directing development to mixed use and highly accessible locations, promoting sustainable travel and promoting renewable energy and sustainable construction methods. In terms of adaptation, the need for green infrastructure is recognised.</p>

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<p>Ringed Plover (Charadrius hiaticula)</p>	<p>Subject to natural change, maintain the habitats for the internationally important populations of regularly occurring migratory bird species (including the nationally important breeding populations) in favourable conditions, in particular: - Saltmarsh - Intertidal mudflats & sand flats - Boulder and cobble shores</p>	<p>Article 4.2</p>	<p>Over winter</p>	<p>The latest WeBS has triggered a medium alert.</p>	<p>Ringed Plovers migrate through Britain and Ireland in spring and autumn either to stay over winter or migrate to breeding grounds. Ringed Plovers are found on almost all coasts in Britain and there is evidence that they show fidelity to their wintering sites on British estuaries. They feed on invertebrates on sand and shingle shores, sandbanks and mudflats, saltmarshes, short grassland and flooded fields.</p>	<p>Disturbance, predation, sea level rise, coastal squeeze</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>A population increase close to the international site will result in an increased risk of predation from domestic cats.</p> <p>The DPD will not directly result in a rise in sea levels. However, it may indirectly contribute through an increase in population and an increase in greenhouse gas emissions, which will exacerbate the effects of global warming.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>Research from the RSPB has shown that cats generally have a hunting range of 0.5 – 1 km and no housing allocations are proposed this close to the site so predation will not be an issue.</p> <p>The LDF seeks to mitigate the effects of climate change by directing development to mixed use and highly accessible locations, promoting sustainable travel and promoting renewable energy and sustainable construction methods. In terms of adaptation, the need for green infrastructure is recognised.</p>
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<p>38,548 waterfowl</p>	<p>Subject to natural change, maintain the habitats for the internationally important assemblage of waterfowl in favourable condition, in particular: - Saltmarsh - Intertidal mudflats & sand flats - Boulder and cobble shores - Shallow coastal waters</p>	<p>Article 4.2 (a wetland of international importance regularly supporting at least 20,000 waterfowl)</p>	<p>Over winter</p>	<p>Species include: Black-tailed Godwit <i>Limosa limosa islandica</i>, Dunlin <i>Calidris alpina alpina</i>, Lapwing <i>Vanellus vanellus</i>, Grey Plover <i>Pluvialis squatarola</i>, Ringed Plover <i>Charadrius hiaticula</i>, Shelduck <i>Tadorna tadorna</i>, Cormorant <i>Phalacrocorax carbo</i>, Great Crested Grebe <i>Podiceps cristatus</i>, Redshank <i>Tringa totanus</i>, Dark-bellied Brent Goose <i>Branta bernicla bernicla</i>, Golden Plover <i>Pluvialis apricaria</i>, Avocet <i>Recurvirostra avosetta</i></p> <p>The latest WeBS has triggered a medium alert for brent geese, shelduck,</p>	<p>Physical and non-physical disturbance, water resources, water quality, coastal squeeze</p>	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>An increase in population within the Borough will result in an increase in demand for water to serve new development. Water shortages could have a detrimental impact on the integrity of fresh water habitats/species designated under Birds Directive/Habitats Directive.</p> <p>An increase in population within the Borough will result in an increase in water use, if water quality is not maintained new development could result in adverse effects on the integrity of this site.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>International sites will not be affected by this DPD in terms of water resources and water quality as explained in the main section of the report.</p>
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			ringed plover and dunlin.				
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Extent and diversity of saltmarsh		Criteria 1 of the Ramsar Convention	N/A	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.		Disturbance, erosion and pollution from agricultural fertilisers, run-off, pesticides, sea level rise	<p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>Natural coastal processes are being exacerbated by sea defences and port development, which will result in adverse effects to this site.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system; however they should be considered in-combination with the DPD.</p>	<p>No, survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>No sea defences or port development are proposed as part of the DPD and the LDF addresses the issues of climate change mitigation and adaptation.</p>
The site supports 12 species of nationally scarce plants and at least 38 British Red Data Book invertebrate species.		Criteria 2 of the Ramsar Convention	N/A			Erosion and pollution from agricultural fertilisers, run-off, pesticides	Saltmarshes are expected to contract as sea levels rise.	
This site supports a full and representative sequences of saltmarsh plant communities covering the range of variation in		Criteria 3 of the Ramsar Convention	N/A			Erosion and pollution from agricultural fertilisers, run-off, pesticides		

Britain.						
Bird assemblages of international importance		Criteria 5 of the Ramsar Convention	Over winter	32041 waterfowl (5 year peak mean 1998/99-2002/2003)		Erosion and pollution from agricultural fertilisers, run-off, pesticides
Common Redshank		Criteria 6 of the Ramsar Convention	Over winter	1624 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3)		Erosion and pollution from agricultural fertilisers, run-off, pesticides

Essex Estuaries SAC

Site Name	Essex Estuaries
Designation	Special Area of Conservation
Date designated	April 2005
Area	46140.82 hectares
General Site Cover	Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (56.5%) Marine areas. Sea inlets (30%) Salt marshes. Salt pastures. Salt steppes (11%) Shingle. Sea cliffs. Islets (0.5%) Improved grassland (2%)

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Soil and geology	Clay, Cobble, Mud, Neutral, Nutrient-rich, Pebble, Sand, Sedimentary, Shingle
Geomorphology & landscape	Coastal, Estuary, Floodplain, Intertidal sediments (including sandflat/mudflat), Islands, Lowland, Open coast (including bay), Subtidal sediments (including sandbank/mudbank)
Sensitivity	The saltmarshes and mudflats are under threat from coastal squeeze , man-made sea defences prevent landward migration of these habitats in response to sea-level rise. These habitats are also vulnerable to plans or projects (onshore and offshore) which have impacts on sediment transport . A scheme of management is being established with the aim of addressing such problems.
Key Issues for the DPD to assess	Water resources, water quality, physical disturbance, non-physical disturbance, coastal squeeze and predation.

Key features/ conservation objectives	Qualifies under	SAC Status	% cover	Attributes	Sensitivity	Effects	Significant effects as a result of the DPD?
Estuaries	Annex 1 habitats (primary reason)	One of the best areas in the UK	40.93	This is a large estuarine site in south-east England, and is a typical, undeveloped, coastal plain estuarine system with associated open coast mudflats and sandbanks. The site comprises the major estuaries of the Colne, Blackwater, Crouch and Roach rivers 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 <i>Sabellaria spinulosa</i> , the brittlestar <i>Ophiothrix fragilis</i> , crustaceans and ascidians. The site also has large areas of saltmarsh and other	Coastal squeeze, changes to sediment budget, sea level rise (sabellaria spinulosa require exposed areas), physical disturbance	<p>Development on adjacent land may result in habitat fragmentation as species will not be able to move as a means of adapting to climate change and may find themselves isolated. This may occur if the DPD allocated land for development adjacent to the site.</p> <p>The DPD will not directly result in a rise in sea levels. However, it may indirectly contribute through an increase in population and an increase in greenhouse gas emissions, which will exacerbate the effects of global warming.</p> <p>This DPD will allocate new land for housing, employment and other uses. New development within the Borough will result in an increase in population, which is likely to bring with it an accompanying increase in visitation. This can lead to habitat damage (particularly to salt marshes and sand dunes) and to disturbance of feeding and roosting waterfowl.</p> <p>An increase in population within the Borough will result in an increase in water use, if water</p>	<p>No, no land is allocated for development adjacent to the site, with the exception of three small sites in Mersea that are extensions to existing uses. The DPD will not exacerbate coastal squeeze or habitat fragmentation.</p> <p>The LDF seeks to mitigate the effects of climate change by directing development to mixed use and highly accessible locations, promoting sustainable travel and promoting renewable energy and sustainable construction methods. In terms of adaptation, the need for green infrastructure is recognised.</p> <p>Survey and monitoring of visitors to the site, compared to site condition and housing completions, will ensure that if disturbance is an issue mitigation measures can be introduced. For example, fencing off particularly sensitive areas or providing new dwellings with increased levels of recreational space.</p> <p>In terms of water quality, increased investment in sewage treatment works, technological innovation and</p>

			important coastal habitats.
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quality is not maintained new development could result in pollution. Additionally, development of Greenfield land that does not include sustainable urban drainage systems (SuDS) could result in polluted surface water running off into drains and eventually ending up in rivers. An increase in motor sports could also result in pollution.

Whilst flooding of nests is not likely to be a direct effect of the DPD, any increase in flooding could cumulatively, with the other effects, adversely affect the species. More urban development has the potential to increase the risk of flooding by introducing more water users and reducing the amount of greenfield land. The

the Environment Agency's review of licenses will ensure no adverse effects. This key issue is discussed in detail in the main body of the appropriate assessment report.

Colchester's LDF seeks to reduce the risk of flooding by directing development to areas at low/no risk of flooding and promoting the use of SuDS.

Proposals for sea defences and port development are not included as part of the DPD.

<p>Mudflats and sandflats not covered by sea water at low tide</p>	<p>Annex 1 habitats (primary reason)</p>	<p>1</p>	<p>One of the best areas in the UK</p>	<p>51.16</p>	<p>Essex Estuaries represents the range of variation of this habitat type found in south-east England and includes the extensive intertidal mudflats and sandflats of the Colne, Blackwater, Roach and Crouch estuaries, Dengie Flats and Maplin Sands. The area includes a wide range of sediment flat communities, from estuarine muds, sands and muddy sands to fully saline, sandy mudflats with extensive growths of eelgrass <i>Zostera</i> spp. on the open coast. The open coast areas of Maplin Sands and Dengie Flats have very extensive mudflats and an unusually undisturbed nature. Maplin Sands is particularly important for its large, nationally-important beds of dwarf eelgrass <i>Zostera noltei</i> and associated animal communities.</p>	<p>Coastal squeeze, physical disturbance, sea level rise, land reclamation, sea defence or coastal protection works, pollution, dredging, fishing, invasion from non-native species</p> <p>DPD will not directly result in a rise in sea levels. However, it may indirectly contribute through an increase in population and an increase in greenhouse gas emissions, which will exacerbate the effects of global warming. This, cumulatively with building adjacent to the site, will result in coastal squeeze.</p> <p>Natural coastal processes are being exacerbated by sea defences and port development, which will affect waterfowl by changing their habitat. If the DPD proposes sea defences or port development effects on waterfowl at this site are likely.</p> <p>Discharges from intensive agriculture cannot be controlled via the planning system, however they should be considered in combination with the DPD.</p> <p>The DPD is unlikely to have an effect in regards to wetland drainage/ land reclamation as it does not propose either.</p>
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<p><i>Salicornia</i> and other annuals colonising mud and sand</p>	<p>Annex habitats (primary reason)</p>	<p>1</p>	<p>One of the best areas in the UK</p>	<p>0.72</p>	<p>Glasswort <i>Salicornia</i> spp. saltmarsh in the Essex estuaries on the east coast of England forms an integral part of the transition from the extensive and varied intertidal mud and sandflats through to upper saltmeadows. Although the saltmarshes in this area are generally eroding, secondary pioneer communities appear as a precursor to erosion on the seaward edge of degraded mid-marsh communities. The area of pioneer marsh includes gradation into extensive cord-grass <i>Spartina</i> spp. swards.</p>	<p>Erosion, physical disturbance, pollution, flooding, climate change, discharge, military manoeuvres, land reclamation, modification of marine currents, competition</p>
<p><i>Spartina</i> swards (<i>Spartinion maritima</i>)</p>	<p>Annex habitats (primary reason)</p>	<p>1</p>	<p>1 of only 2 known outstanding localities in the UK</p>	<p>0.04</p>	<p>The most extensive remaining stand of the native small cord-grass <i>Spartina maritima</i> in the UK and possibly in Europe is found in the Essex Estuaries. The stand is located at Foulness Point and covers approximately 0.17 ha. Other smaller stands are found elsewhere in the estuary complex, notably in the Colne estuary, where it forms a major component of the upper marsh areas.</p>	<p>Coastal squeeze, sea level rise, discharges, pollution, military manoeuvres, land reclamation, flooding, sea defense or coast protection works, erosion, competition</p>

Atlantic salt meadows (<i>Glaucopuccinellietalia maritima</i>)	Annex habitats (primary reason)	1	One of the best areas in the UK	7.37	Although the saltmarshes in this area are generally eroding, extensive salt meadows remain and Essex Estuaries represents Atlantic salt meadows in south-east England, with floristic features typical of this part of the UK. Golden samphire <i>Inula crithmoides</i> is a characteristic species of these marshes, occurring both on the lower marsh and on the drift-line. It represents a community of south-east England also found to the south in mainland Europe.	Grazing, discharges, pollution, military Manoeuvres, land reclamation, drainage, flooding, modification of marine currents, sea defense or coast protection works, erosion, competition, sea level rise
Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)	Annex habitats (primary reason)	1	1 of only 4 known outstanding localities in the UK	0.05	In this complex of estuarine marshes on the east coast of England the occurrence of Mediterranean and thermo-Atlantic halophilous scrubs is currently artificially restricted by sea-walls. It now occurs principally as a strandline community or at the foot of sea-walls. Recent managed retreat schemes offer the prospect of future expansion of the habitat type. The local variant of this vegetation, which features sea-lavenders <i>Limonium</i> spp. and sea-heath <i>Frankenia laevis</i> , occurs at one location, Colne Point.	Grazing, discharges, pollution, military Manoeuvres, land reclamation, drainage, flooding, modification of marine currents, sea defense or coast protection works, erosion

<p>Sandbanks which are slightly covered by sea water all the time</p>	<p>Annex 1 habitats (qualifying feature)</p>	<p>The area is considered to support a significant presence</p>	<p>3.89</p>	<p>Sandbanks which are slightly covered by sea water all the time consist of sandy sediments that are permanently covered by shallow sea water, typically at depths of less than 20 m. The habitat comprises distinct banks (i.e. elongated, rounded or irregular 'mound' shapes) which may arise from horizontal or sloping plains of sandy sediment. The diversity and types of community associated with this habitat are determined particularly by sediment type together with a variety of other physical, chemical and hydrographic factors. These include geographical location (influencing water temperature), the relative exposure of the coast (from wave-exposed open coasts to tide-swept coasts or sheltered inlets and estuaries), the topographical structure of the habitat, and differences in the depth, turbidity and salinity of the surrounding water.</p>	<p>Fishing, sand and gravel extraction, human habitation, discharges, port development, pollution, modification of marine currents, sea defense or coast protection works, erosion, drier climate, changes to sediment budget, sea level rise, species invasion</p>
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Appendix B: Likely in-combination effects

This in-combination assessment is split into two parts. The first looks at the likely in-combination effects with the development plan documents of neighbouring authorities and the second part looks at the in-combination effects with other relevant plans and projects.

Part 1: Neighbouring authorities plans

Regional Spatial Strategy (adopted)

Policy/ies	Site	Reason for likely significant effect & inclusion in appropriate assessment	Avoidance measures/ mitigation	Likely in-combination effects
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<p>SS3 H1 T10 ETG1 ETG4 ETG5 CH1</p>	<p>Essex Estuaries SAC</p>	<p>Coastal management/ recreation</p> <p>Development in the area, including an increased number of homes, would be expected to give rise to an increase in visitors. Increased boat ownership may also result from new residential development in the surrounding area. There are many facilities for mooring boats, marinas and accessible slipways along the Blackwater. There is the potential for habitat damage from water based leisure activities using the Essex estuaries, including boat wash and wash created by jet skiing and water skiing.</p>	<p>The Essex Estuaries SAC is covered by the Essex Coast and Estuaries Coastal Habitat Management Plan (CHaMP), which was prepared for the Environment Agency and English Nature and published in 2002. The purpose of the CHaMP was to provide a long-term strategic view on how to manage habitat change in the light of rising sea levels and flood defence measures. It concluded that changes to the extent and distribution of the protected habitats are inevitable if flood defences are largely maintained as set out in the current Essex Shoreline Management Plan. The Essex Estuaries Initiative was set up to "promote responsible use and management of the coast". It comprises a management group of relevant authorities and advisory groups who have developed a draft management scheme for the Essex Estuaries. That plan identifies a number of actions to address the effects of human activity on those features identified as being moderately or highly vulnerable. These include physical damage to saltmarsh as a result of boat wave action; bird disturbance resulting from leisure boat related development, and bird disturbance as a result of human activity on seawalls and foreshore. The pressures on this site from increased recreation as a result of the proposed housing and leisure development policies are not likely to give rise to significant effects in addition to those already identified and for which plans are in place or proposed.</p>	<p>The increase in population referred to in the RSS is fed down into this DPD, it does not provide for a further increase in population. Therefore no in-combination effects are likely as the AA of the RSS concluded no significant adverse effects.</p>
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<p>SS3 H1 HG1</p>	<p>Colne Estuary (Mid Essex Coast Phase 2) SPA/ Ramsar</p>	<p>Coastal management/ recreation</p> <p>Policy SS3 identifies Colchester as a key centre for development and change and Policy H1 sets out a minimum total target of 25,600 new dwellings in Tendring and Colchester local authority areas. Policy HG1 relates to the strategy for the Haven Gateway sub-region including housing growth in Colchester and expansion of the tourism sector.</p> <p>There is the potential for habitat damage due to wash from leisure craft using the Colne Estuary, and disturbance to wildfowl and waders from shore based recreation including dog walking.</p>	<p>Management measures are already in place for the Essex coast, including this site, and in addition the Colne Estuary project is taking forward site specific initiatives. Thus the AA of the RSS concluded that the increased recreation as a result of the proposed housing and leisure development policies would not give rise to any additional adverse effects on the site.</p>	<p>As above.</p>
<p>SS3 H1 HG1</p>	<p>Blackwater Estuary (Mid Essex Coast Phase 4) SPA/ Ramsar</p>	<p>Coastal management/ recreation</p> <p>Policy SS3 identifies Chelmsford as a key centre for development and change, the strategy for which, including residential development, is set out in Policy CH1. Policy H1 sets out a minimum total target of 18,400 new dwellings in the Chelmsford and Maldon local authority areas.</p> <p>There is the potential for habitat damage due to wash from leisure craft using the Colne Estuary, and disturbance to wildfowl and waders from shore based recreation including dog walking.</p>	<p>Management measures are already in place for the Essex coast including this site and in addition, following on from the Blackwater Estuary Project, coastal management of the Blackwater is being delivered by a designated team within Maldon District Council. Thus the AA of the RSS concluded that increased recreation as a result of the proposed housing and leisure development policies would not give rise to any additional adverse effects on the site.</p>	<p>The increase in population referred to in the RSS is fed down into this DPD, it does not provide for a further increase in population. Therefore no in-combination effects are likely as the AA of the RSS concluded no significant adverse effects.</p>

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<p>SS3 H1 WAT2</p>	<p>Abberton Reservoir SPA/ Ramsar</p>	<p>Water supply It is intended that the increase in water demand from housing growth in the supply zone of Abberton Reservoir will be met by increasing the water storage capacity of the reservoir. This will have short term adverse effects during construction and long term there is an increased risk of the reservoir switching to an algal dominated plant community.</p>	<p>Studies and proposals in advance of a published appropriate assessment for the enlargement of the reservoir indicate that adverse effects can be removed through a series of design and mitigation actions.</p>	<p>Information to support the planning application for the scheme to increase capacity of Abberton Reservoir demonstrates that there will be no adverse effects on site integrity and the competent authorities concluded this and granted permission. There will be no adverse in-combination effects and the scheme may even reduce pressure on other international sites as recreational opportunities at Abberton will increase.</p>
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Chelmsford Borough's Core Strategy and Development Policies DPD (adopted)

Policy	Site	Reason for likely significant effect & inclusion in appropriate assessment	Avoidance measures/ mitigation	In-combination effects
<p>DC3: Managing development density in different locations</p>	<p>Crouch and Roach Estuaries SPA/ Ramsar Site and Essex Estuaries SAC</p>	<p>The area of concern for this policy is the high density housing levels proposed for South Woodham Ferrers Town Centre due to its proximity to the Crouch and Roach Estuaries SPA/ Ramsar Site and Essex Estuaries SAC. High density housing in this area could potentially result in increased recreational pressure that could in turn impact upon the adjacent European Site.</p>	<p>Inclusion of the following additional paragraph to Policy DC3: <i>“Development proposals must avoid any significant adverse environmental impacts and where possible enhance the biodiversity interest of neighbouring internationally designated sites for nature conservation.”</i></p>	<p>The in-combination effect of an increased population in Chelmsford and Colchester will result in more people using the Essex Estuaries SAC for recreational purposes. However, the area identified as being under pressure in Chelmsford Borough is different from the areas under pressure in Colchester and so no in-combination effect is likely.</p>

<p>DC54: Promotion of employ- ment clusters</p>	<p>Crouch and Roach Estuaries SPA/ Ramsar Site and Essex Estuaries SAC</p>	<p>The policy is promoting new development of employment clusters in a number of sectors. Eight specific locations have been outlined, the majority being within the urban area of Chelmsford, and hence not considered to result in adverse effects upon European Sites. However, Ferrers Road Industrial Area, South Woodham Ferrers has been identified as a potential site and this area is located within close proximity to the Essex Estuaries SAC and Crouch and Roach Estuaries SPA/Ramsar Site. Specifics of the location of any new development has not been provided but there is certainly potential for adverse effects to occur as a result of new development in this area.</p>	<p>Inclusion of the following additional paragraph to Policy DC54: <i>"Development proposals must avoid any significant adverse environmental impacts and where possible enhance the biodiversity interest of neighbouring internationally designated sites for nature conservation."</i></p>	<p>As above</p>
<p>DC55: Location of business developm- ent</p>	<p>Crouch and Roach Estuaries SPA/ Ramsar Site and Essex Estuaries SAC</p>	<p>This policy explicitly identifies employment areas where new development will be permitted. The majority of locations identified, as with policy DC54 are within Chelmsford however, the Ferrers Road Industrial Area is identified as a potential site for the focus of this new development. This industrial estate is in close proximity to a European Site and no consideration has been made within the policy text to ensure that new development does not result in adverse effects upon European Sites.</p>	<p>Inclusion of the following additional paragraph to Policy DC55: <i>"Development proposals must avoid any significant adverse environmental impacts and where possible enhance the biodiversity interest of neighbouring internationally designated sites for nature conservation."</i></p>	<p>As above</p>

DC56: Industrial and warehouse developm ent	Crouch and Roach Estuaries SPA/ Ramsar Site and Essex Estuaries SAC	As with policies D54 and D55, proposals for new development in the area of South Woodham Ferrers could potentially lead to significant effects upon European Sites within the vicinity. Furthermore, rural proposals for industrial/warehouse development include a location at Mayphil Industrial Estate, Battlesbridge. This area is also within close proximity to and upstream of the Essex Estuaries SAC and Roach and Crouch SPA/Ramsar Site. As such, proposals at this site could result in adverse effects upon the European Sites within the vicinity.	Inclusion of the following additional paragraph to Policy DC56: <i>"Development proposals must avoid any significant adverse environmental impacts and where possible enhance the biodiversity interest of neighbouring internationally designated sites for nature conservation."</i>	As above
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Maldon District's Core Strategy Issues and Options paper

Policy	Site	Reason for likely significant effect & inclusion in appropriate assessment	In-combination effects
The spatial objectives include increasing number of visitors by 50% by 2015.	Colne SPA/ Ramsar, Blackwater SPA/ Ramsar and Essex Estuaries SAC	Increasing the number of visitors to the area could lead to increased pressure from recreational activities. This has been identified as one of the vulnerabilities of the designated sites due to the potential disturbance to waterfowl caused by use of the sea wall footpaths by dog walkers, bird watchers and tourists. There is also the potential for damage to valuable habitats through the use of motorised craft such as jet skis, however this is largely controlled. Overall, an increase in visitors is considered to have a significant effect on the designated sites as it could cause disturbance to qualifying species.	The in-combination effect of more visitors in Maldon accessing the Colne SPA/ Ramsar, Blackwater SPA/ Ramsar and Essex Estuaries SAC for recreational purposes could, in-combination with the increase in population/ visitors in Colchester, result in an adverse impact on the integrity of these sites.

<p>Urban regeneration of key sites such as the Causeway area of Maldon/Heybridge</p>	<p>Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC</p>	<p>The Causeway area occupies land adjacent to the Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC. Whilst development here would meet the criteria of using previously developed land, regeneration may require improvements to flood defences. Man-made defences can lead to coastal squeeze where the inland migration of saltmarsh and mudflats in response to rising sea levels is prevented. If this option is pursued then there could be loss of saltmarsh and mudflat habitats, which would be contrary to the conservation objectives of the designated sites, which state that the favourable conservation status of these habitats should be maintained. This would therefore represent a significant effect.</p>	<p>Coastal squeeze in this location may impact on the areas of the designated sites within Colchester as species may be forced to move along the coast, thus potentially upsetting the balance of micro-habitats and causing habitat fragmentation.</p>
<p>Linear transport corridor – development at points along communication routes e.g. Crouch Valley Branch Line or a bus route that can develop with the extra housing.</p>	<p>Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC</p>	<p>The Crouch Valley Branch Line runs to the immediate north of the Crouch and Roach Estuary. The protection afforded to the designated sites should prevent any new developments being located within the sites themselves and therefore there would not be direct effects from habitat loss. However, the railway line skirts the coast for a distance of approximately 15km. Development along this route corridor could lead to significant effects on the designated sites due to increased disturbance over a considerable area. Overall, the potential effect of this option is considered to be significant for the integrity of species for which the sites are designated.</p>	<p>As this railway is some distance from the Borough it is not considered that there will be any in-combination effects.</p>

<p>Focus on existing urbanised areas and seek their effective protection from the effects of climate change.</p>	<p>Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC</p>	<p>Man-made defences can lead to coastal squeeze where the inland migration of saltmarsh and mudflats in response to rising sea levels is prevented. If this option is pursued then there could be loss of saltmarsh and mudflat habitats, which would be contrary to the conservation objectives of the designated sites, which state that the favourable conservation status of these habitats should be maintained. This would therefore represent a significant effect.</p>	<p>Coastal squeeze in this location may impact on the areas of the designated sites within Colchester as species may be forced to move along the coast, thus potentially upsetting the balance of micro-habitats and causing habitat fragmentation.</p>
<p>Marina development</p>	<p>Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC</p>	<p>Further marina proposals could lead to disruption to sediment transport mechanisms, which could potentially affect the qualifying habitats of the designated sites. In addition, extensions to the marina could lead to increased recreational activities which have the potential to cause disturbance to the qualifying species of the designated sites. This therefore represents a potentially significant effect.</p>	<p>This predicted disturbance, coupled with disturbance likely from an increase in population in Colchester, is likely to result in significant adverse affects to international sites.</p>

<p>Improve access to the countryside by the introduction of additional footpaths, cycleways and bridleways and other associated recreational infrastructure facilities</p>	<p>Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC</p>	<p>Some disturbance to waterfowl is likely to be caused by recreational use of the sea wall footpaths by dog walkers, bird watchers etc. An increase in visitors is considered to have a significant effect on the designated sites as it could cause disturbance to qualifying species.</p>	<p>This predicted disturbance, coupled with disturbance likely from an increase in population in Colchester, is likely to result in significant adverse affects to international sites.</p>
<p>Large scale renewable energy infrastructure</p>	<p>Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC</p>	<p>The possibility of developing offshore wind farms, wave and tidal energy schemes could potentially impact upon the qualifying species and habitats of the designated sites through direct habitat loss or indirect effects from changes to sediment transfer processes.</p>	<p>Significant affects to international sites are likely if habitat is lost, this DPD does not propose habitat loss and it is therefore unlikely that this option from the Maldon Issues and Options paper, in-combination with this DPD would result in adverse effects to site integrity.</p>

New nuclear power station	Blackwater Estuary SPA/ Ramsar and Essex Estuaries SAC	The provision of a new nuclear power plant in the District to replace Bradwell nuclear power station which has been decommissioned and is being dismantled. Provision of a nuclear power plant would have the potential to cause significant effects to the designated sites if located on the coast. This could be as a result of direct land-take, disturbance to birds during construction and operation and changes to the temperature of the estuary from the release of warm water. These would represent a significant effect.	Although this proposal would be likely to have significant effects alone, it is unlikely that there would be any additional significant effects in-combination with this DPD.
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Braintree District's Core Strategy (draft)

Policy/ies	Site	Reason for likely significant effect & inclusion in appropriate assessment	Avoidance measures/ mitigation	Likely in-combination effects
CS17 – Housing Delivery	Colne, Stour, Blackwater, Croach & Roach, Abberton	Alone this policy is concluded not to have a significant effect on an international site but in-combination with other Core Strategies in the area is likely to have a significant effect.	Provision of suitable accessible natural greenspace as an alternative and contributing to site monitoring with other local authorities.	The effect of an increase in population in Braintree in-combination with the increase in population/ visitors in Colchester could result in an adverse impact on the integrity of these sites.

Colchester's Core Strategy (adopted)

Policy	Site	Reason for likely significant effect & inclusion in appropriate assessment	Avoidance measures/ mitigation	In-combination effects
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<p>SD1 – Sustainable Development Locations</p>	<p>Colne SPA/ Ramsar, Blackwater SPA/ Ramsar, Essex Estuaries, Abberton Reservoir SPA/ Ramsar</p>	<p>Policy SD1 fundamentally seeks to provide sustainable patterns of development within the Borough. The policy provides strategic guidance relating to patterns of development, but does not offer any degree of site specifics, beyond the provision of a settlement hierarchy. Clearly, with increased development and an increase in population, increased visitation and disturbance to nearby international sites cannot be ruled out. Even with the provision of open space to support this development, international sites will continue to offer an attractive recreational resource for walking etc. For these reasons, there is a need to support this policy with avoidance measures to ensure that in the implementation of this core policy, effects on international sites are prevented.</p>	<p>Survey and monitoring, site management and mitigation green space.</p>	<p>There is unlikely to be an in-combination effect as this DPD provides further detail to supplement the Core Strategy. It does not provide for additional levels of growth to that set out in the Core Strategy.</p>
<p>H1 – Housing Delivery</p>	<p>Colne SPA/ Ramsar, Blackwater SPA/ Ramsar, Essex Estuaries, Abberton Reservoir SPA/ Ramsar</p>	<p>This policy provides the strategic framework and specifies the levels of housing growth in the Borough. This is supported by indicative figures relating to areas where development will be encouraged. Whilst the policy specifies a preference for development on previously developed land, this does not preclude development in locations that will lead to increased levels of disturbance relating to international sites.</p>	<p>Survey and monitoring, site management and mitigation green space.</p>	<p>As above.</p>

PR2 Open Space and TA2 Walking and Cycling	Colne SPA/ Ramsar, Blackwater SPA/ Ramsar, Essex Estuaries, Abberton Reservoir SPA/ Ramsar	Policy PR2 simply provides the recognition of the role of open space, and supports this with guidance relating to levels and types of space required. Policy TA2 is specific to the beneficial role of sustainable walking and cycling routes in the Borough. The effects on international sites are very limited here, however, any enhancement of a network of green links or corridors has the potential to make international sites more accessible to walkers, dog walkers and cyclists etc. This increased visitation and resulting disturbance cannot be discounted and for this reason, there is a need for the council to monitor and respond to any localised levels of disturbance that may arise.	Site management	As above.
NE2 – Rural Communities	Colne SPA/ Ramsar, Blackwater SPA/ Ramsar, Essex Estuaries, Abberton Reservoir SPA/ Ramsar	This policy provides direction in regard to types and patterns of rural development which are considered to be appropriate in the Borough. This does provide the potential for increased levels of development in rural areas, which may be in close proximity to international sites. Whilst the actual level of development will be of a lower order of magnitude in comparison with urban areas, the effect of this development on international sites is not known.	Survey and monitoring, site management and mitigation green space.	As above.

Tendring District's Core Strategy Issues and Possible Options document

Tendring District Council has not carried out an appropriate assessment yet, although the SA scoping report included a Habitat Regulations Assessment screening opinion, which stated that an appropriate assessment is needed. The screening opinion predicted that the population increase in Tendring in-combination with the population increase elsewhere in the region is likely to affect the international sites in the district as a result of increased levels of disturbance.

Part 2: Other relevant plans and projects

Plan/ project	Site	Likely in-combination effects
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Colchester Borough Council's Site Allocations DPD Appropriate Assessment Report

Plan to raise the water levels of Abberton Reservoir	Abberton Reservoir SPA/ Ramsar site	The in-combination effect of the plan and the proposal to raise the water level at Abberton Reservoir could affect species, which favour shallow waters. However, this issue has been considered in detail as part of the proposal and appropriate mitigation measures have been incorporated into the scheme and so it is unlikely that there will be a significant effect.
Haven Gateway Green Infrastructure Strategy and Colchester's local strategy	All	These plans will result in positive effects in-combination with the DPD by providing additional areas for the dispersal of species; reducing the impact of habitat fragmentation. The LDF will help to ensure, through relevant policies in DPDs, that existing green infrastructure is protected and new areas/linkages are delivered. Green infrastructure will also act as a 'Suitable Accessible Natural Green Space' and will reduce the amount of visitors visiting the international sites and thereby will result in less disturbance.
Colchester Borough Council's climate change initiatives	All	All sites are likely to be affected by climate change and whilst some species are likely to be positively affected (i.e. by extending their over-wintering range) impacts are generally likely to be adverse. The Council has a number of initiatives to tackle the causes of climate change and these are linked to several national indicators. The LDF seeks to tackle climate change through a series of measures and these, in-combination with the Council's climate change initiatives, will reduce negative effects on the international sites.
Survey and monitoring programme	All	This DPD in-combination with the plan to survey and monitor sites will result in no significant effects on international sites in terms of disturbance as if monitoring highlights that there is an adverse effect on a key feature mitigation measures can be implemented, which will ensure that a significant effect is avoided.
Draft River Basin Management Plan	All	The Draft River Basin Management Plan sets out detailed proposals for the next 6 years to protect the water environment of the Anglian River Basin District. This plan in-combination with the DPD will reduce adverse effects on international sites in terms of water resources and water quality.

