



London Borough of Waltham Forest
Local Development Framework
Submission Core Strategy

Habitat Regulations Assessment

Final Report for Submission
May 2011



Revision Schedule

Habitat Regulations Assessment May 2011

Rev	Date	Details	Prepared by	Reviewed by	Approved by
01	October 2010	Draft Report for client review	Dr Graeme Down Ecologist	Dr James Riley Principal Ecologist	Dr James Riley Principal Ecologist
02	January 2011	Final report for consultation	Dr Graeme Down Ecologist	Dr Jo Hughes Technical Director (Ecology)	Dr Jo Hughes Technical Director (Ecology)
03	May 2011	Final report for submission	Dr James Riley Principal Ecologist		

This document has been prepared in accordance with the scope of Scott Wilson's appointment with its client and is subject to the terms of that appointment. Scott Wilson accepts no liability for any use of this document other than for the purposes for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of the Company Secretary of Scott Wilson Ltd. Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document do not provide legal or tax advice or opinion.

© Scott Wilson Ltd 2010

URS/Scott Wilson
Scott House
Alencon Link
Basingstoke
Hampshire
RG21 7PP

Tel 01256 310200
Fax 01256 310201

www.urs-scottwilson.com

Table of Contents

1	Introduction	5
1.1	Background to the Project	5
1.2	Current Legislation	5
1.3	Scope of the Project	6
1.4	This Report	7
2	Methodology	8
2.1	Introduction	8
2.2	HRA Task 1 - Likely Significant Effects (LSE)	9
2.3	Confirming Other Plans and Projects That May Act In Combination	9
3	Pathways of Impact	13
3.1	Introduction	13
3.2	Urbanisation	13
3.3	Recreational Pressure	14
3.4	Atmospheric Pollution	19
3.5	Water Abstraction	24
3.6	Water Quality	25
4	Summary of Previous Stages of HRA	27
5	Likely Significant Effects - Epping Forest SAC	28
5.1	Introduction	28
5.2	Features of European Interest	28
5.3	Historic Trends and Current Conditions	28
5.4	Key Environmental Conditions	29
5.5	Potential Effects of the Plan	29
5.6	In Combination Assessment	34
5.7	Conclusion	35
6	Likely Significant Effects: Lee Valley SPA and Ramsar	36
6.1	Introduction	36
6.2	Features of European Interest	36
6.3	Historic Trends and Current Conditions	37
6.4	Key Environmental Conditions	37
6.5	Potential Effects of the Plan	38
6.6	In Combination Assessment	44

6.7	Conclusion.....	45
7	Likely Significant Effects: Wormley-Hoddesdonpark Woods SAC	46
7.1	Introduction.....	46
7.2	Features of European Interest.....	46
7.3	Historic Trends and Current Conditions	46
7.4	Key Environmental Conditions	46
7.5	Potential Effects of the Plan	47
7.6	In Combination Assessment.....	48
7.7	Conclusion.....	48
8	Overall Conclusions.....	49
	Appendix 1: ‘Tiering’ in Habitat Regulations Assessment.....	50

1 Introduction

1.1 Background to the Project

1.1.1 URS/Scott Wilson was appointed by the London Borough of Waltham Forest to assist the Council in undertaking a Habitat Regulations Assessment of the Core Strategy Proposed Submission. The objective of the assessment was to identify any aspects of the Core Strategy that would cause an adverse effect on the integrity of Natura 2000 sites, otherwise known as European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either in isolation or in combination with other plans and projects, and to advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

1.1.2 The Core Strategy will form the central planning document within Waltham Forest's Local Development Framework (LDF) which will supersede the current Unitary Development Plan (2006).

1.1.3 The core LDF documents will ultimately include:

- Core Strategy;
- Development Management Policies;
- Proposals Map/Site Specific Allocations;
- North London Joint Waste Plan;
- Area Action Plans (Wood Street, Blackhorse Lane, Walthamstow Town Centre and Northern Olympic Fringe); and
- Supplementary Planning Documents (SPDs) – e.g. Urban Design.

1.1.4 The Core Strategy has been prepared in a number of stages, each subject to appraisal and public participation. In September 2008 the Council published its Core Strategy Issues and Options document. This was followed by the publication of the Core Strategy Preferred Options in January 2010 and the Proposed Submission Core Strategy, which was put out for consultation in January 2011 and is the subject of the HRA covered by an earlier report. Following consultation on the Proposed Submission document, the Council has produced the Submission Core Strategy. It is necessary that this final stage of the Core Strategy is subject to HRA in order to confirm that it is unlikely to lead to significant effects on European sites.

1.2 Current Legislation

1.2.1 The need for Appropriate Assessment is set out within Article 6 of the EC Habitats Directive 1992, and interpreted into British law by the Conservation of Habitats and Species Regulations 2010. The ultimate aim of the Directive is to “*maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of Community interest*” (Habitats Directive, Article 2(2)). This aim relates to habitats and species, not the European sites themselves, although the sites have a significant role in delivering favourable conservation status.

1.2.2 The Habitats Directive applies the precautionary principle to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects with predicted adverse impacts on European sites may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

1.2.3 In order to ascertain whether or not site integrity will be affected, an Appropriate Assessment should be undertaken of the plan or project in question:

Box 1. The legislative basis for Appropriate Assessment

Habitats Directive 1992

Article 6 (3) states that:

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

Conservation of Habitats and Species Regulations 2010

The Regulations state that:

“A competent authority, before deciding to ... give any consent for a plan or project which is likely to have a significant effect on a European site ... shall make an appropriate assessment of the implications for the site in view of that sites conservation objectives... The authority shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the European site”.

1.2.4 Over the years the phrase ‘Habitats Regulations Assessment’ (HRA) has come into wide currency to describe the overall process set out in the Conservation of Habitats and Species Regulations from screening through to Imperative Reasons of Overriding Public Interest (IROPI). This has arisen in order to distinguish the process from the individual stage described in the law as an ‘appropriate assessment’. Throughout this report we use the term Habitat Regulations Assessment for the overall process and restrict the use of Appropriate Assessment to the specific stage of that name.

1.3 Scope of the Project

1.3.1 There is no pre-defined guidance that dictates the physical scope of an HRA of a Core Strategy. Therefore, in considering the physical scope of the assessment, we were guided primarily by the identified impact pathways rather than by arbitrary ‘zones’. Current guidance suggests that the following European sites be included in the scope of assessment:

- All sites within the Waltham Forest Borough boundary; and

- Other sites shown to be linked to development within the Borough boundary through a known 'pathway' (discussed below).

1.3.2 Briefly defined, pathways are routes by which a change in activity within the Core Strategy area can lead to an effect upon a European site. In terms of the second category of European site listed above, guidance from the former Department of Communities and Local Government states that the HRA should be '*proportionate to the geographical scope of the [plan policy]*' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (CLG, 2006, p.6).

1.3.3 There are three European sites that lie partly within the Borough of Waltham Forest – Epping Forest SAC, the Lee Valley SPA and the Lee Valley Ramsar site. As the Core Strategy notes, all 224,300 residents (as of 2009) within the Borough are currently living within 1.2km of either Epping Forest or the Lee (or Lea) Valley Regional Park (within which the components of the Lee Valley SPA and Ramsar sites are geographically contained). Outside the Borough only Wormley-Hoddesdonpark Woods SAC is considered within this assessment, primarily because it lies within the distance over which visitors from Waltham Forest are likely to make recreational day visits (based on the latest results of the England Day Visits Survey). There are no other European sites within 20km of the boundary of the London Borough of Waltham Forest. Figure 1 shows the location of the European sites in relation to Waltham Forest Borough.

1.4 This Report

1.4.1 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 explores the relevant pathways of impact. Chapter 4 considers the Screening stage of the HRA process. Chapters 5 to 7 cover Appropriate Assessment and are organised on the basis of one chapter per European site (Lee Valley SPA and Ramsar designations are considered within the same chapter). Each chapter begins with a consideration of the interest features and ecological condition of the site and of the environmental processes essential to maintain site integrity. An assessment of the Core Strategy in respect of each European site is then carried out and avoidance and mitigation strategies proposed where necessary. The key findings are summarised in Chapter 8: Overall Conclusions.

2 Methodology

2.1 Introduction

2.1.1 The HRA has been carried out in the continuing absence of formal central Government guidance. The former Department of Communities and Local Government released a consultation paper on the Appropriate Assessment of Plans in 2006¹. As yet, no further formal guidance has emerged. However, Natural England has produced its own internal guidance² as has the RSPB³. Both of these have been referred to alongside the guidance outlined in section 1.2.3 in undertaking this HRA.

2.1.2 Figure 2 below outlines the stages of HRA according to current draft CLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

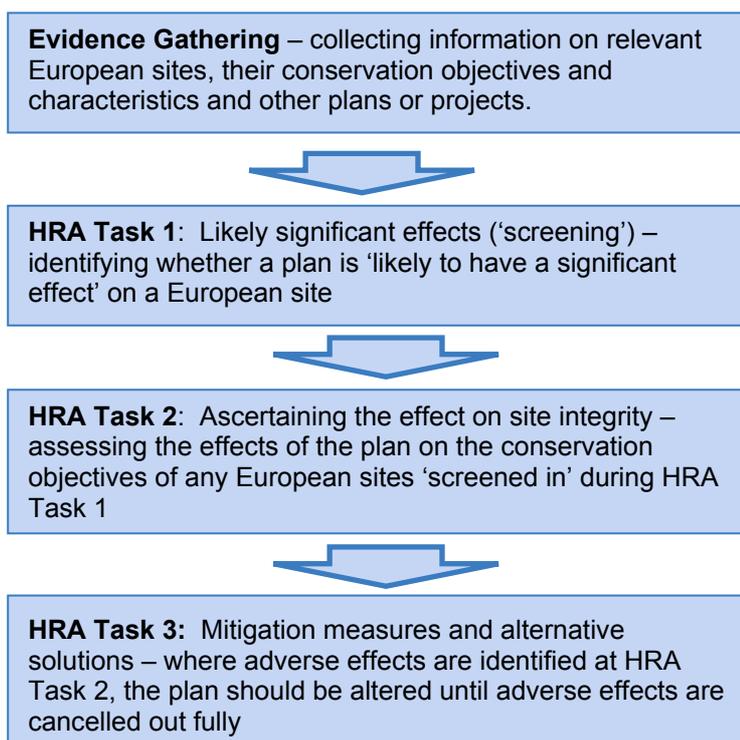


Figure 2 - Four-Stage Approach to Habitat Regulations Assessment

Source: CLG, 2006

¹ CLG (2006) Planning for the Protection of European Sites, Consultation Paper

² http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf

³ Dodd A.M., Cleary B.E., Dawkins J.S., Byron H.J., Palframan L.J. and Williams G.M. (2007)

The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it. The RSPB, Sandy.

2.2 HRA Task 1 - Likely Significant Effects (LSE)

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

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

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

2.2.3 In evaluating significance, URS/Scott Wilson have relied on our professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the Lee Valley SPA & Ramsar site, Epping Forest SAC and Wormley-Hoddesdonpark Woods SAC.

2.2.4 The level of detail in land use plans concerning developments that will be permitted under the plans will never be sufficient to make a detailed quantification of adverse effects. Therefore, we have again taken a precautionary approach (in the absence of more precise data) assuming as the default position that if an adverse effect cannot be confidently ruled out, avoidance or mitigation measures must be provided. This is in line with the former Department of Communities and Local Government guidance that the level of detail of the assessment, whilst meeting the relevant requirements of the Habitats Regulations, should be 'appropriate' to the level of plan or project that it addresses (see Appendix 1 for a summary of this 'tiering' of assessment).

2.3 Confirming Other Plans and Projects That May Act In Combination

2.3.1 It is a requirement of the Regulations that the impacts of any land use plan being assessed are not considered in isolation but in combination with other plans and projects that may also be affecting the European site(s) in question.

2.3.2 It is neither practical nor necessary to assess the 'in combination' effects of the Core Strategy within the context of all other plans and projects within London. For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects relate to the additional housing, transportation and commercial/industrial allocations proposed for neighbouring authorities over the lifetime of the Core Strategy. The East of England Plan (March 2010), South East Plan (May 2009) and the London Plan (consultation draft replacement plan October 2009) provide a good introduction to proposals for areas surrounding the London Borough of Waltham Forest. Although both the South East Plan and the East of England Plan have since been abandoned, they still provide the best summary of the currently anticipated levels of housing within authorities that are up to 20km from European sites that could potentially be impacted by development within Waltham Forest. 20km is the distance over which visitors to these European sites are likely to travel for day visits (based on the latest results of the England Day Visits Survey)

2.3.3 In considering the potential for regional housing development on Epping Forest SAC, Lee Valley SPA and Ramsar and Wormley-Hoddesdonpark Woods SAC, the primary consideration is the impact of visitor numbers – i.e. recreational pressure – to which all three sites are vulnerable.

Other pathways of impact described in more detail in Chapter 3 include reduced air quality and pressure on water resources and quality. Whilst these are also strongly related to housing provision, the actual geographic impact must also be considered within the context of relevant infrastructure (e.g. road transport corridors and water supply catchments).

Table 1. Housing levels to be delivered in authorities within 20km of relevant European sites under the East of England Plan (now revoked) and the London Plan (consultation draft replacement plan), other than Waltham Forest itself

Local Authority	Annual housing average	Total housing from 2006 to 2026 (South East Plan) Total housing from 2011 to 2031 (East of England Plan) Total housing to 2011to 2021 (London Plan)
Barking and Dagenham	1,510	15,100
Barnet	2,255	22,550
Bexley	335	3,350
Brent	1,065	10,650
Brentwood	170	3,400
Bromley	565	5,650
Broxbourne	260	5,100
Camden	665	6,650
Chelmsford	830	16,600
City of London	110	1,100
Croydon	1,330	13,300
Dartford	867	17,340
Ealing	890	8,900
East Hertfordshire	550	11,000
Enfield	560	5,600
Epping Forest	160	3,200
Greenwich	2,595	25,950
Hackney	1,160	11,600
Hammersmith and Fulham	615	6,150
Haringey	820	8,200
Harlow	800	16,000
Harrow	350	3,500
Havering	1,235	12,350
Hertsmere	250	5,000
Hounslow	475	4,750
Islington	1,170	11,700
Kensington and Chelsea	585	5,850
Lambeth	1,255	12,550
Lewisham	1,105	11,050
Merton	320	3,200
Newham	2,500	25,000
North Hertfordshire	790	15,800
Redbridge	760	7,600
Richmond-upon-Thames	245	2,450
St. Albans	350	7,000
Sevenoaks	165	3,300
Southwark	2,005	20,050
Stevenage	320	6,400

Local Authority	Annual housing average	Total housing from 2006 to 2026 (South East Plan) Total housing from 2011 to 2031 (East of England Plan) Total housing to 2011to 2021 (London Plan)
Three Rivers	200	4,000
Thurrock	930	18,500
Tower Hamlets	2,885	28,850
Uttlesford	400	8,000
Wandsworth	1,280	12,800
Watford	260	5,100
Welwyn-Hatfield	290	5,800
Westminster	770	7,700

2.3.4 There are other plans and projects that are relevant to the 'in combination' assessment, and the following have all been taken into account in this assessment:

- Redbridge Borough Council adopted Core Strategy (2008)
- Newham Borough Council Core Strategy Issues and Options (2008)
- Hackney Borough Council Core Strategy Proposed Submission Document (2009)
- Haringey Borough Council Core Strategy Proposed Submission Document (2009)
- Enfield Borough Council Core Strategy Proposed Submission Document (2009)
- North London Waste Plan Preferred Options (2009)
- Crossrail and Crossrail 2
- The London Plan (adopted 2004 and consultation draft replacement plan October 2009)
- London 2012 Olympic Park
- Thames Gateway London Partnership
- London-Stansted-Cambridge-Peterborough Growth Area
- Enfield Council Central Leaside Area Action Plan Issues and Options (2008)
- Westfield Group. Stratford City Masterplan (2009)
- Upper/Lower Lea Valley Opportunity Area Planning Frameworks
- Epping Forest Management Plan 2004-2010
- Lee Valley Regional Park Authority Site management Plan 2006-2011
- Hoddesdon Park Wood Management Plan 2006-2011
- City of London/Essex County Council. Epping Forest Transport Strategy proposals 2009-2016
- Waltham Forest Strategic Infrastructure Plan (2009)
- Waltham Forest Housing Land Availability Assessment (2008)
- Environment Agency. Water for People and the Environment: Water Resources Strategy Regional Action Plan for Thames Region (2009)

- Environment Agency London Catchment Abstraction Management Plan (2006)
- Environment Agency River Basin Management Plan: Thames River Basin District (2009)
- Thames Water's Revised Draft Water Resource Management Plan (2009)
- Veolia Water Central's Final Water Resource Management Plan (2010)
- Impact of East of England Housing and Economic Growth Scenarios on Regional Water Supplies: Draft Environment Agency Response to EERA Consultation (2009)
- Countryside Agency's England Day Visits information (2005)
- Epping Forest Visitor Survey Analysis (2006)
- Lee Valley Regional Park Authority Visitor Tracking Survey data
- Locational data available from the Air Pollution Information System (APIS) database
- Hyder Consulting. Rye Meads Water Cycle Strategy (2009).
- Mayor of London. Connecting with London's Nature – The Mayor's Biodiversity Strategy (2002).

2.3.5 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e. to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis, but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential.

3 Pathways of Impact

3.1 Introduction

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

3.2 Urbanisation

- 3.2.1 This impact is closely related to recreational pressure, in that they both result from increased populations within close proximity to sensitive sites. Urbanisation is considered separately as the detail of the impacts is distinct from the trampling, disturbance and dog-fouling that results specifically from recreational activity. The list of urbanisation impacts can be extensive, but core impacts can be singled out:

- Increased fly-tipping - Rubbish tipping is unsightly but the principle adverse ecological effect of tipping is the introduction of invasive non-native species with garden waste. Non-native species, can in some situations, lead to negative interactions with habitats or species for which European sites may be designated. Garden waste results in the introduction of invasive non-native species precisely because it is the 'troublesome and over-exuberant' garden plants that are typically thrown out⁴. Non-native species may also be introduced deliberately or may be bird-sown from local gardens.
- Cat predation - A survey performed in 1997 indicated that nine million British cats brought home 92 million prey items over a five-month period⁵. A large proportion of domestic cats are found in urban situations, and increasing urbanisation is likely to lead to increased cat predation.

- 3.2.2 The most detailed consideration of the link between relative proximity of development to European sites and damage to interest features has been carried out with regard to the Thames Basin Heaths SPA.

- 3.2.3 After extensive research, Natural England and its partners produced a 'Delivery Plan' which made recommendations for accommodating development while also protecting the interest features of the European site. This included the recommendation of implementing a series of zones within which varying constraints would be placed upon development. While the zones relating to recreational pressure expanded to 5km (as this was determined from visitor surveys to be the principal recreational catchment for this European site), that concerning other aspects of urbanisation (particularly predation of the chicks of ground-nesting birds by domestic cats) was determined at 400m from the SPA boundary. The delivery plan concluded that the adverse effects of any development located within 400m of the SPA boundary could not be mitigated since this was the range over which cats could be expected to roam as a matter of routine and there was no realistic way of restricting their movements, and as such, no new housing should be located within this zone.

⁴ Gilbert, O. & Bevan, D. 1997. The effect of urbanisation on ancient woodlands. *British Wildlife* 8: 213-218.

⁵ Woods, M. et al. 2003. Predation of wildlife by domestic cats *Felis catus* in Great Britain. *Mammal Review* 33, 2 174-188

3.2.4 Given that both Epping Forest SAC and the Lee Valley SPA and Ramsar sites lie partly within Waltham Forest, they are theoretically vulnerable, from a geographic perspective, to the effects of urbanisation from development within Waltham Forest. It is also true that both are vulnerable ecologically – Epping Forest through direct habitat degradation and Lee Valley through similar effects on habitat that supports the species for which the SPA and Ramsar are designated. It is unlikely that the SPA and Ramsar designated species would be directly vulnerable to urbanisation impacts, as they are species that favour aquatic environments and are unlikely to suffer from significant cat predation.

3.2.5 Therefore it is necessary to perform an initial screen to determine whether the Waltham Forest Core Strategy contains policy measures that could lead to significant adverse effects on these European sites, either alone or ‘in combination’ with other plans and projects, through urbanisation.

3.3 Recreational Pressure

3.3.1 Recreational use of a European site has the potential to:

- Prevent appropriate management or exacerbate existing management difficulties;
- Cause damage through erosion and fragmentation;
- Cause eutrophication as a result of dog fouling; and
- Cause disturbance to sensitive species, particularly ground-nesting birds and wintering wildfowl.

3.3.2 Different types of European sites are subject to different types of recreational pressures and have different vulnerabilities. Studies across a range of species have shown that the effects from recreation can be complex.

Mechanical/abrasive damage and nutrient enrichment

3.3.3 Most types of terrestrial European site can be affected by trampling, which in turn causes soil compaction and erosion. Walkers with dogs contribute to pressure on sites through nutrient enrichment via dog fouling and also have potential to cause greater disturbance to fauna as dogs are less likely to keep to marked footpaths and move more erratically. Motorcycle scrambling and off-road vehicle use can cause serious erosion, as well as disturbance to sensitive species.

3.3.4 There have been several papers published that empirically demonstrate that damage to vegetation in woodlands and other habitats can be caused by vehicles, walkers, horses and cyclists:

- Wilson & Seney (1994)⁶ examined the degree of track erosion caused by hikers, motorcycles, horses and cyclists from 108 plots along tracks in the Gallatin National Forest, Montana. Although the results proved difficult to interpret, It was concluded that horses and hikers disturbed more sediment on wet tracks, and therefore caused more erosion, than motorcycles and bicycles.

⁶ Wilson, J.P. & J.P. Seney. 1994. Erosional impact of hikers, horses, motorcycles and off road bicycles on mountain trails in Montana. *Mountain Research and Development* 14:77-88

- Cole et al (1995a, b)⁷ conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow and grassland communities (each tramped between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. Cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks, but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.
- Cole (1995c)⁸ conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampler weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier trampers caused a greater reduction in vegetation height than lighter trampers, but there was no difference in effect on cover.
- Cole & Spildie (1998)⁹ experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse traffic was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance, but recovered rapidly. Higher trampling intensities caused more disturbance.

3.3.5 The total volume of dog faeces deposited on sites can be surprisingly large. For example, at Burnham Beeches National Nature Reserve over one year, Barnard¹⁰ estimated the total amounts of urine and faeces from dogs as 30,000 litres and 60 tonnes respectively. The specific impact on Epping Forest has not been quantified from local studies; however, the fact that habitats for which the SAC is designated appear to be subject already to excessive nitrogen deposition, suggests that any additional source of nutrient enrichment (including uncollected dog faeces) will make a cumulative contribution to overall enrichment. Any such contribution must then be considered within the context of other recreational sources of impact on sites.

Disturbance

3.3.6 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that

⁷ Cole, D.N. 1995a. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology* 32: 203-214

Cole, D.N. 1995b. Experimental trampling of vegetation. II. Predictors of resistance and resilience. *Journal of Applied Ecology* 32: 215-224

⁸ Cole, D.N. (1995c) Recreational trampling experiments: effects of trampler weight and shoe type. Research Note INT-RN-425. U.S. Forest Service, Intermountain Research Station, Utah.

⁹ Cole, D.N., Spildie, D.R. (1998) Hiker, horse and llama trampling effects on native vegetation in Montana, USA. *Journal of Environmental Management* 53: 61-71

¹⁰ Barnard, A. (2003) Getting the Facts - Dog Walking and Visitor Number Surveys at Burnham Beeches and their Implications for the Management Process. *Countryside Recreation*, 11, 16 - 19

is not spent feeding¹¹. Disturbance therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds. In addition, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds¹².

3.3.7 The potential for disturbance may be less in winter than in summer, in that there are often a smaller number of recreational users. In addition, the consequences of disturbance at a population level may be reduced because birds are not breeding. However, winter activity can still cause important disturbance, especially as birds are particularly vulnerable at this time of year due to food shortages, such that disturbance which results in abandonment of suitable feeding areas through disturbance can have severe consequences. Several empirical studies have, through correlative analysis, demonstrated that out-of-season (October-March) recreational activity can result in quantifiable disturbance:

- Underhill *et al*¹³ counted waterfowl and all disturbance events on 54 water bodies within the South West London Water bodies Special Protection Area and clearly correlated disturbance with a decrease in bird numbers at weekends in smaller sites and with the movement of birds within larger sites from disturbed to less disturbed areas.
- Evans & Warrington¹⁴ found that on Sundays total water bird numbers (including shoveler and gadwall) were 19% higher on Stocker's Lake LNR in Hertfordshire, and attributed this to displacement of birds resulting from greater recreational activity on surrounding water bodies at weekends relative to week days.
- Tuite *et al*¹⁵ used a large (379 site), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They found that on inland water bodies shoveler was one of the most sensitive species to disturbance. The greatest impact on winter wildfowl numbers was associated with sailing/windsurfing and rowing.
- Pease *et al*¹⁶ investigated the responses of seven species of dabbling ducks to a range of potential causes of disturbance, ranging from pedestrians to vehicle movements. They determined that walking and biking created greater disturbance than vehicles and that gadwall were among the most sensitive of the species studied.

¹¹ Riddington, R. *et al*. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

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

¹³ Underhill, M.C. *et al*. 1993. Use of Waterbodies in South West London by Waterfowl. An Investigation of the Factors Affecting Distribution, Abundance and Community Structure. Report to Thames Water Utilities Ltd. and English Nature. Wetlands Advisory Service, Slimbridge

¹⁴ Evans, D.M. & Warrington, S. 1997. The effects of recreational disturbance on wintering waterbirds on a mature gravel pitlake near London. *International Journal of Environmental Studies* 53: 167-182

¹⁵ Tuite, C.H., Hanson, P.R. & Owen, M. 1984. Some ecological factors affecting winter wildfowl distribution on inland waters in England and Wales and the influence of water-based recreation. *Journal of Applied Ecology* 21: 41-62

¹⁶ Pease, M.L., Rose, R.K. & Butler, M.J. 2005. Effects of human disturbances on the behavior of wintering ducks. *Wildlife Society Bulletin* 33 (1): 103-112.

- In a three-year study of wetland birds at the Stour and Orwell SPA, Ravenscroft¹⁷ found that walkers, boats and dogs were the most regular source of disturbance. Despite this, the greatest responses came from relatively infrequent events, such as gun shots and aircraft noise. Birds seemed to habituate to frequent 'benign' events such as vehicles, sailing and horses, but there was evidence that apparent habituation to more disruptive events related to reduced bird numbers – i.e. birds were avoiding the most frequently disturbed areas. Disturbance was greatest at high tide and on the Orwell, but birds on the Stour showed greatest sensitivity.
- 3.3.8 A number of studies have shown that birds are affected more by dogs and people with dogs than by people alone, with birds flushing more readily, more frequently, at greater distances and for longer¹⁰. In addition, dogs, rather than people, tend to be the cause of many management difficulties, notably by worrying grazing animals, and can cause eutrophication near paths. Nutrient-poor habitats such as heathland are particularly sensitive to the fertilising effect of inputs of phosphates, nitrogen and potassium from dog faeces¹⁸.
- 3.3.9 Underhill-Day¹⁰ summarises the results of visitor studies that have collected data on the use of semi-natural habitat by dogs. In surveys where 100 observations or more were reported, the mean percentage of visitors who were accompanied by dogs was 54.0%.
- 3.3.10 However the outcomes of many of these studies need to be treated with care. For instance, the effect of disturbance is not necessarily correlated with the impact of disturbance, i.e. the most easily disturbed species are not necessarily those that will suffer the greatest impacts. It has been shown that, in some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain (possibly due to an absence of alternative sites) and thus suffer greater impacts on their population¹⁹. A literature review undertaken for the RSPB²⁰ also urges caution when extrapolating the results of one disturbance study because responses differ between species and the response of one species may differ according to local environmental conditions. These facts have to be taken into account when attempting to predict the impacts of future recreational pressure on European sites.
- 3.3.11 Disturbing activities are on a continuum. The most disturbing activities are likely to be those that involve irregular, infrequent, unpredictable loud noise events, movement or vibration of long duration. Birds are least likely to be disturbed by activities that involve regular, frequent, predictable, quiet patterns of sound or movement or minimal vibration. The further any activity is from the birds, the less likely it is to result in disturbance.
- 3.3.12 The factors that influence a species response to a disturbance are numerous, but the three key factors are species sensitivity, proximity of disturbance sources and timing/duration of the potentially disturbing activity.
- 3.3.13 The distance at which a species takes flight when approached by a disturbing stimulus is known as the 'tolerance distance' (also called the 'escape flight distance') and differs between species to the same stimulus and within a species to different stimuli. These are given in Table 2,

¹⁷ Ravenscroft, N. (2005) Pilot study into disturbance of waders and wildfowl on the Stour-Orwell SPA: analysis of 2004/05 data. Era report 44, Report to Suffolk Coast & Heaths Unit.

¹⁸ Shaw, P.J.A., K. Lankey and S.A. Hollingham (1995) – Impacts of trampling and dog fouling on vegetation and soil conditions on Headley Heath. *The London Naturalist*, **74**, 77-82.

¹⁹ Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation*, **97**, 265-268

²⁰ Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

which compiles ‘tolerance distances’ from across the literature. It is reasonable to assume from this that disturbance is unlikely to be experienced more than a few hundred metres from the birds in question.

Table 2 - Tolerance distances of 21 water bird species to various forms of recreational disturbance, as described in the literature. All distances are in metres. Single figures are mean distances; when means are not published, ranges are given. Tydeman (1978)²¹, Keller (1989)²², Van der Meer (1985)²³, Wolff et al (1982)²⁴, Blankestijn et al (1986)²⁵.

Species	Type of disturbance		
	Rowing boats/kayak	Sailing boats	Walking
Little grebe		60 – 100 ¹⁸	
Great crested grebe	50 – 100 ¹⁹	20 – 400 ¹⁸	
Mute swan		3 – 30 ¹⁸	
Teal		0 – 400 ¹⁸	
Mallard		10 – 100 ¹⁸	
Shoveler		200 – 400 ¹⁸	
Pochard		60 – 400 ¹⁸	
Tufted duck		60 – 400 ¹⁸	
Goldeneye		100 – 400 ¹⁸	
Smew		0 – 400 ¹⁸	
Moorhen		100 – 400 ¹⁸	
Coot		5 – 50 ¹⁸	
Curlew			211 ²⁰ ; 339 ²¹ ; 213 ²²
Shelduck			148 ²⁰ ; 250 ²¹
Grey plover			124 ²⁰
Ringed plover			121 ²⁰
Bar-tailed godwit			107 ²⁰ ; 219 ²¹
Brent goose			105 ²⁰
Oystercatcher			85 ²⁰ ; 136 ²¹ ; 82 ²²
Dunlin			71 ²⁰ ; 163 ¹⁹

3.3.14 It should be emphasised that recreational use is not inevitably a problem. Many European sites are also nature reserves managed for conservation and public appreciation of nature. The Lee Valley Regional Park that encompasses the SPA and Ramsar sites is such an example. At

²¹ Tydeman, C.F. 1978. Gravel Pits as conservation areas for breeding bird communities. PhD thesis. Bedford College

²² Keller, V. 1989. Variations in the response of Great Crested Grebes *Podiceps cristatus* to human disturbance - a sign of adaptation? *Biological Conservation* 49:31-45

²³ Van der Meer, J. 1985. De verstoring van vogels op de slikken van de Oosterschelde. Report 85.09 Deltadienst Milieu en Inrichting, Middelburg. 37 pp.

²⁴ Wolf, W.J., Reijnders, P.J.H. & Smit, C.J. 1982. The effects of recreation on the Wadden Sea ecosystem: many questions but few answers. In: G. Luck & H. Michaelis (Eds.), *Schriftenreihe M.E.L.F., Reihe A: Agnew. Wissenssch* 275: 85-107

²⁵ Blankestijn, S. et al. 1986. *Seizoensverbreding in de recreatie en verstoring van Wulp en Scholkester op hoogwatervluchplaatsen op Terschelling*. Report Projectgroep Wadden, L.H. Wageningen. 261pp.

these sites, access is encouraged and resources are available to ensure that recreational use is managed appropriately.

3.3.15 Where increased recreational use is predicted to cause adverse impacts on a site, avoidance and mitigation should be considered. Avoidance of recreational impacts at European sites involves location of new development away from such sites; Local Development Frameworks (and other strategic plans) provide the mechanism for this. Where avoidance is not possible, mitigation will usually involve a mix of access management, habitat management and provision of alternative recreational space.

- *Access management* – restricting access to some or all of a European site - is not usually within the remit of the Borough Council and restriction of access may contravene a range of Government policies on access to open space, and Government objectives for increasing exercise, improving health etc. However, active management of access may be possible, for example as practised on nature reserves.
- *Habitat management* is not within the direct remit of the Council. However the Council can help to set a framework for improved habitat management by promoting cross-authority collaboration and S106 funding of habitat management. In the case of Waltham Forest, there may be opportunities for this since, according to Natural England, all areas of Site of Special Scientific Interest habitat underpinning Epping Forest SAC and Lee Valley SPA and Ramsar sites in Waltham Forest are not currently in favourable condition²⁶.
- *Provision of alternative recreational space* can help to attract recreational users away from sensitive European sites, and reduce pressure on the sites. For example, some species for which European sites have been designated are particularly sensitive to dogs, and many dog walkers may be happy to be diverted to other, less sensitive, sites. However the location and type of alternative space must be attractive for users to be effective. In the case of both Epping Forest and Lee Valley SPA and Ramsar sites, dog-walking, walking and cycling are likely to be the major site usages, and so alternative space needs to cater for this.

3.3.16 Both Epping Forest SAC and the Lee Valley SPA and Ramsar sites lie partly within Waltham Forest, and they are theoretically vulnerable, from a geographic perspective, to the effects of recreational pressure resulting from housing development within Waltham Forest. Wormley-Hoddesdonpark Woods SAC also lies within the typical distance that visitors will travel to a woodland site for a day trip. All are sensitive ecologically – the woodland sites through habitat erosion, fragmentation and nutrient enrichment, and Lee Valley through disturbance to the species for which the SPA and Ramsar are designated.

3.3.17 Therefore it is necessary to perform an initial screen to determine whether the Waltham Forest Core Strategy contains policy measures that could lead to a significant adverse effects, either alone or 'in combination' with other plans and projects, through recreational pressure, on these European sites.

3.4 Atmospheric Pollution

3.4.1 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂). NO_x can have a directly toxic effect upon vegetation. In addition, greater NO_x or ammonia concentrations within the atmosphere will lead to greater rates

²⁶ <http://www.natureonthemap.org.uk/>

of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.

Table 3. Main sources and effects of air pollutants on habitats and species

Pollutant	Source	Effects on habitats and species
Acid deposition	SO ₂ , NO _x and ammonia all contribute to acid deposition. Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased N emissions may cancel out any gains produced by reduced S levels.	Can affect habitats and species through both wet (acid rain) and dry deposition. Some sites will be more at risk than others depending on soil type, bed rock geology, weathering rate and buffering capacity.
Ammonia (NH ₃)	Ammonia is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but levels have increased considerably with expansion in numbers of agricultural livestock. Ammonia reacts with acid pollutants such as the products of SO ₂ and NO _x emissions to produce fine ammonium (NH ₄ ⁺)- containing aerosol which may be transferred much longer distances (can therefore be a significant trans-boundary issue.)	Adverse effects are as a result of nitrogen deposition leading to eutrophication. As emissions mostly occur at ground level in the rural environment and NH ₃ is rapidly deposited, some of the most acute problems of NH ₃ deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides NO _x	Nitrogen oxides are mostly produced in combustion processes. About one quarter of the UK's emissions are from power stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes.	Deposition of nitrogen compounds (nitrates (NO ₃), nitrogen dioxide (NO ₂) and nitric acid (HNO ₃)) can lead to both soil and freshwater acidification. In addition, NO _x can cause eutrophication of soils and water. This alters the species composition of plant communities and can eliminate sensitive species.
Nitrogen (N) deposition	The pollutants that contribute to nitrogen deposition derive mainly from NO _x and NH ₃ emissions. These pollutants cause acidification (see also acid deposition) as well as eutrophication.	Species-rich plant communities with relatively high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication, due to its promotion of competitive and invasive species which can respond readily to elevated levels of N. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O ₃)	A secondary pollutant generated by photochemical reactions from NO _x and volatile organic compounds (VOCs). These are mainly released by the combustion of fossil fuels. The increase in combustion of fossil fuels in the UK has led to a large increase in background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O ₃ above 40 ppb can be toxic to humans and wildlife, and can affect buildings. Increased ozone concentrations may lead to a reduction in growth of agricultural crops, decreased forest production and altered species composition in semi-natural plant communities.
Sulphur Dioxide SO ₂	Main sources of SO ₂ emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO ₂ emissions have decreased substantially in the UK since the 1980s.	Wet and dry deposition of SO ₂ acidifies soils and freshwater, and alters the species composition of plant and associated animal communities. The significance of impacts depends on levels of deposition and the buffering capacity of soils.

3.4.2 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO₂ or NH₃ emissions will be associated with Local Development Frameworks. NOx emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NOx (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison²⁷. Emissions of NOx could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the LDF.

3.4.3 According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 µgm⁻³; the threshold for sulphur dioxide is 20 µgm⁻³. In addition, ecological studies have determined 'critical loads'²⁸ of atmospheric nitrogen deposition (that is, NOx combined with ammonia NH₃) for key habitats within the European sites considered within this assessment (Table 4.). Both Epping Forest SAC and Wormley-Hoddesdonpark Woods SAC currently exceed their critical loads for nitrogen deposition and NOx levels. Lee Valley SPA/Ramsar is also experiencing high levels of NOx.

Table 4. Critical nitrogen loads, actual rates of nitrogen deposition and NOx concentrations²⁹ for the three European sites considered within this assessment (APIS³⁰ data accessed on 11/10/10)

Site	Grid reference ³¹	Key habitats	Minimum critical loads (Kg N/ha/yr) ³²	Actual nitrogen deposition ³³	Actual NOx concentration (µgm ⁻³)
Epping Forest SAC	TQ389904	Beech woodland Lowland heathland	10	43.8	50.2
Lee Valley SPA and Ramsar	TQ355893	(Grazing marsh) ³⁴	(20)	17.6	59.3
Wormley-Hoddesdonpark Woods SAC	TL322050	Oak woodland	10	32.5	20.1

3.4.4 The National Expert Group on Transboundary Air Pollution (2001)³⁵ concluded that:

²⁷ Proportions calculated based upon data presented in Dore CJ et al. 2005. UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory. <http://www.airquality.co.uk/archive/index.php>

²⁸ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

²⁹ As NO₂

³⁰ UK Air Pollution Information System. <http://www.apis.ac.uk>

³¹ For sites outside Waltham Forest borough, grid references relate to the closest points to the District.

³² APIS provides a critical load range – on a precautionary basis, this assessment uses the lowest figure in that range

³³ To a resolution of 5 km

³⁴ Although parts of Lee Valley SPA/Ramsar habitat consists of grazing marsh, within Waltham Forest the underlying habitat is standing open water, for which there is no defined critical load for atmospheric pollution available from APIS. Therefore grazing marsh is included as the best available habitat indicator. It is important to bear in mind that any interpretation of the data should account for the fact that the critical loads and actual deposition are therefore not directly comparable at the given grid reference.

³⁵ National Expert Group on Transboundary Air Pollution (2001) Transboundary Air Pollution: Acidification, Eutrophication and Ground-Level Ozone in the UK.

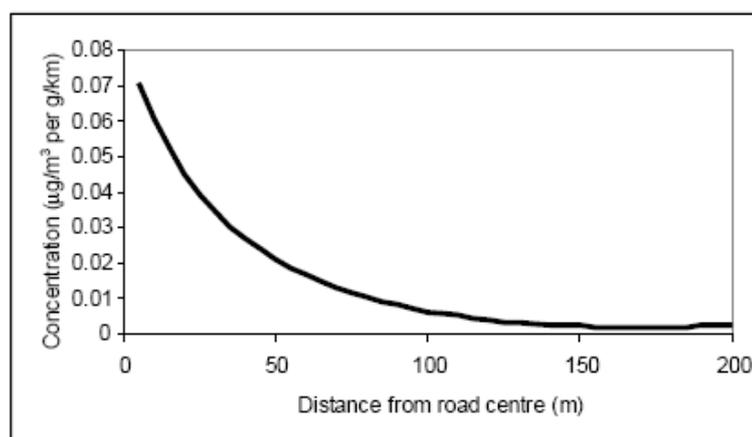
- In 1997, critical loads for acidification were exceeded in 71% of UK ecosystems. This was expected to decline to 47% by 2010.
- Reductions in SO₂ concentrations over the last three decades have virtually eliminated the direct impact of sulphur on vegetation.
- By 2010, deposited nitrogen was expected to be the major contributor to acidification, replacing the reductions in SO₂.
- Current nitrogen deposition is probably already changing species composition in many nutrient-poor habitats, and these changes may not readily be reversed.
- The effects of nitrogen deposition are likely to remain significant beyond 2010.
- Current ozone concentrations threaten crops and forest production nationally. The effects of ozone deposition are likely to remain significant beyond 2010.
- Reduced inputs of acidity and nitrogen from the atmosphere may provide the conditions in which chemical and biological recovery from previous air pollution impacts can begin, but the timescales of these processes are very long relative to the timescales of reductions in emissions.

3.4.5 Grice et al^{36 37} do however suggest that air quality in the UK will improve significantly over the next 15 years due primarily to reduced emissions from road transport and power stations.

Local air pollution

3.4.6 According to the Department of Transport's Transport Analysis Guidance, "Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"³⁸.

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



³⁶ Grice, S., T. Bush, J. Stedman, K. Vincent, A. Kent, J. Targa and M. Hobson (2006) Baseline Projections of Air Quality in the UK for the 2006 Review of the Air Quality Strategy, report to the Department for Environment, Food and Rural Affairs, Welsh Assembly Government, the Scottish Executive and the Department of the Environment for Northern Ireland.

³⁷ Grice, S., J. Stedman, T. Murrells and M. Hobson (2007) Updated Projections of Air Quality in the UK for Base Case and Additional Measures for the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007, report to the Department for Environment, Food and Rural Affairs, Welsh Assembly Government, the Scottish Executive and the Department of the Environment for Northern Ireland.

³⁸ www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf

3.4.7 This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development under the Core Strategy. Given that sites detailed in Table 5 lie within 200m of major roads that may be regularly used by vehicle journeys arising from Waltham Forest as a result of the increased population, and potentially other development plans, it was concluded that air quality should be included within the scope of this assessment. The location of these roads in relation to the European sites is shown in Figure 1. Additionally, Epping Forest is crossed by a number of minor roads that also receive significant traffic volumes.

Table 5. Major roads within 200 m of the three European sites considered in detail within this assessment

Site	Proximity to major roads
Epping Forest SAC	Lies adjacent to, or within 200m of, the M25, A104, A121, A110, A406, A1009, A112, A1069, A113, A11, A12 and A503 as well as smaller, but well-used B-roads and more minor routes.
Lee Valley SPA/Ramsar	Lies adjacent to the A503 and A414 and within 200m of the A1055

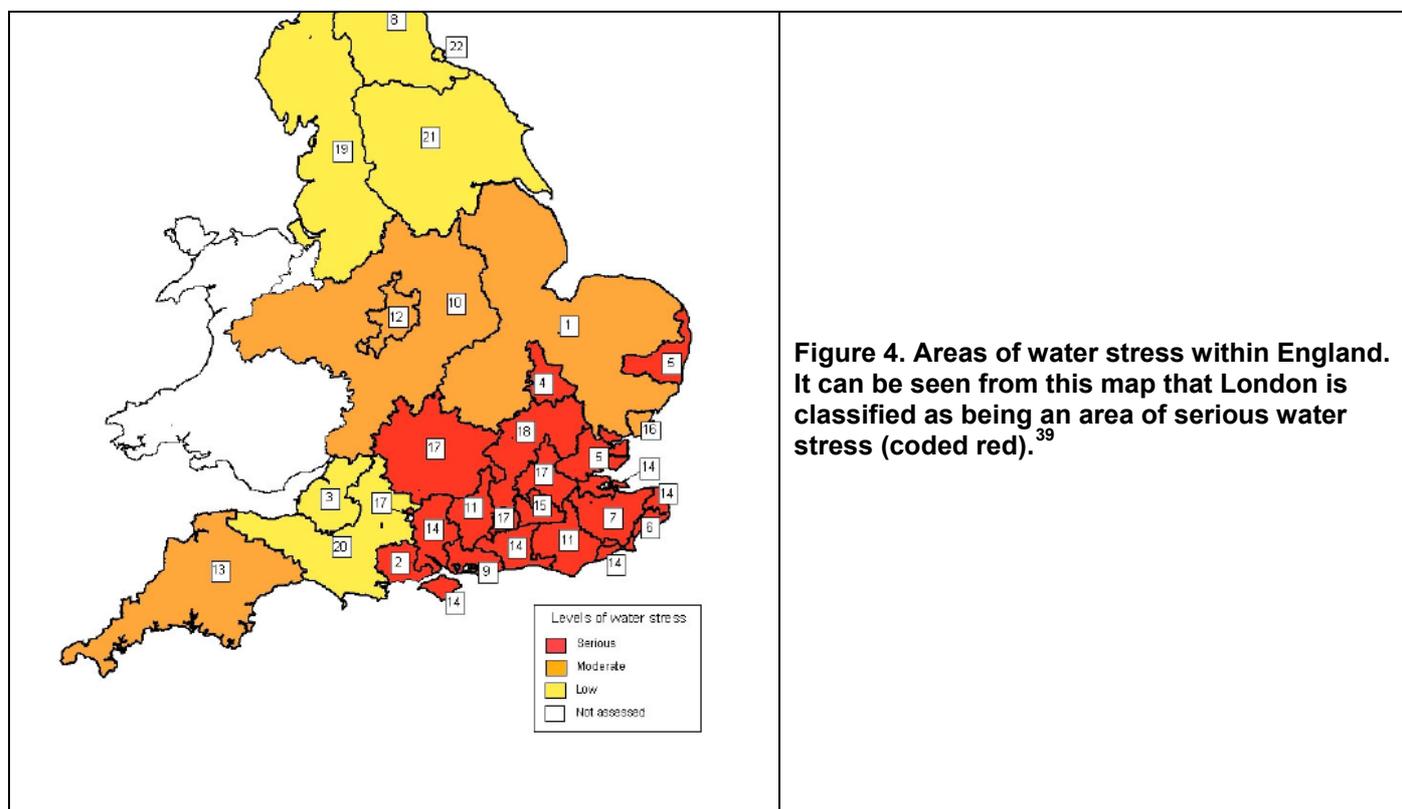
Diffuse air pollution

3.4.8 In addition to the contribution to local air quality issues, development can also contribute cumulatively to an overall deterioration in background air quality across an entire region. In July 2006, when this issue was raised by Runnymede Borough Council in the South East, Natural England advised that their Local Development Framework ‘*can only be concerned with locally emitted and short range locally acting pollutants*’ as this is the only scale which falls within a local authority remit. It is understood that this guidance was not intended to set a precedent, but it inevitably does so since (as far as we are aware) it is the only formal guidance that has been issued to a Local Authority from any Natural England office on this issue.

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

3.5 Water Abstraction

3.5.1 London is generally an area of high water stress (see Figure 4).



3.5.2 Development within Waltham Forest Borough over the plan period will increase water demand.

3.5.3 Waltham Forest lies within Thames Water's supply area, specifically their London Resource Zone. The majority of London's public water supplies come from the rivers Thames and Lee (with approximately 80% of London's supply taken from the freshwater River Thames upstream of Teddington Weir). The remaining supplies are obtained from groundwater sources situated beneath the London Boroughs from the confined chalk aquifer. Water supply for Thames Water's London Resource Zone does involve some abstraction from the Lee Valley Reservoirs (including Walthamstow Reservoirs), which are also subject to an agreement to (if necessary) supply Essex and Suffolk Water with up to 91Ml/day average bulk transfer. The bulk supply is provided from the King George and William Girling Reservoirs in the Lee Valley, potentially supported by abstraction directly from the River Lee at defined intakes, if required.

3.5.4 In the London Catchment Abstraction Management Strategy document, the Environment Agency identifies the River Lee as 'over abstracted', which means that no further consumptive abstraction licences will be issued (except under conditions of very high flow), and no further consumptive abstraction can take place within this catchment.

³⁹ Figure adapted from Environment Agency. 2007. Identifying Areas of Water Stress. <http://publications.environment-agency.gov.uk/pdf/GEHO0107BLUT-e-e.pdf>

- 3.5.5 As such, with no other schemes in place, increased residential development within Waltham Forest could lead to a need for damaging levels of abstraction from the Lee Valley SPA when considered cumulatively with all other new development in the London Water Resource Zone and further north in Hertfordshire that would ordinarily entail water supply from the Lee Valley. However, Thames Water have implemented a major water supply project in London which involves abstraction and desalination of water from the tidal River Thames (the Thames Gateway Water Treatment Plant, now operational), such that damaging levels of abstraction from the River Lee to supply Waltham Forest (or other parts of London) should be avoidable.
- 3.5.6 It should be noted that Thames Water's revised draft Water Resources Management Plan (WRMP; 2009) identifies that implementation of the Thames Gateway Water Treatment Plant "*initially brings the zone back into balance (2009/10 to 2011/12), however the natural growth in demand due to housing growth and increased usage by existing households outstrips demand management and the deficit steadily grows thereafter.*" Thames Water proposes to address this imbalance through demand management approaches and ultimately, through provision of an Upper Thames reservoir at Abingdon, which would provide a secure supply in the longer term.
- 3.5.7 Thames Water's Water Resources Management Plan has been subject to public enquiry, as a result of which Defra has asked the company to undertake further work regarding examination of additional supply options. However, Defra have agreed that the WRMP does ensure security of water supply up until 2035 and it can therefore be relied upon as regards the Core Strategy period. Therefore there is currently uncertainty over the future of water resource management within the area that covers both Waltham Forest and Lee Valley SPA and Ramsar sites. Given this uncertainty, it is necessary to perform an initial screen to determine whether the Waltham Forest Core Strategy contains policy measures that could lead to a significant adverse effects, either alone or 'in combination' with other plans and projects, on these European sites.

3.6 Water Quality

- 3.6.1 As wastewater for Waltham Forest is currently processed by Beckton Sewage Treatment Works and discharged into the Thames, increases in volumes of wastewater that could result from policies promoting housing and employment development are not likely to have a significant adverse effect on the Lee Valley SPA and Ramsar site⁴⁰.
- 3.6.2 The Walthamstow Reservoirs do lie in close proximity to the A503, and therefore there is potential for point source pollution events to arise from accidental spillages from vehicles on this route. However, in reality the implementation by transport operators of measures to avoid point source pollution is not the responsibility of the Council, and it is also likely that the levels of development promoted within the Core Strategy will lead to a minimal increase in risk of such events occurring, given that the likelihood of a catastrophic spillage event may already be considered low. The River Lee and River Lee Navigation separate the reservoirs from most other development, and do not in themselves form a part of the SPA or Ramsar within Waltham Forest.

⁴⁰ According to the Environment Agency's Stage 3 Appropriate Assessment for the Thames estuary and Marshes SPA/Ramsar site, that lies downstream from Beckton, current consented discharges do not have a significant adverse impact upon the Thames Estuary & Marshes SPA, with the exception of slightly elevated levels of elemental copper (Cu) derived from pipes at Reading and Slough. Moreover, development within Waltham Forest will take place at a time when a range of water quality improvements to the Thames Tideway as a whole will be implemented through various Thames Water/Environment Agency schemes including the interception and storage of wastewater from a large number of Combined Sewer Overflows (CSO's) in London and expansions to the treatment capacity of Thames Water's Sewage treatment Works, including at Beckton which will enable them to treat greater quantities of wastewater to a higher standard than is currently the case. As such, the overall water quality of the River Thames should actually improve over the delivery period.

3.6.3 In conclusion, no European designated sites are susceptible to reduced water quality through STW discharges or direct run-off arising from development within Waltham Forest borough, and therefore such considerations are not considered further within the HRA.

4 Summary of Previous Stages of HRA

4.1 The proposed submission Core Strategy was subject to Appropriate Assessment in 2010 covering recreational pressure and deterioration in air quality in relation to Epping Forest SAC and Lee Valley SPA/Ramsar site. The following policies were concluded as having the potential to result in adverse effects on the integrity of one or more European sites when considered 'in combination' with other projects and plans, particularly the levels of development contained within the Core Strategies of the surrounding north London and south Essex authorities:

- Location and Management of Growth CS1;
- Improving Housing Quality and Choice CS2;
- Making Efficient Use of Employment Land CS3;
- Providing Infrastructure CS4;
- Promoting Sustainable Waste Management and Recycling CS7;
- Tourism Development and Visitor Attractions CS11; and
- Attractive and Vibrant Town Centres CS14.

4.2 The following policies were screened out as being unlikely to lead to significant effects and therefore not requiring Appropriate Assessment:

- Minimising and Adapting to Climate Change CS5;
- Enhancing Green Infrastructure and Biodiversity CS6;
- Developing a Sustainable Transport Network CS8;
- Promoting Better Education CS9;
- Creating New Jobs and Reducing Worklessness CS10;
- Protecting and Enhancing Heritage Assets CS12;
- Promoting Health and Fitness CS13;
- Well-Designed Buildings, Places and Spaces CS15; and
- Making Waltham Forest Safer CS16.

4.3 This is because no pathway has been identified between these policies and European sites. The purpose of the following Chapters is therefore to re-evaluate the potential impacts of the policies that were previously identified as possibly leading to adverse effects (to 're-screen' them) within the context of the amendments made to the Core Strategy and the Council's response to the recommendations of the previous round of HRA.

5 Likely Significant Effects - Epping Forest SAC

5.1 Introduction

5.1.1 Epping Forest SAC covers over 1,600 ha of Essex and the London Borough of Waltham Forest, with 70% of the site consisting of broadleaved deciduous woodland. Epping Forest is one of only a few remaining large-scale examples of ancient wood-pasture in lowland Britain and has retained habitats of high nature conservation value including ancient semi-natural woodland, old grassland plains and scattered wetland. The semi-natural woodland is particularly extensive, forming one of the largest coherent blocks in the country. Most is characterised by groves of over-mature pollards and these exemplify all three of the main wood-pasture types found in Britain: beech-oak, hornbeam-oak and mixed oak. The Forest plains are also a major feature and contain a variety of unimproved acid grasslands, which have become uncommon elsewhere in Essex and the London area. In addition, Epping Forest supports a nationally outstanding assemblage of invertebrates, a major amphibian interest and an exceptional breeding bird community.

5.2 Features of European Interest⁴¹

5.2.1 The site is designated as an SAC for its:

- Beech forests on acid soils; an example of such habitat toward the north-east of its UK range, containing a notable selection of bryophytes, fungi and dead-wood invertebrates;
- Stag beetle (*Lucanus cervus*), for which this is one of only four known outstanding localities in the UK;
- Dry heaths; and
- Wet heathland with cross-leaved heath.

5.3 Historic Trends and Current Conditions

5.3.1 Deteriorating air quality and under-grazing are the two key pressures that currently affect the site. While recreational pressure has a considerable impact in some areas, these are localised; however, funding of management on the SAC is governed largely by donation and contributions from the Corporation of London and it is likely that the ability to adequately manage recreation on the SAC will come under increasing pressure as the population of northeast London, Epping Forest district and East Hertfordshire district increases.

5.3.2 Within the London Borough of Waltham Forest itself none of the SSSI management units that underpin the SAC are in favourable condition – some are considered to be recovering from unfavourable status, but others are showing no improvement or are declining. In all cases, poor air quality is cited in the most recent condition assessment process (2010) as a primary factor for this condition. There are localised concerns over recreational pressure, but the condition

⁴¹ Features of European Interest are the features for which a European sites is selected. They include habitats listed on Annex 1 of the Habitats Directive, species listed on Annex II of the EC Habitats Directive and populations of bird species for which a site is designated under the EC Birds Directive.

assessment reports state that the site would be able to withstand this in a more robust manner were it not for the stress imposed by atmospheric pollutants.

5.4 Key Environmental Conditions

5.4.1 The following key environmental conditions have been identified for the maintenance of the interest features of Epping Forest SAC:

- Controlled recreational activity;
- Good air quality;
- Maintenance of grazing regimes;
- Absence of nutrient enrichment;
- Unpolluted water;
- Absence of non-native species.

5.5 Potential Effects of the Plan

5.5.1 Three potential impacts of the Waltham Forest Core Strategy upon the SAC have been identified:

- Urbanisation
- Recreational pressure
- Air pollution

Urbanisation

5.5.2 Policy CS1 (Location and Management of Growth) does advocate development (mixed use) at Wood Street, which lies close to the 500m distance over which urbanisation effects may be considered to have a potential effect. Wood Street is assigned significant, growth through development of an Area Action Plan (the estimated residential capacity is up to 1000 homes). In addition, Whipp's Cross, adjacent to the SAC is identified as a site that is likely to come forward for redevelopment.

5.5.3 Although Waltham Forest does face challenges with fly tipping, and the associated risk on introduction of non-native species through garden waste, policy CS7 (Promoting Sustainable Waste Management and Recycling) does support best practice in waste management and therefore mitigates against the possibility of unauthorised disposal occurring. Additionally, the general movement from an industrial environment to a residential one will substantially reduce opportunities for carrying out anti-social behaviour unobserved. As a result, it is considered that it is not reasonable to conclude in this case that a material increase in fly-tipping and the like will occur.

5.5.4 Given the existing heavily urban context of the boundary between the SAC and its surroundings within the Borough, and the fact that urbanisation is not currently considered a significant problem, it is considered that additional development will not materially increase the risk posed to the site and so potential urbanisation impacts as a result of policies within the Waltham Forest Core Strategy are not predicted to have an adverse effect on Epping Forest SAC.

Recreational Pressure

- 5.5.5 The entire borough of Waltham Forest lies within easy access of Epping Forest SAC. Policies CS1, CS2 (Housing Supply) and CS14 (Attractive and Vibrant Town Centres) all advocate increased levels of housing within the borough, with a commitment to deliver 10,320 new dwellings across the borough during the plan period. This alone has potential to significantly increase the number of visitors to Epping Forest, and must also be considered within the context of approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period.
- 5.5.6 Policy CS11 (Tourism Development and Visitor Attractions) promotes tourism development in proximity to visitor attractions, and also increased access to sites including Epping Forest (whilst recognising the need to avoid harming their conservation value). In this context, policy CS6 (Protection and Enhancement of the Natural Environment) also aims to promote access to and contact with nature.
- 5.5.7 Currently, units of the Epping Forest SSSI, contiguous with the SAC that lie adjacent to Whipp's Cross and east of Chingford are considered to be experiencing damaging levels of recreational pressure. It is likely that the cumulative effect of increased uncontrolled recreational pressure together with poor air quality in Epping Forest within and beyond Waltham Forest would lead to significant adverse effects on the SAC.
- 5.5.8 The Core Strategy does contain positive measures that should aim to alleviate or avoid excessive recreational pressure on Epping Forest SAC:
- SO6 states that the Council will seek to “*protect, enhance and further develop a network of multifunctional green infrastructure capable of delivering a comprehensive range of benefits for both people and wildlife.*” The supporting text to policy CS1 specifically lists the Walthamstow Wetlands project as a development that will be encouraged and supported. This is an example of a scheme that is likely to prove an attractive option for walkers, cyclists, dog-walkers and other recreational users.
 - Policy CS1 also allows for the possibility of developer contributions to be sought – whilst not specifically linking these to provision of green infrastructure, the provision of financial assistance toward on-site, or if necessary, off-site open space could certainly be included in this. The supporting text to policy CS6 does state that “*the Council will promote...S106 funding for habitat management.*” It also states that the Development Management policies will “*outline the development requirements and expected financial contributions. Financial contributions will be sought for the provision of new or enhancements to existing areas of nature conservation and open spaces.*”
 - The supporting text to policy CS1 indicates that the Olympic legacy in the south of the borough will provide key opportunities for open space and leisure facilities, and it also lists other green space and corridor enhancements that are planned. The Open Spaces Strategy (2010) identifies that Lloyd Park; Chingford Mount Cemetery; St Mary's Churchyard, Leyton; and Dagenham Brook & land either side of Marsh Lane have been identified for enhancement “*to improve access to nature in the borough.*”
 - Policy CS6 confirms that new open spaces (at an indicative proportion of 1.6ha/1000 population) will be delivered.
 - Policy CS6, crucially, states that the Council will be “*seeking to protect and enhance biodiversity, especially where habitats, species and sites are recognised at the international,*

national, regional and local levels” and specifically commits to ‘protecting, promoting and enhancing the Lee Valley Regional Park and Epping Forest’;

- The supporting text to policy CS6 defines specific locations for improved green links, including priority cycle routes such as Mansfield Park to Woodford Golf Course (which could include Chingford Mount Cemetery, where improved access to nature is planned). Inter-linking green infrastructure in this way does provide potential to provide users with alternatives to Epping Forest. The supporting text also states that *‘The Council will encourage landscaping and environmental improvements adjacent to roads, especially where they pass through areas of environmental significance such as the Lee Valley Park and Epping Forest’;*
- The supporting text for policy CS6 goes on to state that *‘In order to lessen the pressure on Epping Forest (SAC/SSSI) and the Lee Valley SPA/Ramsar sites it is recommended that alternative open spaces are provided for recreational users such as walkers and cyclists’;*
- In addition, the Council *“will collaborate with a range of public, private and community partners in order to deliver improvements to existing green infrastructure and biodiversity in the Borough”* and will *‘promote cross-authority collaboration and S106 funding for habitat management’;*
- Improvements to the visitor experience of Epping Forest are also described in the supporting text for CS6, provided they are *‘carefully designed and located in order to preserve the character and biodiversity value’;*
- Policy CS6 supporting text additionally states that *‘The Council will work with the ... Epping Forest Conservators to ... ensure ... sustainable access opportunities’*. In other words to ensure that recreational activity is compatible with the international ecological interest of the site;
- Policy CS11 aims to protect the Borough’s unique assets including Epping Forest, from *“insensitive development”*
- Policy CS13 (Promoting Health and Fitness) seeks to provide convenient cycle and pedestrian access within the borough at locations that should provide residents with additional and alternative leisure facilities (e.g. the Olympic legacy) to Epping Forest.

5.5.9 The Council, within its Core Strategy, has committed to enhanced provision of open space and green infrastructure within the Borough. This will be particularly important with regard to those development areas (such as Whipps Cross) that lie in close proximity to parts of Epping Forest that are already subject to excessive recreational pressure. The proposed submission Core Strategy HRA noted that the following should be born in mind when planning such greenspace:

- Delivery of each area of enhanced greenspace would need to be phased in parallel to occupation of the developments it was intended to serve. This could be referenced within CS1 alongside commitment to timely delivery of other specified ‘essential infrastructure’ and also within the policy CS6 that encompasses green infrastructure.
- Delivery of the greenspace would need to serve a similar recreational function to Epping Forest (i.e. walking, cycling, dog-walking and appreciation of nature)

5.5.10 It is important to make clear that alternative natural greenspace would not have to be woodland (since this would take decades to mature), species-rich grassland for example could be acceptable.

- 5.5.11 However, it was not concluded that any changes to actual Core Strategy policy were required.
- 5.5.12 The London Borough of Waltham Forest has a coherent set of policies, measures and initiatives to maximise open space and green infrastructure opportunities within the borough, associated with new development. None of the amendments to Core Strategy text that have been made since the proposed Submission version have introduced any risk to Epping Forest and several (particularly in the supporting text for Policy CS6) have strengthened its protection.

Air Quality

- 5.5.13 All forms of development within the Core Strategy that would be likely to lead to increases in vehicle emissions within 200m of Epping Forest SAC could have potential to reduce air quality of the SAC, parts of which are already subject to NO_x and nitrogen deposition levels considerably in excess of the critical loads for the habitats for which the SAC is designated. Such development must also be considered within the context of nearly half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period, many of which will potentially lead to increased car journeys on relevant arteries such as the M25.
- 5.5.14 Natural England site visits have identified effects arising from *“excessive levels of oxides of nitrogen and other pollutants, and the related deposition of acidity and of nitrogen. Many veteran trees...display clear symptoms of stress (e.g. thin canopy and die-back of leading shoots), bryophytes are sparse and only a few species are present, there is excessive growth of bramble, grassland areas show excessive growth of grasses compared to broad-leaved species, and there are dense stands of nettles along roadsides and ride edges.”*
- 5.5.15 Habitats at the roadside are often subject to qualitative deteriorations that may have little to do with atmospheric nitrogen deposition – for example the process of road construction can affect local drainage and can involve the importation of fill materials that are different in character to the substrates in the wider area, which can in turn both affect vegetation composition. Moreover, vegetative changes that theory identifies as being likely to result from atmospheric nitrogen deposition can fail to appear in practice since they are relatively subtle and can be dwarfed by changes in management regime. Separating out the effects of atmospheric nitrogen deposition and other causes is difficult and separating the effects of atmospheric nitrogen deposition arising from vehicle exhausts and that arising from other sources (e.g. agriculture) complicates the situation further.
- 5.5.16 For those measures which are available at the strategic planning level It is therefore extremely difficult to predict in advance the precise scale of improvement that can be delivered by a given mitigation measure (for example, a policy to ‘require developers to produce travel plans indicating that they have maximised opportunities for sustainable transport’ may prove effective in practice, but cannot be predictively linked to a specific scale of improvement of air quality), although a specified reduction can be set as a monitoring target against which the success or failure of mitigation measures can be defined.
- 5.5.17 While it would not be proportionate to conclude as a result of these knowledge gaps that there is no possibility that any development could ever be accommodated (since the absence of evidence is due to the novel nature of the mitigation tools available and the limitations of the science, rather than any indication that a problem does/does not exist), in the case of Epping Forest, there is a compelling argument that localised vehicle emissions play a significant role in creating unfavourable conditions on the SAC.

- 5.5.18 The Core Strategy includes a number of policies that without mitigation are likely to lead to an increase in road transport within 200m of the SAC. Policies CS1, CS2, CS3, and CS4 all promote development and growth that is likely to result in greater levels of road travel.
- 5.5.19 The Council does include policies that would serve to protect the SAC, and to both reduce traffic demand and improve public transport and non-motorised movement:
- Policy CS1 seeks the enhancement of green infrastructure, which will be important in not only providing alternatives for recreational users to Epping Forest, but also reducing the number of journeys made to the SAC by car.
 - Policy CS1 also commits to ensure the “*timely delivery of infrastructure to support growth.*” As the supporting text makes clear this will include transport infrastructure, and its delivery alongside other development should minimise the likelihood of unsustainable increase in road transport within the borough. Alongside this the policy also expresses support for enhanced public transport. The proposed reinstatement of the Hall Farm Curve rail link for example, has potential to alleviate pressure on north-south roads through the borough, some of which, such as the A104, pass within 200m of Epping Forest SAC.
 - Policy CS1 also allows for the possibility of developer contributions to be sought – whilst not specifically linking these to provision of transport infrastructure, this could certainly be a consideration.
 - Policy CS3 (Making Efficient Use of Employment Land) acknowledges the need for new employment sites to have good links to public transport.
 - The Council’s commitment to the delivery of green infrastructure and open space has been discussed in terms of its potential to alleviate recreational pressure on Epping Forest. It also stands to reason that policies that disperse users from Epping Forest SAC will also lead to reduced vehicular movements in the vicinity of the SAC.
 - Policy CS6, crucially, states that the Council will be “*seeking to protect and enhance biodiversity, especially where habitats, species and sites are recognised at the international, national, regional and local levels.*”
 - Policy CS8 (Developing Sustainable Transport) has a focus on improved public transport, improvements in cycling and walking options, and an encouragement to use these forms of transport. It also promotes development in areas with good links to public transport, and aims to require new development to provide appropriate Transport Access and Travel Plans. Additionally, the Council will actively manage traffic flow and speeds and will also seek to maximise sustainable freight transport. All of these measures should help to reduce the amount and impact of road traffic movements within the borough and beyond. The Council also acknowledges that it will need to work with partners to achieve these aims.
 - The Council, in the supporting text to policy CS6 has committed to “*work with the Epping Forest Conservators and other stakeholders to provide enhanced access management, sustainable transport and mitigation against negative impacts as endorsed in documents such as the Epping Forest Transport Strategy.*”
 - Policies CS9 (Promoting Better Education) and CS10 (Creating Jobs and Reducing Worklessness) both recognise the need for sustainable access to any new developments.
 - Policy CS11 aims to protect the Borough’s unique assets including Epping Forest, from “insensitive development.” This can be taken to include any development that would lead directly to reduced air quality at the SAC.

- Policy CS13 seeks to provide convenient cycle and pedestrian access within the borough and to protect its residents from polluting activities. These aspirations should result in improved air quality across the borough, including Epping Forest.
- 5.5.20 Policy CS7 (Promoting Sustainable Waste Management and Recycling) acknowledges the need to ensure sufficient land for waste management facilities, and also to ensure that waste is processed as locally to source as possible. The location of waste sites in relation to European sites is important – sources of air pollutants such as dusts and gas flares can require HRA consideration up to 1km distant.
- Policy CS7 is largely positive with regard to waste management. It strives to minimise waste and its transportation and critically, Epping Forest SAC is protected through its adherence to policies within the North London Waste Plan (NLWP). The latest draft of the NLWP states that a HRA Screening exercise has been able to conclude that “the Plan is unlikely to have an adverse effect on the qualifying features of any Natura 2000 [European] sites and therefore no further work is required.”
- 5.5.21 These constitute a coherent set of policies, measures and initiatives to maximise air quality improvement within the borough, associated with new development. The proposed Submission Core Strategy HRA also identified that the Council should introduce a development control policy that requires transport assessments for larger new developments within 200m of Epping Forest SAC⁴² that will determine whether a significant negative impact on air quality will result and if so to devise appropriate mitigation. Since this is a development control matter, the Council is introducing a similar policy into the Development Management Policies DPD.

5.6 In Combination Assessment

- 5.6.1 The following plans and projects are likely to contribute, in combination with the Waltham Forest Core Strategy to adverse effects on Epping Forest SAC through increased recreational pressure:
- Approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period
- 5.6.2 The following plans and projects are likely to contribute, in combination with the Waltham Forest Core Strategy to adverse effects on Epping Forest SAC through reduced air quality:
- Approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period
 - Specific foci for development including the London 2012 Olympic Park and its legacy; Thames Gateway London Partnership; Stratford City; and Central Leaside AAP all have the potential to lead to increased traffic movements on roads that pass within 200m of Epping Forest SAC. These development projects do however also include planning for sustainable access.

⁴² 200m being the distance within which most ‘direct’ atmospheric pollution (i.e. dry deposition of nitrogen) will be deposited from a conventional development

5.7 Conclusion

- 5.7.1 It can be concluded that the Waltham Forest Core Strategy does include an adequate policy framework to deliver measures to avoid or mitigate the adverse effects of development on Epping Forest SAC, provided that the effectiveness of measures is adequately monitored. None of the amendments to Core Strategy text that have been made since the proposed Submission version have introduced any risk to Epping Forest and several (particularly in the supporting text for Policy CS6) have strengthened its protection.

6 Likely Significant Effects: Lee Valley SPA and Ramsar

6.1 Introduction

6.1.1 The Lee Valley comprises a series of embanked water supply reservoirs, sewage treatment lagoons and former gravel pits along approximately 24 km of the valley. These water bodies support internationally important numbers of wintering gadwall and shoveler, while the reedbeds support a small but internationally important population of bittern.

6.1.2 The Lee Valley SPA/Ramsar consists of four Sites of Special Scientific Interest, of which Turnford and Cheshunt Pits SSSI, Rye Meads SSSI and Amwell Quarry SSSI all lie outside Waltham Forest borough on the Hertfordshire/Essex border. Walthamstow Reservoirs SSSI lies within London Borough of Waltham Forest. The Special Protection Area is managed by the Lee Valley Regional Park Authority and by Thames Water.

6.1.3 The Walthamstow Reservoirs contain one of the country's major heronries and a particularly large concentration of breeding wildfowl. They are also an important gathering area for moulting tufted duck and in winter attract nationally significant populations of wildfowl and other wetland birds. They were mainly constructed in the latter half of the nineteenth century and comprise ten relatively small, shallow, water storage basins. Several of the reservoirs are fringed by sloping earth banks and these, together with the presence of wooded islands, form distinctive habitat features. The reservoirs serve an active part in Thames Water's strategic water supply infrastructure.

6.1.4 During the winter months the reservoirs are a favoured area for a variety of wetland birds and in particular, large numbers of wildfowl. The populations of shoveler and tufted duck consistently reach levels of national significance, while great crested grebe, pochard and coot also occur in important numbers. The shores of the reservoirs and the banks of the Coppermill Stream are of added interest for fringes of fenland vegetation containing species that are uncommon in Greater London.

6.2 Features of European Interest

6.2.1 Lee Valley is designated as a SPA due to its over-wintering populations of:

- Bittern *Botaurus stellaris*, 6 individuals representing at least 6.0% of the wintering population in Great Britain (5 year peak mean, 1992/3-1995/6)
- Gadwall *Anas strepera*, 515 individuals representing at least 1.7% of the wintering Northwestern Europe population (5 year peak mean 1991/2 - 1995/6)
- Shoveler *Anas clypeata*, 748 individuals representing at least 1.9% of the wintering Northwestern/Central Europe population (5 year peak mean 1991/2 - 1995/6)

6.2.2 The birds that winter on many Special Protection Areas/Ramsar sites (the Lee Valley being no exception) are not confined to the boundaries of the SPA, but in fact utilise areas of 'supporting habitat' located outside the boundaries and sometimes many kilometres distant.

6.2.3 Lee Valley qualifies as a Ramsar site under two criteria:

- **Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.** The site supports the nationally scarce plant species whorled water-milfoil *Myriophyllum verticillatum* and the rare or vulnerable invertebrate *Micronecta minutissima* (a water-boatman).
- **Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.**
 - Species with peak counts in spring/autumn:
Shoveler *Anas clypeata*, 287 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)
 - Species with peak counts in winter:
Gadwall *Anas strepera*, 445 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9- 2002/3)

6.3 Historic Trends and Current Conditions

6.3.1 Although parts of the SPA currently experience high levels of visitor pressure, it is not currently deemed to be at levels that threaten the SPA/ Ramsar site⁴³.

6.3.2 During the most recent condition assessment of the SSSI units that underpin the SPA/Ramsar site (2008), the Walthamstow reservoirs were listed as recovering from unfavourable condition. The assessment noted that “*There has been a slight fall in the number of breeding Grey Heron and Tufted Duck. Wintering Cormorant, Shoveler and Tufted Duck and breeding Pochard remain favourable. The site is in good condition and the fall in numbers is no reflection of site management.*”

6.4 Key Environmental Conditions

6.4.1 The following key environmental conditions were identified for this site:

- Absence of non-native species
- Minimal disturbance
- Good air quality
- Absence of nutrient enrichment
- Maintenance of grazing / mowing regimes
- Consistent water quality
- Unpolluted water
- Consistent freshwater flows and volumes
- The maintenance of adequate supporting habitat outside the boundaries of the European site

⁴³ JNCC (2000) Information Sheet on Ramsar Wetlands – Lee Valley <http://www.jncc.gov.uk/pdf/RIS/UK11034.pdf>

- 6.4.2 It is understood that most of the off-site supporting habitat for gadwall and shoveler relates to nearby water bodies (i.e. within approximately 2 km). It is understood that bittern does not significantly utilise habitat outside the boundaries of the SPA/Ramsar site.

6.5 Potential Effects of the Plan

- 6.5.1 Four potential impacts of the Waltham Forest Core Strategy on the SPA and Ramsar site have been identified:

- Urbanisation
- Recreational pressure
- Air pollution
- Water abstraction

Urbanisation

- 6.5.2 Lee Valley Ramsar in particular is vulnerable to incidences such as introduction of non-native species that can arise as a result of proximity to urban areas, and both the SPA and Ramsar would be sensitive to noise related to any development (both construction and operation) adjacent to the site. However, there is currently no suggestion that these issues occur or are having any detrimental effect on the condition of the SPA/Ramsar.
- 6.5.3 The entire borough of Waltham Forest lies within easy access of Lee Valley SPA/Ramsar. Policies CS1 (Location and Management of Growth), CS2 (Housing Supply) and CS14 (Attractive and Vibrant Town Centres) all advocate increased levels of housing within the borough, with a commitment to deliver 10,320 new dwellings across the borough during the plan period. Policies CS1 and CS2 focus on several Area Action Plans, including Blackhorse Lane and the Northern Olympic Fringe. Both Area Action Plans highlight locations for development adjacent to the SPA and Ramsar. In addition, Policy CS3 (Making Efficient Use of Employment Land), CS4 (Providing Infrastructure), and CS11 (Tourism Development and Visitor Attractions) also advocate growth that could conceivably lead to urbanisation impacts – CS3 also has a focus on Blackhorse Lane and the Northern Olympic Fringe.
- 6.5.4 Development within 500m of the SPA and Ramsar will be likely to increase the density of residents and therefore the number of people living in close proximity to the SPA/Ramsar. In addition, the redevelopment process will inevitably be associated with periods of demolition and construction noise.
- 6.5.5 Although Waltham Forest does face challenges with fly tipping, and the associated risk on introduction of non-native species through garden waste, policy CS7 (Promoting Sustainable Waste Management and Recycling) does support best practice in waste management and therefore mitigates against the possibility of unauthorised disposal occurring. Additionally, the general movement from an industrial environment to a residential one will substantially reduce opportunities for carrying out anti-social behaviour unobserved. As a result, it is considered that it is not reasonable to conclude in this case that a material increase in fly-tipping and the like will occur.
- 6.5.6 Construction and demolition noise and general disturbance through residential and employment activity within 500m of the SPA/Ramsar is therefore considered to be the only adverse effect requiring further consideration. The degree of impact that varying levels of noise

will have on different species of bird is poorly understood except that a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al⁴⁴ examined the distribution of 43 passerine species (i.e. 'songbirds'), of which 60% had a lower density closer to the roadside than further away and it was concluded that noise was probably the principal factor. By controlling vehicle usage they also found that the density generally was lower along busier roads than quieter roads. A three year study of wetland birds at the Stour and Orwell SPA found that the greatest disturbance responses came from relatively infrequent events, such as gun shots and aircraft noise⁴⁵. Birds seemed to habituate to frequent 'benign' events such as vehicles, sailing and horses, but there was evidence that apparent habituation to more disruptive events related to reduced bird numbers – i.e. birds were avoiding the most frequently disturbed areas.

- 6.5.7 It is important to note that the birds that use the Lee Valley SPA and Ramsar site are already within an essentially urban situation with high-rise housing surrounding the site, and a busy road (the A508) passing through the centre of the designated area. Therefore they are likely to be habituated (i.e. have become tolerant to) a level of background noise and visible presence of human activity.
- 6.5.8 Nonetheless, new development in close proximity to the SPA/Ramsar will require incorporation of measures into the Area Action Plans to ensure that a clear policy framework exists for mitigating these adverse effects on the ground (e.g. appropriate screening of new development, timing of construction and demolitions, and best practice during construction).
- 6.5.9 However, this level of detail does not require definition within the Core Strategy. Therefore potential urbanisation impacts as a result of policies within the Waltham Forest Core Strategy are not predicted to have an adverse effect on Lee Valley SPA and Ramsar.

Recreational Pressure

- 6.5.10 The entire borough of Waltham Forest lies within easy access of Lee Valley SPA and Ramsar, in particular the Walthamstow Reservoirs, since the borough of Waltham Forest does not have direct road links to other major routes that run close to other constituent water bodies that make up the SPA/Ramsar. Policies CS1, CS2 (Housing Supply) and CS14 (Attractive and Vibrant Town Centres) all advocate increased levels of housing within the borough, with a commitment to deliver 10,320 new dwellings across the borough during the plan period. This alone has potential to significantly increase the number of visitors to the Lee Valley, and must also be considered within the context of approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period.
- 6.5.11 Policy CS11 (Tourism Development and Visitor Attractions) promotes tourism development in proximity to visitor attractions, and also increased access to sites including the Lee Valley (whilst not harming their conservation value). In this context, policy CS6 (Protection and Enhancement of the Natural Environment) also aims to promote access to and contact with nature.
- 6.5.12 Currently, access to Walthamstow reservoirs is by key-holder only, and access is controlled by a permit basis, such that the exposure of the reservoirs to human activity is very limited, unlike the rest of the Regional Park (much of which lies outside of the SPA/Ramsar). However, the

⁴⁴ Reijnen, R., Foppen, R., ter Braak, C. & Thissen, J. (1995): The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. *J. Appl. Ecol.* 32: 187-202.

⁴⁵ Ravenscroft, N. (2005) Pilot study into disturbance of waders and wildfowl on the Stour-Orwell SPA: analysis of 2004/05 data. Era report 44, Report to Suffolk Coast & Heaths Unit.

supporting text to policy CS1 does note that “*Walthamstow Wetlands’ sits within the Middle Lee and is identified by the Upper Lee Valley Landscape Strategy as a transformational project...to increase access to Walthamstow Reservoirs by providing attractive walking and cycling connections throughout the area.*” It also notes that “*the Blackhorse Lane area is surrounded by the reservoirs, waterways and marshes of the Lee Valley Regional Park but access to the Park is extremely poor. It is proposed to create new and improved pedestrian and cycle routes to the Park, create more views of Walthamstow Reservoirs and Tottenham Marshes, and encourage the development of new and improved leisure and recreational facilities making full use of the landscape.*”

6.5.13 Additionally, the supporting text to policy CS6 states that “*The Lea Valley Reservoirs in particular form a network of open spaces that have the potential to link to the wider green infrastructure network and to local communities. Improvements to the water quality and habitats of the reservoirs is a key challenge, and the Council will aim to effectively manage, protect and support catalyst projects in the Borough, such as the Lee Valley Pathway project, the Walthamstow Wetlands project, proposals for the Green grid and the revitalisation of Dagenham Brook. The Upper Lee Valley Landscape Strategy makes specific reference to the Walthamstow Wetlands project. The Strategy identifies the potential in terms of distinctiveness, diversity of open spaces and likelihood of attracting public interest from across the region.*”

6.5.14 It should be noted that there is an inherent conflict between Government policy to increase public access to the natural environment (as embodied in the Countryside and Rights of Way Act) and the requirements of European site management which often require visitor numbers to be controlled. However, ultimately, the legal requirements of the Conservation (Natural Habitats &c) Regulations should override national policy where such a conflict exists unless the policy is considered to represent an Imperative Reason of Overriding Interest as defined in the Regulations. It must be pointed out however that increased access to a site such as Walthamstow reservoirs does not necessarily automatically lead to increased levels of disturbance, particularly if access is well designed and managed.

6.5.15 The Core Strategy does contain positive measures that should aim to alleviate or avoid excessive recreational pressure on the Lee Valley SPA and Ramsar:

- SO6 states that the Council will seek to “*protect, enhance and further develop a network of multifunctional green infrastructure capable of delivering a comprehensive range of benefits for both people and wildlife.*” The supporting text to policy CS1 specifically lists the Walthamstow Wetlands project as a development that will be encouraged and supported. This is an example of a scheme that is likely to prove an attractive option for walkers, cyclists, dog-walkers and other recreational users.
- Policy CS1 also allows for the possibility of developer contributions to be sought – whilst not specifically linking these to provision of green infrastructure, the provision of or financial assistance toward on-site, or if necessary, off-site open space could certainly be included in this. The supporting text to policy CS6 does state that “*the Council will promote...S106 funding for habitat management.*” It also states that the Development Management policies will “*outline the development requirements and expected financial contributions. Financial contributions will be sought for the provision of new or enhancements to existing areas of nature conservation and open spaces.*”
- The supporting text to policy CS1 indicates that the Olympic legacy in the south of the borough will provide key opportunities for open space and leisure facilities. As with Walthamstow wetlands, these could provide means of deflecting any future recreational

pressure from the SPA/Ramsar, though the same caveats would apply in terms of off-site usage by designated species.

- The supporting text to CS1 also lists other green space and corridor enhancements that are planned. The Open Spaces Strategy (2010) identifies that Lloyd Park; Chingford Mount Cemetery; St Mary's Churchyard, Leyton; and Dagenham Brook & land either side of Marsh Lane have been identified for enhancement *"to improve access to nature in the borough."*
- Policy CS6 confirms that new open spaces (at an indicative proportion of 1.6ha/1000 population) will be delivered.
- Policy CS6, crucially, states that the Council will be *"seeking to protect and enhance biodiversity, especially where habitats, species and sites are recognised at the international, national, regional and local levels."* Even more pertinently, it also commits to *"protecting, promoting and enhancing the Lee Valley Regional Park."* In terms of access it notes that *"improving access to open spaces and watercourses within the Borough should be encouraged but requires well designed access arrangements and suitable management."*
- The Council notes that *"improvements to the water quality and habitats of the reservoirs is a key challenge, and the Council will aim to effectively manage, protect and support catalyst projects in the Borough."*
- The Council *"will collaborate with a range of public, private and community partners in order to deliver improvements to existing green infrastructure and biodiversity in the Borough."* With regard to the Lee Valley, *"the Council will...work in unison with the Lee Valley Regional Park in delivering the proposals set out in the Park Development Framework. Specifically, the Walthamstow Wetlands project and projects around the Lea Bridge and Blackhorse Lane areas will require collaboration between the Council and other partners."* We understand that Natural England are supportive of increased public access to Walthamstow Reservoirs. Access to Walthamstow reservoirs will also require dialogue with Thames Water, the site owners.
- Policy CS11 aims to protect the Borough's unique assets including the Lee Valley water bodies, from "insensitive development."
- Policy CS13 (Promoting Health and Fitness) seeks to provide convenient cycle and pedestrian access within the borough at locations that should provide residents with alternative leisure facilities (e.g. the Olympic legacy) to the Lee Valley SPA and Ramsar.

6.5.16 These constitute a coherent set of policies, measures and initiatives to maximise open space and green infrastructure opportunities within the borough, associated with new development. Coupled with the fact the Lee Valley Regional Park Authority have a detailed management strategy, which includes careful management and licensing of many recreational activities, these measures, coupled with those already contained within the Core Strategy, would be sufficient to mitigate any adverse effect as a result of the increased population within the recreational catchment of the SPA and Ramsar.

6.5.17 The proposed submission Core Strategy HRA noted that the following should be born in mind when planning such greenspace:

- Delivery of each area of enhanced greenspace would need to be phased in parallel to occupation of the developments it was intended to serve. This could be referenced within CS1 alongside commitment to timely delivery of other specified 'essential infrastructure' and also within the policy CS6 that encompasses green infrastructure.

- Delivery of the greenspace would need to serve a similar recreational function to the Lee Valley (i.e. walking, cycling, dog-walking and appreciation of nature)
- 6.5.18 However, it was not concluded that any changes to actual Core Strategy policy were required.

Air Quality

- 6.5.19 Parts of the Lee Valley SPA and Ramsar site are sensitive to deterioration in air quality, as the supporting habitat consists of terrestrial features that can be degraded by excessive deposition of pollutants. The Ramsar site is partly designated for its aquatic plant life, specifically the whorled water milfoil, which is dependent on calcareous water (and thus susceptible to acidification of the aquatic environment).
- 6.5.20 All forms of development within the Core Strategy that would be likely to lead to increases in vehicle emissions within 200m of Lee Valley SPA and Ramsar could have potential to reduce air quality. The delivery of 10,320 new dwellings, including in specified areas in close proximity to the SPA/Ramsar, coupled with other employment and infrastructure development, and encouragement of recreational access is likely to lead, unmitigated, to increased road traffic, and therefore air pollution on routes within 200m of the designated site.
- 6.5.21 The Council does include policies that seek to protect the SPA/Ramsar, and to both reduce traffic demand and improve public transport and non-motorised movement:
- Policy CS1 seeks the enhancement of green infrastructure, which will be important in not only dispersing some recreational users from Lee Valley SPA/Ramsar, but also reducing the number of journeys made to the site by car.
 - Policy CS1 also commits to ensure the “*timely delivery of infrastructure to support growth.*” As the supporting text makes clear this will include transport infrastructure, and its delivery alongside other development should minimise the likelihood of unsustainable increase in road transport within the borough. Alongside this the policy also expresses support for enhanced public transport, including the proposed reinstatement of the Hall Farm Curve rail link.
 - Policy CS1 also allows for the possibility of developer contributions to be sought – whilst not specifically linking these to provision of transport infrastructure, this could certainly be a consideration.
 - Policy CS3 (Making Efficient Use of Employment Land) acknowledges the need for new employment sites to have good links to public transport.
 - The Council’s commitment to the delivery of green infrastructure and open space has been discussed in terms of its potential to reduce recreational pressure on Lee Valley. It also stands to reason that policies that provide alternative to users from Lee Valley SPA/Ramsar will also lead to reduced vehicular movements in the vicinity of the SPA/Ramsar.
 - Policy CS6, crucially, states that the Council will be “*seeking to protect and enhance biodiversity, especially where habitats, species and sites are recognised at the international, national, regional and local levels.*” Even more pertinently, it also commits to “*protecting, promoting and enhancing the Lee Valley Regional Park.*” In terms of access it notes that “*improving access to open spaces and watercourses within the Borough should be encouraged but requires well designed access arrangements and suitable management.*”

- Policy CS7 is largely positive with regard to waste management. It strives to minimise waste and its transportation and critically, Lee Valley SPA/Ramsar is protected through its adherence to policies within the North London Waste Plan (NLWP). The latest draft of the NLWP states that a HRA Screening exercise has been able to conclude that “*the Plan is unlikely to have an adverse effect on the qualifying features of any Natura 2000 [European] sites and therefore no further work is required.*”
 - Policy CS8 (Developing Sustainable Transport) has a focus on improved public transport, improvements in cycling and walking options, and an encouragement to use these forms of transport. It also promotes development in areas with good links to public transport, and aims to require new development to provide appropriate Transport Access and Travel Plans. Additionally, the Council will actively manage traffic flow and speeds and will also seek to maximise sustainable freight transport. All of these measures should help to reduce the amount and impact of road traffic movements within the borough and beyond. The Council also acknowledges that it will need to work with partners to achieve these aims.
 - Policies CS9 (Promoting Better Education) and CS10 (Creating Jobs and Reducing Worklessness) both recognise the need for sustainable access to any new developments.
 - Policy CS11 aims to protect the Borough’s unique assets including the Lee Valley, from “insensitive development.” This can be taken to include any development that would lead directly to reduced air quality at the SPA/Ramsar.
 - Policy CS13 seeks to provide convenient cycle and pedestrian access within the borough and to protect its residents from polluting activities. These aspirations should result in improved air quality across the borough, including the Lee Valley.
- 6.5.22 These constitute a coherent set of policies, measures and initiatives to maximise air quality improvement within the borough, associated with new development.
- 6.5.23 However, even disregarding that the Core Strategy does contain a number of policy measures that would improve air quality within the borough as a whole, it is possible to conclude that the European site is unlikely to be adversely affected as a result of the CS because:
- There are no key supporting habitats within 200m of major roads within Waltham Forest that are known to be vulnerable to reduced air quality.
 - Whilst critical loads for nitrogen deposition are not available for open water habitats, there is no indication that the potentially susceptible species, whorled water milfoil, for which the Ramsar site is partly designated, occurs in Walthamstow Reservoirs. There is little available data for the water boatman *Micronecta minutissima*, which may or may not be susceptible. Wintering gadwall and shoveler would not be significantly affected.
 - The borough of Waltham Forest does not have direct road links to other major routes that run within 200m of other constituent water bodies that make up the SPA/Ramsar.
- 6.5.24 It is therefore considered that air quality does not require further consideration as a pathway of impact (on Lee Valley SPA/Ramsar) within this HRA.

Water Resources

- 6.5.25 Current uncertainty over the future of water supplies in Thames Water’s London Resource Zone means that it is not possible to conclude with certainty that there will not be levels of

abstraction from the River Lee or associated water bodies (such as Walthamstow Reservoirs) that would have adverse effects on the Lee Valley SPA and Ramsar.

6.5.26 Policies CS1, CS2, CS3, and CS4 all promote development and growth that is likely to result in greater demand for water through supply to residential, employment and infrastructure to be delivered within the borough.

6.5.27 However, there are also a number of policy approaches that will contribute to water efficiency savings over the lifetime of the Core Strategy:

- Policy CS1 commits to ensure the “*timely delivery of infrastructure to support growth.*” The delivery of key utilities infrastructure alongside other development should minimise the likelihood of unsustainable demands on water supply within the borough.
- Policy CS1 also allows for the possibility of developer contributions to be sought – whilst not specifically linking these to water supply and efficiency measures, this could certainly be a consideration.
- Policy CS2 will seek “*high quality design from all new housing development.*”
- Policy CS5 elaborates on this by stating that the Council will require “*high environmental standards of building design and construction including targets based on standards such as BREEAM and Code for Sustainable Homes.*” At present the CS does not set the standards to be met - it is recommended that the Council establish minimum levels to be met, phased if necessary over the plan duration.
- Policy CS5 also requires developments “*to minimise the use of water.*”
- The supporting text to policy CS5 confirms that “*new developments will also be expected to contribute towards adaptation objectives...*”
- Policy CS6, crucially, states that the Council will be “*seeking to protect and enhance biodiversity, especially where habitats, species and sites are recognised at the international, national, regional and local levels.*” Even more pertinently, it also commits to “*protecting, promoting and enhancing the Lee Valley Regional Park.*” The Council notes that “*improvements to the water quality and habitats of the reservoirs is a key challenge, and the Council will aim to effectively manage, protect and support catalyst projects in the Borough.*”
- Policy CS11 aims to protect the Borough’s unique assets including the Lee Valley, from “*insensitive development.*” This can be taken to include any development that would lead directly to any impacts of reduced water availability at the SPA/Ramsar.

6.5.28 The issue of regional water supply is beyond the remit of Waltham Forest Borough Council to determine. Given this, and the commitment to maximise opportunities for water use efficiency and water retention within the Core Strategy, it is concluded that the Council has taken all possible measures to avoid significant adverse effects on the Lee Valley SPA and Ramsar site.

6.6 In Combination Assessment

6.6.1 The following plans and projects are likely to contribute, in combination with the Waltham Forest Core Strategy to adverse effects on Lee Valley SPA/Ramsar through increased recreational pressure:

- Approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period
- 6.6.2 The following plans and projects are likely to contribute, in combination with the Waltham Forest Core Strategy to adverse effects on the Lee Valley SPA/Ramsar through reduced air quality:
- Approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period
 - Specific foci for development including regeneration of Tottenham Hale and Central Leaside AAP all have the potential to lead to increased traffic movements on roads that pass within 200m of Lee Valley SPA/Ramsar. However, it has already been concluded that the Walthamstow Reservoirs are relatively insensitive to reduced air quality, and so these schemes are unlikely to result in significant 'in combination' effects.
- 6.6.3 The following plans and projects are likely to contribute, in combination with the Waltham Forest Core Strategy to adverse effects on the Lee Valley SPA/Ramsar through urbanisation:
- Specific foci for development including regeneration of Tottenham Hale and Central Leaside AAP all have the potential to lead to incidences of fly-tipping or noise disturbance within 500m of Lee Valley SPA/Ramsar. However, subject to the implementation of minor policy recommendations within section 6.5.8, it can be concluded that Waltham Forest has taken all appropriate measures to avoid contribution to any 'in combination' urbanisation impacts.
- 6.6.4 The following plans and projects are likely to contribute, in combination with the Waltham Forest Core Strategy to adverse effects on the Lee Valley SPA/Ramsar through increased pressure on water resources:
- All other development proposals within Thames Water's London Water Resource Zone, including housing development, and major infrastructure projects such as Stratford City; London 2012 Olympic Park and its legacy; and Thames Gateway London Partnership. However, it has already been noted that the security of water supply is beyond the scope of Waltham Forest to influence, and it is considered that the Council has taken all appropriate measures to minimise any contribution to the overall pressures on water resources in London.

6.7 Conclusion

- 6.7.1 It can be concluded that the Waltham Forest Core Strategy does include an adequate policy framework to deliver measures to avoid or mitigate the adverse effects of development on the Lee Valley SPA and Ramsar site, provided that the effectiveness of measures is adequately monitored. None of the amendments to Core Strategy text that have been made since the proposed Submission version have introduced any risk to the Lee Valley SPA/Ramsar site.

7 Likely Significant Effects: Wormley-Hoddesdonpark Woods SAC

7.1 Introduction

7.1.1 Wormley-Hoddesdonpark Woods SAC consists of two SSSI's – Wormley-Hoddesdonpark Wood North SSSI and Wormley-Hoddesdonpark Wood South SSSI which cover the SAC area.

7.1.2 A series of discreet woodland blocks lying mainly on acid gravel deposits over the London Clay, these woods have developed from ancient wood-pasture and heaths, and retain many large oak and hornbeam pollards along the boundaries. More basic conditions arise from prevalence of boulder clays to the north of the site. This range of geological conditions and the variety of past management regimes has resulted in a varied woodland structure, wide habitat diversity and a correspondingly rich flora. Despite extensive clearance and replanting with conifers the remaining semi-natural woodland is of national importance as an example of lowland south-east sessile oak/hornbeam type with the pedunculate oak/hornbeam variant also present. Small ponds and streams are important habitats for bryophyte species dependent on shady, wet and acidic conditions.

7.1.3 Nationally the woods are regarded as the best remaining example of the south-east Sessile Oak-Hornbeam woods with associated flora and fauna. The Pedunculate Oak-Hornbeam variant is also represented, adding variety to the site.

7.2 Features of European Interest

7.2.1 The site is designated as an SAC for its:

- Oak-hornbeam forests

7.3 Historic Trends and Current Conditions

7.3.1 During the most recent (2010) Condition Assessment summary, some areas of the SSSI covering the northern woods were noted to be recovering from four-wheel drive vehicle usage. However, the tone of the comments is that these are exceptional circumstances, although an area of the site is of status 'unfavourable no change' due to the presence of fly tipping and absence of active management. 98.65% of the northern woodland site was in "favourable" condition. One part of the SSSI covering the south woods was noted as being subject to an ongoing problem of abandoned cars, although this compartment was nonetheless judged to be in favourable condition indicating that the car dumping, while undesirable, is not perhaps yet at the level that results in a net adverse effect on the interest features of the site. 75% of the southern woodland site was in favourable condition. Unfavourable areas of the site were suffering from the effects of car dumping and a requirement for further active management.

7.4 Key Environmental Conditions

7.4.1 The following key environmental conditions were identified for this site:

- Minimal air pollution;
- Balanced hydrological regime;
- Absence of direct fertilisation; and
- Well-drained soils.

7.5 Potential Effects of the Plan

7.5.1 One potential impact of the Waltham Forest CS upon the SAC has been identified:

- Recreational pressure

Recreational Pressure

7.5.2 Policies CS1, CS2 (Housing Supply) and CS14 (Attractive and Vibrant Town Centres) all advocate increased levels of housing within Waltham Forest, with a commitment to deliver 10,320 new dwellings across the borough during the plan period. This figure, within the context of approaching half a million new dwellings to be delivered by surrounding authorities in London, the South East and the East of England over a similar time period, could potentially lead to an increase in recreational pressure on Wormley-Hoddesdonpark Woods SAC.

7.5.3 However, there is currently no indication that the SAC, which lies, at its closest, 10km from Waltham Forest is subject to unsustainable recreational pressure, most of the limited concerns over its current condition arising from the proximity of development (urbanisation). The site is however relatively easy to access from Waltham Forest via the M25 and A10.

7.5.4 If, in the absence of specific data regarding the recreational catchment of Wormley-Hoddesdonpark Woods SAC, we take as a proxy the England Day Visits data as broadly 'typical' of the distances that residents may travel to visit large woodland sites (i.e. 18km), it is clear that Wormley Hoddesdonpark Woods SAC could potentially form a recreational resource for the borough. Nonetheless, given the proximity to residents of a nationally renowned woodland site in Epping Forest, it is considered unlikely that the majority of casual day visitors would make the extra effort required to visit Wormley-Hoddesdonpark Woods, considerably further distant.

7.5.5 Moreover, the Core Strategy does contain numerous policies that seek to enhance access to and provision of open space within Waltham Forest borough, and which should reduce the likelihood that residents will feel the need to travel extensively to find such opportunities outside the borough:

- SO6 states that the Council will seek to "*protect, enhance and further develop a network of multifunctional green infrastructure capable of delivering a comprehensive range of benefits for both people and wildlife.*"
- The supporting text to policy CS1 indicates that the Olympic legacy in the south of the borough will provide key opportunities for open space and leisure facilities, and it also lists other green space and corridor enhancements that are planned. The Open Spaces Strategy (2010) identifies that Lloyd Park; Chingford Mount Cemetery; St Mary's Churchyard, Leyton; and Dagenham Brook & land either side of Marsh Lane have been identified for enhancement "*to improve access to nature in the borough.*"

- Policy CS6 confirms that new open spaces (at an indicative proportion of 1.6ha/1000 population) will be delivered. The supporting text to policy CS6 defines specific locations for improved green links.
- The Council “*will collaborate with a range of public, private and community partners in order to deliver improvements to existing green infrastructure and biodiversity in the Borough.*”
- Policy CS13 (Promoting Health and Fitness) seeks to provide convenient cycle and pedestrian access within the borough at locations that should provide residents with improved access to leisure facilities (e.g. the Olympic legacy).

7.5.6 These constitute a coherent set of policies, measures and initiatives to maximise open space and green infrastructure opportunities within the borough, associated with new development. Given these, the distance of the borough from Wormley-Hoddesdonpark Woods SAC, the favourable condition of the SAC, and the low risk from recreational pressure, it is considered that the Core Strategy does not contain policies that would lead to any likely significant adverse effects on this SAC.

7.5.7 Therefore there are no potential impacts as a result of policies within the Waltham Forest Core Strategy that are predicted to have an adverse effect on Wormley-Hoddesdonpark Woods SAC.

7.6 In Combination Assessment

7.6.1 Although approaching half a million new dwellings are to be delivered by authorities in London, the South East and the East of England over a similar time period to the Waltham Forest Core Strategy, and it is possible that this level of development could create recreational pressure on Wormley-Hoddesdonpark Woods SAC, the contribution of development within the borough to any such effect would be negligible. Therefore, we are able to conclude that there is no likely ‘in combination’ effect of recreational pressure with any other plan or project on Wormley-Hoddesdonpark Woods SAC.

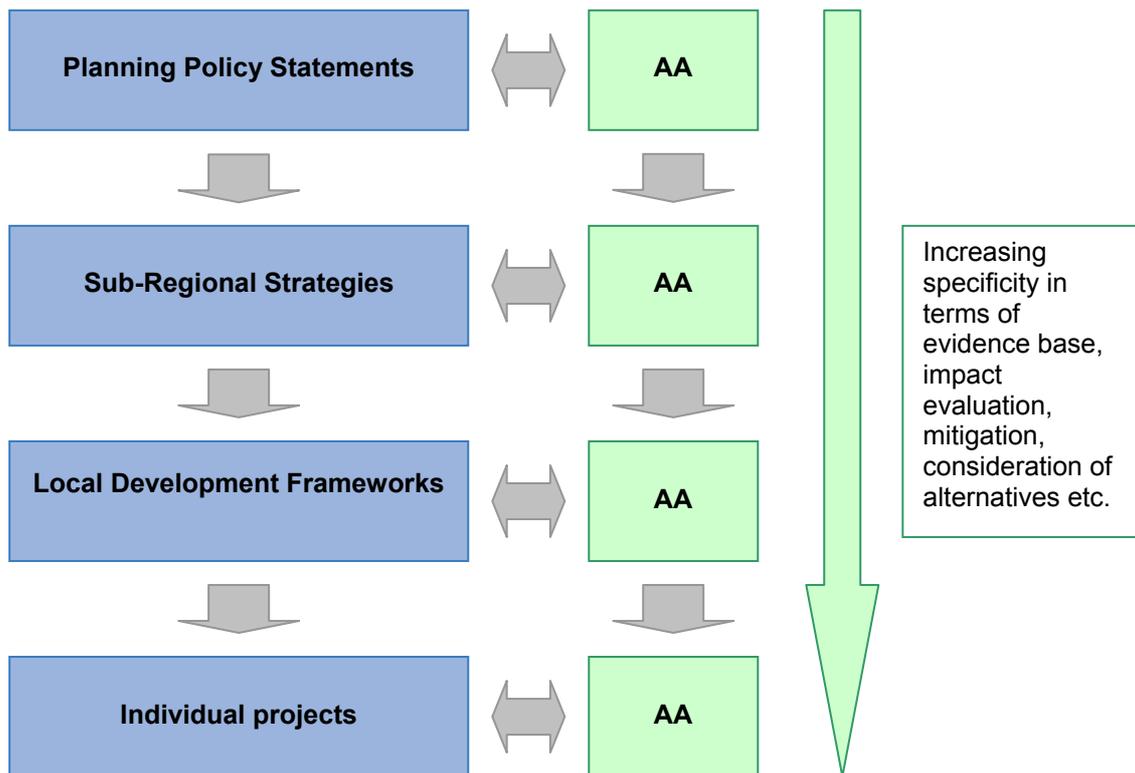
7.7 Conclusion

7.7.1 It can be concluded that the Waltham Forest Core Strategy will not lead to any significant adverse effects on Wormley-Hoddesdonpark Woods SAC.

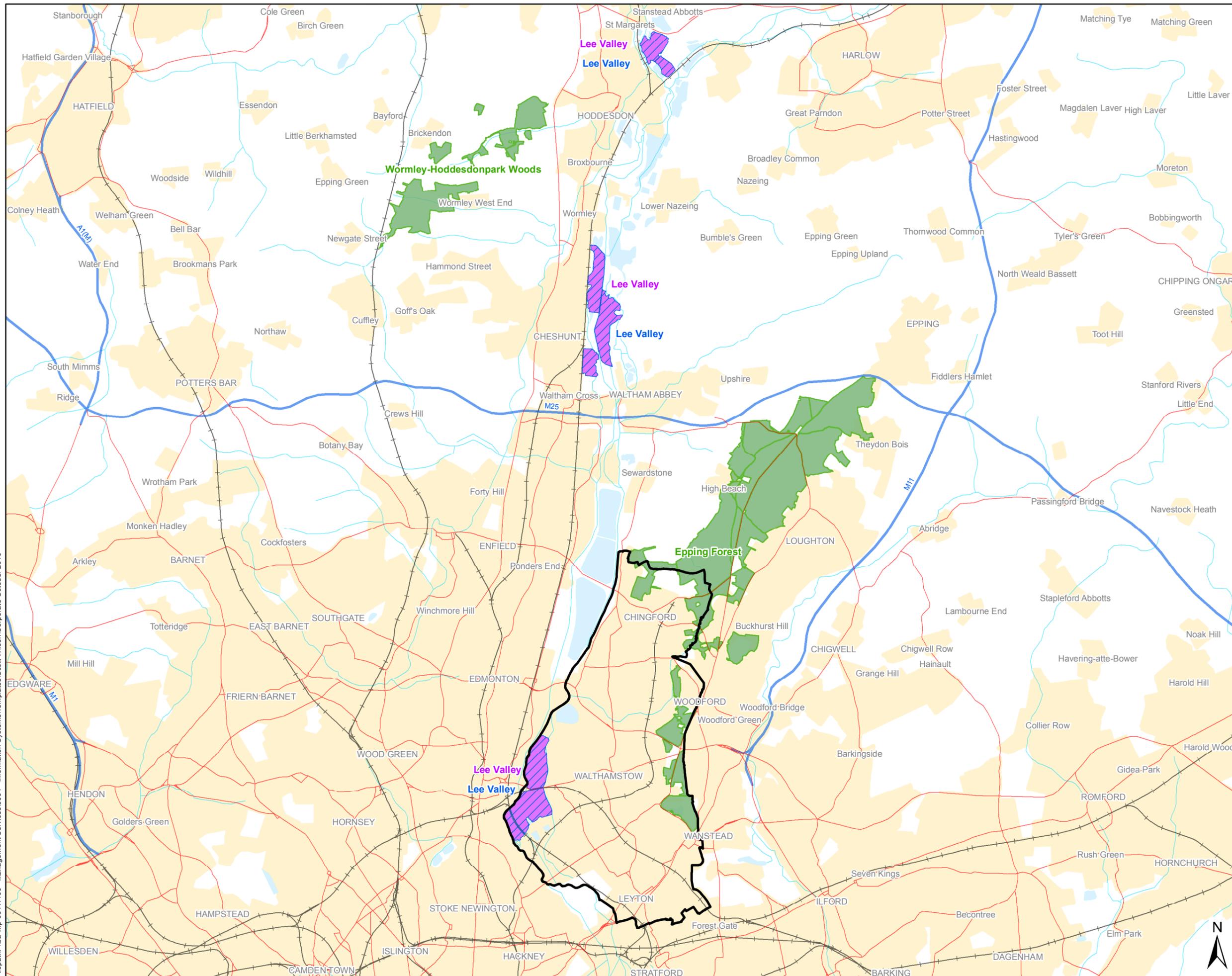
8 Overall Conclusions

- 8.1.1 As a result of this HRA of the Submission Core Strategy we have been able to conclude that significant effects are unlikely to occur on any European sites as a result of Core Strategy development, either alone or in combination with other plans and projects.

Appendix 1: 'Tiering' in Habitat Regulations Assessment



Date: 11th October 2010
 Filepath: \\ba-wip-001\4400 - Management Services\5004 - Information Systems\Templates\Scott Wilson\Corporate\October 2010



- NOTES**
- London Borough of Waltham Forest Boundary
 - Special Area of Conservation (SAC)
 - Special Protection Area (SPA)
 - Ramsar
 - Motorway
 - A Road
 - Railway
 - River

Copyright
 Contains Ordnance Survey Data
 © Crown Copyright and database right 2010
 © Natural England material is reproduced with the permission of Natural England 2010

Revision Details	By	Date	Check	Suffix

Drawing Status: **DRAFT**

Job Title: **WALTHAM FOREST HRA**

Drawing Title: **EUROPEAN DESIGNATED SITES**

Scale at A3: **1:100,000**

Drawn: AH	Approved: GD
Stage 1 check	Stage 2 check
Originated	Date

THIS DOCUMENT HAS BEEN PREPARED IN ACCORDANCE WITH THE SCOPE OF SCOTT WILSON'S APPOINTMENT WITH ITS CLIENT AND IS SUBJECT TO THE TERMS OF THAT APPOINTMENT. SCOTT WILSON ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS CLIENT AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.
 © SCOTT WILSON LTD 2010

Scott Wilson Ltd Scott House Alençon Link, Basingstoke Hampshire, RG21 7FP Telephone (01256) 310200 Fax (01256) 310201 www.urs-scottwilson.com	
--	------

Drawing Number: **FIGURE 1** Rev

