London Borough of Waltham Forest Local Development Framework

Walthamstow Town Centre Area Action Plan Preferred Options – Habitats Regulations Assessment

Revision Schedule

Habitats Regulations Assessment
August 2011

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Table of Contents

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 Habitats Regulations Assessment of the Preferred Options Stage of its Walthamstow Town Centre Area Action Plan (AAP). The objective of the assessment was to identify any aspects of the AAP that would cause an adverse impact 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 impacts were identified.

1.1.2 The Area Action Plan will form a planning document within Waltham Forest's Local Development Framework (LDF) that will supersede the current Unitary Development Plan (2006).

1.1.3 The core LDF documents will ultimately include:

- Core Strategy (submitted for examination in May 2011);
- Development Management Policies;
- 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 subject to Habitats Regulations Assessment (HRA) and has incorporated recommendations made for mitigation measures that should be included in order to determine no likely significant effects on European sites. Appraisal of this AAP has been undertaken on the understanding that the recommendations relating to the Core Strategy will be adopted.

1.1.5 The AAP has been informed by studies that have included the Walthamstow Town Centre Masterplan and the Interim Planning Policy Framework (adopted 2008).

1.1.6 The stated aims of the AAP are to:

- enhance Walthamstow's character and environment;
- provide new homes;
- promote sustainable development;
- improve the quality and range of facilities and services available to residents, businesses and visitors;
- revitalise deteriorating areas of the centre; and
- identify the significant development sites and investment opportunities within the centre.

1.1.7 The AAP will seek to provide a coordinated approach in order to manage the town centre's regeneration, growth and development over the next 15 years.

1.2 Current Legislation

1.2.1 The need for Habitats Regulations 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 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 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 an Area Action Plan. 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 Walthamstow Town Centre boundary; and
- Other sites shown to be linked to development within the AAP boundary through a known 'pathway' (discussed below).

1.3.2 Briefly defined, pathways are routes by which a change in activity within the AAP area can lead to an effect upon a European site. In terms of the second category of European site listed above, CLG guidance[1] 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 no European sites that lie within the area covered by the AAP, but 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. The details of these European sites are provided in Appendix 1. 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).

1.3.4 Figure 1 shows the location of the European sites in relation to Walthamstow Town Centre.

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. The key findings are summarised in Chapter 5.

1 Communities and Local Government (2006) - Planning for the Protection of European Sites: Appropriate Assessment - Guidance For Regional Spatial Strategies and Local Development Documents.

2 Methodology

2.1 Introduction

2.1.1 The HRA has been carried out in the continuing absence of formal central Government guidance, although general EC guidance on HRA does exist[2]. The former Department for Communities and Local Government released a consultation paper on the Appropriate Assessment of Plans in 2006[3]. As yet, no further formal guidance has emerged. However, Natural England has produced its own internal guidance[4] as has the RSPB[5].

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

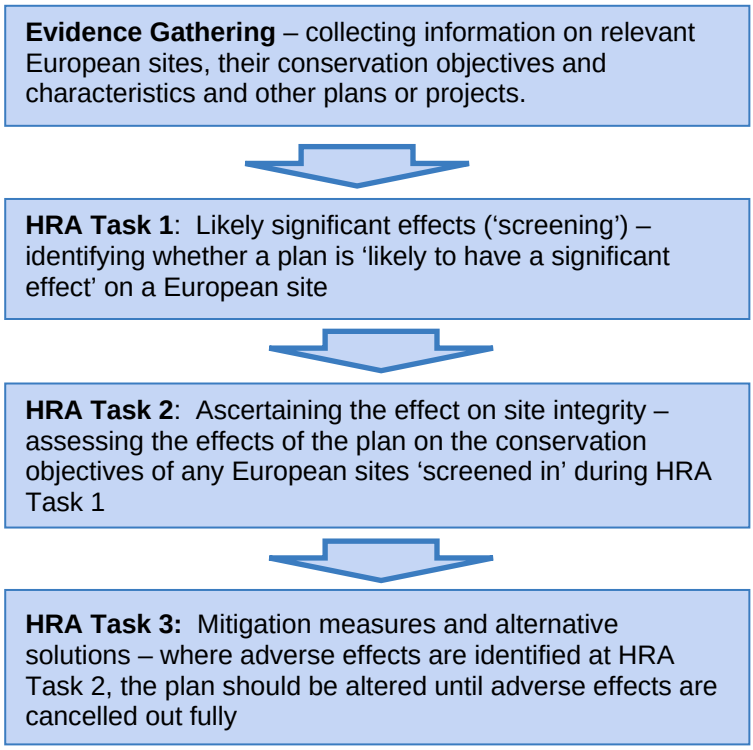

Figure 2. Four-Stage Approach to Habitat Regulations Assessment
Source: CLG, 2006

[2] European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
[3] CLG (2006) Planning for the Protection of European Sites, Consultation Paper
[4] http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf
[5] 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 – Screening for Likely Significant Effects (LSE)

2.2.1 The first stage of any Habitat Regulations Assessment is a Likely Significant Effect (LSE) test - essentially a risk assessment or screening exercise 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 Since this assessment is within the context of an existing Core Strategy and associated HRA, we have also used this screening exercise as the basis to confirm that that there are no new mechanisms for any likely significant effects on European sites which might arise from the further details of development contained within the AAP that were not identified at the Core Strategy level and thus addressed by avoidance or mitigation measures included within Core Strategy policy.

2.3 Appropriate Assessment and Mitigation

2.3.1 With regard to those European sites where it is considered not possible to 'screen out' the AAP without detailed appraisal, it is necessary to progress to the later 'Appropriate Assessment' stage to explore the adverse effects and devise mitigation.

2.3.2 The steps involved are detailed in Box 2.

Box 2. The steps involved in Appropriate Assessment

1. Explore the reasons for the European designation of these sites.
2. Explore the environmental conditions required to maintain the integrity of the selected sites and become familiar with the current trends in these environmental processes.
3. Gain a full understanding of the plan and its policies and consider each policy within the context of the environmental processes – would the policy lead to an impact on any identified process?
4. Decide if the identified impact will lead to an adverse effect on integrity.
5. Identify other plans and projects that might affect these sites in combination with the Plan and decide whether there are any adverse effects that might not result from the Plan in isolation but will do so "in combination".
6. Develop policy mechanisms to enable the delivery of measures to avoid the effect entirely, or if not possible, to mitigate the impact sufficiently that the effect on the European site is rendered effectively inconsequential.

2.3.3 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 and Ramsar site and Epping Forest SAC.

2.3.4 The level of detail concerning developments that will be permitted under land use 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 CLG 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 2 for a summary of this 'tiering' of assessment).

2.3.5 It is important to note that there is a clear mitigation hierarchy with regard to Appropriate Assessment – if possible the plan or project should seek to avoid the impact and if that cannot be achieved should seek to mitigate it to such an extent that an adverse effect on integrity of the European site will not result. Only in exceptional circumstances (following demonstration of 'no alternatives' and 'imperative reasons of over-riding public interest') will compensation be acceptable.

2.4 Confirming other plans and projects that may act in combination

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

2.4.2 It is neither practical nor necessary to assess the 'in combination' effects of the AAP 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 the rest of Waltham Forest and for other neighbouring authorities over the lifetime of the AAP. The East of England Plan (March 2010), South East Plan (May 2009) and the London Plan (draft replacement plan 2010) provide a good introduction to proposals for areas surrounding Waltham Forest borough. 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 within the region.

2.4.3 In considering the potential for impacts from regional housing development on Epping Forest SAC, and Lee Valley SPA and Ramsar, 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).

2.4.4 The following plans and projects are relevant to 'in combination' assessment:

- Housing provision figures identified within The East of England Plan (March 2010), South East Plan (May 2009) and the London Plan (draft replacement plan 2010), along with policies relating to employment provision and any significant infrastructure;
- Local Development Framework documents of neighbouring local authorities;
- North London Waste Plan Proposed Submission Version (2011);
- Crossrail and Crossrail 2;
- London 2012 Olympic Park;
- Thames Gateway London Partnership;
- London-Stansted-Cambridge-Peterborough Growth Area;
- Stratford City Masterplan;
- Upper/Lower Lea Valley Opportunity Area Planning Frameworks;
- Epping Forest Management Plan 2004-2010;
- Lee Valley Regional Park Authority Site 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);
- Stage 3 and (as appropriate) Stage 4 of the Environment Agency's Review of Consents process for the European sites covered in this assessment (where available); and
- Mayor of London - Connecting with London's Nature – The Mayor's Biodiversity Strategy (2002).

2.4.5 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.

2.4.6 As identified above, the HRA of the AAP will be assessing whether there exist new mechanisms for any likely significant effects on European sites that were not identified at the Core Strategy level and thus covered by Core Strategy policy. The HRA of the CS was able to conclude no likely significant effects on European sites 'in combination', and therefore in the absence of any new mechanisms for adverse effects within the AAP, there would be no need to re-visit the 'in combination' considerations in this HRA.

3 Pathways of impact

3.1 Introduction

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

3.1.2 The following pathways of impact have been identified as relevant for this assessment and are discussed further in this chapter:

- Recreational pressure and disturbance;
- Atmospheric pollution;
- Water abstraction; and
- Water quality.

3.2 Recreational pressure and Disturbance

3.2.1 Recreational use or other activity within or adjacent to a European site has the potential to:

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

3.2.2 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

3.2.3 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. Motorcycle scrambling and off-road vehicle use can cause more serious erosion, as well as disturbance to sensitive species.

3.2.4 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.
- 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 tramplers caused a greater reduction in vegetation height than lighter tramplers, 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.

3.2.5 The total volume of dog faeces deposited on sites can be surprisingly large. For example, at Burnham Beeches National Nature Reserve over one year, Barnard[10] 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 already be subject to excessive nitrogen deposition, suggests that any additional source of nutrient enrichment (including uncollected dog

[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
[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

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

3.2.6 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 is not spent feeding[11]. Disturbance therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds. In addition, displacement of birds from one feeding site to others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds[12].

3.2.7 The potential for disturbance may be less in winter than in summer, in that there are often a smaller number of recreational users. 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 & Warrington[14] found that on Sundays total water bird numbers (including shoveler and gadwall) were 19% higher on Stocker's Lake LNR in Hertfordshire, and attributed this to displacement of birds resulting from greater recreational activity on surrounding water bodies at weekends relative to week days. However, recreational activity was not quantified in detail, nor were individual recreational activities evaluated separately.

- 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 shoveler was one of the most sensitive species to disturbance. The greatest impact on winter wildfowl numbers was associated with sailing/windsurfing and rowing.

[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

- 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.

- A three year study of wetland birds at the Stour and Orwell SPA 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 (Ravenscroft, 2005).[17]

3.2.8 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 longer[10]. 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 faeces[18].

3.2.9 Underhill-Day[10] 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%.

3.2.10 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 population[19]. A literature review undertaken for the RSPB[20] 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.

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

[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.
[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.

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

Sensitivity of Species – Waterfowl and Waders

3.2.13 The distance at which a species takes flight when approached by a disturbing stimulus is known as the 'tolerance distance' (also called the 'escape flight distance') and differs between species to the same stimulus and within a species to different stimuli. These are given in Table 1, which compiles 'tolerance distances' from 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 1. Tolerance distances of 21 water bird species to various forms of recreational disturbance, as described in the literature. All distances are in metres. Single figures are mean distances; when means are not published, ranges are given. 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 [21]	
Great crested grebe	50 – 100 [22]	20 – 400 [21]	
Mute swan		3 – 30 [21]	
Teal		0 – 400 [21]	
Mallard		10 – 100 [21]	
Shoveler		200 – 400 [21]	
Pochard		60 – 400 [21]	
Tufted duck		60 – 400 [21]	
Goldeneye		100 – 400 [21]	
Smew		0 – 400 [21]	
Moorhen		100 – 400 [21]	
Coot		5 – 50 [21]	
Curlew			211 [23]; 339 [24]; 213 [25]
Shelduck			148 [23]; 250 [24]
Grey plover			124 [23]
Ringed plover			121 [23]

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

Species	Type of disturbance		
	Rowing boats/kayak	Sailing boats	Walking
Bar-tailed godwit			107 [23]; 219 [24]
Brent goose			105 [23]
Oystercatcher			85 [23]; 136 [24]; 82 [25]
Dunlin			71 [23]; 163 [22]

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

3.2.15 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 condition[26].
- *Provision of alternative recreational space* can help to attract recreational users away from sensitive European sites, and reduce additional pressure on them. 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.

3.2.16 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 or other disturbing activities. Both sites 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.

[26] http://www.natureonthemap.org.uk/

3.2.17 Therefore it is necessary to perform an initial screen to determine whether the Walthamstow Town Centre AAP contains policy measures that could lead to a significant adverse effects, either alone or 'in combination' with other plans and projects, through recreational pressure or other disturbance factors, on these European sites.

3.3 Atmospheric pollution

3.3.1 The main pollutants of concern for European sites are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2). NOx can have a directly toxic effect upon vegetation. In addition, greater NOx or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.

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

Pollutant	Source	Effects on habitats and species
Acid deposition	SO_2, NOx 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	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-

Pollutant	Source	Effects on habitats and species
	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.	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.

3.3.2 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 SO_2 or NH_3 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 comparison[27]. Emissions of NOx could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the LDF.

3.3.3 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 NH_3) for key habitats within the European sites considered within this assessment (Table 3). Epping Forest SAC currently exceeds critical loads for nitrogen deposition and NOx levels. Lee Valley SPA/Ramsar is also experiencing high levels of NOx.

Table 3. Critical nitrogen loads, actual rates of nitrogen deposition and NOx concentrations[29] for the European sites considered within this assessment (APIS[30] data accessed on 08/07/11)

Site	Grid reference [31]	Key habitats	Minimum[32] critical loads (Kg N/ha/yr)	Actual nitrogen deposition [33]	Actual NOx concentration (μgm^{-3})
Epping Forest SAC	TQ396882	Beech woodland	10	34.3	59.3

[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 NO_2
[30] UK Air Pollution Information System. http://www.apis.ac.uk
[31] Grid references relate to the closest points to the AAP area.
[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

Site	Grid reference [31]	Key habitats	Minimum [32] critical loads (Kg N/ha/yr)	Actual nitrogen deposition [33]	Actual NOx concentration (μgm^{-3})
		Lowland heathland		17.6	
Lee Valley SPA and Ramsar	TQ352883	(Grazing marsh)[34]	(20)	17.6	59.3

3.3.4 The National Expert Group on Transboundary Air Pollution (2001)[35] concluded that:

- In 1997, critical loads for acidification were exceeded in 71% of UK ecosystems. This was expected to decline to 47% by 2010.
- Reductions in SO_2 concentrations over the last three decades have virtually eliminated the direct impact of sulphur on vegetation.
- By 2010, deposited nitrogen was expected to be the major contributor to acidification, replacing the reductions in SO_2.
- 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.

3.3.5 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.

[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.

[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.

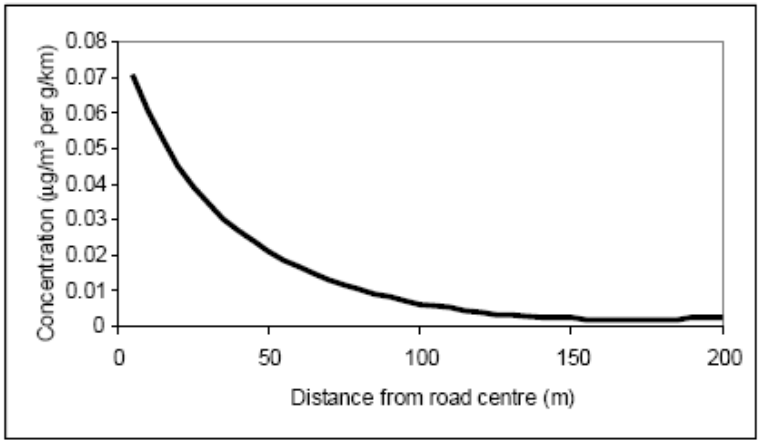
[37] Grice, S., J. Stedman, T. Murrells and M. Hobson (2007) Updated Projections of Air Quality in the UK for Base Case and Additional Measures for the Air Quality Strategy for England, Scotland, Wales and Northern Ireland 2007, report to the Department for Environment, Food and Rural Affairs, Welsh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

3.3.6 Recent data on historical and projected emissions[38] has confirmed that UK emissions of NOx in 2010 exceeded that of SO_2, but that NOx emissions are declining and are projected to continue to do so. NH_3 emissions are predicted to remain stable until at least 2020. Wet deposition of nitrogen and sulphur has been found to decrease more slowly than the emissions reductions rate[39]. This is attributed to a number of factors including increases in emissions from international shipping and changing rates of atmospheric oxidation. The percentage of the United Kingdom surface area for which critical loads are exceeded is estimated to fall from 85% in 1970 to 37% in 2020 for acidic deposition and from 73% to 49% for nutrient nitrogen deposition.

Local air pollution

3.3.7 According to the Department of Transport's Transport Analysis Guidance, "Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"[40].

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



3.3.8 This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development under the AAP. Given that sites detailed in Table 4 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.

[38] Dore, A., Matejko, M., Hallsworth, S., Kryza, M., Bealey, B., Hall, J., Dore, C., Smith, R., Tang, S., Vieno, M.Dragosits, U. & Sutton, M. (2010). Modelling the deposition of nitrogen and sulphur and exceedance of critical loads and levels in the UK. Linnean Society, London.
[39] Matejko, M., Dore, A., Hall, J., Dore, C., Blas, M., Kryza, M., Smith, R., & Fowler, D. (2009). The influence of long term trends in pollutant emissions on deposition of sulphur and nitrogen and exceedance of critical loads in the United Kingdom. Environmental Science and Policy 12 882-896.
[40] www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf

Table 4. Major roads within 200 m of the 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

3.3.9 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.

3.3.10 In the light of this and our own knowledge and experience, it is considered reasonable to conclude that it must be the responsibility of higher-tier plans to set a policy framework for addressing the cumulative diffuse pan-authority air quality impacts, partly because such impacts stem from the overall quantum of development within a region (over which individual 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.

3.4 Water abstraction

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

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

3.4.3 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 (WRZ) 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.

3.4.4 In the London CAMS 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.

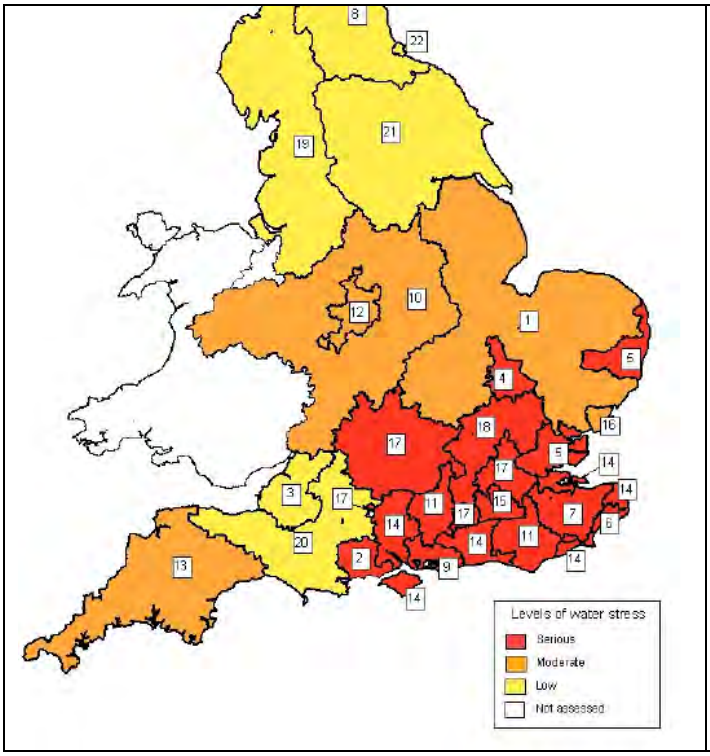


Figure 4. Areas of water stress within England. It can be seen from this map that London is classified as being an area of serious water stress (coded red).[41]

3.4.5 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/Ramsar when considered cumulatively with all other new development in the London WRZ 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), such that damaging levels of abstraction from the River Lee to supply Waltham Forest (or other parts of London) should be avoidable.

3.4.6 It should be noted that Thames Water's draft Water Resources Management Plan identifies that this "*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.

3.4.7 Thames Water's Water Resources Management Plan has been subject to public inquiry, which concluded that the plan did not meet statutory requirements. 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 AAP 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.

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

3.5 Water Quality

3.5.1 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 site.

3.5.2 The Lee Valley reservoirs do lie in close proximity to the A503, and therefore there is potential for point source pollution events to arise. 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 AAP 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.

3.5.3 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 Screening

4.1.1 The following tables present the screening assessments for each AAP Objective and associated policies. Green shading in the final column indicates an objective or policy option that has been screened out of further consideration due to the absence of any mechanism for an adverse effect on European sites. Orange shading indicates the need for further consideration at Appropriate Assessment stage.

Table 5. HRA Screening of the Walthamstow Town Centre AAP Strategic Objectives

Objective	Implications for HRA
SO1:- Promoting Walthamstow's unique retail offer by building on its historic market, high proportion of independent retailers, the large percentage of young population, and cultural diversity of the local community.	There are no HRA aspects that require consideration as a result of this Objective. It is unlikely that this objective will lead to significantly increased recreational visits to Epping Forest SAC and the Lee Valley SPA and Ramsar sites. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC, SPA and Ramsar sites from a Borough-wide perspective.
SO2:– Improving the quality of Walthamstow's retail offer by seeking to improve the range and quality of goods sold within the centre.	There are no HRA aspects that require consideration as a result of this Objective.
SO3:- Creating a vibrant, attractive and competitive town centre by encouraging a wide mix of uses such as new retail, leisure, tourism and community to ensure the centre is a place to shop, work, spend leisure time and live.	There are no HRA aspects that require consideration as a result of this Objective. It is unlikely that this objective will lead to significantly increased recreational visits to Epping Forest SAC and the Lee Valley SPA and Ramsar sites. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC, SPA and Ramsar sites from a Borough-wide perspective.
SO4:- Creating and establishing a sustainable neighbourhood by providing a range of quality new homes in terms of tenure, size and affordability to meet the housing needs of the local community.	There are no HRA aspects that require consideration as a result of this Objective. The total quantum of housing to be delivered has been considered within the HRA of the Pre-Submission stage of the Core Strategy, and measures have been recommended to ensure no adverse effects on European designated sites.
SO5:- Improving accessibility to the centre by improving the quality and frequency of the existing transport network and promoting new transport improvements.	Though the Objective leaves open the possibility of car transport increases (as it does not explicitly focus on public transport improvements), there are unlikely to be significant effects on Epping Forest SAC as a result. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC from a Borough-wide perspective.
SO6:- Creating a more sustainable centre by encouraging sustainable forms of transport such as walking and cycling, incorporating the highest levels of sustainable design in new development and establishing a decentralised energy network(s) within the centre.	This objective will assist in ensuring that air quality is improved, both within the town centre and in terms of transport access routes.
SO7:- Creating a high quality accessible and inclusive environment, especially in the evenings in order to further encourage the development of the night-time economy within the centre.	There are no HRA aspects that require consideration as a result of this Objective.

Objective	Implications for HRA
SO8:- Creating an attractive and distinctive centre with high quality design of buildings, public spaces and protecting and enhancing the centres heritage and other important areas.	There are no HRA aspects that require consideration as a result of this Objective.
SO9:- Diversifying and balancing the centres economy in order to create additional jobs, increase training opportunities, provide additional office space to support local business and encouraging the development of emerging sectors such as hi-tech, research and development, and creative industries.	Though the Objective leaves open the possibility of car transport increases (through travel to work), there are unlikely to be significant effects on Epping Forest SAC as a result. SO6 seeks to reduce the need for car travel within the town centre. Additionally, creation of jobs within the town centre may reduce the need for travel into and out of the borough. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC from a Borough-wide perspective.
SO10:- Supporting planned growth with the appropriate level of social infrastructure to meet the needs of the local community.	There are no HRA aspects that require consideration as a result of this Objective, since the infrastructure will not be in close proximity to European designated sites.

Table 6. HRA Screening of Walthamstow Town Centre AAP Policies (WTCs)

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
WTC1 – Housing Growth	Up to 2,000 new homes to be delivered by 2026. We will aim to meet this target by: a. Developing Opportunity Sites as identified and designated in section XX for housing; b. Providing housing as part of mixed-use schemes with active ground floor uses; c. Infill development; and d. Promoting housing above shops or on the upper floors of building within the centre, particularly along High Street.	An alternative option would be to have a lower growth scenario and seek to deliver up to 1000 new homes in the centre. Such a scenario would lead to us not promoting housing above shops.	There are no HRA aspects that require consideration as a result of this policy. The total quantum of housing to be delivered has been considered within the HRA of the Pre-Submission stage of the Core Strategy, and measures have been recommended to ensure no adverse effects on European designated sites.
WTC2 – Housing Density and Design	Housing densities of 200-700 hrha. Higher density residential development should be concentrated in the following areas: a. Sites surrounding Walthamstow Central and the south side of St James Street stations; Lower residential densities should be located: a. Near other low density surrounding residential areas; b. Near Leucha Road and Walthamstow St James conservation area.	An alternative option would be to allow higher densities over 700 hrha on all sites within the town centre in order to maximise housing growth. An alternative option would be to build housing at lower densities up to 500 hrha.	Housing density within the town centre has no HRA implications.
WTC3 – Affordable Housing and Tenure Mix	a. Provide at least 50% affordable housing negotiated on a site by site basis subject to viability; b. Where the viability case is used to justify an affordable housing offer below 50%, require the shortfall to be made up by an off site payment in lieu;	An alternative option would be to reduce the level of affordable housing sought on site to below 50% in order to improve development viability.	Housing and tenure mix within the town centre has no HRA implications.

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	and c. Provide a tenure split of 60% Social Rented and 40% intermediate, particularly seeking Shared Ownership housing.	Another alternative option would be to allow a higher proportion of intermediate housing to be built in the centre.	
WTC4 – Unit Mix	In order to provide a range of unit sizes within the centre we will: a. Negotiate the unit mix on a site by site basis, focusing family housing on sites near St James Street Station; b. Where family housing is provided, locating it on the ground floor where it has access to private usable amenity space.	An alternative option would be seek a housing mix of 10% 1 bed, 40% 2 bed, 40% 3 bed and 10% one bed for market housing and 10% 1 bed, 30% 2 bed, 50% 3 bed and 10% 4 bed for affordable tenures in accordance with our emerging Development Management Polices. An alternative option would be to seek a higher proportion of family homes (three bed plus) across all tenures to ensure adequate supply of larger homes in the centre.	Housing unit mix within the town centre has no HRA implications.
WTC5 –Retail	In order to develop a strong unique retail centre in Walthamstow, we aim to: 1. Develop opportunity sites as identified and designated in chapter XX for new retail uses (Map XX); 2. Include retail as part of mixed use development; 3. Where appropriate, allow the extension of sites to increase retail floorspace; 4. Consolidate retail development within the core of the centre in the designated primary and secondary retail frontages (Map XX); 5. Upgrade and further diversifying the overall range, mix and quality of uses within the centre; and 6. Promote, support and enhance the development of Walthamstow Market;	In order to increase retail floorspace within the centre an alternative option could extend the town centre boundary in order to incorporate additional sites which could provide retail uses.	It is unlikely that this policy will lead to significantly increased recreational visits to Epping Forest SAC and the Lee Valley SPA and Ramsar sites. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC, SPA and Ramsar sites from a Borough-wide perspective. The background text to the policy does indicate that enhancement of The Mall shopping centre would be likely to result in the loss of some open space. However, it is unlikely that this open space fulfils a function that would deflect users from European sites. It is anticipated that any such loss would be accounted for in implementation of Core Strategy policies on creation and enhancement of open space. The alternative policy of expanding the town centre

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	7. Ensure there is no over concentration or clustering of Hot Food Takeaways, betting shops, estate agents and off licences.		could lead to development within the area covered by Blackhorse Lane AAP. Development within this area could occur within 500m of Walthamstow Reservoirs SSSI which is a key part of the Lee Valley SPA/Ramsar Redevelopment processes will inevitably be associated with periods of demolition and construction noise. Should this alternative policy be taken forward, then additional information on the scale of the town centre expansion, and locations for such, would be required in order to be able to conclude no likely significant effects arising from increased bird disturbance.
WTCX – Hot Food Takeaways, Estate Agents, Betting Shops and Off Licences	In order to maintain and improve the vitality and viability of the centre, we will resist the development of any additional Hot Food Takeaway, Estate Agent, Betting Shop or Off Licence and also seek to reduce the number which already exist within the centre.	An alternative option would be to allow a proportion (10%) of such be be able to located or part of the secondary shopping frontage.	No HRA implications.
WTCX - Pubs	In order to protect a vital community use and support and promote the night-time economy we will resist the loss of any existing pubs within the centre and seek to promote healthy pubs.	An alternative option would be to not protect or promote healthy pubs within the centre.	No HRA implications.
WTC6 – Leisure, Entertainment, Culture and Tourism	In order to develop a strong leisure and entertainment centre in Walthamstow, we aim to: 1. Developing opportunity sites as identified and designated in chapter XX for new leisure, entertainment, cultural and leisure uses (Map XX); 2. Support the development of a 'Leisure Zone and	An alternative option would be not to develop any leisure or cultural uses within the centre. An alternative option would be not to seek to develop the evening economy within the centre.	It is unlikely that this policy will lead to significantly increased recreational visits to Epping Forest SAC and the Lee Valley SPA and Ramsar sites. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC, SPA and Ramsar sites from a Borough-wide perspective.

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	Entertainment ' at the eastern end of the High Street; 3. Support the creation of a 'Cultural Café Quarter' at the western end of the High Street; and 4. Facilitate and support the growth of the evening economy, with particular focus in the 'Leisure and Entertainment Zone' and 'Cultural Café Quarter'.		
WTC7 - Employment	In order to develop a strong, balanced and diverse local economic centre, we aim to: 1. Protect existing employment uses within the centre; 2. Further diversify the range of employment generating uses within the centre; 3. Develop opportunity sites as identified and designated in chapter XX for new office space (Map XX); 4. Encourage the development of creative and cultural industries; and 5. Support the development of a Business Improvements District.	An alternative option would be to seek to significantly change the role and function of the centre and make it a location for office and business use. We could seek to provide a significant increase in the amount of high quality and adaptable office and business floorspace to provide for new business to locate within the centre.	Though the policy leaves open the possibility of car transport increases (through travel to work), there are unlikely to be significant effects on Epping Forest SAC as a result. Objective SO6 and associated policies seek to reduce the need for car travel within the town centre. Additionally, creation of jobs within the town centre may reduce the need for travel into and out of the borough. The HRA of the Pre-Submission stage of the Core Strategy recommended measures that would enable a conclusion of no likely significant effects on the SAC from a Borough-wide perspective.
WTC8 – Transport Improvements	Within the centre, we aim to: 1. Work with TFL and other transport providers to ensure there is sufficient transport capacity on the existing bus and rail transport system; 2. Simplify the layout of the gyratory system on Hoe Street to reduce traffic congestion and improve traffic flows within the centre; 3. Improve pedestrian crossings at a) High Street/Hoe Street, b) Hoe Street/ Selborne Road c) Walthamstow	Other than a 'do nothing' approach, it is considered that there are no alternative options for this policy as the proposals in it are essential to the enhancement and regeneration of the centre.	The measures detailed in this policy do not create any HRA implications. Enhancement of public transport, walking and cycling opportunities should ensure that air quality within and beyond the town centre is improved.

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	Central exit/Seborne Road/Bus Station and d) Palmerston Road/High Street; 4. Establish a pedestrian and cycle link between key transport interchanges at Walthamstow Queens Road and Walthamstow Central; 5. Create a new walkway(s) under the Liverpool Street to Chingford line to improve connectivity between the centre and communities to the north and south at South Grove and Queens Road Station; 6. Improve north/south links throughout the town centre; 7. Remove unnecessary obstacles, barriers and street clutter within the public realm; 8. Improve the lighting in and around the centre to improve safety and security; and 9. Requiring new development to provide financial contributions towards projects that enhance the transport network in the centre.		
WTC9 – Sustainable Transport	In order to develop and promote sustainable forms of transport within the centre, we aim to: 1. Support a range of improvements to promote and enhance the environment for pedestrians and cyclists; 2. Improve the cycle network in the centre.	An alternative option would be to priorities initiatives which upgrade and improve the existing road road network and which promote the use of the private car as the main form of transport to access the centre.	The measures detailed in this policy do not create any HRA implications. Enhancement of walking and cycling opportunities should ensure that air quality within and beyond the town centre is improved. The alternative policy approach does not appear to be consistent with Core Strategy Policy 8: Developing Sustainable Transport. Promotion of the use of private car access as the main option for visiting Walthamstow Town Centre would inevitably lead to increased car usage in the wider borough. Epping Forest SAC is vulnerable to increases in atmospheric pollution, with parts of the site already subject to NOx and nitrogen deposition

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
			levels considerably in excess of the critical loads for the habitats for which the SAC is designated. This alternative policy has potential to contribute to such an effect through encouraging car journeys within 200m of the SAC. Should this alternative policy be taken forward, then the Walthamstow Town Centre AAP would require Appropriate Assessment in order to determine adverse effects and devise mitigation.
WTC10 – Car and Cycle Parking	1. Ensure that all new residential development within the centre is 'car free' incorporating the appropriate level of cycle parking; and 2. Ensure that all new retail, leisure, community and cultural uses provide appropriate levels of car and cycle parking in accordance with DM appendix 4.	An alternative option would be to provide additional car parking within the town centre for car borne visitors to the centre. An alternative option would be to allow an element of car parking in residential development.	The measures detailed in this policy do not create any HRA implications. Enhancement of cycle parking opportunities should ensure that air quality within and beyond the town centre is improved. Promotion of the use of private car access as the main option for visiting Walthamstow Town Centre would inevitably lead to increased car usage in the wider borough. Epping Forest SAC is vulnerable to increases in atmospheric pollution, with parts of the site already subject to NOx and nitrogen deposition levels considerably in excess of the critical loads for the habitats for which the SAC is designated. This alternative policy has potential to contribute to such an effect through encouraging car journeys within 200m of the SAC. Should this alternative policy be taken forward, then the Walthamstow Town Centre AAP would require Appropriate Assessment in order to determine adverse effects and devise mitigation
WTC11 – High Quality Environment	We will improve the town centre's image and public realm by: 1. Supporting the reorganisation of the market to	Other than a 'do nothing' approach, it is considered that there are no alternative options for this policy as the proposals in it are essential to the enhancement	No HRA implications.

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	improve the appearance and function of the market and pedestrian circulation; 2. Incorporating the principles of 'High Street Life Strategy' to new shop fronts on Hoe Street, High Street and St James Street; 3. Designate Hoe Street as an 'Area of Public Realm Improvement'; 4. Improve the pedestrian environment through a range of public realm improvements and by including Walthamstow as part of the 'Legible London' wayfinding scheme; 5. Protect and enhance the heritage of the centre; 6. Remove unnecessary obstacles, barriers and street clutter within the public realm; 7. Enhance and improve the quality of green spaces throughout the centre; 8. Provide play facilities in the centre, particularly in areas of deficiency; 9. Incorporate improvements to the public realm in order to make the centre more active and secure; and 10. Require new development to provide financial contributions towards projects that enhance the existing public realm.	and regeneration of the centre.	
WTC12 – Design and Place Making	We will use the following "place-making" principles as a framework when considering new development and improvements within the centre: 1. Creating, improving and reinforcing convenient	An other alternative option could be to creating a new character and context for the centre by creating land mark buildings, encouraging distinctive and contemporary design and establishing new building forms and character areas.	The measures detailed in this policy do not create any HRA implications. Enhancement of walking and cycling opportunities should ensure that air quality within and beyond the town centre is improved.

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	and safe pedestrian and cycle routes to the town centre, particularly north-south from Selborne Road and further south from the railway line; 2. Improving the key “arrival” points into the centre for residents and visitors via public realm, landscaping, signage, public art and other environmental improvements; 3. Significantly raising the quality of architectural and urban design in the area with development that positively responds to its context whilst encouraging the very best in contemporary design; 4. Setting a framework for building heights of new development to be sympathetic in scale to the predominant 2-3 storey context, whilst focussing taller buildings in key “gateway” sites such as the Arcade site, the Town Square and South Grove; 5. Encouraging the restoration and ongoing improvement of existing buildings of character within the centre, including via shopfront and/or building grants where available; 6. Bringing forward a range of options for improving the town square and gardens, including the possibility of extending the Selborne Walk development and potential redevelopment of the bus station; 7. Developing and implementing a new public space strategy which provides comfortable, convenient and safe places for people to sit, relax and enjoy a variety of experiences within the town centre; 8. Incorporating “active building frontages” in all new		

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	development to provide increased vitality, interest and safety at ground floor level for shoppers and visitors; and 9. Improving and developing a clear and robust management regime for the area encompassing cleaning, maintenance, partnership working, promotion and activities etc to reinforce the town centre offer for shoppers and visitors.		
WTC13 – Social Infrastructure	We will encourage the provision of amenities on mixed use sites with a high density of residential use, and grant planning permission for community uses and social infrastructure: 1. As part of mixed-use development on the Opportunity Sites identified in chapter XX; 2. In other accessible locations, where an active ground floor street frontage is provided; 3. Contributions will be sought through planning obligations to support the provision of new social infrastructure or the expansion or improvement of existing facilities to meet the needs of the community; and 4. Wherever possible, new facilities should be a multi-use and be accessible by all members of the community.	To priorities the delivery the most important forms of social infrastructure health and eduction.	There are no HRA aspects of an adverse nature that require consideration as a result of this policy, since the infrastructure will not be in close proximity to European designated sites. If such infrastructure were to include amenity facilities such as play areas or green space areas then they may assist in deflecting users from more sensitive ecological sites such as Epping Forest SAC.
WTC14 – Decentralised Energy	We will seek to facilitate a CHP and district heating system to supply the centre with energy by: 1. Requiring developments in the area to contribute towards establishing the system; 2. Connecting public sector buildings and	An alternative option would be not to facilitate and promote CHP and district heating system in the centre.	No HRA implications.

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
	redeveloped Council properties to the network in order to provide sufficient anchor loads; 3. Requiring all new development to link to the system, subject to viability; 4. Requiring all development which comes forward before the system is established to be 'connection ready'; and 5. Safeguarding routes for pipelines.		
WTC15 – Access to Sites of Nature Conservation	We will aim to improve access to sites of nature conservation importance by: 1. Creating, improving and enhancing links to sites of nature conservation importance; and 2. Seeking developer contributions to create, improve and enhance links to sites of nature conservation importance.	An alternative option could be not to link the town centre with areas of nature conservation importance which are located nearby	Although increased access to European designated sites has the potential to result in increased recreational pressure upon them, this policy does not conflict with strategies detailed within the Core Strategy. The HRA of the Pre-Submission stage of the Core Strategy was able to conclude no likely significant effects on European designated sites through recreational pressure due to the inclusion of measures to protect the integrity of such sites (particularly policies CS1 – Location and Management of Growth; CS6 – Enhancing Green Infrastructure and Biodiversity; and CS11 – Tourism Development and Visitor Attractions). The HRA recommended that on a borough-wide basis, a commitment to timely delivery of green space, of a nature that would fulfil a similar function to the European sites in terms of visitor usage, should be incorporated into the Core Strategy. Although the alternative policy approach would have less potential than the preferred option to lead to increased recreational pressure on European designated sites, it does not appear consistent with Core Strategy policy. Measures proposed within the Core Strategy to avoid adverse recreational impacts on European designated sites would still be required in order to address potential effects of other policies

Policy Number/Name	Policy Summary	Alternative Policy Options	Screening Decision
			(such as housing numbers).
WTCP 1-19 Key opportunity areas for development	These policies discuss individual site locations, along with the nature of proposed development.	No alternatives.	None of the specific development schemes have HRA implications as individually their scale and location do not lead to likely significant effects on European designated sites.

5 Conclusions of Screening

5.1.1 Issues of recreational pressure, reduction in air quality and increased water abstraction have been considered in relation to the impacts of the Walthamstow Town Centre Area Action Plan on the Lee Valley SPA and Ramsar sites and Epping Forest SAC.

5.1.2 It has been concluded that, in consideration of the AAP as a daughter document of the Core Strategy, it does not contain, either through its own preferred policies, or through relation to the CS, any measures that would be likely to have a significant adverse effect on the European sites assessed.

5.1.3 As a result, it is concluded the draft preferred policies of the AAP do not need to be taken forward for Appropriate Assessment.

5.1.4 Should the alternative policies proposed for the following aspects of the AAP be taken forward, then it is considered that Appropriate Assessment would be required in order to determine adverse effects on European sites and mitigation approaches that could be incorporated:

- WTC5 – Retail (due to possibility of disturbance to birds at Lee Valley SPA/Ramsar);
- WTC9 – Sustainable Transport (due to possibility of increased atmospheric pollution at Epping Forest SAC); and
- WTC10 – Car and Cycle Parking (due to possibility of increased atmospheric pollution at Epping Forest SAC).

Appendix 1:
Background on European Sites Referenced in this Document

Epping Forest SAC

Introduction

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.

Features of European Interest[42]

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.

Historic Trends and Current Conditions

Deteriorating air quality and under-grazing are the two key pressures that currently affect the site. While recreational pressure is 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.

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

[42] 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.

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 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.

Key environmental conditions

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;
- Unpolluted water;
- Absence of nutrient enrichment;
- Absence of non-native species.

Lee Valley SPA and Ramsar

Introduction

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 waterbodies support internationally important numbers of wintering gadwall and shoveler, while the reedbeds support a small but internationally important population of bittern.

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 of 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.

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.

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.

Features of European interest

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)

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..

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)

Historic Trends and Current Conditions

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 site[43].

During the most recent condition assessment of the SSSI units that underpin the SAC (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.*"

Key environmental conditions

The following key environmental conditions were identified for this site:

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

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

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.

Appendix 2: 'Tiering' in Habitat Regulations Assessment