London Borough of Waltham Forest Local Development Framework

Blackhorse Lane Area Action Plan Preferred Options – Habitats Regulations Assessment

Report

July 2011




Waltham Forest

Revision Schedule

Habitats Regulations Assessment
July 2011

Rev	Date	Details	Prepared by	Reviewed by	Approved by
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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 Blackhorse Lane Area Action Plan (AAP). The objective of the assessment was to identify any aspects of the AAP that would cause an adverse effect on the integrity of Natura 2000 sites, otherwise known as European sites ((Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and, as a matter of Government policy, Ramsar sites), either in isolation or in combination with other plans and projects, and to advise on appropriate policy mechanisms for delivering mitigation where such effects were identified.

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

1.1.4 The Core Strategy has reached the Submission stage and has recently been subject to updated HRA; some amendments have been made (and are to be made to the ongoing Development Management Policies DPD) to reflect recommendations made for mitigation measures in order to determine no likely significant effects on European sites. Appraisal of this AAP has been undertaken on the basis that the recommendations relating to the Core Strategy and Development Management Policies DPD have been incorporated.

1.1.5 The AAP has been informed by studies that have included the Blackhorse Lane Interim Planning Policy Framework, which was itself subject to HRA by URS Scott Wilson in 2008. The Council aims to adopt the AAP by April 2013.

1.2 Current Legislation

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

1.2.2 The Habitats Directive applies the precautionary principle to European sites. Plans and projects can only be permitted having ascertained that there will be no adverse effect on the integrity of the site(s) in question. Plans and projects 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 Blackhorse Lane 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 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 two European sites that lie within the AAP boundary - the Lee Valley SPA and the Lee Valley Ramsar site which both occupy the west of the Blackhorse Lane area being part of the Lee Valley corridor. There is a further European site (Epping Forest SAC) which lies within 4km of the Blackhorse Lane area and partially within the London Borough of Waltham Forest. The details of these European sites are provided in Appendix 1. Figure 1 shows the location of the European sites in relation to Waltham Forest Borough.

1.4 This report

1.4.1 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 explores the relevant pathways of impact. Chapter 4 considers the Screening stage of the HRA process. The key findings are summarised in Chapter 5: Conclusions.

2 Methodology

2.1 Introduction

2.1.1 The HRA has been carried out in the continuing absence of formal central Government guidance. CLG released a consultation paper on AA of Plans in 2006[1]. As yet, no further formal guidance has emerged. However, Natural England has produced its own internal guidance as has the RSPB. Both of these have been referred to in producing this HRA.

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

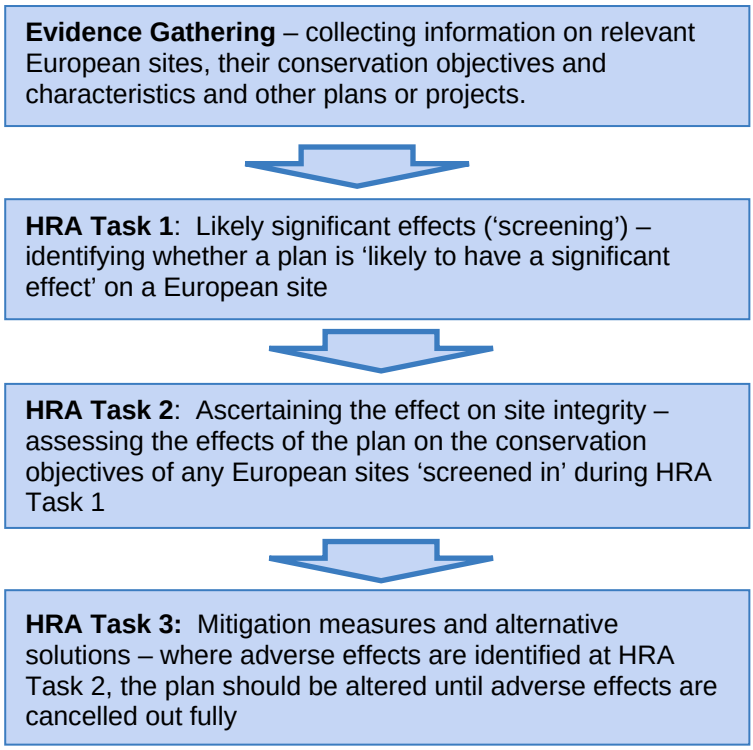


Figure 2 - Four-Stage Approach to Habitat Regulations Assessment
Source: CLG, 2006

2.2 HRA Task 1 - 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 to decide whether the full subsequent stage known as Appropriate Assessment is required. The essential question is:

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

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

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

2.2.4 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 covered by 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 & 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

2.3.5 When discussing 'mitigation' for an Area Action Plan one is concerned with the policy framework to enable the delivery of such mitigation as well as the details of the mitigation measures themselves since the AAP is a policy document and is not spatially specific enough in many areas to determine practical mitigation measures.

2.3.6 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 can't 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 be affecting 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 (consultation draft replacement plan October 2009) 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 that are up to 20km^2 from European sites that could potentially be impacted by development within Waltham Forest.

2.4.3 In considering the potential for regional housing development on Epping Forest SAC, Lee Valley SPA and Lee Valley Ramsar site, 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 There are other 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 (consultation draft replacement plan October 2009), along with policies relating to employment provision and any significant infrastructure.

[2] This distance covers the typical day visit made to sites (other than coastal) for recreational purposes

- Local Development Framework documents of neighbouring local authorities
- North London Waste Plan Preferred Options (2009)
- Crossrail and Crossrail 2
- London 2012 Olympic Park
- Thames Gateway London Partnership
- London-Stansted-Cambridge-Peterborough Growth Area
- Westfield Group. Stratford City Masterplan (2009)
- Upper/Lower Lea Valley Opportunity Area Planning Frameworks
- Epping Forest Management Plan 2004-2010
- Lee Valley Regional Park Authority Site management Plan 2006-2011
- City of London/Essex County Council. Epping Forest Transport Strategy proposals 2009-2016
- Waltham Forest Strategic Infrastructure Plan (2009)
- Waltham Forest Housing Land Availability Assessment (2008)
- Environment Agency. Water for People and the Environment: Water Resources Strategy Regional Action Plan for Thames Region (2009)
- Environment Agency London Catchment Abstraction Management Plan (2006)
- Environment Agency River Basin Management Plan: Thames River Basin District (2009)
- Thames Water's Revised Draft Water Resource Management Plan (2009)
- Veolia Water Central's Final Water Resource Management Plan (2010)
- Impact of East of England Housing and Economic Growth Scenarios on Regional Water Supplies: Draft Environment Agency Response to EERA Consultation (2009)
- Countryside Agency's England Day Visits information (2005)
- Epping Forest Visitor Survey Analysis (2006)
- Lee Valley Regional Park Authority Visitor Tracking Survey data
- Locational data available from the Air Pollution Information System (APIS) database
- Hyder Consulting. Rye Meads Water Cycle Strategy (2009).
- Mayor of London. Connecting with London's Nature – The Mayor's Biodiversity Strategy (2002).

2.4.5 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.

3.2 Urbanisation

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

- Increased fly-tipping - Rubbish tipping is unsightly but the principle adverse ecological effect of tipping is the introduction of invasive alien species with garden waste. Garden waste results in the introduction of invasive aliens precisely because it is the 'troublesome and over-exuberant' garden plants that are typically thrown out[3]. Alien species may also be introduced deliberately or may be bird-sown from local gardens.
- Cat predation - A survey performed in 1997 indicated that nine million British cats brought home 92 million prey items over a five-month period[4]. A large proportion of domestic cats are found in urban situations, and increasing urbanisation is likely to lead to increased cat predation.

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

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

[3] Gilbert, O. & Bevan, D. 1997. The effect of urbanisation on ancient woodlands. *British Wildlife* 8: 213-218.
[4] Woods, M. et al. 2003. Predation of wildlife by domestic cats *Felis catus* in Great Britain. *Mammal Review* 33, 2 174-188

3.2.4 The Lee Valley SPA and Ramsar sites lie adjacent to the Blackhorse Lane, and they are theoretically vulnerable, from a geographic perspective, to the effects of urbanisation. It is also true that both are vulnerable ecologically – through degradation of UUhabitat that supports the species for which the SPA and Ramsar are designated. It is unlikely that the SPA and Ramsar designated species would be directly vulnerable to urbanisation impacts, as they are species that favour aquatic environments and are unlikely to suffer from significant cat predation.

3.2.5 Issues of disturbance to bird species will be discussed in the following section on Recreational Pressure and Disturbance. However, it is possible to consider this as being closely related to urbanisation if such disturbance were to arise as a result of visual or noise intrusion due to development adjacent to a European designated site.

3.2.6 Therefore it is necessary to perform an initial screen to determine whether the Blackhorse Lane AAP contains policy measures that could lead to significant adverse effects, either alone or 'in combination' with other plans and projects, through urbanisation, on these European sites.

3.3 Recreational pressure and Disturbance

3.3.1 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.

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

Mechanical/abrasive damage and nutrient enrichment

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

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

- Wilson & Seney (1994)[5] 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.

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

- Cole et al (1995a, b)[6] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow & 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)[7] 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)[8] experimentally compared the effects of off-track trampling by hiker and horse (at two intensities – 25 and 150 passes) in two woodland vegetation types (one with an erect forb understorey and one with a low shrub understorey). Horse traffic was found to cause the largest reduction in vegetation cover. The forb-dominated vegetation suffered greatest disturbance, but recovered rapidly. Higher trampling intensities caused more disturbance.

3.3.5 The total volume of dog faeces deposited on sites can be surprisingly large. For example, at Burnham Beeches National Nature Reserve over one year, Barnard[9] 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 faeces) will make a cumulative contribution to overall enrichment. Any such contribution must then be considered within the context of other recreational sources of impact on sites.

Disturbance

3.3.6 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent

[6] 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
[7] 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.
[8] 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
[9] 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

feeding[10]. 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[11].

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

- Underhill *et al*[12] 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[13] 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*[14] 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.

- Pease *et al*[15] 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

[10] Riddington, R. *et al*. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279
[11] Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72
[12] 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
[13] 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
[14] 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
[15] 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.

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).[16]

3.3.8 A number of studies have shown that birds are affected more by dogs and people with dogs than by people alone, with birds flushing more readily, more frequently, at greater distances and for 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[17].

3.3.9 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%.

3.3.10 However the outcomes of many of these studies need to be treated with care. For instance, the effect of disturbance is not necessarily correlated with the impact of disturbance, i.e. the most easily disturbed species are not necessarily those that will suffer the greatest impacts. It has been shown that, in some cases, the most easily disturbed birds simply move to other feeding sites, whilst others may remain (possibly due to an absence of alternative sites) and thus suffer greater impacts on their population[18]. A recent literature review undertaken for the RSPB[19] also urges caution when extrapolating the results of one disturbance study because responses differ between species and the response of one species may differ according to local environmental conditions. These facts have to be taken into account when attempting to predict the impacts of future recreational pressure on European sites.

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

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

Sensitivity of Species – Waterfowl and Waders

3.3.13 The distance at which a species takes flight when approached by a disturbing stimulus is known as the 'tolerance distance' (also called the 'escape flight distance') and differs between species to the same stimulus and within a species to different stimuli. These are given in Table 1, which

[16] 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.
[17] 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.
[18] Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation,* **97**, 265-268
[19] Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

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. In addition, the regular mechanized noise that is associated with waste sites is likely to be less disturbing that the presence of visible human activity in areas in which the birds are not used to observing such activity.

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)[20], Keller (1989)[21], Van der Meer (1985)[22], Wolff et al (1982)[23], Blankestijn et al (1986)[24].

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

[20] Tydeman, C.F. 1978. Gravel Pits as conservation areas for breeding bird communities. PhD thesis. Bedford College
[21] 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
[22] 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.
[23] 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
[24] 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.

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

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

- *Access management* – restricting access to some or all of a European site - is not usually within the remit of the Borough Council and restriction of access may contravene a range of Government policies on access to open space, and Government objectives for increasing exercise, improving health etc. However, active management of access may be possible, for example as practised on nature reserves.
- *Habitat management* is not within the direct remit of the Council. However the Council can help to set a framework for improved habitat management by promoting cross-authority collaboration and S106 funding of habitat management. In the case of Waltham Forest, there may be opportunities for this since, according to Natural England, all areas of Site of Special Scientific Interest habitat underpinning Epping Forest SAC and Lee Valley SPA and Ramsar sites in Waltham Forest are not currently in favourable condition[25].
- *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.

3.3.16 Both Epping Forest SAC and the Lee Valley SPA and Ramsar sites lie partly within Waltham Forest, and they are theoretically vulnerable, from a geographic perspective, to the effects of recreational pressure 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.

3.3.17 Therefore it is necessary to perform an initial screen to determine whether the Blackhorse Lane 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.

3.4 Atmospheric pollution

3.4.1 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,

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

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 background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O_3 above 40 ppb can be toxic to humans and wildlife, and can affect buildings. Increased ozone concentrations may lead to a reduction in growth of agricultural crops, decreased forest production and altered species composition in semi-natural plant communities.
Sulphur Dioxide SO_2	Main sources of SO_2 emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO_2 emissions have decreased	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

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

3.4.2 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in 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[26]. Emissions of NOx could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the LDF.

3.4.3 According to the World Health Organisation, the critical NOx concentration (critical threshold) for the protection of vegetation is 30 μgm^{-3}; the threshold for sulphur dioxide is 20 μgm^{-3}. In addition, ecological studies have determined 'critical loads'[27] 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[28] for the European sites considered within this assessment (APIS[29] data accessed on 03/11/10)

Site	Grid reference [30]	Key habitats	Minimum [31] critical loads (Kg N/ha/yr)	Actual nitrogen deposition [32]	Actual NOx concentration (μgm^{-3})
Epping Forest SAC	TQ396882	Beech woodland Lowland heathland	10	34.3	59.3
Lee Valley SPA and Ramsar	TQ352883	(Grazing marsh)[33]	(20)	17.6	59.3

3.4.4 The National Expert Group on Transboundary Air Pollution (2001)[34] concluded that:

[26] 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
[27] The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur
[28] As NO_2
[29] UK Air Pollution Information System. http://www.apis.ac.uk
[30] Grid references relate to the closest points to the AAP area.
[31] APIS provides a critical load range – on a precautionary basis, this assessment uses the lowest figure in that range
[32] To a resolution of 5 km
[33] 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.

- 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.

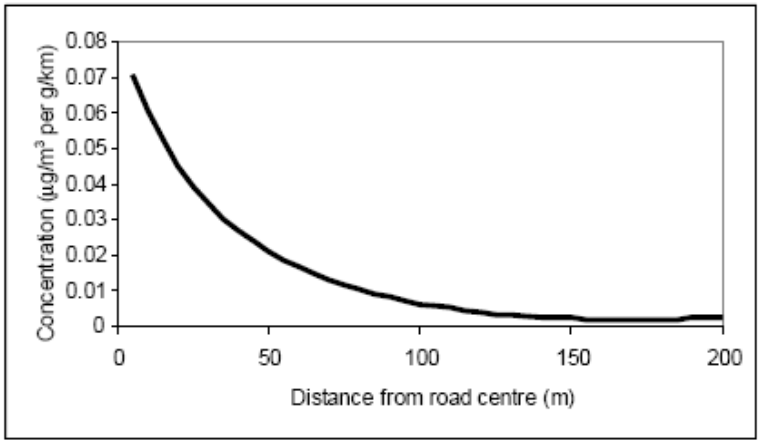
3.4.5 Grice et al[35] [36] do however suggest that air quality in the UK will improve significantly over the next 15 years due primarily to reduced emissions from road transport and power stations.

Local air pollution

3.4.6 According to the Department of Transport's Transport Analysis Guidance, "Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"[37].

[34] National Expert Group on Transboundary Air Pollution (2001) Transboundary Air Pollution: Acidification, Eutrophication and Ground-Level Ozone in the UK.
[35] 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.
[36] 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.
[37] www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf

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



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

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

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

3.4.9 In the light of this and our own knowledge and experience, it is considered reasonable to conclude that it must be the responsibility of higher-tier plans to set a policy framework for addressing the cumulative diffuse pan-authority air quality impacts, partly because such impacts stem from the overall quantum of development within a region (over which individual Councils have little control), and since this issue can only practically be addressed at the highest pan-

authority level. In the light of this, diffuse air quality issues will not therefore be considered further within this HRA.

3.5 Water abstraction

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

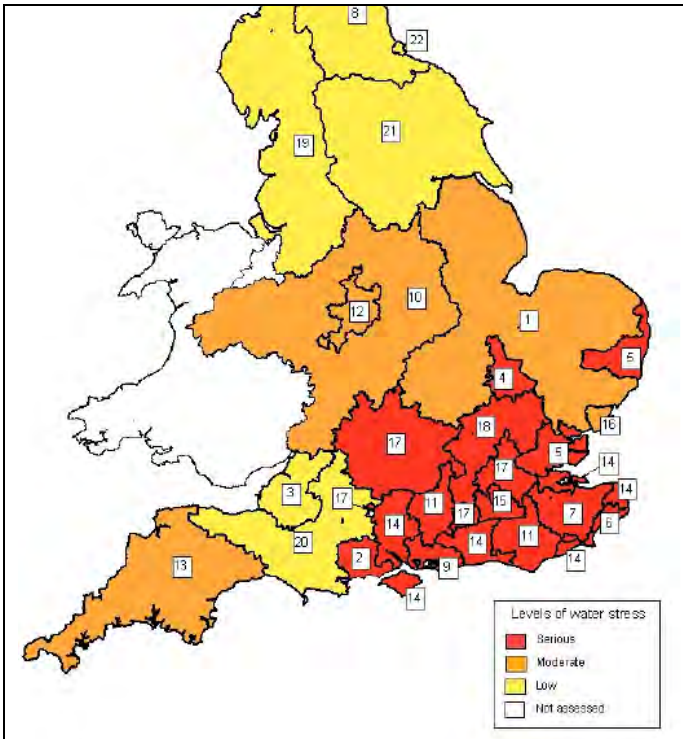


Figure 4. Areas of water stress within England. It can be seen from this map that London is classified as being an area of serious water stress (coded red).[38]

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

3.5.3 Waltham Forest lies within Thames Water's supply area, specifically their London Resource Zone. The majority of London's public water supplies come from the rivers Thames and Lee (with approximately 80% of London's supply taken from the freshwater River Thames upstream of Teddington Weir). The remaining supplies are obtained from groundwater sources situated beneath the London Boroughs from the confined chalk aquifer. Water supply for Thames Water's London Resource Zone (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.

3.5.4 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.

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

3.5.5 As such, with no other schemes in place, increased residential development within Waltham Forest could lead to a need for damaging levels of abstraction from the Lee Valley SPA/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.

3.5.6 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.

3.5.7 Thames Water's Resources Management Plan has been subject to public enquiry, with the outcome expected in November. 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.

3.6 Water Quality

3.6.1 As wastewater for Waltham Forest is currently processed by Beckton Sewage Treatment Works and discharged into the Thames, increases in volumes of wastewater that could result from policies promoting housing and employment development are not likely to have a significant adverse effect on the Lee Valley SPA and Ramsar site.

3.6.2 The 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.

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

4 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 Blackhorse Lane AAP Strategic Objectives

Objective	Implications for HRA
1: Neighbourhood Centre -To ensure Blackhorse Lane has a clear neighbourhood centre, which provides a range of shops and services to meet the needs of local residents and businesses, and encourages passers by to spend more time in the area.	There is no mechanism for this policy to lead to a significant effect on European sites.
2: A Place to Live – To provide a range of high quality homes that attracts young single people and families to live in the area, as part of a mixed and balanced community that also caters for local housing need.	There is no mechanism for the quality of the housing to lead to a significant effect on European sites.
3: A Green Place – To ensure existing and new residents and workers in the area have better access to a range of open spaces, including Walthamstow Wetlands, Lee Valley Regional Park and the Olympic Park.	There is a possibility of a significant effect through increased access to the Lee Valley SPA area without safeguards. This is considered further in Table 6.
4: A Well Designed Place – To enhance the image of Blackhorse Lane by ensuring all new developments in the area are designed to a high standard and fit for purpose, and interact well with their surroundings, especially blue/ green spaces.	There is no mechanism for the quality of the housing to lead to a significant effect on European sites.
5: A Place to do Business and for Creative Industries – To ensure Blackhorse Lane continues to provide a range of jobs for our residents, and support the retention and growth of creative industries in the area.	There is no mechanism for this policy to lead to a significant effect on European sites.
6: A Sustainable Place - To ensure new developments incorporate the highest levels of sustainable design and their impact on climate change is minimised.	There is no mechanism for this policy to lead to a significant effect on European sites.
7: A Connected Place – To encourage movement both within Blackhorse Lane and to areas outside of it, by walking, cycling and public transport; and minimising the need for private car use.	There is no mechanism for this policy to lead to a significant effect on European sites. Indeed, the promotion of sustainable transport is likely to reduce the risk of significant effects from private car use.
8: A Community Place – To enhance or provide a range of new facilities	There is no mechanism for this policy to lead to a significant effect

Objective	Implications for HRA
to meet the needs of existing and new residents and businesses, in order to strengthen 'community spirit'.	on European sites.

Table 6 – HRA Screening of Blackhorse Lane AAP Proposed Policies

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
BHL1: Housing growth	As a key growth area, we will seek to deliver approximately 2000 new homes by 2026 in the Blackhorse Lane area. We will aim to meet this target: A) by bringing forward housing as a key element of mixed use schemes in the key sites set out in section 4; B) through windfall sites, where the proposals are acceptable in all other respects.	**Urbanisation** All but one of the identified development sites (BHL7) within the Blackhorse Lane area is situated within 500m of Walthamstow Reservoirs SSSI which is the key part of the Lee Valley SPA/Ramsar site of relevance to the AAP. Development locations BHL1 and BHL4-9 will all be likely to increase the number of residents and therefore the number of people living in close proximity to the SSSI[39]. In addition, the redevelopment process will inevitably be associated with periods of demolition and construction noise. It has been argued in other circumstances that an increase in human populations adjacent to any designated site would also carry with it concomitant increases in anti-social behaviour	**Urbanisation** The AAP is not anticipated to cause any adverse urbanisation effects on this European site as no development shall occur within 500m of the site. **Recreational disturbance** Epping Forest SAC lies within 4km of the Blackhorse Lane area. The SAC is therefore within the typical distances that people will travel to visit a woodland site for the day according to the most recent England Day Visits Survey (refer to the Core Strategy HRA for more detail). Moreover, Epping Forest is known to draw visitors from a large catchment. The increased population within the Blackhorse Lane area could potentially

[39] BHL2, 3, 10 and 11 are non-residential so will not contribute
[40] Riddington, R. *et al*. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279
[41] Madsen, J. 1995. Impacts of disturbance on migratory waterfowl. *Ibis* 137: 67-74
[42] Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72
[43] Reijnen, R. et al. 1995. The effects of car traffic on breeding bird populations in woodland. III. Reduction of density in relation to the proximity of main roads. Journal of Applied Ecology 32: 187-202
[44] 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.
[45] 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.

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
		such as fly tipping and arson and would therefore in most cases also result in an adverse effect on the interest features of the site. However, although Waltham Forest does face challenges with fly tipping, the redevelopment of Blackhorse Lane will support best practice in waste management and be designed to enhance natural surveillance along the park boundary. Moreover, the general movement from an industrial environment to a residential one will substantially reduce opportunities for carrying out anti-social behaviour unobserved. As a result, it is considered that it is not reasonable to conclude in this case that a material increase in fly-tipping and the like will occur as a result of the redevelopment. Although the redevelopment of the Blackhorse Lane area is likely to increase the cat population within close proximity to the SPA, cats generally prey on smaller passerine birds (e.g. songbirds) or on the chicks of other species (particularly those that nest at ground level). The Lee Valley SPA is designated for its non-breeding waterfowl populations and these birds are considered to be too large to be significantly predated by cats. This aspect of 'urbanisation' can therefore also be set aside as an impact in this case. Concern regarding the effects of disturbance on wintering 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[40] . Disturbance of wintering birds therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately survival of the birds at a time when food is scarce[41]. In addition, displacement of birds from one feeding site to	therefore contribute to an overall 'in combination' impact on the SAC. Although the Epping Forest Conservators have a detailed management strategy for the site, which includes careful management and licensing of some recreational activities that is likely to reduce the magnitude of adverse effects, it is inevitable that the delivery of these measures will be made more difficult as the population of East London increases. The redevelopment in the Blackhorse Lane area can be expected to contribute cumulatively to this impact along with other developments within Waltham Forest. However, this is a borough-wide (not to say London-wide) matter that is not specific to the Blackhorse Lane area. The Core Strategy contains a range of measures to alleviate or avoid excessive recreational pressure on Epping Forest SAC, including Policy CS6 which states in the supporting text that '*The Council will work with the … Epping Forest Conservators to … ensure … sustainable access opportunities'*. As such, nothing specific is required in the AAP. **Atmospheric Pollution** The Epping Forest SAC is considered to be sensitive to air pollution, having been assessed to be in unfavourable condition status due to air quality. The redevelopment covered in the AAP may result in increased traffic on some of the roads that lie within the SAC in that

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
		others can increase the pressure on the resources available within the remaining sites, as they have to sustain a greater number of birds.[42] Construction and demolition noise is therefore considered to be the only adverse effect requiring further consideration. The degree of impact that varying levels of noise will have on different species of bird is poorly understood except that a number of studies have found that an increase in traffic levels on roads does lead to a reduction in the bird abundance within adjacent hedgerows - Reijnen et al (1995) examined the distribution of 43 passerine species (i.e. 'songbirds'), of which 60% had a lower density closer to the roadside than further away and it was concluded that noise was probably the principal factor. By controlling vehicle usage they also found that the density generally was lower along busier roads than quieter roads[43]. In the absence of more specific data, it must be assumed at this stage that the redevelopment of areas BHL1 – BHL11 (excluding BHL7 which is located further afield) would result in temporary adverse noise effects on birds wintering within the Walthamstow Reservoirs SSSI as a result of demolition/construction, although it is reasonable to conclude that the conversion of the estate from industrial to residential uses will result in a net reduction in background noise levels during the long-term occupation of the estate. **Measures will however need to be incorporated into the AAP to ensure that a clear policy framework exists for mitigating these adverse effects on the ground. These are covered in the following section.** **<u>Air quality</u>**	several of these are major arterial routes across East London and when considered cumulatively with development elsewhere in Waltham Forest and East London, it is not considered possible to rule out a cumulative adverse effect on this site as a result of deteriorating air quality from increased road traffic. However, this is also a borough-wide issue. The Core Strategy does include policies that would serve to protect the SAC, and to both reduce traffic demand and improve public transport and non-motorised movement (refer to Core Strategy HRA for further details). The Development Management Policies DPD will contain further measures to reduce air quality impacts on the SAC. As such, no specific measures are required in the AAP.

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
		Current levels of understanding of air quality effects on semi-natural habitats or usage of particular major roads by residents of particular districts are not adequate to allow a rigorous assessment of the likelihood of significant effects on the integrity of key European sites. While current trend predictions based upon the introduction of improvements in vehicle emission technology (Grice et al[44] [45]) do suggest that air quality in the UK will improve significantly over the next 15 years, these models are based on national averages and do not take account of the latest district/borough levels and locations of housing growth. As such, the national trend does not mean that there will necessarily be improvements at a local scale. Forest Road and Blackhorse Lane itself can both expect to receive higher volumes of traffic as a result of the redevelopment and both lie within 200m of the Walthamstow Reservoirs component of the Lee Valley SPA. However, the Core Strategy and Policy BHL11 of this document contain a number of policy measures that would improve air quality within the borough as a whole. Moreover: • there are no key supporting habitats within 200m of major roads within Waltham Forest that are known to be vulnerable to reduced air quality; • While there may be an increase in private cars, there will be a concomitant decrease in industrial traffic; • Whilst critical loads for nitrogen deposition are not available for open water habitats, there is no indication that the potentially susceptible species, whorled water milfoil, for which the Ramsar site is partly designated, occurs in	

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
		Walthamstow Reservoirs. There is little available data for the water boatman *Micronecta minutissima*, which may or may not be susceptible. Wintering gadwall and shoveler would not be significantly affected; and • The borough of Waltham Forest does not have direct road links to other major routes that run within 200m of other constituent water bodies that make up the SPA/Ramsar. As such, it is considered that the AAP can be screened out with regard to air quality.	
BHL2: Housing densities	Higher density residential development should be concentrated on sites surrounding Blackhorse Road Station. Key considerations will be: A) the existing PTAL covering the site; B) any planned improvements in provision of shops, services and public transport in the locality; C) the need to provide a high quality design; D) the ability of the scheme to meet Building for Life Standards.	No HRA implications	No HRA implications
BHL3: Household sizes	A range of household sizes will be required in new developments in the interests of creating a mixed community. This will be negotiated on a site by site basis, with the Council's Preferred Dwelling Mix (as set out in the Development Management Policies DPD) used as starting point. To meet housing need, a higher proportion of family housing will be sought on sites other than Site BHL1: The Station Hub.	No HRA implications	No HRA implications
BHL4: Affordable housing	A target of 50% affordable housing should apply to new developments in the Blackhorse	No HRA implications	No HRA implications

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
	Lane area, subject to viability. In the Sutherland Road area (i.e. Sites BHL4, BHL5 and BHL6), we will negotiate for some of this requirement to be in the form of a developer contribution towards off-site provision; in the interests of creating mixed and balanced communities.		
BHL5: Employment	The role of Blackhorse Lane as a major employer of local people will be retained and enhanced by: A) providing new B1 units for small/ medium businesses and creative industries as part of mixed use developments in the sites identified in section 4: Key Sites; B) directing general industrial, storage, manufacturing and distribution uses to land designated as SIL; C) requiring redevelopment of any other existing employment areas to secure an increase in the number of jobs provided on site; D) supporting uses that offer education and training opportunities for local residents within new, mixed use developments, outside of land designated as SIL; E) supporting the refurbishment of existing industrial buildings of architectural merit where viable; to provide new employment space for small and medium businesses; F) securing employment or training of local people as part of new developments; through local labour agreements, jobs brokerage initiatives, or financial contributions towards wider employment and training initiatives.	No HRA implications.	No HRA implications
BHL6: Neighbourhood centre	A) A new neighbourhood centre will be provided in the broad area indicated in figure 6 to meet the needs of local residents and	No HRA implications.	No HRA implications

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
	businesses. As part of mixed use developments, the following use classes will be appropriate: i) A1 shops; ii) A3 restaurants and cafes; iii) A4 drinking establishments; iv) D1 non-residential institutions. B) Any retail developments should have a net floor area of less than 1000m2.		
BHL7: Design and local character	New developments in Blackhorse Lane should: A) ensure the highest standards of urban and architectural design which responds positively to local character and context; B) reinforce and develop a network of connected streets that will form the principal means of access and movement within a regenerated area; C) ensure residential development has "active frontages" with front doors onto streets and windows that overlook them; D) where viable, integrate buildings of merit and ensure that new development is carefully integrated to respect and enhance existing built heritage; E) ensure appropriate building heights of primarily between 3-6 storeys that respect the existing built context adjacent landscape features; F) develop a sustainable and accessible built environment that encourages walking, cycling and the use of public transport.	Tall buildings could have impacts through visual disturbance to birds for which Lee Valley SPA and Ramsar is designated. The stated need for an assessment, means that this issue would be considered at the individual project level.	No HRA implications
BHL8: Open space and nature conservation	A) New developments in Blackhorse Lane should: i) provide new public open space, and appropriate landscaping, to contribute towards a 'green signature' in new developments. Play	**Recreational pressure** The IPPF seeks to deliver approximately 2,000 homes by 2026. This should not be considered in isolation, but must be set within the context of over 305,000 new dwellings in Greater London to be delivered under the London Plan, including:	No HRA implications

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
	facilities should also be sought in appropriate cases; ii) be designed to be in keeping with the setting of the natural landscape, particularly along the valley edge, and improve physical and visual links to the Lee Valley Regional Park and Walthamstow Wetlands; iii) avoid any negative impact on Lee Valley Special Protection Area and Ramsar site and other sites of importance to nature conservation, or provide appropriate mitigation for any such impact; iv) incorporate measures to enhance biodiversity, such as green/ brown roofs, wildlife-friendly landscaping, tree planting, bird nesting and roofing spaces; v) provide financial contributions towards projects that enhance the quality of open space and public access to it, in particular the Lee Valley Regional Park and Walthamstow Wetlands. B) Existing open spaces in the area should be protected, and opportunities for increased public use enhanced. C) To enhance biodiversity and public enjoyment, opportunities to open up and naturalise the Dagenham Brook will be supported.	31,500 in Tower Hamlets, 11,600 in Islington, 6,800 in Haringey, 10,850 in Hackney and 35,100 in Newham, the neighbouring boroughs to Waltham Forest. In particular, Policy BHL8 seeks to actively increase recreational access to the Regional Park. While the Council would not seek to encourage watersports on any reservoir other than Banbury Reservoir, which lies outside the Special Protection Area, there is also reference made to increased 'views' of Walthamstow Reservoirs (a key part of the SPA). Recreational access to Walthamstow Reservoirs is currently restricted and controlled on a permit basis, such that the current exposure of the Reservoirs to human activity is limited, which is likely to have reduced the degree of habituation to disturbance that the reservoir birds can be expected to exhibit. However, the proposal to increase access to the whole 'Walthamstow Wetlands' area is a joint initiative, separate from the AAP, which involves Natural England as a key partner. It can therefore be assumed that initiatives to improve access to this site will be balanced by measures to ensure that significant adverse effects on the ecological interest will not occur. This is explicitly set out in the text of Policy BHL8 which states that new developments in Blackhorse Lane should '*avoid any negative impact on the Lee Valley Special Protection Area and Ramsar site and other sites of nature conservation importance, or provide appropriate mitigation for any such impact'.* The key 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.	

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
		• Although gadwall and shoveler are considered to be sensitive to increased disturbance, this sensitivity is always relative to the levels of disturbance to which the birds in a given location are adapted. The birds that use the Lee Valley SPA and Ramsar site are already within an essentially urban situation with high-rise housing surrounding the site, and a busy road (the A508) passing through the centre of the designated area. • No built areas will be situated closer to the site than is currently the case and while Walthamstow Reservoir is used mainly for bird watching and angling access is strictly controlled by permit. • Waterfowl such as shoveler and gadwall are often highly active at night, and are therefore potentially at greater risk of disturbance during these periods. However, nocturnal recreational activity is unlikely to occur as a result of the redevelopment, largely because nocturnal recreation tends to be associated with illuminated areas and there will be no lighting situated closer to the site than is currently the case. The most sensitive season for wintering bird populations (such as those in the Lee Valley SPA) is September-March whereas the peak period for recreational usage is likely to be the summer months. For this reason, the policy can be screened out.	
BHL9: Walthamstow Wetlands	We will work with partners to promote and deliver Walthamstow Wetlands as an urban nature reserve and wetland centre to enable	Recreational access to Walthamstow Reservoirs is currently restricted and controlled on a permit basis, such that the current exposure of the	

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
	access to open space and nature for residents of Blackhorse Lane, and support the wider visitor economy. This will be achieved by: • securing improved public access to Walthamstow Reservoirs, whilst ensuring • the areas biodiversity and nature conservation value is not compromised; • refurbishing the Marine Engine House to provide an educational resource and wetland centre; • enhancing the physical appearance of Forest Road as a key gateway into Walthamstow Wetlands; • pooling funding from a range of sources, including developer contributions where appropriate	Reservoirs to human activity is limited, which is likely to have reduced the degree of habituation to disturbance that the reservoir birds can be expected to exhibit. However, the proposal to increase access to the whole 'Walthamstow Wetlands' area is a joint initiative, separate from the AAP, which involves Natural England as a key partner. It can therefore be assumed that initiatives to improve access to this site will be balanced by measures to ensure that significant adverse effects on the ecological interest will not occur. This is explicitly set out in the text of Policy BHL8 which states that new developments in Blackhorse Lane should '*avoid any negative impact on the Lee Valley Special Protection Area and Ramsar site and other sites of nature conservation importance, or provide appropriate mitigation for any such impact'* and in Policy BHL9 itself which states that the Council will ensure that *'the areas biodiversity and nature conservation value is not compromised'* by delivering improved access.	
BHL10: Decentralised energy	All major new developments in Blackhorse Lane will be required to link to a district heating network within the Upper Lea Valley, unless this can be demonstrated to be unviable. Where developments come forward in advance of the installation of a district heating network, they should be designed to be connection ready.	No HRA implications	No HRA implications
BHL11: Flood Risk	A) New developments in Blackhorse Lane should be designed and sited to minimise flood risk to new and existing communities. B) Basement dwellings will not be permitted, in the interests of avoiding groundwater flooding issues.	No HRA implications.	No HRA implications

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
	C) All sites in flood zones 2 or 3, and any other sites over 1 hectare, should be accompanied by a site specific flood risk assessment. This should be used to ensure new developments minimise risk through matters such as: i) incorporating Sustainable Urban Drainage Systems (SuDs) to achieve Greenfield run-off rates; ii) configuring road and building layouts to preserve and improve existing flood routing; iii) raising habitable floor levels above the maximum flood water level; iv) using flood resistant or resilient construction techniques dependent on likely depth of flooding; v) providing safe routes to and from properties, and evacuation strategies. D) Where any development is proposed in flood zone 3a, provision should be made for an equal level of compensation storage in the local area to mitigate for this loss. E) Only water compatible and essential infrastructure uses (as defined by Planning Policy Statement 25: Development and Flood Risk), will be allowed in flood zone 3b. F) Where development is proposed near the Dagenham Brook: i) No new development should be built over the Dagenham Brook Culvert; ii) All development should be set back at least 4m from the edges of the culvert and 8m from the open sections of the Dagenham Brook; iii) Opportunities should be investigated to open up the culvert and naturalise the banks of the watercourse.		

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
BHL12: Sustainable transport	A) Major new developments will be required to: i) incorporate a network of streets designed for all users, following the guidance in the Urban Design Framework; ii) incorporate appropriate traffic calming measures within the street network which will increase pedestrian and cycle permeability and discourage rat-running by vehicles; iii) consider Public Transport Accessibility Level (PTAL) ratings and proximity to shops and services to inform the density of new developments; iv) take opportunities to enhance pedestrian and cycle access to Lee Valley Regional Park; v) accord with the levels of car and cycle parking set out in Appendix 4 of the Development Management Policies DPD; vi) make a financial contribution towards proposed improvements to pedestrian crossings at the Standard Junction and/or other sustainable transport projects in the area; vii) provide and comply with a Travel Plan in order to minimise private car use. B) On sites within easy walking distance of Blackhorse Road Station, car free developments will be encouraged.	The policy supports the CS in terms of seeking to reduce car usage and improve opportunities for pedestrian, cycling and public transport movements. All of these measures should reduce the likelihood of development creating reduced air quality on European sites. The Council has also committed to work with partners on developing a sustainable transport network.	No HRA implications
BHL13: Social Infrastructure	To secure a sustainable pattern of development: A) site BHL2 South and BHL3 (see section 4: Key sites) will be protected for education use to meet demand as population in the area grows; B) we will work with the health providers to	Social infrastructure provision does not have direct impact on European designated sites (except for contributing to location of development in general). The need for timely provision of infrastructure is stated in policy CS1 – 'Distribution of Growth' within the CS. Additionally the HRA of the Pre-Submission CS has recommended that Open	No HRA implications

Policy Number/Name	Policy Summary	Screening Decision – Lee Valley SPA/Ramsar site	Epping Forest SAC
	secure new health facilities within one of the opportunity sites in section 4: Key sites; C) community uses and social infrastructure will be supported as part of mixed use developments on opportunity sites, where there are no overriding concerns in terms of neighbour amenity; D) developer contributions will be sought to support the provision of new, or expansion and maintenance of existing social infrastructure; E) we will seek to incorporate or replace the Standard Pub in the redevelopment of the Station Hub area, as an important social facility.	Space and Green infrastructure be included within this requirement for timely delivery.	

Table 7 – HRA Screening of the Blackhorse Lane AAP Key Sites. Note that issues that would apply to all sites are not discussed in detail below, but in the preceding Table 6.

Objective	Implications for HRA
Site BHL1 - Station Hub and Waterfront	Specific potential impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise and vibration and dust generation during this process, since site is largest redevelopment location and is immediately adjacent to SPA/Ramsar site; not a fundamental constraint but needs further consideration (and potentially mitigation) at planning application level.
Site BHL2 North - Car Wash Site	Site is within 100m of the Lee Valley SPA/Ramsar site at its closest although majority of site is over 200m away. Potential impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise. Probably easily addressed but needs further consideration (and potentially mitigation) at planning application level.
Site BHL2 South - Blackhorse Road/ Hawarden Road	Site is within 100m of the Lee Valley SPA/Ramsar site at its closest although majority of site is over 200m away. Potential impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise. Probably easily addressed but needs further consideration (and potentially mitigation) at planning application level.

Objective	Implications for HRA
Site BHL3 - Willowfield School, Tavistock Avenue	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.
Site BHL4 - Sutherland Road	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.
Site BHL5 - Papermill Place	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.
Site BHL6 - Webb's Industrial Estate	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.
Site BHL7 - Billet Works	Site is located approximately 1km from the Lee Valley SPA/Ramsar site. No likely significant effects.
Site BHL8 - 152/154 Blackhorse Road	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.
Site BHL9 - Former Essex Arms Public House	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.
Site BHL10 - Gun Site Playing Field, Folly Lane	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application

Objective	Implications for HRA
	level before can be dismissed.
Site BHL11 - Higham Hill Local Retail Parade	Site is within 500m of the Lee Valley SPA/Ramsar site. Potential for an impact on Lee Valley SPA/Ramsar site in relation to demolition/construction noise is low, but does require further consideration (and potentially mitigation) at planning application level before can be dismissed.

4.1.2 In addition to actual policy, or in extra detail to support policy, the AAP does contain approaches that will also potentially reduce the likelihood of significant adverse effects on European sites. The major examples of this are:

- Dagenham Brook enhancement and improved access is strongly promoted. This will also help to attract users away from the SPA/Ramsar wetlands of the Lee Valley.
- Green space/open space locations for creation are identified, including Orient Way as an improved Green Link to the Regional Park.
- There is a commitment to S106 agreements and tariffs for developers.
- The Council acknowledges key partners in Natural England and the Environment Agency in bringing forward proposed development and infrastructure.

5 Conclusions of Screening

5.1.1 Issues of recreational pressure, urbanisation, and reduction in air quality have all been considered in relation to the impacts of the Blackhorse Lane Area Action Plan on the Lee Valley SPA/Ramsar site 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 policies, or through relation to the CS, any measures that would be likely to have a significant adverse effect on the European sites assessed which is are not already addressed by counterbalancing elements of the AAP or the Core Strategy or Development Management Policies DPD.

5.1.3 The exception to this is the potential for noise, vibration and dust generation impacts during demolition/construction on the disturbance-sensitive wintering waterfowl populations of the reservoirs adjacent to the redevelopment areas, particularly sites BHL1 and (to a lesser extent) BHL2 North and South. While in neither case are such impacts considered to be a fundamental problem, they will require further investigation at the planning application stage (and potential mitigation[46]) before they can be dismissed. While it would be inappropriate to go into detail in the AAP (since each demolition/construction project will be different) the issue should be raised as guidance within the AAP text.

5.1.4 In response to this advice, Waltham Forest Council have inserted into In the penultimate paragraph on the section on site BHL1:

5.1.5 'Due to the sites proximity to these sensitive areas, demolition and construction phases will need to minimise disturbance to wintering waterfowl populations. This will be negotiated at the planning application stage, but could include requirements such as using noise attenuation techniques, or avoiding works between September and March'.

5.1.6 The following wording has also been inserted at the end of the sections on sites BHL2 north and south:

5.1.7 'As with Site BHL1, proximity to Walthamstow Wetlands means potential disturbance to wintering waterfowl will need to be minimised during demolition and construction phases. The methodology for this will be agreed during the planning application process'.

5.1.8 Following this amendment, it can be concluded the policies of the AAP do not need to be taken forward for Appropriate Assessment.

[46] e.g. timing demolition to lie outside the most sensitive period for wintering waterfowl (September – March) and/or adopting noise attenuation measures/techniques during demolition/construction as set out in British Standards guidance.

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[47]

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 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

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

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

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[48].

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:

- Minimal disturbance
- Maintenance of grazing / mowing regimes

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

- 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