

Broxbourne Borough Council Pre-Submission Core Strategy **Habitat Regulations Assessment**

Final Report
July 2010



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Broxbourne Borough Council

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1 Introduction

1.1 Scope of the Project

- 1.1.1 Scott Wilson Ltd was appointed in June 2010 by Broxbourne Borough Council (“the Council”) to assist the Council in undertaking a Habitat Regulations Assessment of the Broxbourne Core Strategy (pre-submission version of 5th July 2010). The objective of the assessment was to identify any areas of the Core Strategy that had the potential to cause an adverse effect on Natura 2000 or European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar sites), either in isolation or in combination with other plans and projects, and to devise appropriate mitigation strategies where such effects were identified.
- 1.1.2 Once the final version of the Core Strategy has been produced this Assessment will be revised in order to verify that its recommendations have been acted upon and that its conclusions and recommendations are still appropriate. The purpose of this document is therefore that it will inform any necessary amendments to the final version of the Core Strategy.
- 1.1.3 Currently, the Local Development Framework (LDF) is at an early stage of development. The core LDF documents will ultimately consist of:
- The Core Strategy.
- 1.1.4 This current HRA report covers the Core Strategy only. As the subsequent DPD’s are produced, the assessment will be refreshed and updated. The LDF will supercede the current Local Plan (site allocations and generic development control policies adopted in 2005 and relevant to at least 2011) and Hertfordshire Structure Plan (adopted 1998, relevant to 2011), which is the strategic planning framework for the protection of the environment, major transport priorities, and the scale, pattern and broad location of new development including provision for new housing and major economic development across Hertfordshire. The Core Strategy states that the Council (from the recommendations of the Strategic Housing Market Assessment) considers there to be a need to build 3,840 dwellings by 2026, at a rate of 240 per year, to meet housing need within the borough without placing excessive pressure on the borough to accommodate new development.

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 Regulation 102 of 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 protected areas (Special Areas of Conservation, SACs and Special Protection Areas, SPAs, collectively known as European sites and which comprise the *Natura* 2000 pan-European network). 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. This is in contrast to the SEA Directive which does not

prescribe how plan or programme proponents should respond to the findings of an environmental assessment; merely that the assessment findings (as documented in the 'environmental report') should be 'taken into account' during preparation of the plan or programme. In the case of the Habitats Directive, plans and projects may still be permitted if there are no alternatives to them and there are Imperative Reasons of Overriding Public Interest (IROPI) as to why they should go ahead. In such cases, compensation would be necessary to ensure the overall integrity of the site network.

- 1.2.3 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

Regulation 102 states that:

“Where a land use plan is likely to have a significant effect on a European site... (either alone or in combination with other plans or projects)...the plan-making authority for that plan must, before the plan is given effect, make an appropriate assessment of the implications for the site in view of that site's conservation objectives.... The plan-making authoritymust give effect to the land use plan only after having ascertained that it will not adversely affect the integrity of the European site”.

1.3 European Court of Justice Ruling

- 1.3.1 In October 2005, the European Court of Justice ruled that the UK had failed to correctly transpose the provisions of Articles 6(3) and (4) of Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora – the Habitats Directive – into national law. Specifically, the UK had failed to ensure that land use plans are subject to Appropriate Assessment where the development that they propose might have a significant effect on a *Natura* 2000 site.
- 1.3.2 Following the European Court ruling, the former Office of the Deputy Prime Minister (ODPM; now CLG) indicated that the regulations implementing the Habitats Directive in the UK would be amended to ensure that HRA explicitly applies to land use plans. Planning Policy Statement (PPS) 9 states that Ramsar sites (wetlands of international importance) should receive the same protection as designated SACs and SPAs.
- 1.3.3 Over the years the phrase 'Habitat Regulations Assessment' (HRA) has come into wide currency to describe the overall process set out in the Conservation (Natural Habitats &c) 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.

1.4 Scope of the Project

1.4.1 The version of the Core Strategy that was assessed was the pre-submission Broxbourne Core Strategy of 5th July 2010.

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

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

1.4.3 Briefly defined, pathways are routes by which a change in activity within the Core Strategy area can lead to an effect upon a European site. In terms of the second category of European site listed above, CLG guidance states that the AA 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).

1.4.4 There are two European sites that lie wholly or partly within the borough of Broxbourne – Wormley Hoddesdonpark Woods SAC and the Lee Valley SPA and Ramsar site. European sites also lie in adjoining boroughs and the potential for longer range and indirect effects upon these sites has been considered at least in screening (Table 1). Figure 1 shows the location of the European sites in relation to Broxbourne Borough.

Table 1: European sites considered at the screening stage of the Habitats Regulations Assessment

Site	Minimum distance from Broxbourne Borough
Wormley Hoddesdonpark Woods SAC	Partially within the borough
Lee Valley SPA/ Ramsar	Partially within the borough
Epping Forest SAC	3.5 km

1.5 This report

1.5.1 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 explores the relevant pathways of impact and summarises the screening assessment of preferred policies. Chapters 4 to 6 are organised on the basis of one chapter per European site. Each chapter begins with a consideration of the interest features and ecological condition of the site and environmental process essential to maintain site integrity. An assessment of the Core Strategy in respect of each European site is then carried out and avoidance and mitigation strategies proposed where necessary. The key findings are summarised in Chapter 7: Conclusions.

2 Methodology

2.1 Introduction

- 2.1.1 The methodology adopted is in compliance with emerging Government guidance¹.
- 2.1.2 The HRA has been carried out in the absence of formal Government guidance. Communities and Local Government released a consultation paper on Appropriate Assessment of Plans in 2006². As yet, no further formal guidance has emerged.
- 2.1.3 Figure 2 below outlines the stages of HRA according to current draft CLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.

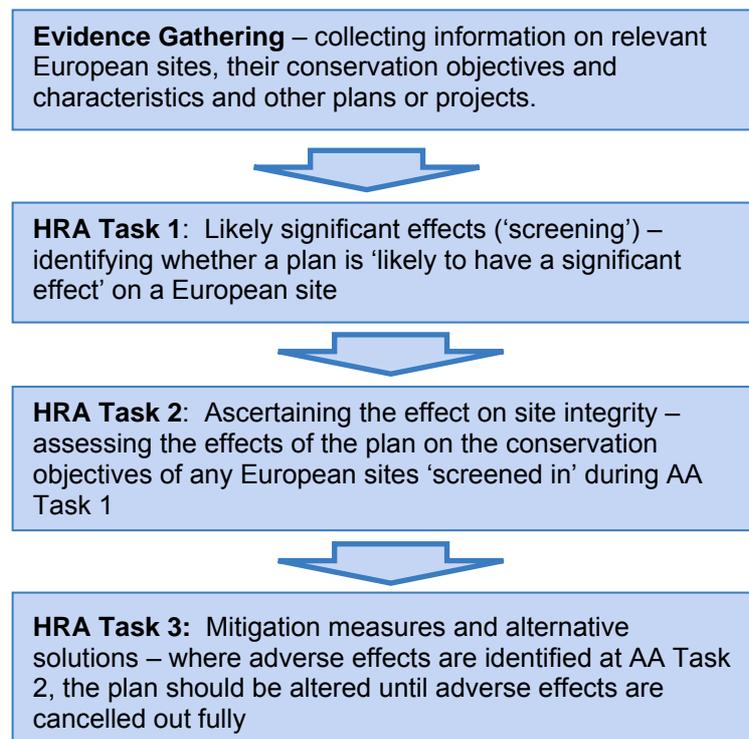


Figure 2 - Four-Stage Approach to Habitat Regulations Assessment
Source: CLG, 2006

¹ *Planning for the Protection of European Sites: Appropriate Assessment*. Under The Conservation (Natural Habitats, &c) (Amendment) (England and Wales) Regulations 2006 Guidance for Regional Spatial Strategies and Local Development Documents.

² CLG (2006) *Planning for the Protection of European Sites*, Consultation Paper

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:
- 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 In this case, the plan as a whole has been evaluated in detail within the context of existing knowledge of the various ways in which development can impact on European sites, accumulated from carrying out HRA's across the country at all geographical scales (from individual projects through to Regional Spatial Strategies). If it cannot be concluded with confidence that adverse effects are unlikely, we have deferred to the precautionary principle and assumed that they require investigation in the Appropriate Assessment. The previous draft of the Core Strategy was subject to a full Appropriate Assessment, which was consulted upon with Natural England. As such, part of the consideration of how much of the Core Strategy can be 'screened out' in this iteration relates to the extent to which previous recommendations have been incorporated.

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 Core Strategy 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 3.

Box 3. The steps involved in the Appropriate Assessment exercise undertaken for the Broxbourne Core Strategy

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 is likely to lead to an adverse effect.
5. Identify other plans and projects that might affect these sites in combination with the Plan and decide whether there any adverse effects that might not result from the Plan in isolation will do so "in combination".
6. Develop measures to avoid the effect entirely, or if not possible, to mitigate the impact sufficiently that its effect on the European site is rendered effectively inconsequential.

- 2.3.3 In evaluating significance, Scott Wilson have relied on our professional judgement as well as stakeholder consultation. We believe that we are in an excellent position to provide such judgement given our previous experience in undertaking HRA of plans in the East of England, South East and North West at RSS, LDF and Area Action Plan levels.
- 2.3.4 The level of detail concerning developments that will be permitted under land use plans will never be sufficient to make a detailed quantification of adverse effects. Therefore, we have again taken a precautionary approach (in the absence of more precise data) assuming as the default position that if an adverse effect cannot be confidently ruled out, avoidance or mitigation measures must be provided. This is in line with CLG guidance that the level of detail of the assessment, whilst meeting the relevant requirements of the Habitats Regulations, should be 'appropriate' to the level of plan or project that it addresses (see Appendix 1 for a summary of this 'tiering' of assessment).
- 2.3.5 When undertaking this part of the assessment it is essential to bear in mind the principal intention behind the legislation i.e. to ensure that those projects or plans which in themselves have minor impacts are not simply dismissed on that basis, but are evaluated for any cumulative contribution they may make to an overall significant effect. In practice, in combination assessment is therefore of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential.

2.4 Confirming other plans and projects that may act in combination

- 2.4.1 It is clearly neither practical nor necessary to assess the 'in combination' effects of the Core Strategy within the context of all other plans and projects within the East of England. In practice therefore, in combination assessment is of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential. For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects relate to the additional housing, transportation and commercial/industrial allocations proposed for other neighbouring authorities over the lifetime of the Core Strategy. The draft updated East of England Plan (March 2010) provides a good introduction to proposals for areas surrounding Broxbourne Borough (Table 2). Although the East of England plan has since been abandoned, it still provides the best summary of the currently anticipated levels of housing within authorities surrounding Broxbourne. However it must be noted that Broxbourne's Core Strategy indicates a target of 240 homes per annum or 3,840 homes to 2026.

Table 2. Housing levels to be delivered across Hertfordshire, and west Essex over the plan period (March 2010)

Local Authority	Annual housing average	Total housing from 2011 to 2031
Hertfordshire	3,570	71,300
Broxbourne	240	5,040
Dacorum	310	6,100
East Hertfordshire	550	11,000
Hertsmere	250	5,000
North Hertfordshire	790	15,800
St. Albans	350	7,000
Stevenage	320	6,400
Three Rivers	200	4,000

Watford	260	5,100
Welwyn Hatfield	290	5,800
Essex	-	-
Epping Forest	160	3,200
Harlow	800	16,000

- 2.4.2 There are other plans and projects that are often relevant to the ‘in combination’ assessment, most notably Thames Water’s Draft Water Resource Management Plan (September 2009), the Environment Agency’s River London Catchment Abstraction Management Strategy and the Rye Meads Water Cycle Study (2009). These have all been taken into account in this assessment.
- 2.4.3 The Regional Spatial Strategy for the East of England provides a good introduction to proposals for Hertfordshire as a whole, and surrounding counties.
- 2.4.4 The Hertfordshire Waste Development Framework is also of some relevance, since this may well contribute to increased vehicle movements on the road network within Broxbourne (and thereby contribute to air quality impacts). The Hertfordshire Local Transport Plans to 2011 will also be important in determining vehicle movements on the highways network in the short term. However, the major impact is likely to be that of housing and commercial development within the surrounding districts as set out in Local Development Frameworks and these have therefore been the main focus of cumulative ‘in combination’ effects with regard to this HRA. In this context, we have also consulted the Draft Replacement London Plan (2009) and the London Plan (2004).
- 2.4.5 However, the major impact is likely to be that of housing, employment and retail development within the surrounding boroughs as set out in Local Development Frameworks and these have therefore been the main focus of cumulative ‘in combination’ effects with regard to this HRA. Reference has also been made to the Lee Valley Regional Park Authority Park Development Framework, although it is at an early stage of development
- 2.4.6 In relation to recreational pressure, the following documents have been consulted for their plans and projects that may affect European sites in combination with development in Broxbourne: Lee Valley Regional Park Authority Site management Plan 2006-2011; Epping Forest Management Plan 2004-2010; Hoddesdonpark Wood Management Plan 2009-2014; Wormley Wood and Nut Wood Management Plan 2008-2013.
- 2.4.7 Table 3 summarises documents that we have reviewed to inform our assessment:

Table 3. Documents reviewed in order to inform this assessment

Document		Relevant contents
Broxbourne Borough Council (2010)	Broxbourne Core Strategy	<ul style="list-style-type: none"> Document under assessment.
Thames Water (September 2009)	Draft Water Resource Management Plan	<ul style="list-style-type: none"> Sets out the proposed approach to providing water resources in the future
Environment Agency (2006)	The London Catchment Abstraction Management Plan	<ul style="list-style-type: none"> Sets out the Environment Agency’s position regarding future abstraction within the London Catchment
Environment Agency (various)	Stage 3 Appropriate Assessments: Review of Consents	<ul style="list-style-type: none"> Understanding of existing conditions at European sites
Hertfordshire County Council	Hertfordshire Waste Development Framework	<ul style="list-style-type: none"> Vehicle movements within Broxbourne

Document		Relevant contents
Lee Valley Park	Lee Valley Regional Park Authority Development Framework – Consultation Draft	<ul style="list-style-type: none"> • Visions and objectives for the park.
Environment Agency (2009)	Water Resources Strategy Regional Action Plan for the Thames Region	<ul style="list-style-type: none"> • Sets out the Environment Agency's plans for sustainable management of water resources in the Thames region.
Hyder Consultancy (October 2009)	Rye Meads Water Cycle Study	<ul style="list-style-type: none"> • Water resources
APIS	The UK Air Pollution Information System (www.apis.ac.uk);	<ul style="list-style-type: none"> • Air quality data at European site.
Natural England	Nature on the Map and its links to SSSI citations and the JNCC website (www.natureonthemap.org.uk)	<ul style="list-style-type: none"> • SSSI condition assessments
EERA	The East of England Regional Spatial Strategy HRA (2006); The East of England Regional Spatial Strategy: Proposed Changes and Further Proposed Changes HRA (2007); Draft Revision to the East of England Regional Spatial Strategy: HRA (to be published in 2010).	<ul style="list-style-type: none"> • Housing figures for Broxbourne borough and for surrounding boroughs. • Other local proposals. • General development context for East England.
Environment Agency (March 2009)	The Impact of Housing and Water Efficiency Policies on Water Supplies to the East of England – Evidence for the Review of the East of England Plan – RSS14	<ul style="list-style-type: none"> • Water resources
Entec/ Environment Agency/ Anglian Water 2009	Impacts of Growth on Water Quality in the East of England: Interim Report to support the RSS Review'	<ul style="list-style-type: none"> • Sewage treatment capacity

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 out³. 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 period⁴. 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.

3.2.4 No exact correlation can be made between the incidence of fly-tipping and deliberate arson and the specific proximity of large-scale human settlement, since it does depend on

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

circumstances. However, it is reasonable to conclude that the incidence will be highest when human settlement is very near (for the purposes of this assessment we have as a precaution defined 'very near' as being within 500m rather than immediately adjacent). While this is not an empirically derived distance, it does enable urbanisation effects to be assessed at this high level. These impacts would need to be evaluated in more detail when individual site proposals and masterplans were developed.

- 3.2.5 It was therefore concluded that adverse effects from the Core Strategy on European sites as a result of urbanisation could not be described as inherently unlikely and required further investigation at the Appropriate Assessment stage.

3.3 Recreational pressure

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

- 3.3.2 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.
- 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

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

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.

damage was greater with walking boots, there was no significant difference after one year. Heavier trampers caused a greater reduction in vegetation height than lighter trampers, but there was no difference in effect on cover.

- Cole & Spildie (1998)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.

3.3.3 Many wetland sites, and particularly the Lee Valley, are extensively used for recreational activity by people from a wide-ranging catchment that includes the whole of Hertfordshire and also draw visitors from further afield. Activities of walkers (particularly dog walkers) and water-borne recreation can, if carried out in winter, have a significant disturbing effect upon wintering waterfowl thus increasing energetic expenditure (as birds have to take flight more frequently) and competition on the less disturbed parts of the wetland⁹.

3.3.4 Analysis of the latest England Day Visits Survey¹⁰ indicates that people typically travel:

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

3.3.5 In all cases, more journeys were made by car than on foot. It should be noted that these are generalised figures; individual European sites may draw the majority of their visitors from a much smaller catchment (e.g. Thames Basin Heaths SPA, which draws 96% of its visitors from within 5 km¹¹) or a much larger one (e.g. the New Forest SAC, for which 55% of visitors are holidaymakers rather than locals¹²). Although we have tried to obtain visitor survey and recreational catchment data relating to Wormley Hoddesdonpark Woods SAC, we have been unable to obtain any quantitative data. However, we have obtained detailed information for Epping Forest SAC and some information relating to the Lee Valley SPA.

3.3.6 In the absence of more precise visitor surveys for the European sites considered in this assessment, we take the England Day Visits data as broadly 'typical' of the distances that residents may travel to visit European sites, this means that all of those sites within these distances could be affected by trampling or (in the case of the Lee Valley SPA) disturbance of sensitive wildlife as a result of the population increase in Broxbourne associated with delivery of 3,840 new homes in the borough during the lifetime of the plan to 2026.

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

¹⁰ Various. 2006. *England Leisure Visits: the Results of the 2005 Survey*. Countryside Agency (now Natural England)

¹¹ Liley, D. et al. 2005. Visitor access patterns on the Thames Basin Heaths. *English Nature Research Report*, English Nature, Peterborough

¹² Forestry Commission. 2005. *New Forest Visitor Survey*.

- 3.3.7 It was therefore concluded that adverse effects from the Core Strategy on European sites as a result of recreational pressure could not be described as inherently unlikely. These therefore require further investigation at the Appropriate Assessment stage.

3.4 Atmospheric pollution

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

Table 4. Main sources and effects of air pollutants on habitats and species

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

Pollutant	Source	Effects on habitats and species
Sulphur Dioxide SO ₂	Main sources of SO ₂ emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO ₂ emissions have decreased substantially in the UK since the 1980s.	Wet and dry deposition of SO ₂ acidifies soils and freshwater, and alters the species composition of plant and associated animal communities. The significance of impacts depends on levels of deposition and the buffering capacity of soils.

3.4.2 The main pollutants of concern for European sites are oxides of nitrogen (NO_x), ammonia (NH₃) and sulphur dioxide (SO₂). NO_x can have a directly toxic effect upon vegetation. In addition, greater NO_x or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to soils. An increase in the deposition of nitrogen from the atmosphere to soils is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.

3.4.3 Sulphur dioxide emissions are overwhelmingly influenced by the output of power stations and industrial processes that require the combustion of coal and oil. Ammonia emissions are dominated by agriculture, with some chemical processes also making notable contributions. As such, it is unlikely that material increases in SO₂ or NH₃ emissions will be associated with Local Development Frameworks. NO_x emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NO_x (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison¹³. Emissions of NO_x could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the LDF.

3.4.4 According to the World Health Organisation, the critical NO_x concentration (critical threshold) for the protection of vegetation is 30 µg m⁻³; the threshold for sulphur dioxide is 20 µg m⁻³. In addition, ecological studies have determined 'critical loads'¹⁴ of atmospheric nitrogen deposition (that is, NO_x combined with ammonia NH₃).

3.4.5 The National Expert Group on Transboundary Air Pollution (2001)¹⁵ concluded that:

- In 1997, critical loads for acidification were exceeded in 71% of UK ecosystems. This was expected to decline to 47% by 2010.
- Reductions in SO₂ concentrations over the last three decades have virtually eliminated the direct impact of sulphur on vegetation.
- By 2010, deposited nitrogen was expected to be the major contributor to acidification, replacing the reductions in SO₂.
- Current nitrogen deposition is probably already changing species composition in many nutrient-poor habitats, and these changes may not readily be reversed.
- The effects of nitrogen deposition are likely to remain significant beyond 2010.
- Current ozone concentrations threaten crops and forest production nationally. The effects of ozone deposition are likely to remain significant beyond 2010.

¹³ 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>

¹⁴ The critical load is the rate of deposition beyond which research indicates that adverse effects can reasonably be expected to occur

¹⁵ National Expert Group on Transboundary Air Pollution (2001) Transboundary Air Pollution: Acidification, Eutrophication and Ground-Level Ozone in the UK.

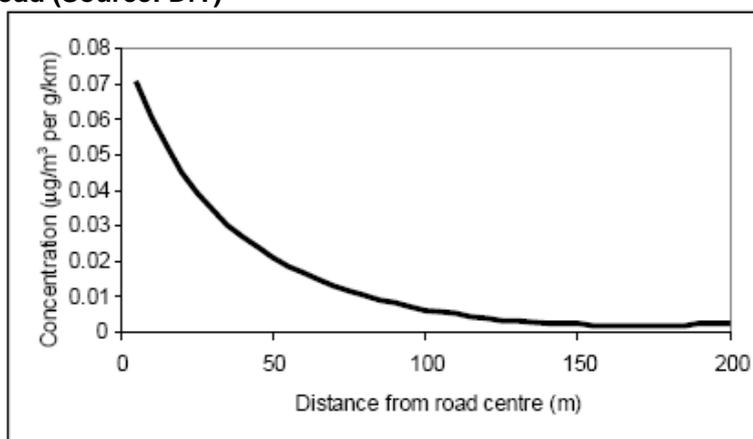
- Reduced inputs of acidity and nitrogen from the atmosphere may provide the conditions in which chemical and biological recovery from previous air pollution impacts can begin, but the timescales of these processes are very long relative to the timescales of reductions in emissions.

3.4.6 Grice et al¹⁶¹⁷ 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

3.4.7 According to the Department of Transport's Transport Analysis Guidance, "Beyond 200m, the contribution of vehicle emissions from the roadside to local pollution levels is not significant"¹⁸.

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



3.4.8 This is therefore the distance that has been used throughout this HRA in order to determine whether European sites are likely to be significantly affected by development under the Core Strategy. Given that sites detailed in Table 5 that lie within 200m of major roads that may be regularly used by vehicle journeys arising from Broxbourne as a result of the increased population, 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 5. Major roads within 200 m of the three European sites considered in detail within this assessment

Site	Major Roads in Close Proximity
Wornley Hoddesdonpark Woods SAC	None within 200m

¹⁶ 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.

¹⁷ 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.

¹⁸ www.webtag.org.uk/archive/feb04/pdf/feb04-333.pdf

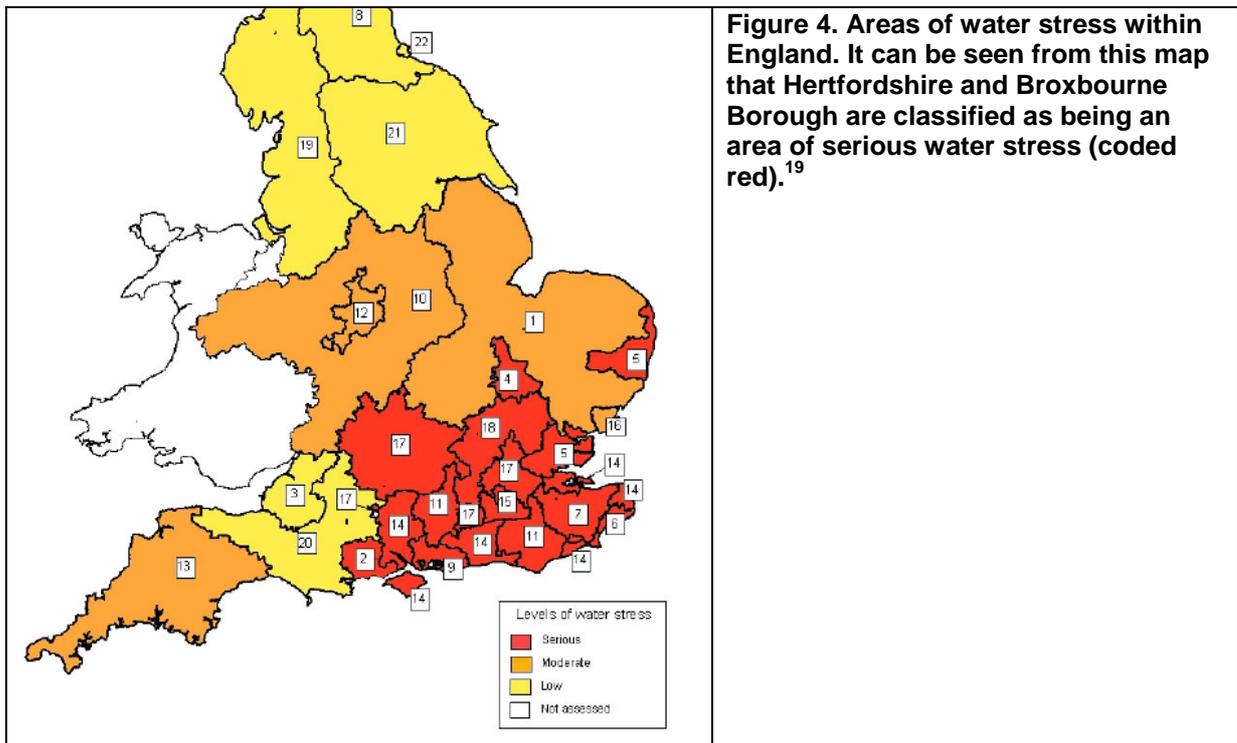
Lee Valley SPA/ Ramsar	None within 200m
Epping Forest SAC	M25, A1400, A104, A121, A114

Diffuse air pollution

- 3.4.9 In addition to the contribution to local air quality issues, development can also contribute cumulatively to an overall deterioration in background air quality across an entire region. In July 2006, when this issue was raised by Runnymede Borough Council in the South East, Natural England advised that their Local Development Framework ‘can only be concerned with locally emitted and short range locally acting pollutants’ as this is the only scale which falls within a local authority remit. It is understood that this guidance was not intended to set a precedent, but it inevitably does so since (as far as we are aware) it is the only formal guidance that has been issued to a Local Authority from any Natural England office on this issue.
- 3.4.10 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 The East of England is generally an area of high water stress. Much of England has experienced low rainfall for most of the last few years, including dry winters. The East of England is the driest region in the country receiving only two thirds of the average UK annual rainfall. Expected climate change trends for the East are for drier summers, wetter winters, and more extreme events. If the current climate trends continue, it may be impractical in the longer term to preserve wetland habitats characteristic of our former climate but in the short and medium term, it is clear that strenuous efforts to reduce the risk of water stress in European wetland sites should be a priority. The potential for severe water stress is evidenced by Figure 4.



3.5.2 Development within Broxbourne Borough over the plan period will increase water demand. There is a risk that increased abstraction will lower water levels within watercourses that are designated as or which feed European sites, thereby reducing freshwater inputs. This could potentially lead to increased salinity of saltmarshes, increased sedimentation of the river channel due to reduced flows and a reduction in the freshwater available to SPA birds for drinking and bathing²⁰.

3.5.3 Since the River Lee and its associated reservoirs form a major component of the water resource for Broxbourne, it was therefore concluded that adverse effects from the Core Strategy on European sites as a result of increased abstraction from sensitive surface and groundwater sources could not be described as inherently unlikely. These therefore require further investigation at the Appropriate Assessment stage.

3.6 Water Quality

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

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

¹⁹ Figure adapted from Environment Agency. 2007. Identifying Areas of Water Stress.

<http://publications.environment-agency.gov.uk/pdf/GEHO0107BLUT-e-e.pdf>

²⁰ Ravenscroft, N.O.M. and Beardal, C.H. 2003. The importance of freshwater flows over estuarine mudflats for wintering waders and wildfowl. *Biological Conservation*, 113:1, 89-97

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

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

3.6.4 Given that the key sewage treatment works for Broxbourne discharge to the River Lee, it was concluded that adverse effects from the Core Strategy on European sites as a result of deteriorating water quality could not be described as inherently unlikely. These therefore require further investigation at the Appropriate Assessment stage.

3.7 Summary of Screening

3.7.1 The overall conclusion of the Likely Significant Effect stage was therefore that adverse effects on European sites from the Core Strategy could not be described as inherently unlikely and further investigation was required at the Appropriate Assessment stage. That more detailed assessment is the subject of the remainder of this document. Each European site considered in the assessment is accorded its own chapter.

3.7.2 All consultation draft policies within the Core Strategy were screened for potential conflicts within European sites. The majority of the draft policies could be 'screened out' as there was no potential for any of these policy options to result in adverse effects on European sites. The full screening table for the draft policies is contained within Appendix 2.

3.7.3 The following draft policies were deemed to require consideration as they may lead to adverse effects on European sites generally because they promote and determine the location or scale of development (particularly housing and commercial development):

- CS1 - Sustainable Neighbourhoods;
- CS2 - Housing Development;
- CS3 - Housing Mix;
- CS4 – Travelling Community
- CS5 - Employment;
- CS6 - Retail and Town Centres; and
- CS7 -Greater Brookfield.

- 3.7.4 It should be noted that only policies that have the potential for negative impact on European sites are screened in for assessment. Those policies that might have a beneficial effect are referred to where appropriate in the following chapters, but have not been actually assessed. This is due to the fact that HRA is only concerned with adverse effects.

4 Wormley-Hoddesdonpark Woods SAC

4.1 Introduction

- 4.1.1 The Wormley-Hoddesdonpark Woods SAC consists of two SSSI's – Wormley-Hoddesdonpark Wood North SSSI and Wormley-Hoddesdonpark Wood South SSSI which cover the majority of the SAC area.
- 4.1.2 A series of discreet woodland blocks lying mainly on acid gravel deposits over the London Clay, these woods have developed from ancient wood-pasture and heaths, and retain many large oak and hornbeam pollards along the boundaries. More basic conditions arise from prevalence of boulder clays to the north of the site. This range of geological conditions and the variety of past management regimes has resulted in a varied woodland structure, wide habitat diversity and a correspondingly rich flora. Despite extensive clearance and replanting with conifers the remaining semi-natural woodland is of national importance as an example of lowland south-east sessile oak/hornbeam type with the pedunculate oak/hornbeam variant also present. Small ponds and streams are important habitats for bryophyte species dependent on shady, wet and acidic conditions.
- 4.1.3 Nationally the woods are regarded as the best remaining example of the south-east Sessile Oak-Hornbeam woods with associated flora and fauna. The Pedunculate Oak-Hornbeam variant is also represented, adding variety to the site.

4.2 Features of European Interest

- 4.2.1 Wormley Hoddesdonpark Woods SAC has large stands of almost pure hornbeam *Carpinus betulus* (former coppice), with sessile oak *Quercus petraea* standards. Areas dominated by bluebell *Hyacinthoides non-scripta* do occur, but elsewhere there are stands of great wood-rush *Luzula sylvatica* with carpets of the mosses *Dicranum majus* and *Leucobryum glaucum*. Locally, a bryophyte community more typical of continental Europe occurs, including the mosses *Dicranum montanum*, *D. flagellare* and *D. tauricum*. Approximately 70% of the site is a National Nature Reserve. The site is designated as an SAC for its:
- Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*

4.3 Condition Assessment

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

4.4 Key Environmental Conditions

4.4.1 The key environmental conditions that support the features of European interest are:

- Minimal air pollution – nitrogen deposition may cause reduction in diversity, sulphur deposition can cause acidification;
- Balanced hydrological regime - Meandering high-quality streams run eastward along the shallow valleys (Wormleybury Brook and Spital Brook). There are several ponds, especially in Westfield Grove;
- Absence of direct fertilisation; and
- Well-drained soils.

4.5 Potential Effects of the Plan

Urbanisation

Adverse effects of the Core Strategy

- 4.5.1 The nearest current urban area is Broxbourne town itself, which lies over 600 m east of the SAC (specifically Wormley Hoddesdonpark Wood North SSSI). Hoddesdon lies only slightly further away. The site is already recorded as being subject to a number of impacts that are associated with the close proximity of large urban development – car dumping, fly tipping etc. and, despite the fact that the urban development is situated more than 500m distant, this is the most likely source of such activities. While the condition assessment seems to indicate that these activities are not at this stage having a significant adverse effect on the site as a whole, clearly an increase in the urban population may bring with it an increase in such activities and these may result in an adverse effect.
- 4.5.2 The draft policy 'CS2 - Housing Development' focuses on urban sites, Greater Brookfield, small 'edge of urban area' sites and large greenbelt sites. One area highlighted in the background text is the 'West of Hoddesdon' area of search (urban edge of Hoddesdon and the A10) with the potential for up to 1,000 dwellings during the plan period, along with 790 dwellings within the Hoddesdon Urban SHLAA site. The Broxbourne Urban SHLAA site will gain 380 dwellings during the plan period. If one takes the average Broxbourne occupancy of 2.3 people per dwelling, the 1,790 houses in Hoddesdon would result in a population increase of 20.3%²¹. For Broxbourne the 380 dwellings would result in a population increase of 6.6%²². While this is small in itself it would have a cumulative impact when considered within the context of the urbanisation effects being delivered by the existing development. As such, and since Habitat Regulations Assessment must take the precautionary approach of assuming there is an adverse effect unless it can be demonstrated otherwise, it is not possible to conclude with confidence that increased housing within the Broxbourne town/Hoddesdon/A10 corridor will not lead to an adverse effect upon the SAC, when considered as a cumulative pressure with the existing development.

²¹ The 2001 population of Hoddesdon was approximately 20,250 people.

²² The 2001 population of Broxbourne was approximately 13,300 people

Mitigating aspects of the Core Strategy

4.5.3 Various policies will provide a measure of direct control over the 'urbanisation' issue:

- CS1 -Sustainable Neighbourhoods – this policy includes the statement that *'development will...provide habitats for wildlife.'*
- CS2 -Housing Development – this policy states that *'allocating and phasing small edge of urban area sites...in response to...local environmental capacity'* and *'allocating and phasing large green belt sites...based on...local environmental capacity'* and *'masterplans for Greater Brookfield and large greenbelt sites...should address a full range of issues which are likely to inform a major development proposal including....landscape impacts, wildlife and biodiversity.'*
- CS4 – Travelling Communities – this policy states that *'sites should not be on...important protected sites.'*
- Environment – *'Conserve and enhance.... all sites in and adjoining the borough which are protected by the planning system for their landscape, wildlife, scientific and/or archaeological value will be conserved and enhanced in accordance with national and local objectives.'*

4.5.4 However, the statements in the first three policies are oblique and would require further clarification in order to ensure that they could prevent adverse effects upon the SAC. The fourth policy does include a specific reference to conserve sites protected by the planning system, which includes SACs. However, in practice this is a statement of the legal position rather than a description of active measures to be implemented by the Council. In addition to this passive measure it is therefore advised that a more active measure is required.

Additional measures recommended

4.5.5 It is inevitable that the main existing urban locations within the borough should be the focus of development (and ultimately this is more desirable and logical than dispersing the housing across the rural parts of the borough). Therefore it is inevitable that it cannot be sensibly located a long way from the SAC (which would be the easiest way to avoid an effect). In order to be sure that the development around West Hoddesdon and within Hoddesdon and Broxbourne urban areas will not lead to adverse effects upon Wormley Hoddesdonpark Woods SAC as a result of increase 'urbanisation' impacts, some further clarity is required within the Core Strategy.

The Council should make a specific commitment to assist with the installation of measures (e.g. fencing and other measures to prevent cars entering the woods and/or increased surveillance²³) to control any increase in 'urbanisation' and anti-social behaviour impacts upon Wormley Hoddesdonpark Woods SAC that might result from new development in the borough. The 'Planning Conditions policy would seem the appropriate place for such a reference.

4.5.6 If this additional proactive measure was incorporated it would be possible to conclude that the Core Strategy is unlikely to have an adverse effect on Wormley Hoddesdonpark Woods SAC as a result of urbanisation.

²³ Precise details of measures to be implemented and actual scale of any contribution would need to be agreed with Natural England and relevant landowners

Recreational Pressure

Adverse effects of the Core Strategy

- 4.5.7 We have only been able to obtain a limited amount of data with regards to the recreational use of Wormley-Hoddesdonpark Woods SAC, namely from the Woodland Trust's management plan for Wormley Wood and Nut Wood (part of the Broxbourne NNR, which overlaps in part with the SAC). The management plan states that wood is *'well used for quiet and informal recreation, primarily by locals, visitors from nearby towns and those enjoying a longer walk through the countryside.'*
- 4.5.8 Therefore, if, in the absence of specific data regarding the recreational catchment of Wormley Hoddesdonpark Woods SAC, we take as a proxy the England Day Visits data as broadly 'typical' of the distances that residents may travel to visit large woodland sites (i.e. 18km), it is clear that Wormley Hoddesdonpark Woods SAC will form a significant recreational resource for the borough. If we assume 2.2 people per household, then even if only 10% of the additional population regularly visited the site, this would still constitute an additional 1,144 recreational visitors from Broxbourne alone. While this is ultimately positive, recreation must be controlled and directed to avoid an adverse effect and clearly this would be made more difficult through the construction of up to 3,840 new homes within the borough. Moreover, these additional homes must be considered within the context of a further approximately 71,300 new homes that will be delivered elsewhere in Hertfordshire during the same period some of which may also be making a contribution to increased recreational pressure on the SAC.
- 4.5.9 That said, there are clearly defined footpaths within the woodlands to which the majority of recreational users adhere. Moreover, wet conditions can make these footpaths difficult to navigate thereby further reducing recreational usage of the woods to a level below that which might otherwise be expected for such a prominent feature. The most recent Natural England condition assessment recorded that recreational activity on the site is fairly well controlled. However, that control could be at risk if recreational use increases rapidly.
- 4.5.10 It should be noted that there is an inherent conflict between Government policy to increase public access to the natural environment (as embodied in the CRow Act) and the requirements of European site management which often require visitor numbers to be controlled. However, ultimately, the legal requirements of the Conservation (Natural Habitats &c) Regulations should override national policy where such a conflict exists unless the policy is considered to represent an Imperative Reason of Overriding Interest as defined in the Regulations.

Mitigating aspects of the Core Strategy

- 4.5.11 Various policies will provide opportunities to control recreational pressure and/or deliver additional green space or greater access to existing green space:
- CS1 -Sustainable Neighbourhoods – this policy includes the statement that *'development will...provide habitats for wildlife.'*
 - CS2 - Housing development – *'The Council working in partnership with developers, landowners, utility providers, other stakeholders and the local community to prepare comprehensive masterplans for Greater Brookfield and large green belt sites. These should address the full range of issues which are likely to inform a major development proposal, includingopen spaces.... landscape impacts, wildlife and biodiversity.'*

- CS8 - Environment – *‘The following green corridors will be protected and enhanced to help link open spaces in towns with surrounding countryside: the Lee Valley Regional Park, the New River green chain, Spital Brook valley between Barclay Park and Hoddesdonpark Wood, Rags Brook valley between Rosedale and Cheshunt Common, Wormley playing fields and Theobalds Brook from Cedars Park into Theobalds Park.’*

‘All sites in and adjoining the borough which are protected by the planning system for their landscape, wildlife, scientific and /or archaeological value will be conserved and enhanced in accordance with national guidance and local objectives.’

‘Seek to maintain and increase the quantity and accessibility of open space throughout the borough in accordance with the following standards.’

	Space per 1,000 residents	Accessibility
Parks and Gardens	0.28 hectares	15 min walk
Natural and Semi-Natural Space	1.26 hectares	15 min walk
Amenity Greenspace	0.46 hectares	10 min walk
Provision for Children	0.04 hectares	10 min walk
Teenage Provision	0.02 hectares	15 min walk
Allotments	0.2 hectares	15 min walk
Outdoor Sports Facilities i.e. sports pitches, tennis courts	1.88 hectares	15 min walk
Outdoor Sports Facilities i.e. golf courses, swimming pools	1.88 hectares	20 min drive

- Planning conditions – *‘The Council will seek planning contributions from new development in accordance with national guidance and to help fund policy objectives set out in the Core Strategy, the Sustainable Community Strategy and other planning documents such as town centre strategies and development briefs.’*

The Council will prepare an Infrastructure Schedule covering the items listed below to map existing provision, identify any areas of surplus or deficit and plan for future needs. This will be combined with viability appraisal work to inform a Planning Obligations SPD.....Open space, sports facilities and green infrastructure’

- 4.5.12 Due to the limitations of the assessment tools and data available at this time (and in particular the inability to quantify the number of residents of each allocated site that will be making use of the European sites in question and what proportion of the total cumulative load this represents), coupled with the need for any standards within the Core Strategy to be generally applicable (it not being possible to devise a unique policy or standard for each allocated site), it is not possible for the Core Strategy to specify an exact quantity of alternative natural greenspace that will need to be provided for individual developments in order to absorb recreational visitors to such an extent that they will not materially contribute towards recreational pressure on the European sites in question.
- 4.5.13 Natural England's more general Accessible Natural Greenspace Standards (ANGSt) provide a set of benchmarks for ensuring access to places of wildlife interest and were specifically developed to provide size and distance criteria to provide natural spaces that will contribute most towards sustainable use of recreational resources. While the criteria were not developed with the specific intention of mitigating for adverse impacts on

European sites, they were intended to specify a level of semi-natural greenspace provision that would meet the needs of a development's population.

- 4.5.14 In many cases natural greenspace provision to the ANG Standard should therefore serve to minimise the need for recreational resources further afield (i.e. European sites) to receive an unsustainably large influx of visitors provided that they are delivered within a timescale linked to that of the development and will fulfil a function similar to that of the European site in question (i.e. dog walking and appreciation of nature rather than more formal recreational activities). For these reasons, we have selected the Natural England ANG standards as the criterion for semi-natural greenspace provision that the Core Strategy should require developments to meet in order to ensure that sufficient recreational space is provided to minimise adverse effects on the identified European sites.
- 4.5.15 The stipulation that new natural and semi-natural greenspace will be provided at a rate of over 1 ha/1000 population does fit with our core recommendation from the HRA of the preferred options Core Strategy regarding the ANG Standard.
- 4.5.16 In addition, the Environment policy does provide a mechanism for providing open space by seeking minimum areas close to residents, although this is not stringent or detailed enough in itself to ensure that no adverse effects would occur at the SAC. Further detail is required regarding the phasing of delivery of such greenspace for us to be able to state with confidence that adverse effects would not occur.

Additional measures recommended

- 4.5.17 The following further criteria should be set out in order to ensure that additional greenspace delivered as part of or associated with new housing developments meet the necessary requirements to minimise adverse effects. *While it is accepted that detailed information on these aspects is perhaps not appropriate to a Core Strategy, a commitment should at least be given in the Core Strategy that such details will be developed for an SPD or similar.* The Planning Conditions policy currently goes some way towards the measures below in stating that the Council will seek 'planning contributions', and that the 'annually updated Infrastructure Schedule covering the items listed below to map existing provision, identify and areas of surplus or deficit and plan for future needs' and that this will 'inform future planning application decisions' however at present the text is not explicit enough with regards to the phasing of green space in parallel to the occupation of developments.

The Council should include the following measures into either the Core Strategy (The 'Planning Conditions' and 'Environment' policies would seem the appropriate places for such a reference) or into a relevant SPD cross-referenced in the Core Strategy (The Planning Contributions SPD would seem an appropriate place). These are modified from the Natural England Accessible Natural Greenspace Standard (ANGSt):

- Delivery of greenspace would need to be phased in parallel to occupation of the developments it was intended to serve and would need to serve a similar recreational function to Wormley Hoddesdonpark Woods, from which it is intended to draw recreational users (i.e. dog-walking and appreciation of nature). However, that does not mean that it would have to be woodland (since this would be impractical, taking decades to mature), species-rich grassland for example could be acceptable. Existing natural greenspace could be included within the allocation provided that a visitor study could demonstrate that it did not already meet its maximum recreational capacity.

- 4.5.18 It is considered that incorporation of this additional detail would be sufficient to mitigate any adverse effect as a result of the increased population within the recreational catchment of the SAC.

Atmospheric Pollution

- 4.5.19 It can be seen from Table 6 that the SAC exceeds the critical threshold for nitrogen load. It can also be seen that the NO_x and sulphur dioxide atmospheric levels do not currently appear to be a problem for the site.

Table 6. Critical nitrogen loads, actual rates of nitrogen deposition, NO_x concentrations²⁴ and sulphur dioxide concentrations for the Wormley-Hoddesdonpark Woods SAC. Red shading indicates exceedance of thresholds.

Site	Grid reference	Most nitrogen sensitive habitat	Minimum ²⁵ critical loads (Kg N/ha/yr)	Actual nitrogen deposition ²⁶ (Kg N/ha/yr)	Actual NO _x concentration (µgm ⁻³)	Actual SO ₂ concentration (µgm ⁻³)
Wormley-Hoddesdonpark Woods SAC	TL 320059	Oak woodland	20	32.5	20.1	1.6

- 4.5.20 Although the SAC lies close to the A10, there is no point at which it lies within 200 m. Therefore traffic movements on the A10 (the nearest major road) are unlikely to be contributing to significant local nitrogen deposition effects within the SAC. White Stubbs Lane, Pembridge Lane and Lord Street all lie close to the SAC, but these lanes are narrow and winding, and are unlikely to see substantial increased vehicle use compared to the A10. Using these criteria, development under the Core Strategy will therefore not lead to an adverse effect on the SAC as a result of deteriorating local atmospheric nitrogen deposition.

4.6 Summary

- 4.6.1 As the Core Strategy currently stands, it is not possible to conclude that the development that it will deliver will not lead to an adverse effect upon Wormley Hoddesdonpark Woods SAC as a result of both increased urbanisation and recreational pressure, although relatively minor amendments will achieve this.

²⁴ Calculated as NO₂

²⁵ APIS provides a critical load range – on a precautionary basis, this assessment uses the lowest figure in that range

²⁶ To a resolution of 5 km

5 Epping Forest SAC

5.1 Introduction

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

5.2 Features of European Interest

- 5.2.1 The site is designated as an SAC for its:
- Atlantic acidophilous beech forest;
 - Stag beetle, for which this is one of only four known outstanding localities in the UK. Stag beetles spend the majority of their life (up to 5 years) as larvae and during this period live in decaying wood at or below ground level. Adult beetles start to emerge in May and have generally mated and died by the end of August. It is not known whether adult stag beetles eat anything at all, although some entomologists have suggested that they may consume tree sap.
 - European dry heaths; and
 - Northern Atlantic wet heaths.

5.3 Condition Assessment

- 5.3.1 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 and east Hertfordshire increases.

5.4 Key Environmental Conditions

- 5.4.1 The following key environmental conditions have been identified for the maintenance of the interest features of Epping Forest SAC:
- Controlled recreational activity;
 - Good air quality;
 - Maintenance of grazing regimes;

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

5.5 Potential Effects of the Plan

Urbanisation

- 5.5.1 Given that the SAC is situated 4 km from Broxbourne at its closest 'urbanisation' effects are highly unlikely to occur as a result of development within the borough.

Recreational Pressure

Adverse effects of the Core Strategy

- 5.5.2 The Corporation of London have published the results of the Epping Forest Visitor Survey 2006²⁷. All the urban areas within Broxbourne lie within 2 to 10 miles of Epping Forest. According to the Epping Forest visitor survey data approximately 29% of visitors to the site come from within this band. It is not possible to determine what proportion of Broxbourne's residents travel to visit Epping Forest for recreational purposes based upon these data.
- 5.5.3 In the absence of any other data the precautionary principle must be used and it must be concluded that, when the 3,840 homes to be delivered in Broxbourne are considered in combination with the houses to be delivered within those other boroughs that surround the SAC²⁸ (15,200 from Waltham Forest and Redbridge under the London Plan 2001-2021 targets and 6,600 across Epping and Brentwood between 2011 and 2031 under the East of England Plan), and assuming a Broxbourne Borough average of 2.3 residents per house, an 'in combination' adverse effect upon the SAC will result.

Mitigating aspects of the Core Strategy

- 5.5.4 Various policies will provide opportunities to control recreational pressure and/or deliver additional green space or greater access to existing green space:
- CS1 -Sustainable Neighbourhoods – this policy includes the statement that *'development will...provide habitats for wildlife.'*
 - CS2 - Housing development – *'The Council working in partnership with developers, landowners, utility providers, other stakeholders and the local community to prepare comprehensive masterplans for Greater Brookfield and large green belt sites. These should address the full range of issues which are likely to inform a major development proposal, includingopen spaces.... landscape impacts, wildlife and biodiversity.'*
 - CS8 - Environment – *'The following green corridors will be protected and enhanced to help link open spaces in towns with surrounding countryside: the Lee Valley Regional Park, the New River green chain, Spital Brook valley between Barclay Park and Hoddesdonpark Wood, Rags Brook valley between Rosedale and Cheshunt Common, Wormley playing fields and Theobalds Brook from Cedars Park into Theobalds Park.'*

²⁷ Corporation of London, 2006. Epping Forest Visitor Survey 2006 Analysis. Unpublished report

²⁸ Epping Forest District, Brentwood District and the London Boroughs of Waltham Forest and Redbridge

'All sites in and adjoining the borough which are protected by the planning system for their landscape, wildlife, scientific and /or archaeological value will be conserved and enhanced in accordance with national guidance and local objectives.'

'Seek to maintain and increase the quantity and accessibility of open space throughout the borough in accordance with the following standards.'

	Space per 1,000 residents	Accessibility
Parks and Gardens	0.28 hectares	15 min walk
Natural and Semi-Natural Space	1.26 hectares	15 min walk
Amenity Greenspace	0.46 hectares	10 min walk
Provision for Children	0.04 hectares	10 min walk
Teenage Provision	0.02 hectares	15 min walk
Allotments	0.2 hectares	15 min walk
Outdoor Sports Facilities i.e. sports pitches, tennis courts	1.88 hectares	15 min walk
Outdoor Sports Facilities i.e. golf courses, swimming pools	1.88 hectares	20 min drive

- CS10 - Planning conditions – *'The Council will seek planning contributions from new development in accordance with national guidance and to help fund policy objectives set out in the Core Strategy, the Sustainable Community Strategy and other planning documents such as town centre strategies and development briefs.'*

The Council will prepare an Infrastructure Schedule covering the items listed below to map existing provision, identify any areas of surplus or deficit and plan for future needs. This will be combined with viability appraisal work to inform a Planning Obligations SPD.....Open space, sports facilities and green infrastructure'

- 5.5.5 Due to the limitations of the assessment tools and data available at this time (and in particular the inability to quantify the number of residents of each allocated site that will be making use of the European sites in question and what proportion of the total cumulative load this represents), coupled with the need for any standards within the Core Strategy to be generally applicable (it not being possible to devise a unique policy or standard for each allocated site), it is not possible for the Core Strategy to specify an exact quantity of alternative natural greenspace that will need to be provided for individual developments in order to absorb recreational visitors to such an extent that they will not materially contribute towards recreational pressure on the European sites in question.
- 5.5.6 Natural England's more general Accessible Natural Greenspace Standards (ANGSt) provide a set of benchmarks for ensuring access to places of wildlife interest and were specifically developed to provide size and distance criteria to provide natural spaces that will contribute most towards sustainable use of recreational resources. While the criteria were not developed with the specific intention of mitigating for adverse impacts on European sites, they were intended to specify a level of semi-natural greenspace provision that would meet the needs of a development's population.
- 5.5.7 In many cases natural greenspace provision to the ANG Standard should therefore serve to minimise the need for recreational resources further afield (i.e. European sites) to receive an unsustainably large influx of visitors provided that they are delivered within a timescale

linked to that of the development and will fulfil a function similar to that of the European site in question (i.e. dog walking and appreciation of nature rather than more formal recreational activities). For these reasons, we have selected the Natural England ANG standards as the criterion for semi-natural greenspace provision that the Core Strategy should require developments to meet in order to ensure that sufficient recreational space is provided to minimise adverse effects on the identified European sites.

5.5.8 The stipulation that new natural and semi-natural greenspace will be provided at a rate of over 1 ha/1000 population does fit with our core recommendation from the HRA of the preferred options Core Strategy regarding the ANG Standard.

5.5.9 In addition, the Environment policy does provide a mechanism for providing open space by seeking minimum areas close to residents, although this is not stringent or detailed enough in itself to ensure that no adverse effects would occur at the SAC. Further detail is required regarding the phasing of delivery of such greenspace for us to be able to state with confidence that adverse effects would not occur.

Additional measures recommended

5.5.10 The following further criteria should be set out in order to ensure that additional greenspace delivered as part of or associated with new housing developments meet the necessary requirements to minimise adverse effects. *While it is accepted that detailed information on these aspects is perhaps not appropriate to a Core Strategy, a commitment should at least be given in the Core Strategy that such details will be developed for an SPD or similar.* The Planning Conditions policy currently goes some way towards the measures below in stating that the Council will seek ‘planning contributions’, and that the ‘annually updated Infrastructure Schedule covering the items listed below to map existing provision, identify and areas of surplus or deficit and plan for future needs’ and that this will ‘inform future planning application decisions’ however at present the text is not explicit enough with regards to the phasing of green space in parallel to the occupation of developments.

The Council should include the following measures into either the Core Strategy (The ‘Planning Conditions’ and ‘Environment’ policies would seem the appropriate places for such references) or into a relevant SPD cross-referenced in the Core Strategy (The Planning Contributions SPD would seem an appropriate place). These are modified from the Natural England Accessible Natural Greenspace Standard (ANGSt):

- Delivery of the greenspace would need to be phased in parallel to occupation of the developments it was intended to serve and would need to serve a similar recreational function to Epping Forest, from which it is intended to draw recreational users (i.e. dog-walking and appreciation of nature). However, that does not mean that it would have to be woodland (since this would be impractical, taking decades to mature), species-rich grassland for example could be acceptable. Existing natural greenspace could be included within the allocation provided that a visitor study could demonstrate that it did not already meet its maximum recreational capacity.

5.5.11 Coupled with the fact the Epping Forest Conservators have a detailed management strategy for the site, which includes careful management and licensing of many recreational activities, these measures would be sufficient to mitigate any adverse effect as a result of the increased population within the recreational catchment of the SAC.

