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Habitats Regulations Assessment of Epping Forest District Council Regulation 19 Local Plan

Epping Forest District Council

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Quality information

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1. Introduction

Background to the Project

1.1 AECOM has been appointed by Epping Forest District Council to assist the Council in undertaking a Habitat Regulations Screening Assessment of its Regulation 19 Local Plan (hereafter referred to as the 'Plan' or 'Local Plan'). The Plan being assessed is the Submission Version of the Local Plan 2017 which sets out the Council's proposed strategy to meet the economic and housing needs in the District up to 2033. The Plan identifies sites for housing (including traveller accommodation) and employment. It also sets out development management policies and infrastructure requirements. The objective of this assessment is to identify any aspects of the Plan 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.

1.2 An assessment of housing need across the East Herts and West Essex Housing Market Area (HMA) was undertaken, which was then used as the basis for developing the Local Plan. The HMA covers Epping Forest District Council, Harlow Council, East Herts District Council and Uttlesford District Council. The HMA developed a series of different Options for quanta and distribution of housing in each of the Authority boundaries, focussed on growth within the wider Harlow area. To underpin this, traffic modelling and an air quality impact assessment regarding impacts on Lee Valley SPA/Ramsar site and Epping Forest SAC was undertaken of each of the Options. Data from that analysis is used to inform the air quality section of this HRA, although it is to be replaced in 2018 by new modelling.

Current Legislation

1.3 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.

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

1.5 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*".

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

1.7 The Conservation of Habitats and Species Regulations 2017 came into force on 30th November 2017. However, these simply consolidate changes made to the regulations since 2010 and do not alter the law regarding HRA.

Scope of the Project

1.8 There is no pre-defined guidance that dictates the physical scope of a HRA of a Plan document. 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 Epping Forest District boundary; and
- Other sites shown to be linked to development within the District boundary through a known 'pathway' (discussed below).

1.9 Briefly defined, pathways are routes by which a change in activity provided within a Local Plan document can lead to an effect upon an internationally designated site. Guidance from the former Department of Communities and Local Government states that the HRA should be '*proportionate to the geographical scope of the [plan policy*]' and that '*an AA need not be done in any more detail, or using more resources, than is useful for its purpose*' (CLG, 2006, p.6). More recently, the Court of Appeal [1] ruled that providing the Council (as competent authority) was duly satisfied that proposed mitigation could be '*achieved in practice'* such that the proposed development would have no adverse effect, then this would suffice. This ruling has since been applied to a planning permission (rather than a Core Strategy document)[2]. In this case the High Court ruled that for 'a multistage process, so long as there is sufficient information at any particular stage to enable the authority to be satisfied that the proposed mitigation can be achieved in practice it is not necessary for all matters concerning mitigation to be fully resolved before a decision maker is able to conclude that a development will satisfy the requirements of the Habitats Regulations'.

1.10 There are three European sites that lie partly within Epping Forest District:

- Epping Forest SAC;
- Lee Valley SPA; and

[1] No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17th February 2015
[2] High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

- Lee Valley Ramsar site.

1.11 Outside the District, the following site also requires consideration because there is potential for impacts stemming from the Local Plan to create significant effects even though the site lies outside the authority boundary:

- Wormley-Hoddesdonpark Woods SAC located 2.2km west of the District.

1.12 The reasons for designation of these sites, together with current trends in habitat quality and pressures on the sites, are set out at Appendix A. All the European sites are shown at Appendix B, Figure B1.

1.13 In order to fully inform the screening process, a number of recent studies have been consulted to determine likely significant effects that could arise from the Submission Version of the Plan. These include:

- Final Water Resources Management Plan, 2015-2040. Affinity Water. June 2014
- Future development proposed (and, where available, HRAs) for Harlow, East Hertfordshire District, Chelmsford, Brentwood, Havering, Redbridge, Waltham Forest, Enfield and Broxbourne District, and Uttlesford District.
- Recreational activity, tourism and European site recreational catchment data has been used where this exists for individual European sites although this is limited. In such circumstances where data does not exist then this HRA has used appropriate proxy information from other European sites designated for similar features and in similar settings;
- The UK Air Pollution Information System (www.apis.ac.uk); and
- Multi Agency Geographic Information for the Countryside (MAGIC)and its links to SSSI citations and the JNCC website (www.magic.gov.uk)

This Report

1.14 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 contains an initial sift of Local Plan policies to determine which present potential scope for impacts on European sites. Chapters 5 to 8 then provide more detailed screening (likely significant effects assessment) of each impact pathway. Each chapter begins with a consideration of the interest features and ecological condition of the site(s) and of the environmental processes essential to maintain their integrity. An assessment of the Plan in respect of each European site is then carried out mitigation strategies are proposed where necessary[3]. The key findings are summarised in Chapter 9: which provides overall conclusions and a summary of recommendations.

[3] Legal precedent confirms that it is perfectly acceptable to reference mitigation measures at the screening stage of HRA, if that is the stage at which they can be identified.

2. Methodology

Introduction

2.1 The HRA has been carried out in the continuing absence of formal central Government guidance, although general EC guidance on HRA does exist[4]. The former Department of Communities and Local Government (DCLG) released a consultation paper on the Appropriate Assessment of Plans in 2006[5]. As yet, no further formal guidance has emerged. However, Natural England has produced its own internal guidance[6] as has the RSPB[7]. Both of these have been referred to in undertaking this HRA.

2.2 Figure 1 below outlines the stages of HRA according to current draft DCLG 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.

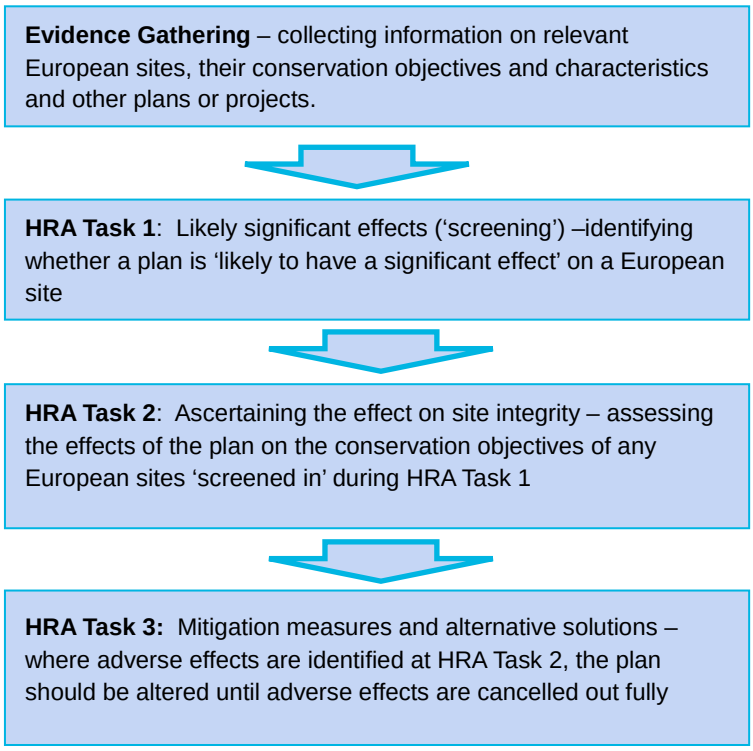


Figure 1: Four Stage Approach to Habitats Regulations Assessment. Source CLG, 2006.

HRA Task 1: Likely Significant Effects (LSE)

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

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

2.4 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.

[4] European Commission (2001): Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive.
[5] CLG (2006) Planning for the Protection of European Sites, Consultation Paper
[6] http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf
[7] Dodd A.M., Cleary B.E., Dawkins J.S., Byron H.J., Palframan L.J. and Williams G.M. (2007). *The Appropriate Assessment of Spatial Plans in England: a guide to why, when and how to do it.* The RSPB, Sandy.

2.5 Case law has established that it is legally permissible to take mitigation measures into account in drawing a conclusion on likely significant effects. Therefore, where such measures are already included in the Local Plan or related initiatives, these have been taken into account in determining whether an adequate policy framework is in place to ensure no effects will result.

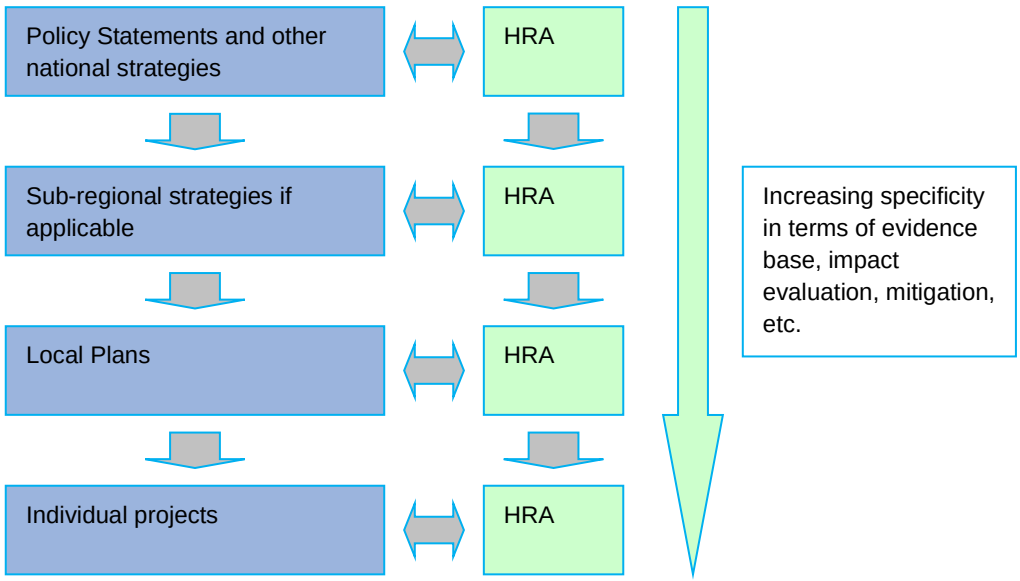
HRA Task 2: Appropriate Assessment (AA)

2.6 Where it is determined that a conclusion of 'no likely significant effect' cannot be drawn, the analysis has proceeded to the next stage of HRA known as Appropriate Assessment. Case law has clarified that 'appropriate assessment' is not a technical term. In other words, there are no particular technical analyses, or level of technical analysis, that are classified by law as belonging to appropriate assessment rather than determination of likely significant effects. Therefore it is legal to undertake the fullest level of technical assessment possible and still term the analysis an investigation into likely significant effects. Drawing the line between the studies that belong in the 'likely significant effects' section of analysis and those that belong in the 'appropriate assessment' of the analysis is therefore a judgment to be made by each competent authority. The ultimate legal requirement is that, whether the analysis is termed an investigation into likely significant effects or an appropriate assessment, the analysis supports the conclusion.

2.7 In this case, Natural England's response to the previous HRA of the Local Plan indicated that they would prefer the air quality analysis at Epping Forest to be classified as 'appropriate assessment' and that approach has therefore been followed in this report.

2.8 In making judgments regarding mitigation, it is important to note that mitigation measures can be tiered. This 'tiering' of assessment is summarised in Box 2.

Box 2: Tiering in HRA of Land Use Plans



Task 3: Avoidance & Mitigation

2.9 Where necessary, measures will be recommended for incorporation into the Plan in order to avoid or mitigate adverse effects on European sites. There is considerable precedent concerning the level of detail that a Local Plan document needs to contain regarding mitigation for recreational impacts on European sites. The implication of this precedent is that it is not necessary for all measures that will be deployed to be fully developed prior to adoption of the Plan, but the Plan must provide an adequate policy framework within which these measures can be delivered.

2.10 In evaluating significance, AECOM has relied on professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the European sites considered within this assessment.

2.11 When discussing 'mitigation' for a Local Plan document, one is concerned primarily with the policy framework to enable the delivery of such mitigation rather than the details of the mitigation measures themselves since the Local Plan document is a high-level policy document.

Principal Other Plans and Projects That May Act 'In Combination'

2.12 In practice 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 and commercial/industrial development proposed for other relevant Essex and Hertfordshire authorities over the lifetime of the District Plan, particularly East Herts, Harlow and Uttlesford. These have therefore been taken into consideration.

Table 1: Housing levels to be delivered across Epping Forest District and surrounding authorities, provided for context.

Local Authority	Total housing provided
Uttlesford	These three authorities with Epping Forest District are working together as part of a HMA. Where impacts in combination such as air quality impacts are considered, these assessments will be based in the level of development provided within the HMA.
East Hertfordshire	
Harlow	
Broxbourne	7,718 (2016-2033)[8]
Chelmsford	18,515 (to 2036)[9]
Brentwood	7,240 (to 2033) [10]
Havering	17,550 (2016 - 2031) [11]
Redbridge	16,845 (2015-2030)[12]
Waltham Forest	10,320 (2012 - 2026)[13]
Enfield	13,480 (to 2030)[14]

2.13 The Minerals and Waste Development Plans for Hertfordshire, Essex, London and Cambridgeshire are also of some relevance, since these may contribute to increased vehicle movements on the road network within Epping (and thereby contribute to air quality impacts). The, Essex, Hertfordshire and Cambridgeshire Local Transport Plans to 2031 will also be important in terms of encouraging sustainable transport. However, the major impact is likely to be that of housing and commercial development within the surrounding districts as set out in Local Plans and these have therefore been the main focus of cumulative 'in combination' effects with regard to this HRA.

[8] https://www.broxbourne.gov.uk/sites/default/files/Documents/Planning/pp_PreSubmission%20Local%20Plan%20-%20Track%20Changes%20version%20V2.pdf [accessed 31/10/2017]
[9] https://www.chelmsford.gov.uk/planning-and-building-control/planning-policy-and-new-local-plan/new-local-plan/developing-the-new-local-plan/?entryid1139=67198 [accessed 31/10/2017]
[10] https://brentwood.jdi-consult.net/localplan/readdoc.php?docid=8&chapter=5&docelemid=d1160#d1160 [accessed 31/10/2017]
[11] http://havering.objective.co.uk/file/4645335 [accessed 31/10/2017]
[12] https://www.redbridge.gov.uk/media/2268/final-web-pdf_redbridge-local-plan_reduced.pdf [accessed 31/10/2017]
[13] https://branding.walthamforest.gov.uk/Documents/adopted-core-strategy.pdf [accessed 31/10/2017]
[14] https://new.enfield.gov.uk/services/planning/planning-policy/local-plan/planning-policy-information-enfield-core-strategy.pdf [accessed 31/10/2017]

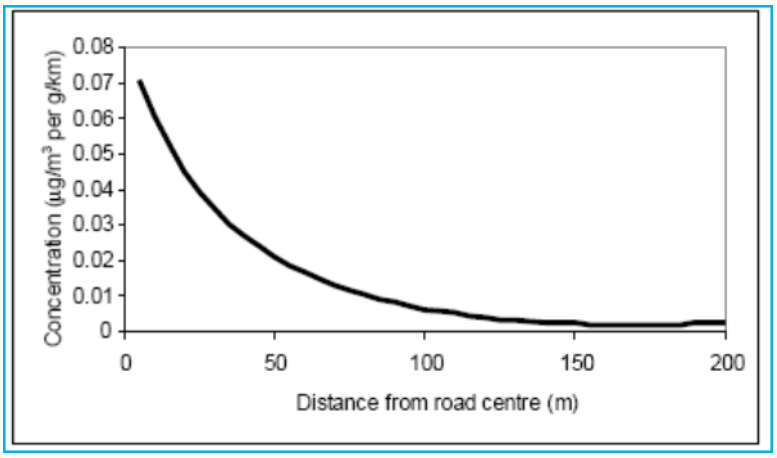
2.14 In relation to recreational activity, the following documents have been consulted for their plans and projects that may affect European sites in combination with development in Epping Forest District: Lee Valley Regional Park Authority Site Management Plan and Epping Forest Management Plan and visitor surveys.

Air Quality Impact Assessment

2.15 To support the 2016 HMA Options, traffic modelling and an air quality impact assessment was undertaken in 2016 in line with the standard Design Manual for Roads and Bridges (DMRB) methodology[15] This modelled the predicted change in vehicle flows on roads within 200m of Epping Forest SAC and Lee Valley SPA/ Ramsar site as a result of all expected growth over the plan period (i.e. the development Options identified within the HMA, background traffic growth arising from development in surrounding authorities and delivery of existing planning permissions within the HMA authorities).

2.16 As a general rule vehicle exhaust emissions are considered to only have a local effect within a narrow band along the roadside; typically within 200m of the centreline of the road. Beyond 200m emissions should generally have dispersed sufficiently that atmospheric concentrations are essentially background levels. The rate of decline is steeply curved rather than linear. In other words concentrations will decline rapidly as one begins to move away from the roadside, slackening to a more gradual decline over the rest of the distance up to 200m.

Figure 2: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT)



2.17 There are two measures of particular relevance regarding air quality impacts from vehicle exhausts (although a third, ammonia concentrations, is also being modelled for Epping Forest SAC). The first is the concentration of oxides of nitrogen (known as NOx) in the atmosphere. The main importance is as a source of nitrogen, which is then deposited on adjacent habitats (including directly onto the plants themselves) either directly (known as dry deposition) or washed out in rainfall (known as wet deposition). The deposited nitrogen can then have a range of effects, primarily growth stimulation or inhibition[16], but also biochemical and physiological effects such as changes to chlorophyll content. NOx may also have some effects which are un-related to its role in total nitrogen intake (such as the acidity of the gas potentially affecting lipid biosynthesis) but the evidence for these effects is limited and they do not appear to occur until high annual concentrations of NOx are reached. The guideline atmospheric concentration of NOx advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (μgm^{-3}), known as the Critical Level. This is driven by the role of NOx in nitrogen deposition and in particular in growth stimulation and inhibition. If the total NOx concentration in a given area is below the critical level, it is unlikely that nitrogen deposition will be an issue unless there are other sources of nitrogen (e.g. ammonia). If it is above the critical level then local nitrogen deposition from NOx could be an issue and should be investigated.

2.18 The second important metric is a direct determination of the rate of the resulting nitrogen deposition. Calculating nitrogen deposition rates rather than relying purely on scrutiny of NOx concentrations has the advantage of being habitat specific (the critical level for NOx is entirely generic; in reality different habitats have varying tolerance to nitrogen) and, for many habitats, of being directly relatable to measurable effects on the ground through scrutiny of published dose-response relationships that do not exist for NOx. Unlike NOx, the nitrogen deposition rate below which current evidence suggests that effects should not arise is different for each habitat. The rate (known as the Critical Load) is provided on the UK Air Pollution Information System website (www.apis.ac.uk) and is expressed as

[15] Design Manual for Roads and Bridges, Volume 11, Section 3 Part 1 (HA207/07) and subsequent Interim Advice Notes
[16] The addition of nitrogen is a form of fertilization, which can have a negative effect on habitats over time by encouraging more competitive plant species that can force out the less competitive species that are more characteristic of such habitats.

a quantity (kilograms) of nitrogen over a given area (hectare) per year ($kgNha^{-1}yr^{-1}$). More recently, there has also been research compiled[17] which investigates nitrogen dose-response relationships in a range of habitats.

2.19 For completeness, rates of acid deposition were also calculated. Acid deposition derives from both sulphur and nitrogen. It is expressed in terms of kiloequivalents (keq) per hectare per year. The thresholds against which acid deposition is assessed are referred to as the Critical Load Function. The principle is similar to that for a nitrogen deposition Critical Load but it is calculated very differently.

2.20 For the 2016 modelling, a series of road links within 200m of Epping Forest SAC and the Lee Valley SPA/ Ramsar site were identified for further investigation. In their consultation response on the 2016 Regulation 18 draft of the Local Plan HRA Natural England confirmed that they were satisfied that the area of the Lee Valley SPA being analysed (Rye Meads) was not susceptible to atmospheric pollution from road traffic. That site is therefore not discussed further and the discussion focusses on Epping Forest SAC. Road links in proximity to Epping Forest SAC are identified in Table 2.

Table 2: Location of Road Links analysed within 200m of Epping Forest SAC

Road Link	Ecological Site	Distance of Link from Designated Site
A121 (two sections)	Epping Forest SAC	Adjacent
A104	Epping Forest SAC	Adjacent
B1393	Epping Forest SAC	Adjacent
B172	Epping Forest SAC	Adjacent
Theydon Road	Epping Forest SAC	Adjacent

2.21 In April 2017 a High Court judgment[18] (known as the Ashdown Forest judgment) partially quashed the Lewes District and South Downs National Park Joint Core Strategy. This was on the basis that the HRA supporting the Joint Core Strategy only considered its own contribution to changes in traffic flows (and specifically whether such flows would exceed 1000 Annual Average Daily Traffic) in determining whether there would be a likely significant air quality effect on the Ashdown Forest SPA. The judge ruled that the HRA had thus explicitly failed to undertake any form of assessment 'in combination' with growth in other authorities that would affect the same road links and that this was in contravention of the Conservation of Habitats and Species Regulations 2010.

2.22 The air quality modelling undertaken for the West Essex/East Herts HMA authorities in 2016 avoided the problems that led to the successful Ashdown Forest Judicial Review for three reasons:

- The modelling was undertaken for a group of four authorities around Epping Forest SAC rather than for a single authority;
- Even when the change in flows due to the HMA growth options was forecast to be below 1,000 AADT air quality modelling was still undertaken; and
- The air quality modelling undertaken for the 2016 HRA was in accordance with standard methodology in Volume 11 of the Design Manual for Roads and Bridges. This method inherently involves modelling growth in surrounding authorities outside the HMA (such as Redbridge, Waltham Forest and Broxbourne) to generate a forecast of future flows known as the 'Do Minimum' scenario. HMA growth was then factored into the Do Minimum scenario to create the 'Do Something' scenario. Therefore, the Do Something scenario reported in Appendix C represented the forecast total flows expected by 2033 based on the traffic modelling available in 2016, irrespective of source.

2.23 The Do Minimum scenario drew upon a government database tool called the National Trip End Model Presentation Programme (TEMPro). This contains data for each local authority district in England regarding expected changes in population, households, workforce and employment (in addition to data such as car ownership). The traffic modellers used this to forecast the change in traffic flows that would occur due to growth other than within the HMA over the period to 2033 (e.g. that arising from Redbridge, Broxbourne, Waltham Forest and further afield), onto which were added outstanding commitments in the HMA area. The result was the Do Minimum scenario. Proposed growth in the HMA was then modelled and factored into the Do Minimum scenario to create the Do Something scenario. Comparing the Do Something scenario with the Base case therefore enables one to see the effect of all

[17] Compiled and analysed in Caporn, S., Field, C., Payne, R., Dise, N., Britton, A., Emmett, B., Jones, L., Phoenix, G., S Power, S., Sheppard, L. & Stevens, C. 2016. Assessing the effects of small increments of atmospheric nitrogen deposition (above the critical load) on semi-natural habitats of conservation importance. Natural England Commissioned Reports, Number 210.
[18] http://www.bailii.org/ew/cases/EWHC/Admin/2017/351.html [accessed 26/10/2017]

forecast traffic growth on the roads in question 'in combination' using the 2016 data, within the context of forecast improvement in vehicle emission factors and background nitrogen deposition rates over the same timescale.

2.24 Traditionally, the implications of the 'in combination' scenario would only have been discussed if the forecast change in flows due to growth within the HMA exceeded either 1,000 AADT or 1% of the critical level (for NOx) or load (for nitrogen and acid deposition). In the light of the Ashdown Forest case AECOM now generally begins the examination of the air quality modelling with a discussion of the 'in combination' scenario, irrespective of the contribution made by HMA growth.

2.25 Using the generated traffic scenarios, and information on average vehicle speeds and percentage heavy duty vehicles (both of which influence the emissions profile), air quality specialists calculated expected NOx concentrations, nitrogen deposition rates and acid deposition rates for those road links where traffic flows were forecast to increase as a result of all forecast traffic growth. For some road sections (particularly around Wake Arms Roundabout which lies within the Epping Forest SAC) multiple transects were modelled to account for the influence of the predominant wind direction and emissions from the other nearby road links.

2.26 The predictions of nitrogen deposition and annual mean NO_X concentrations are based on the assessment methodology presented in Annex F of the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 1 (HA207/07)[19] for the assessment of impacts on sensitive designated ecosystems due to highways works. Background data for the predictions for 2033 were sourced from the Department of Environment, Food and Rural Affairs (Defra) background maps for 2013 projected forward to 2033[20]. Background nitrogen deposition rates were sourced from the Air Pollution Information System (APIS) website[21].

2.27 Guidance note HA207/07 advises that background rates are reduced by 2% per year to allow for an improvement in background air quality over the Local/District Plan period (2033) as a result of ongoing national initiatives to improve emissions and the expected improvement in vehicle emissions over that period. However, due to the uncertainty in the rate with which projected future vehicle emission rates and background pollution concentrations are improving, the assumption was made in the 2016 modelling that conditions in 2023 (the midpoint between the base year and the year of assessment) are representative of conditions in 2033 (the year of assessment). This approach is accepted within the professional air quality community and accounts for known recent improvements in vehicle technologies (new standard Euro 6/VI vehicles), whilst excluding the more distant and therefore more uncertain projections on the future evolution of the vehicle fleet.

2.28 Annual mean concentrations of NOx were calculated at two 200m transects modelled at 1m, 10m, 20m, 50m, 100m, 150m, and 200m back from all Links. Predictions were made using the latest version of ADMS-Roads using emission rates derived from the Defra Emission Factor Toolkit (version 6.0.2) which utilises traffic data in the form of 24-hour Annual Average Daily Traffic (AADT)[22], detailed vehicle fleet composition and average speed. The end of the Local/District Plan (2033) period was selected for the future scenario as this is the point at which the total emissions due to Plan traffic will be at their greatest.

2.29 It should be noted that the data in Appendix C are the results of the 2016 modelling. As a result of that modelling and broader discussion with Natural England and City of London Corporation, the HMA authorities agreed that a mitigation strategy should be devised[23]. Since that commitment was made governance arrangements have been put in place and traffic modellers have been working on potential traffic mitigation scenarios. The latest scenarios available to AECOM at time of writing focus on Wake Arms Roundabout, as this is known to be the most congested part of the network in Epping Forest SAC. It is understood that the traffic modelling will be further refined to take account of downstream impacts since introduction of mitigation on one part of the network can cause issues on another part of the network which then need to be addressed in turn. However, the initial outcomes of the traffic mitigation modelling are briefly discussed in this report.

2.30 As the traffic modelling of the Submission Local Plan (including traffic mitigation options) is still being refined, the air quality modelling will need to be updated. It is intended that the air quality modelling reported in Appendix C will be updated in 2018, before submission of the Epping Forest District Local Plan to the Secretary of State. This is

[19] Design Manual for Roads and Bridges, HA207/07, Highways Agency

[20] Air Quality Archive Background Maps. Defra, 2013. Available from: http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html

[21] Air Pollution Information System (APIS) www.apis.ac.uk

[22] Derived from Peak Flow data

[23] The MoU states that '*It is intended this Joint Strategy will be in agreed and published prior to the determination of any of the planning applications on sites around Harlow that are part of The Spatial Option detailed in the "Distribution of OAN across West Essex and East Hertfordshire" MoU. If the Joint Strategy is not in place when planning applications are submitted, applicants will be required to submit the necessary information to ascertain whether any adverse impacts will be caused in Epping Forest, and if necessary any mitigation measures that may be necessary*'.

likely to include modelling of additional parameters (particularly ammonia), allowance for queuing traffic at Wake Arms Roundabout and additional links.

2.31 A programme of long-term air quality monitoring is also being planned within input from the City of London Corporation. This will be useful in air quality model verification but its main value will be in tracking the expected improvement in emissions over the plan period. This can feed into any reviews of housing/employment quantum and mitigation measures over the plan period.

3. Pathways of Impact

Introduction

3.1 In carrying out an HRA it is important to determine the various ways in which land use plans can impact on internationally designated sites by following the pathways along which development can be connected with internationally designated 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 an internationally designated site. Following screening of the Plan, the following impact pathways are considered within this document.

3.2 Impact pathways for consideration are:

- Disturbance from recreational activities including urbanisation
- Atmospheric pollution
- Water abstraction
- Water quality

Disturbance from Recreational Activities Including Urbanisation

3.3 Recreational use of an internationally designated site has potential to:

- Cause damage through mechanical/ abrasive damage and nutrient enrichment;
- Cause disturbance to sensitive species, particularly ground-nesting birds and wintering wildfowl; and
- Prevent appropriate management or exacerbate existing management difficulties.

3.4 Different types of internationally designated 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

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

3.6 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)[24] 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)[25] conducted experimental off-track trampling in 18 closed forest, dwarf scrub and meadow and grassland communities (each tramped between 0 – 500 times) over five mountain regions in the US. Vegetation cover was assessed two weeks and one year after trampling, and an inverse relationship with trampling intensity was discovered, although this relationship was weaker after one year than two weeks indicating some recovery of the vegetation. Differences in plant morphological characteristics were found to explain more variation in response between different vegetation types than soil and topographic factors. Low-growing, mat-forming grasses regained their cover best after two weeks

[24] 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

[25] 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

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)[26] 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)[27] 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.

3.7 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[28] estimated the total amounts of urine and faeces from dogs as 30,000 litres and 60 tonnes respectively. The specific impact on Epping Forest SAC has not been quantified from local studies; however, the fact that habitats for which the SAC is designated appear to be subject already to excessive nitrogen deposition, suggests that any additional source of nutrient enrichment (including uncollected dog faeces) will make a cumulative contribution to overall enrichment. Any such contribution must then be considered within the context of other recreational sources of impact on sites.

Disturbance

3.8 Concern regarding the effects of disturbance on birds stems from the fact that they are expending energy unnecessarily and the time they spend responding to disturbance is time that is not spent feeding[29]. Disturbance therefore risks increasing energetic output while reducing energetic input, which can adversely affect the 'condition' and ultimately the 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[30].

3.9 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 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 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[31] 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[32] 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.

[26] 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
[27] 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
[28] 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
[29] Riddington, R. *et al*. 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279
[30] Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72
[31] 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
[32] Evans, D.M. & Warrington, S. 1997. The effects of recreational disturbance on wintering waterbirds on a mature gravel pit lake near London. International Journal of Environmental Studies 53: 167-182

- Tuite et al[33] used a large (379 site), long-term (10-year) dataset (September – March species counts) to correlate seasonal changes in wildfowl abundance with the presence of various recreational activities. They found that on inland water bodies shoveler was one of the most sensitive species to disturbance. The greatest impact on winter wildfowl numbers was associated with sailing/windsurfing and rowing.
- Pease et al[34] 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, Ravenscroft[35] found that walkers, boats and dogs were the most regular source of disturbance. Despite this, the greatest responses came from relatively infrequent events, such as gun shots and aircraft noise Birds seemed to habituate to frequent 'benign' events such as those involving 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 on the Orwell, but birds on the Stour showed greatest sensitivity.

3.10 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. 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[36] .

3.11 Underhill-Day[37] 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%.

3.12 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[38] . A literature review undertaken for the RSPB[39] 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 internationally designated sites.

3.13 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 (such as those often associated with construction activities). 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.

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

3.15 It should be emphasised that recreational use is not inevitably a problem. Many internationally designated 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.

[33] 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
[34] 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.
[35] 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.
[36] 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.
[37] Underhill-Day, J.C. (2005). A literature review of urban effects on lowland heaths and their wildlife. Natural England Research Report 623.
[38] Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation,* **97**, 265-268
[39] Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

3.16 The Epping Forest SAC and Lee Valley SPA and Ramsar site lie within the District boundary, whilst Wormley-Hoddesdonpark Woods SAC is located 2.2km from the District boundary. As such they are potentially vulnerable to the effects of recreational pressure and/ or disturbances from construction activities resulting from development within Epping Forest District.

3.17 It is therefore necessary to undertake an initial screening exercise to determine whether the development proposals within the Submission Version Local Plan could lead to a likely significant effects, either alone or 'in combination' with other plans and projects, through recreational pressure, on these internationally designated sites.

Urbanisation

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

- Increased fly-tipping - Rubbish tipping is unsightly but the principle adverse ecological effect of tipping is the introduction of invasive non-native species with garden waste. Non-native species can in some situations, lead to negative interactions with habitats or species for which internationally designated sites may be designated. Garden waste results in the introduction of invasive non-native species precisely because it is the 'troublesome and over-exuberant' garden plants that are typically thrown out[40]. Non-native species may also be introduced deliberately or may be bird-sown from local gardens.

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

3.20 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 internationally designated 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 internationally designated site), that concerning other aspects of urbanisation (particularly predation of the chicks of ground-nesting birds by domestic cats) was determined at 400m from the SPA boundary. The delivery plan concluded that the adverse effects of any development located within 400m of the SPA boundary could not be mitigated since this was the range over which cats could be expected to roam as a matter of routine and there was no realistic way of restricting their movements, and as such, no new housing should be located within this zone.

3.21 Urbanisation effects are linked with recreational pressure effects and would potentially therefore arise from across the core recreational catchment of the SAC. However, in the analysis in this report it is also considered useful to understand the relative density of new development close to the SAC. For that purpose the report uses 400m as a threshold to identify particular development sites in relation to this impact pathway, partly because it has precedent as a threshold and partly because it is a widely used definition of 'easy walking distance' (typically taking less than 5 minutes); being located within easy walking distance is likely to be a material factor in the likelihood of some urbanisation impacts (i.e. fly- tipping) since such impacts tend to increase with relative convenience between the point of origin and the point of tipping.

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

Atmospheric Pollution

3.22 The main pollutants of concern for European sites are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2). Ammonia can have a directly toxic effect upon vegetation and research suggests that this may also be true for NOx at very high concentrations. More significantly, greater NOx or ammonia concentrations within the atmosphere will lead to greater rates of nitrogen deposition to vegetation and soils. An increase in the deposition of nitrogen from the atmosphere is generally regarded to lead to an increase in soil fertility, which can have a serious deleterious effect on the quality of semi-natural, nitrogen-limited terrestrial habitats.

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

Pollutant	Source	Effects on habitats and species
Acid deposition	SO_2, NOx and ammonia all contribute to acid deposition. Although future trends in SO_2 emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased NOx emissions may cancel out any gains produced by reduced SO_2 levels.	Can affect habitats and species through both wet (acid rain) and dry deposition. Some sites will be more at risk than others depending on soil type, bed rock geology, weathering rate and buffering capacity.
Ammonia (NH_3)	Ammonia is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but levels have increased considerably with expansion in numbers of agricultural livestock. Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_4+) - containing aerosol which may be transferred much longer distances (can therefore be a significant trans-boundary issue.)	Adverse effects are as a result of nitrogen deposition leading to eutrophication. As emissions mostly occur at ground level in the rural environment and NH_3 is rapidly deposited, some of the most acute problems of NH_3 deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides (NO_x)	Nitrogen oxides are mostly produced in combustion processes. About one quarter of the UK's emissions are from power stations, one-half from motor vehicles, and the rest from other industrial and domestic combustion processes.	Deposition of nitrogen compounds (nitrates (NO_3), nitrogen dioxide (NO_2) and nitric acid (HNO_3)) can lead to both soil and freshwater acidification. In addition, NO_x can cause eutrophication of soils and water. This alters the species composition of plant communities and can eliminate sensitive species.
Nitrogen (N) deposition	The pollutants that contribute to nitrogen deposition derive mainly from NO_X and NH_3 emissions. These pollutants cause acidification (see also acid deposition) as well as eutrophication.	Species-rich plant communities with relatively high proportions of slow-growing perennial species and bryophytes are most at risk from N eutrophication, due to its promotion of competitive and invasive species which can respond readily to elevated levels of N. N deposition can also increase the risk of damage from abiotic factors, e.g. drought and frost.
Ozone (O_3)	A secondary pollutant generated by photochemical reactions from NO_x and volatile organic compounds (VOCs). These are mainly released by the combustion of fossil fuels. The increase in combustion of fossil fuels in the UK has led to a large increase in background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb. Reducing ozone pollution is believed to require action at international level to reduce levels of the precursors that form ozone.	Concentrations of O_3 above 40 ppb can be toxic to humans and wildlife, and can affect buildings. Increased ozone concentrations may lead to a reduction in growth of agricultural crops, decreased forest production and altered species composition in semi-natural plant communities.
Sulphur Dioxide (SO_2)	Main sources of SO_2 emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO_2 emissions have decreased substantially in the UK since the 1980s.	Wet and dry deposition of SO_2 acidifies soils and freshwater, and alters the species composition of plant and associated animal communities. The significance of impacts depends on levels of deposition and the buffering capacity of soils.

3.23 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. 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[41]. Emissions of NOx could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the plan.

Water Abstraction

3.24 The East of England is generally an area of high water stress. It is particularly vulnerable to future climate change. It is already the driest region in the country and the predicted changes could affect the amount and distribution of rainfall, and the demand for water from all sectors. The average natural summer flows of rivers could drastically reduce; the period where groundwater resources are replenished could be shorter; and resources could become much more vulnerable. By 2050, climate change could reduce water resources by 10 -15% on an annual average basis, and reduce summer river flows by 50 -80%. Drought and floods may become more frequent in the future. The reliability of existing reservoirs, groundwater extractions and river intakes will change. The delivery of housing and economic development throughout the region could therefore result in adverse effects on many internationally designated sites in the region including those listed in preceding sections.

3.25 Epping Forest District lies within the Affinity Water supply area, specifically their Central region, WRZ 5. Approximately 60% of the Central region's water supply comes from groundwater sources (chalk and gravel aquifers) and 40% comes from surface water sources and imports from neighbouring water companies (Thames Water, Anglian Water and Cambridge Water). Water is also exported to South East Water and Cambridge Water[42].

Water Quality

3.26 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:

3.27 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.

3.28 Sewage and some industrial effluent discharges contribute to increased nutrients in the European sites and in particular to phosphate levels in watercourses.

3.29 The Plan provides for development within the following settlements that are served by the following Wastewater Treatment Works (WwTW):

Table 4: Wastewater Treatment Works with Catchments Serving Settlements Identified to Provide New Development in the Local Plan.

WwTW Catchment	Settlements to Provide Residential Development and Approximate Quantum	HRA implications
Rye Meads	Roydon – 62 dwellings, Lower Sheering - 14 dwellings Sites around Harlow - 3,900 dwellings	Discharges into watercourses such as the Tollhouse Stream (ultimately entering the River Lee)

[41] 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
[42] Affinity Water (2014) Final Water Resource management Plan, 2015-2040.

Deephams	Waltham Abbey – 858 dwellings Nazeing – 122 dwellings Buckhurst Hill – 87 new dwellings	Discharges into the Salmon Brook, a tributary of the River Lee, but is not connected to the Lee Valley SPA/Ramsar site
Theydon Bois	Theydon Bois – 57 dwellings	Discharges into the River Roding which discharges into the River Thames near Barking, 16.2 km from the discharge point (in a straight line)
Fiddlers Hamlet	Epping – 1305 dwellings (it is not known how much new development will be located within this catchment)	Discharges into Brookhouse Brook, and then the River Roding which discharges into the River Thames near Barking, 18.9 km from the discharge point (in a straight line)
Thornwood	Epping – 1305 dwellings (it is not known how much new development will be located within this catchment) North Weald Bassett – 1050 dwellings Coopersale – 6 dwellings Thornwood – 172 dwellings	Discharges into a ditch, then to Cripsey Brook, and then the River Roding which discharges into the River Thames near Barking, 23.5 km from the discharge point (in a straight line)
Stanford Rivers	Ongar - 590 dwellings High Ongar – 10 dwellings	Discharges into the River Roding which discharges into the River Thames near Barking, 20.5 km from the discharge point (in a straight line)
Moreton	Fyfield - 14 dwellings	Discharges into a drain and then the River Roding which discharges into the River Thames near Barking, 26.3 km from the discharge point (in a straight line)
Abbess Roding	Sheering - ~ 74 dwellings	Discharges into a drain and then the River Roding which discharges into the River Thames near Barking, 30.7 km from the discharge point (in a straight line)
Beckton	Loughton – 1021 dwellings Chigwell - 376 dwellings Stapleford Abbotts – 47 dwellings	Discharges into the River Thames close to the site near Barking

3.30 Of the WwTWs serving Epping Forest District, Rye Meads WwTW is the only one that is to receive an increase in housing numbers has potential to link to an internationally designated site (identified in orange in Table 4).This will be discussed later in this document.

4. Initial Policy Sift

Screening of Plan Policies

4.1 Table 5 presents an initial sift of policies within the Submission Version of the Local Plan, from the point of view of HRA. Where policies have been coloured green in the 'HRA implications' column, this indicates that the policy does not contain potential impact pathways linking to European designated sites and has been screened out from further consideration. Where policies have been coloured orange in the 'HRA implications' column, this indicates that the policy provides for potential impact pathways linking to European designated sites and has been screened in for further consideration in this report.

Table 5: Screening Assessment of Submission Local Plan Policies

Policy number/ name	Policy detail	HRA implications
Chapter 2: Strategic Policies		
Policy SP 1 Presumption in favour of sustainable development	A. The Council will take a positive approach to the consideration of development proposals, reflecting the presumption in favour of sustainable development contained in the National Planning Policy Framework. The Council will work proactively with applicants to find solutions for development proposals that help to improve the economic, social and environmental conditions in the District. B. Proposals which accord with the development plan will be approved. Proposals that do not accord with the development plan will be refused, unless material considerations indicate otherwise. When taking decisions, the Council will apply the presumption in favour of sustainable development within national planning policy.	No HRA implications. By definition sustainable development will not result in likely significant effects upon internationally designated sites. There are no impact pathways present.
Policy SP 2: Spatial Development Strategy 2011-2033	A. Within the period 2011-2033 the Local Plan will provide for a minimum of 11,400 new homes allocated in accordance with the following sequential approach: (i) The creation of Garden Town Communities around Harlow recognizing its strategic economic role and needs, (ii) A sequential flood risk assessment – proposing land in Flood Zone 2 and 3 only where need cannot be met in Flood Zone 1; (iii) Sites located on previously developed land within settlements; (iv) Sites located on open space within settlements where such selection would maintain adequate open space provision within the settlement; (v) Previously developed land within the Green Belt; (vi) Greenfield/Green Belt land on the edge of settlements: - Of least value to the Green Belt if the land meets other suitable criteria for development. - Of greater value to the Green Belt if the land meets other suitable criteria for development. - Of most value to the Green Belt if the land meets other suitable criteria for development. (vi) Agricultural land: - Of Grade 4-5 if the land meets other suitable criteria for development. - Of Grade 1-3 if the land meets other suitable criteria for development. (vii) Enable small scale sites in smaller rural communities to come forward where there is a clear local need which supports the social and economic well-being of that community.	**Potential HRA implications** This policy identifies a quantum of new homes (set as a minimum), pitches and yards for Travellers and Travelling Showpeople, and employment land to be provided during the Plan period, including for the Garden Town Communities around Harlow. This policy does contain the positive provision of the requirement for development proposals to demonstrate they accord with infrastructure requirements. Dependent on the location of the types of development provided within this policy. **Potential impact pathways are present:** • **Recreational Pressure** • **Urbanisation** • **Atmospheric Pollution** • **Water Abstraction** • **Water Quality.**

<table>
<tr><th>Policy number/ name</th><th>Policy detail</th><th>HRA implications</th></tr>
<tr><td></td><td>
B. The new homes will be distributed as follows:
<table>
<tr><th>Settlement</th><th>Allocated Housing</th></tr>
<tr><td>Sites around Harlow</td><td>~3900</td></tr>
<tr><td>Epping</td><td>~1305</td></tr>
<tr><td>Loughton</td><td>~1,021</td></tr>
<tr><td>Waltham Abbey</td><td>~858</td></tr>
<tr><td>Ongar</td><td>~590</td></tr>
<tr><td>Buckhurst Hill</td><td>~87</td></tr>
<tr><td>North Weald Bassett</td><td>~1050</td></tr>
<tr><td>Chigwell</td><td>~376</td></tr>
<tr><td>Theydon Bois</td><td>~57</td></tr>
<tr><td>Roydon</td><td>~62</td></tr>
<tr><td>Nazeing</td><td>~122</td></tr>
<tr><td>Thornwood</td><td>~172</td></tr>
<tr><td>Coopersale, Fyfield, High Ongar, Sheering, Lower Sheering, Stapleford Abbots</td><td>~175</td></tr>
<tr><td>Rural East</td><td>~41</td></tr>
</table>
C. The new homes will be delivered by:
(i) permitting development proposals within the defined settlement boundaries where they comply with all other relevant policies of the Local Plan;
(ii) the development of Garden Town Communities around Harlow and at other settlements as allocated through this Local Plan (as identified in Policy SP 5 and Chapter 5);
(iii) Permitting rural exception sites in accordance with Policy H 3 and all other relevant policies of the Local Plan;
(iv) the delivery of sites identified in made Neighbourhood Plans;
(v) making the best use of land by ensuring that development densities are appropriate to the location and size of the site in accordance with Policy SP 3; and
(vi) resisting developments which would result in a net loss of homes, unless it can be demonstrated that the benefits of doing so will materially outweigh the harm.
D. An additional 38 pitches and 1 yard will be provided through the allocation of sites in the Local Plan to accommodate the needs of Travellers as identified in Policy SP 5 and Chapter 5. This provision will be delivered through the following sequential approach:
(i) the regularisation of existing sites with temporary permissions or other unauthorised sites where appropriate;
(ii) making the best use of existing traveller sites through intensification and extension, and the review of personal permissions where appropriate;
(iii) new sites in locations outside the Green Belt which are appropriately located in terms of access to healthcare, education and other services
(iv) new Traveller sites in Green Belt areas which are appropriately located in terms of access to healthcare, education and other services;
(v) the provision of land as part of the development of the Garden
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</table>

Policy number/ name	Policy detail	HRA implications
	Town Communities around Harlow and other allocated sites in this Local Plan; and (vi) permitting additional Traveller sites in accordance with Policy H 4. E. Within the period 2011-2033 the Local Plan will provide for employment needs by: (i) retaining and enhancing existing employment sites and premises where appropriate; (ii) allocating 23 hectares of new employment land at appropriate locations across the District as set out in Policy E 1 to provide a flexible supply of future sites to cater for needs, and to meet the economic needs of the wider sub-region, and complement Harlow Enterprise Zone; and (iii) promoting new small-scale employment opportunities within mix-use developments, including at the Garden Town Communities. F. In addition, the Council will: (i) promote and support town centre development and regeneration; (ii) encourage town centres to complement other larger sub-regional and regional comparison retail destinations outside of the District; (iii) support growth in the food production and glasshouse industry; (iv) support growth in the tourism industry and visitor economy; (v) seek to provide suitable training and skills development for local residents, to provide them with the skills needed to access future employment opportunities both within and outside the District; (vi) seek to increase workforce participation and encouraging older workers to continue to work; and (vii) attract new businesses, encourage start-ups, and help growing businesses. G. Development proposals will be required to demonstrate that they accord with infrastructure requirements established through the Infrastructure Delivery Plan and all other policies of the Plan.	
Policy SP 3 Place Shaping	Strategic Masterplans and development proposals must reflect and demonstrate that the following place shaping principles have been adhered to with respect to the scale of development proposed: (i) strong vision, leadership and community engagement; (ii) provide for the long term stewardship of assets; (iii) provide mixed tenure of homes and a range of housing types and sizes; (iv) ensure a robust range of employment opportunities with a variety of jobs within easy commuting distance of homes; (v) provide high quality and imaginatively designed homes with gardens or access to usable and accessible amenity space, combining the very best of urban and rural living to promote healthy and active lifestyles and vibrant communities; (vi) ensure generous, well connected and biodiverse rich green space provision; (vii) extend, enhance and reinforce strategic green infrastructure and public open space; (viii)ensure that development enhances the natural environment; (ix) deliver strong local cultural, recreational, social (including health and educational where required) and shopping facilities to support day-to-day needs in walkable neighbourhoods; (x) ensure positive integration and connection with adjacent rural and urban communities thereby contributing to the revitalisation of existing neighbourhoods;	No HRA implications This is a development management policy. It does not identify any location, quantum or type of development. A positive policy that provides for green infrastructure which has potential to divert recreational pressure away from internationally designated sites, encourages sustainable transport which has potential to improve air quality, and to positively respond to sustainable water management which has potential to reduce water abstraction and improve water quality. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	(xi) maintain and enhance the important features, character and assets of existing settlements; (xii) conserve and positively enhance key landscapes, habitats and biodiversity; (xiii) provide for sustainable movement and access to local and strategic destinations (including rail, bus and pedestrians/cycling); and (xiv) to positively respond to sustainable water management. B. To ensure the best and most efficient use of land as a guide the Council will normally expect: (i) a greater density of development at places with good public transport accessibility; (ii) densities above 50 dwellings per hectare in towns and large village centres, and along main transport routes and/or close to transport nodes; (iii) in the areas outside town and large village centres, new residential development should achieve densities of between 30 and 50 dwellings per hectare, and should enhance the distinctive character and identity of the area; (iv) lower density developments may be appropriate in other areas of the District. Some parts of the urban areas and some villages are particularly sensitive to the impact of intensification and redevelopment because of the prevailing character of the area and the sensitive nature of the surrounding countryside or built form.	
Policy SP 4 Development & Delivery of Garden Communities in the Harlow and Gilston Garden Town	A. The following three Garden Town Communities are planned in the Harlow and Gilston Garden Town within Epping Forest District: (i) Latton Priory; (ii) Water Lane Area; and (iii) East of Harlow B. Development within the Garden Town Communities will be holistically and comprehensively planned with a distinct identity that responds directly to its context and is of sufficient scale to incorporate a range of homes, employment, education and community facilities, green space and other uses to enable residents to meet the majority of their day-to-day needs. Delivery of each new Garden Town Community will be phased and underpinned by a comprehensive package of infrastructure as set out within the Infrastructure Delivery Plan. C. The design, development and phased delivery of each Garden Town Community must accord with the following principles: (i) The public sector will work pro-actively and collaboratively with the private sector to design, and bring forward the Garden Town Communities to: (a) secure a high-quality of place-making; (b) ensure the timely delivery of both the on-site and off-site infrastructure required to address the impact of these new communities; and (c) provide and fund a mechanism for future stewardship, management, maintenance and renewal of community infrastructure and assets; (ii) Community and stakeholder empowerment will be embedded in the design and delivery of each Garden Town Community from the outset and include a long-term community engagement strategy. (iii) Inclusion of opportunities for community led housing development; (iv) Agreeing appropriate and sustainable long term governance and stewardship arrangements for community assets including green space, the public realm areas and community and other relevant facilities prior to the submission of outline planning applications. Such arrangements will be funded by the development and include community representation to ensure residents have a stake in long term development, stewardship and	**Potential HRA implications** Whilst this policy provides the positive provision of sustainable transport corridors (which by definition would not result in a likely significant effect), provision of infrastructure and sustainable and long-term governance of green space assets prior to outline planning, and encourages alternative transport methods (walking cycling and public transport), that have potential to reduce atmospheric pollution contributions), this policy also provides for a quantum and broad locations of residential development. **Potential impact pathways are present:** • **Recreational Pressure** • **Atmospheric Pollution** • **Water Abstraction** • **Water Quality.**

Policy number/ name	Policy detail	HRA implications
	management of their community; (v) A Strategic Masterplan will be developed for each of the Garden Town Communities setting out the key development design and delivery principles and guide development proposals. Planning applications and any other consenting mechanisms for the Garden Town Communities will be required to be in general conformity with the Strategic Masterplans which have been formally endorsed by Epping Forest District Council and where appropriate Harlow District Council; (vi) Be consistent with and adhere to the relevant Design Code(s) which has been formally endorsed by Epping Forest District Council and where appropriate Harlow District Council; (vii) Strategic Masterplans and detailed design proposals must be reviewed and informed by the Quality Review Panel; (viii) Promotion and execution of the highest quality of planning, design and management of the built and public realm so that the Garden Town Communities are characterised as distinctive places that capitalise on local assets and establish environments that promote health, happiness and well-being. Proposals should adhere to the Harlow and Gilston Garden Town Spatial Vision and Design Charter, and have regard to the original guiding principles established by Sir Frederick Gibberd's masterplan for Harlow, including the Green Wedge network; (ix) Ensure that on-site and off-site infrastructure is provided in a timely manner, subject to viability considerations, ahead of or in tandem with the development it supports to mitigate any impacts of the new Garden Communities, meet the needs of residents and establish sustainable travel patterns; (x) Provide for balanced and inclusive communities through a mix of homes of different sizes, tenures and types. Provision should be made for self and custom-built homes and the needs of an aging population; (xi) Provide and promote appropriate opportunities for small-scale employment generating uses; (xii) Ensure the provision of integrated and sustainable transport systems for the Harlow and Gilston area that put walking, cycling and public transit networks and connections at the heart of growth in the area, to create a step change in modal shift through providing for and encouraging more sustainable travel patterns; (xiii) Contribute to the delivery of the Sustainable Transport Corridors and the establishment of an integrated, accessible and safe transport system which maximises the use of the sustainable transport modes of walking, cycling and the use of public and community transport in order to improve air quality and reduce emissions and promote healthy lifestyles. Garden Town Communities must ensure the provision of high quality, safe and direct walking and cycling routes and linkages to and from Harlow within a permeable site layout with priority over vehicular traffic; (xiv) Create sociable, vibrant, healthy and walkable neighbourhoods with equality of access for all to local employment opportunities, a range of community services and facilities including health, education, retail, culture, community meeting spaces, multi-functional open space, the Green Wedge Network, sports and leisure facilities and to high quality digital infrastructure; (xv) Develop specific Garden Town Community parking approaches and standards recognising that car-ownership will need to be accommodated without impacting on the 'quality of place, and sustainable transport objectives' whilst making the best use of land; (xvi) Create distinctive environments which relate to the surrounding area, the natural and historic landscapes and systems, provide a multi-functional green-grid which creates significant networks of new green infrastructure and which provides a high degree of connectivity to existing corridors and	

<table>
<tr><th>Policy number/ name</th><th>Policy detail</th><th>HRA implications</th></tr>
<tr><td></td><td>networks and enhance biodiversity;
(xvii) Integrate a sustainable approach to design and construction that secures net gains in local biodiversity and the highest standards of energy efficiency and innovation in technology; and
(xviii) Ensure that appropriate measures are put in place to equalise and apportion the cost of shared infrastructure and associated land contributions.</td><td></td></tr>
<tr><td>Policy SP 5 Garden Town Strategic Allocations</td><td>Allocates:<table><tr><td>Allocation Reference</td><td>Location</td><td>Development to be delivered</td></tr><tr><td>SP 5.1</td><td>Latton Priory</td><td>Approximately 1,050 homes and 1ha of employment land; 0.5ha for up to 5 traveller pitches</td></tr><tr><td>SP 5.2</td><td>Water Lane Area</td><td>Approximately 2,100 homes; 0.5ha for up to 5 traveller pitches</td></tr><tr><td>SP 5.3</td><td>East of Harlow</td><td>Approximately 750 homes and potential relocation of Princess Alexandra Hospital; 0.5ha for up to 5 traveller pitches</td></tr></table>B As well as the delivery of new homes sites SP5.1 – SP5.3 will also be expected to make provision for appropriate small-scale employment, retail and community uses in accordance with other policies within the Plan. The Garden Town Communities must be planned and delivered as high quality, integrated, sustainable and distinctive developments supported by necessary infrastructure, services and facilities.
C. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Development identified in this policy will be expected to make a contribution proportionate to its scale and impact for the delivery of improvments to Junction 7 and other strategic requirements..
D. Development proposals in relation to sites SP 5.1-5.3 will be required to be in general conformity with a Strategic Masterplan endorsed by the Council.
E Development proposals for the Garden Town Communities (and where applicable Strategic Masterplans) must reflect and demonstrate that the Place Shaping and Garden Town principles set out in policies SP 3 and SP 4 have been adhered to.
<u>Latton Priory</u>: Land allocated at Latton Priory (SP 5.1) will be brought forward on a phased basis for a comprehensive high quality development to include:
(i) At least 1,050 homes up to 2033;
(ii) 1ha of employment land at Dorrington farm;
(iii) 0.5ha for up to 5 traveller pitches;
(iv) strategic 'green infrastructure' comprising natural / semi natural open space, walking and cycling routes, flood mitigation and wildlife space and a new Green Belt defensible boundary to the South of the site;
(v) Land within the Green Belt and Masterplan area must be retained for public open space and for appropriate uses in the</td><td>Potential HRA implications
The closest of these sites is 5.5km from Epping Forest SAC (SP 5.1), 6.3km from Wormley-Hoddesdonpark Woods SAC (SP 5.2), and 2.9 km from Lee Valley SPA and Ramsar site (SP 5.2).
Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8.
Potential impact pathways present include:
• Recreational Pressure
• Atmospheric Pollution
• Water Abstraction
• Water Quality.
Locations are illustrated on Figures 3A to 4B.</td></tr>
</table>

Policy number/ name	Policy detail	HRA implications
	Green Belt; (vi) A sympathetic design which responds to the adjacent ancient woodland and the Scheduled Monument; (vii) a local centre (viii) A two-form entry primary school; (ix) At least 10ha of land to accommodate a secondary school in addition to any necessary contributions (x) Early years facilities; (xi) The provision of appropriate community and health facilities; (xii) highway and transport improvements including to the north-south sustainable transport corridor, works to Southern Way and Second Avenue corridor, and upgrades to Junction 7 of the M11; (xiii) Satisfactory water supply and waste water network infrastructure for occupants; and (xiv) bus services and direct pedestrian and cycle links between housing and the facilities that serve them. <u>G Water Lane Area</u>: Land allocated in the Water Lane Area (SP 5.2) will be brought forward on a phased basis for a comprehensive high quality development to include: (i) at least 2,100 homes up to 2033; (ii) 0.5 hectares for up to 5 traveller pitches; (iii) strategic 'green infrastructure' comprising natural / semi natural open space, walking and cycling routes, flood mitigation and wildlife space and a Green Belt defensible boundaries as indicated on the map; (iv) a local centre; (v) A two-form entry primary school; (vi) Contributions towards new secondary school provision within the Garden Town; (vii) Early years facilities; (viii) The provision of appropriate community and health facilities; (ix) Highway and transport improvements including works to Water Lane / A1169 roundabout; A1025/Abercrombie Way signals and traffic calming along the A1169 Southern Way Corridor; (x) Satisfactory water supply and waste water network infrastructure for occupants; and (xi) Bus services and direct pedestrian and cycle links between housing and the facilities that serve them. <u>H East of Harlow</u>: Land allocated in the East of Harlow (SP5.3) will be brought forward on a phased basis for a comprehensive high quality development to include: <u>(i)</u> At least 750 homes up to 2033; <u>(ii)</u> O.5 hectares for up to 5 traveller pitches; <u>(iii)</u> Strategic 'green infrastructure' comprising natural / semi natural open space, walking and cycling routes, flood mitigation and wildlife space and any compensatory BAP habitat to retain existing provision; <u>(iv)</u> No built development will be permitted on land within Flood Zone 2 and 3 as indicated on the Environment Agency maps; <u>(v)</u> A local centre; <u>(vi)</u> The provision of appropriate community and health facilities including approximately 14 hectares of land for a health and well-being hospital campus <u>(vii)</u> A two-form entry primary school;	

Policy number/ name	Policy detail	HRA implications
	(viii) At least 10ha of land to accommodate a new secondary school in addition to any necessary contributions; (ix) Early years facilities; (x) The provision of appropriate community and health facilities; (xi) Highway and transport improvements including linkages into off-road cycle and walking networks; (xii) The delivery of works to widen the B183 Gilden Way, a left turn slip road from M11 Junction 7a link road approach to the East Harlow northern access road ahead of development commencing; (xiii) Satisfactory water supply and waste water network infrastructure for occupants; (xiv) Bus services and direct pedestrian and cycle links between housing and the facilities that serve them; (xv) The proposed National Cycle Route 1;and (xvi) Measures to ensure the protection of the functional flood plain and restriction of surface water run-off from the site into Pincey Brook to no more than existing rates.	
Policy SP 6 Green Belt and District Open Land	Green Belt The general extent of the Green Belt is set out in Map 2.5. The detailed boundaries and inset settlements are defined in Chapter 5 and shown on the policies map. The openness of the Green Belt will be protected from inappropriate development in accordance with national planning policy and Policy DM 4. District Open Land The same level of protection will be applied to areas of District Open Land as is applied to Green Belt. The key characteristics of District Open Land are their openness, permanence, local significance, wildlife value and/or public accessibility. It is not necessary for each of these characteristics to be present to be designated or retained as such.	No HRA implications. This is a development management policy that provides for the protection of the green Belt and District Open Land. There are no impact pathways present.
Policy SP 7 The Natural Environment, Landscape Character and Green and Blue Infrastructure	A. 'The Council will protect the natural environment, enhance its quality and extend access to it; this contributes to the health and wellbeing of its people and economic viability of the District. In considering proposals for development the Council aims to create a comprehensive network of green and blue corridors and places, appropriate to the specific rural or urban setting. In so doing, it seeks to connect and enrich biodiversity through habitat improvement and protection at all scales, including priority habitats and extend access to and maximise the recreation opportunities of, our countryside and urban open spaces.' B. The countryside: (i) the Council will conserve and enhance the character and appearance of the countryside. Landscape character assessments will be used to assist in judgements on the suitability of new development; (ii) the Council will act itself, and in relation to development proposals, to develop a multifunctional countryside, which is productive, rich in biodiversity at all scales, with a well-connected green and blue infrastructure network that is accessible for quiet enjoyment, recreation and exercise. C. Towns and smaller settlements: (i) the Council will protect the green and blue infrastructure assets of the towns and smaller settlements and improve the quality of existing green space in towns and smaller settlements;	No HRA implications. This is a positive policy as it provides for the retention and extension of green infrastructure which has potential to divert recreational pressure away from internationally designated sites. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	(ii) the Council will ensure that new developmentis designed to protect existing green and blue infrastructure, enhance networks, secure better provision where deficiencies have been identified and deliver new green and blue infrastructure to link to local or wider green and blue infrastructure networks; and (iii) the Council will seek the provision of new quality green space appropriate to the scale of the development. D. Green and Blue Infrastructure The District's green and blue infrastructure network will be extended, maintained and enhanced through the remaining policies in this Plan including: (i) the location of development (Policy SP 2 and Chapter 5) (ii) protecting habitat and improving biodiversity (Policy DM 1) (iii) sustainable urban drainage systems (Policy DM 16) (iv) supporting sustainable transport choices (Policy T 1) (v) open space, sport and recreation provision (Policy DM 6) E -The Council will therefore expect all development proposals, where appropriate, to contribute towards the delivery of new green and blue infrastructure which develops and enhances a network of multi-functional green and blue assets throughout the District. This will be proportionate to the scale of the proposed development and the rural or urban context. The Council will support development which contributes to the District's existing green and blue infrastructure and where possible, enhances and protects networks. It will secure additional provision where deficiencies have been identified through the Infrastructure Delivery Plan and other appropriate evidence base documents. Where on site provision is not feasible then the use of CIL/S106 agreements will be sought to contribute.	
Chapter 3: Housing, Economic and Transport Policies		
Policy H 1 Housing mix and accommodation types	A. Development will be permitted where the mix of new homes: (i) includes a range of house types and sizes to address local need including for 'down-sizing'; (ii) is appropriate to the size, location and characteristics of the site and its surroundings; (iii) takes into account the existing housing stock in the settlement or neighbourhood in order to avoid any over-concentration of a single type or size of homes, or specialist accommodation, where this would undermine the achievement of mixed and balanced communities; and (iv) allows for community-led approaches such as cohousing and co-operatives where appropriate; (v) provides for all new homes to be accessible and adaptable as defined by the Building Regulations in effect at the time of the application. B. Planning applications will be required to be supported by evidence, proportionate to the nature and scale of development proposed, to justify the mix of new homes to be provided. Such evidence will also need to reflect latest housing needs evidence published by the Council. C. Proposals for housing, requiring specialist accommodation, self-build/custom build housing, sites upon which caravans can be stationed, or locations for mooring houseboats, will be supported where: (i) they meet a proven identified need; (ii) the location is appropriate in terms of access to facilities, services and public transport and; (iii) It can be demonstrated that the development is designed and	No HRA implications. This is a policy relating to the mix and type of housing to be provided. This policy does not identify any location or quantum of development. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	managed to provide the most appropriate types and levels of support to the proposed occupier and adequately caters for the needs of support staff. D. The Council will require all New Housing Development to include affordable housing in accordance with Policy H 2 (Affordable Housing). E. Where there is evidence of an identified unmet need in the local area and the location is appropriate in terms of access to existing or proposed facilities, services and public transport, larger scale new residential developments should incorporate specially designed housing/specialist accommodation for people with support needs (including for older people and housing with care). F. The loss of bungalows and specialist accommodation will be resisted. G. The Council will support the development of self-build homes on appropriately sized, serviced sites in the first instance or on appropriately sized sites that are capable of being serviced. The provision of such will be encouraged as part of larger development schemes.	
Policy H 2 Affordable housing	A. On development sites which provide for 11 or more homes, or residential floorspace of more than 1,000 sq m (combined gross internal area), the Council will require 40% of those homes to be for affordable housing provided on site. The mix of affordable homes will be required to reflect the latest available housing need. All new homes will be required to meet accessible and adaptable homes standards as defined by the Building Regulations applicable at the time of the application. B. The management of the affordable housing provided will be undertaken by a Registered Provider which is a Preferred Partner of the Council unless otherwise agreed by the Council. Any relevant scheme will need to demonstrate that the design, siting and phasing of affordable homes provides for its proper integration and timely provision as part of the wider development. C. The mix of units in respect of size will be determined on a site by site basis dependent on the overall needs for the local area and on the specific characteristics of the individual site. However, the Council will generally expect the mix of the affordable homes to reflect the mix of the market housing, in terms of the ratios of types, sizes and the overall number of habitable rooms. D. Proposals that do not accord with the requirements of paragraph A (above) must be accompanied by a financial and viability appraisal (with supporting evidence), which is transparent and complies with relevant national or local guidance applicable at the time. E. Where, it has been demonstrated to the Council's satisfaction that the provision of affordable housing in accordance with the above levels and tenure mix would render the scheme unviable, the Council will determine the approach to be taken to achieving viability, where appropriate, having regard to the following available options: (i) reviewing the tenure mix; (ii) reviewing the extent of other site specific planning obligations; and (iii) reviewing the proportion of affordable housing. F. In exceptional circumstances, where the Council agrees that it would be inappropriate for the required affordable housing to be provided on-site as part of the development, the Council will accept a financial contribution to fund the provision of affordable housing on another site in the District, provided that the Council is satisfied that: (i) The financial contribution is at least equivalent to the increased development value if affordable housing was not provided on-site,	No HRA implications. This is a policy relating to the provision of affordable housing. This policy does not identify any location or quantum of development. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	subject to such a contribution being viable; and (ii) A financial and viability appraisal has been provided (with supporting evidence) in accordance with paragraph D (above) which is transparent and complies with relevant national and local guidance applicable at the time, properly assessing the level of financial contribution to be provided. G. Where a viability and financial appraisal has been submitted in accordance with paragraph D (above) the Council will undertake an independent review of that appraisal for which the applicant will bear the cost.	
Policy H 3 Rural exceptions	A. Planning permission may be granted for small-scale affordable housing schemes which are related to smaller settlements, where planning permission for housing development will not normally be granted, where the Council is satisfied that: (i) there is a demonstrable social or economic need for affordable housing for local residents which cannot be met in any other way and which can reasonably be expected to persist in the long term. Planning applications will be expected to be supported by a local housing needs assessment; (ii) the development is well-related to the existing settlement and there is no significant detrimental impact to the character of the nearby settlement and the surrounding countryside, or would cause significant harm to Green Belt objectives. Proposals involving extensions into the open countryside or the creation of ribbons or isolated pockets of development are unlikely to be considered acceptable and should be avoided. There should be no significant material grounds for objection including on highways, infrastructure, environmental or amenity matters; and (iii) suitable arrangements have been secured to ensure that all of the affordable homes built are available only for initial and subsequent qualifying occupiers whose total income is insufficient to enable them to afford to rent or buy a dwelling of a sufficient size on the open market in the specified parish. B. The management of the affordable housing provided will be undertaken by a Registered Provider which is a Preferred Partner of the Council unless otherwise agreed by the Council. C. For the purpose of this Policy 'local resident' is defined as: (i) Persons who have been permanently resident in the specified parish for at least two years; or (ii) Persons who are no longer resident in the specified parish but who have been resident there for at least three years during the last iii) Persons who are in permanent employment in the specified parish and have been for a minimum of two years and are working at least an average of 24 hours per week; or (iv) Persons who have close relatives (i.e. parents, grandparents, children, brother or sister) living in the specified parish who have lived there for at least five years. D. Should there be insufficient applicants from the specified parish when the homes become available for occupation, then applicants from neighbouring parishes who comply with the eligibility criteria set out above will be considered. E. The Council will consider the provision of a small proportion of market housing within the proposal site if it can be demonstrated through a financial and viability appraisal (with supporting evidence), which is transparent and complies with relevant national or local guidance applicable at the time, that such housing is financially necessary to ensure the delivery of the affordable homes. F. Where a viability appraisal has been submitted in accordance with paragraph D (above) the Council will undertake an independent review of that appraisal for which the applicant will bear the cost.	No HRA implications. It is noted that this policy provides for new housing beyond that previously identified, however this is small scale housing in exceptional circumstances. This policy does not provide for any location or quantum (other than small scale) for development. As such there are no impact pathways present.

<table>
<tr><th>Policy number/ name</th><th>Policy detail</th><th>HRA implications</th></tr>
<tr><td>Policy H 4 Traveller site development</td><td>A. The Council will meet the identified need for Travellers through the provision of plots and/or pitches as part of allocations as set out in Policies SP 2, SP 4 and Chapter 5.
B. If applications for Traveller site development are received for sites other than those allocated in this Plan they will be determined taking into account the following considerations:
(i) The impact on local amenity and the natural and historic environment;
(ii) The relationship to local services with capacity, including education establishments, health and welfare services, shops and community facilities;
(iii) Access to the highway, public transport services and sustainable transport options;
(iv) The provision of on-site facilities for parking, storage, play and residential amenity and appropriate essential services;
(v) Whether the site is located outside areas of high flooding risk;
(vi) The compatibility of the proposed use with surrounding land uses including potential disturbance from vehicular movements, and on-site business activities;
(vii) The impact on the physical and visual character of the area;
(viii)The potential for successful integration between travelling and settled communities; and
(ix) Any impact on the Green Belt.
C. In accordance with Policy SP 4, proposals for new sites under part B of this policy should not exceed five pitches or 0.5 hectares, unless a specific justification is provided for a greater number of pitches up to a maximum of 10 pitches.
D. Planning permission will not be granted for the replacement of lawful Traveller sites by permanent dwellings or other uses unless it can be clearly demonstrated to the satisfaction of the local planning authority that there is no genuine need or likely future need for Traveller sites in the locality and other planning policy requirements are met.</td><td>No HRA implications.
Whilst this policy relates to provision of new Traveller sites, it does not itself identify any quantum or location (this is provide in policies SP 2 and SP 3). In addition, it ensures that no adverse impact upon the natural environment will occur. As such there are no HRA implications.</td></tr>
<tr><td>Policy E 1 Employment sites</td><td>A. Existing Employment Sites
(i) The Council will seek to retain and enhance existing employment sites and premises. Proposals for the redevelopment, renewal, intensification, or extension of existing employment sites and premises for their existing use will be encouraged.
(ii) The change of use of existing employment sites or premises (whether designated or undesignated) to other uses will not normally be permitted unless the applicant can demonstrate through evidence, including marketing of the site, that there is no longer a reasonable prospect of the site being used for the existing employment use.
(iii) Proposals which will result in loss of employment space will be expected to provide mitigation measures in the form of contributions to local employment training and small business growth programmes supported by the Council.
B. New Employment Sites
(i) The Council will meet the identified need for employment sites through new allocations as set out in Policies SP 2, SP 5 and Chapter 5.
C. The Council will support and encourage the development of flexible local employment space to meet the employment and economic needs of the District.
<table><tr><th>Allocation reference</th><th>Site Name</th><th>Allocated use</th><th>Indicative Development Area</th></tr></table></td><td>Potential HRA implications
The closest new employment site is located 1km from Epping Forest SAC (SR-1034-Z: WAL.E9), 6.3km from Wormley-Hoddesdonpark Woods SAC (SP 5.2), and 1 km from Lee Valley SPA and Ramsar site (SR-0375-N: WAL.E7).
Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8.
Potential impact pathways present include:
• Atmospheric Pollution
• Water Abstraction
• Water Quality.
Locations are illustrated on Figures 3A to 4B.</td></tr>
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<tr><th>Policy number/ name</th><th>Policy detail</th><th>HRA implications</th></tr>
<tr><td></td><td>
<table>
<tr><td>LOU.E2</td><td>Langston Road Industrial Estate</td><td>B2</td><td>1 ha</td></tr>
<tr><td>NWB.E4</td><td>North Weald Airfield</td><td>B1/B2/B8</td><td>10 ha</td></tr>
<tr><td>RUR.E19</td><td>Dorrington Farm</td><td>B1a/B1b</td><td>1 ha</td></tr>
<tr><td>WAL.E6</td><td>Galley Hill Road Industrial Estate</td><td>B2/B8</td><td>1 ha</td></tr>
<tr><td>WAL.E8</td><td>Land North of A121</td><td>B1c/B2/B8</td><td>10 ha</td></tr>
<tr><td>Total</td><td></td><td></td><td>23ha</td></tr>
</table>
(note – figures have been rounded)
</td><td></td></tr>
<tr><td>Policy E 2 Centre Hierarchy/Retail Policy</td><td>A. The following Town and District Centre hierarchy applies in the District:
(i) Town Centre:
• Epping
• Loughton High Road
(ii) Small District Centre:
• Waltham Abbey
• Loughton Broadway
• Ongar
• Buckhurst Hill
B. Proposals within defined Town and Small District Centres for retail, leisure, entertainment, offices, arts and culture, tourism and other main town centre uses, as defined by national planning guidance, will be supported where they will maintain and enhance the vitality and viability of the centres.
C. Within defined Primary Retail Frontage ground floor units will be maintained in A1 Class Uses in accordance with Policies P 1 to P 5. Proposals that would not result in a reduction in the specified percentage of A1 Class Uses will be permitted for other main town centre uses where this would support the function, vitality or viability of the Town or District Centre and maintain an active daytime frontage.
D. Within defined Secondary Retail Frontage ground floor units will be maintained in A1 Class Uses in accordance with Policies P 1 to P 5, but a wider range of main town centre uses may be supported where they would maintain the diversity, viability and vitality of the Town or District Centre. Proposals for non-A1 Class Uses within Secondary Retail Frontages must encourage active shop fronts, attract a high footfall consistent with other main town centre uses and positively contribute to the function of the Town or District Centre.
E. The scale and type of any development proposals should be proportionate to the position of the relevant centre in the hierarchy.
F. In Town and Small District Centres, the Council may permit residential development in appropriate locations and within Primary or Secondary Retail Frontages where it is above the ground floor and would not lead to a loss of main town centre uses, floorspace</td><td>No HRA implications.
This is a policy relates to Centre Hierarchy and Retail.
This policy does not identify any type or location of development.
There are no impact pathways present.</td></tr>
</table>

Policy number/ name	Policy detail	HRA implications
	or frontage. G. The Council will not permit the change of use to any non- retail use of corner shops, shops in small local parades or village shops, unless it can be demonstrated that: (i) there is no demand for a retail use; or (ii) the service provided is to be continued in another location in the village or locality; or (iii) the new use would meet an identified need for community facilities or services. H. Out of Centre development (i) All proposals for main town centre uses outside of defined Town and Small District Centres, including edge of centre/out of centre development, will be subject to sequential testing as required by national planning guidance and will only be permitted where: • There is demonstrable need for the development; • The proposal satisfies the sequential approach to site selection; • The proposal would not put at risk or harm proposals to safeguard the vitality and viability of any nearby town centre; • The proposal would not cause material harm to the vitality and viability of any nearby town centre; and • The development would be readily accessible, or will be made so, by a range of transport options, including public transport, cycle and foot I. Relevant applications for main town centre use outside of defined Town and Small District Centres will be required to undertake and provide an impact assessment in accordance with national planning guidance.	
Policy E 3 Food production and glasshouses	A. New or replacement glasshouses, any ancillary packhouse development, any ancillary low carbon energy generation facilities and Combined Heat and Power (CHP) facilities will be permitted subject to the following criteria: (i) The scheme does not have a significant visual impact upon the character of the landscape particularly with regard to long-distance views; (ii) the planning application includes full details of landscaping, including trees and other vegetation which will be retained or removed; (iii) the land is capable of being developed without major changes to existing contouring; (iv) vehicular access from the site to the road network is adequate and uses roads capable of accommodating the vehicle movements likely to be generated by the development without detriment to highway safety, the rural character of the roads, and residential amenity; (v) adequate surface water and foul drainage capacity exists or can be provided as part of the development. The Council may require inclusion of suitable and adequately maintained sustainable drainage systems to control the quality or attenuate the rate of surface water run-off; (vi) adequate quality and quantity of provision of water is available or can be provided on-site, for all domestic and non-domestic purposes; B. Within existing horticultural nurseries sites, residential accommodation for nursery workers will only be permitted where it can be demonstrated, to the Council's satisfaction, that: (i) There is clear and robust evidence which shows that the lack of on-site accommodation is rendering existing use unviable. This include the possibility for converting/extending existing onsite structure to provide for such accommodation; (ii) There is no other alternative suitable accommodation within a reasonable distance including purchasing/renting of existing	No HRA implications. This is a policy relating to food production and glasshouses. This policy does not identify and location or quantum of development. It does provide the requirement for adequate water resources. It should be noted that food production uses lots of water. At this stage it is not possible to assess the impacts of any new food production and glasshouse development. Any increase in water abstraction for commercial reasons would be required to gain an abstraction license from the Environment Agency for the specific development. The quantum of new residential development provided by this policy is likely to be small. As no location is identified, there are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	residential property for use as a House in Multiple Occupation or hostel; (iii) The quality, size and nature of the proposed structure is commensurate with the needs of the enterprise concerned; (iv) Any permission for such accommodation will be strictly tied by either a planning condition and/or other forms of legal agreements e.g. an occupancy agreement to ensure that the accommodation will only be occupied by horticultural workers employed by the relevant enterprise; (v) any relevant structure will be removed or demolished once the need for such accommodation ceased to continue and the site reinstate to agricultural use; and (vi) Where applicable, any permission will lead to the removal of long established, but inappropriate caravan accommodation within the site, where applicable.	
Policy E 4 The visitor economy	A. Opportunities for the sustainable development of the visitor economy will be supported where they are of a scale, type and appearance appropriate to the locality and provide local economic benefits, through the following measures: (i) support for the development of high quality visitor accommodation, in particular accommodation linked to outdoor sport and activity hubs in the Lee Valley Regional Park, and visitor accommodation of an appropriate scale and type that makes use of existing buildings and strengthens existing rural leisure businesses; (ii) support for the upgrading of existing visitor attractions, visitor centres and development of appropriate new ones; (iii) the retention and improvement of existing visitor accommodation and venues unless there is proof that there is no market interest in acquisition and investment to allow continued profitable operation; (iv) encouraging sustainable tourism in rural areas. This will include better linkages between the towns and rural surroundings; and opportunities for the enjoyment of the Lee Valley Regional Park and Epping Forest while recognising the importance of heritage of the area, as assets that form the basis of the tourist industry here; (v) support a year-round visitor economy while ensuring the facility remains for visitor use; (vi) supporting the improvement of sustainable transport opportunities for visitors and encourage the use of sustainable transport modes to reduce the impact of visitors on the highway network; and (vii) encouraging local food/produce and appropriate tourism development that supports rural business and farm diversification.	Potential HRA implications. This policy has potential to increase visitor numbers to internationally designated sites and to lead to impact pathways such as increased water abstraction and atmospheric pollution, and reduction in water quality. However, by definition sustainable development, sustainable tourism and sustainable transport would not result in likely significant effects upon internationally designated sites. Further, this policy does not identify any location, type or scale of development. There are no impact pathways present.
Policy T 1 Sustainable Transport Choices	A. The Council will work in partnership with relevant stakeholders to promote a safe, efficient and convenient transport system which will: (i) build on the District's strategic location, through improvements to strategic road and rail connections and other public transport networks to the wider area; (ii) promote transport choice, through improvements to public transport services and supporting infrastructure, and providing coherent and direct cycling and walking networks to provide a genuine alternative to the car and facilitate a modal shift; (iii) provide opportunities to improve access to the two town and four district centres and rail stations by all modes of transport and ensure good integration between transport modes; (iv) manage congestion, seek to reduce journey time and maintain consistency in journey times; (v) promote and improve safety, security and healthy lifestyles; and	Potential HRA implications By definition sustainable transport would not result in likely significant effects upon internationally designated sites. Further, this policy does not identify any location, type or scale of development, or any scale or location of any transport schemes. It contains positive text to encourage modal shift away towards cycling, walking and use of public transport and electric cars which all have potential to reduce atmospheric pollution. There are no impact

Policy number/ name	Policy detail	HRA implications
	(vi) improve the efficiency of the local highway network. B. Development should minimise the need to travel, promote opportunities for sustainable transport modes, improve accessibility to services and support the transition to a low carbon future. C. Development proposals will be permitted where they: (i) integrate into existing transport networks; (ii) provide safe, suitable and convenient access for all potential users; (iii) provide on-site layouts that are compatible for all potential users with appropriate parking and servicing provision; and (iv) do not result in unacceptable increases in traffic generation or compromise highway safety. D. Development proposals that generate significant amounts of movement, must be supported by a Transport Statement or Transport Assessment and will normally be required to provide a Travel Plan. Development proposals which generate a significant number of heavy goods vehicle movements will be required to demonstrate by way of a Routing Management Plan that no severe impacts are caused to the efficient and safe operation of the road network and no material harm caused to the living conditions of residents. E. Development will, where appropriate, ensure that transport infrastructure will be of a high quality, sustainable in design, construction and layout, and offer maximum flexibility in the choice of travel modes, including walking and cycling, and with accessibility for all potential users. F. Development will be permitted where it: (i) does not result in cumulative severe impact on the operation and safety of, or accessibility to, the local or strategic highway networks; (ii) mitigates impacts on the local or strategic highway networks and London Underground station infrastructure within the District, arising from the development itself or the cumulative effects of development, through the provision of, or contributions towards, necessary transport improvements, including those secured by legal agreement, subject to viability considerations; (iii) protects and, where appropriate, enhances access to public rights of way; (iv) provides appropriate parking provision, in terms of amount, design and layout and cycle storage arrangements, in accordance with adopted Parking Standards and which mitigates any impact on on-street parking provision within the locality. Reduced car parking, including car free, development in sustainable locations will be supported; and (v) ensures that, where appropriate, development proposals provide a co-ordinated and comprehensive scheme that does not prejudice the future provision of transport infrastructure on and through adjoining sites. G. In order to accommodate the use of low emission vehicles to support improvements in air quality within the District the provision of electric vehicle charging points will be required within all new developments which make provision for car parking for vehicles.	pathways present.
Policy T 2 Safeguarding of routes and facilities	A. Land required for proposed transport schemes as identified in Plans and Programmes including Essex County Council's Highways and Transport Investment Programmes, the Highways England Route Investment Strategies, Network Rail Investment Strategies and Transport for London Investment Strategies will be protected from other developments which would prevent their proper implementation. B. Local filling stations and car repairs facilities will be protected from redevelopment for alternative uses unless it can be demonstrated through evidence, that the current use on site is no	No HRA implications. This is a policy relating to safeguarding land for future schemes. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	longer viable or necessary, and that the site has been effectively marketed at a rate which is comparable to local market value of its existing use.	
Chapter 4: Development Management Policies		
Policy DM 1 Habitat Protection and Improving Biodiversity	A. All development should seek to deliver net biodiversity gain in addition to protecting existing habitat and species. Development proposals should seek to integrate biodiversity through their design and layout, including, where appropriate, through the provision of connections between physical and functional networks. B. Development proposals must protect and enhance natural habitats, areas and corridors for biodiversity and should not negatively impact upon areas of international or national designation. The creation of new corridors for biodiversity will be supported in appropriate locations. The provision of buffers to protect sensitive habitats including those of wetlands and ponds will be required where necessary. C. Development proposals which are likely to have a negative impact on a locally designated site (Local Wildlife Site and Local Nature Reserve) will only be permitted where the benefits of the proposed development clearly outweigh the value of the ecological feature adversely affected and there are no appropriate alternatives. D. In exceptional circumstances where the negative impacts of development on natural habitat and biodiversity are unavoidable, the negative impacts must be proportionately addressed in accordance with the hierarchy of: (i) mitigation; (ii) compensation in the form of habitat; and finally (iii) offsetting within the locality. E. The details of any necessary enhancing, mitigating or compensatory measures should accompany the planning application as appropriate. When appropriate, conditions will be put in place to require that monitoring is undertaken (by a suitably qualified ecological professional), and to make sure that any mitigation, compensation and offsetting is effective. F. The loss, deterioration or fragmentation of irreplaceable habitats, such as veteran trees and ancient woodland, will not be permitted by the Council, unless the need for, and benefits of, the development in that location can be demonstrated to clearly outweigh the loss. G. Where there are grounds to believe that a Protected Species, Priority Species, Priority Habitat or other valuable habitat may be affected by proposed development, applicants must provide a full survey and site assessment to establish the extent of potential impact. This evidence should inform appropriately designed plans and mitigation measures. H. Ecological impacts of a proposed development will be quantified by using the Biodiversity Impact Assessment Calculator (BIAC) where appropriate. Development proposals must demonstrate a net gain in ecological units. I. Ecological information must be supplied in accordance with BS 42020 2013 for all relevant planning applications.	No HRA implications. This is a development management policy relating to the protection of habitats and improving biodiversity. It includes text that explicitly identifies the need to '*not negatively impact upon areas of international or national designation*.' There are no impact pathways present.
Policy DM 2 Epping Forest SAC and the Lee Valley SPA	A. The Council will expect all relevant development proposals to assist in the conservation and enhancement of the biodiversity, character, appearance and landscape setting of the Epping Forest Special Area of Conservation (SAC) and the Lee Valley Special Protection Area (SPA). B. New residential development likely to have a significant effect, either alone or in combination with other development in these areas, will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects. C. All outline or detailed planning applications for new homes	No HRA implications This is a positive policy. The pre-amble to this policy (paragraphs 4.15 and 4.18) includes reference to the need for projects or plans to undertake HRA as required. The policy itself provides for the explicit protection of Epping Forest SAC and the

Policy number/ name	Policy detail	HRA implications
	within the settlements of Loughton, Epping, Waltham Abbey, North Weald Bassett, Theydon Bois, Coopersale, Thornwood, Buckhurst Hill, Chigwell and Chigwell Row will be required to make a financial contribution to access management and monitoring of visitors to the Epping Forest SAC, in accordance with Visitor Survey Information which demonstrates this is needed. D. To mitigate against potential or identified adverse effects of additional development in the District, in particular from strategic developments, on the Epping Forest SAC, and Lee Valley SPA the Council will ensure the provision of a meaningful proportion of Natural Green Space or access to Natural Green Space. This could involve: (i) providing new green spaces; or (ii) improving access to green space; or (iii) improving the naturalness of existing green spaces; or (iv) improving connectivity between green spaces where this would not contribute to a material increase in recreational pressure on designated sites. E. Planning applications on sites within 400m of the Epping Forest SAC will be required to submit a site level Habitats Regulations Assessment setting out how any urbanisation effects (including from fly tipping, the introduction of non-native plant species and incidental arson) will be mitigated against.	Lee Valley SPA and Ramsar site. There are no impact pathways present.
Policy DM 3 Landscape Character, Ancient Landscapes and Geodiversity	A. Development proposals will be permitted where applicants are able to demonstrate that the proposal will not, directly, indirectly or cumulatively, cause significant harm to landscape character, the nature and physical appearance of ancient landscapes, or geological sites of importance. Proposals should: (i) be sensitive to their setting in the landscape, and its local distinctiveness and characteristics; (ii) use techniques to minimise impact on, or enhance the appearance of, the landscape by: • taking into account existing landscape features from the outset; • careful landscaping of the site; • ensuring the sensitive use of design, layout, materials and external finishes; and • having regard to protecting, and where possible, enhancing long views to distant landmarks and landscapes of interest	No HRA implications. This is a development management policy relating to landscape character and ancient landscapes. There are no impact pathways present.
DM 4 Green Belt	A. The purposes of the Green Belt are to: Check the unrestricted sprawl of large built up areas; Prevent neighbouring towns from merging into one another; Safeguard the countryside from encroachment; Preserve the setting and special character of historic towns; and Assist urban regeneration by encouraging the recycling of derelict and other urban land. B. Within the Green Belt planning permission will not be granted for inappropriate development, except in very special circumstances, in accordance with national policy. C. The construction of new buildings is inappropriate development in the Green Belt. Exceptions to this are: (i) Buildings for the purposes of agriculture and forestry; (ii) Provision of appropriate facilities for outdoor sport, outdoor recreation and for cemeteries, as long as any development preserves the openness of the Green Belt and does not conflict with the purposes of including land within it; (iii) The extension or alteration of a building provided that it does not result in disproportionate additions over and above the size of the original building; (iv) The replacement of a building, provided the building is of the same use and not materially larger than the one it replaces;	No HRA implications. This is a development management policy relating to development in the Green Belt. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	(v) Limited infilling in smaller settlements and limited affordable housing in accordance with Policy H 3; and (vi) Limited infilling or the partial or complete redevelopment of previously developed land, which would not have a greater impact on the openness of the Green Belt and the purpose of including land within it than the existing development. D. Certain other forms of development may also be appropriate in the Green Belt provided they preserve the openness of the Green Belt and do not conflict with the purposes of including land in the Green Belt. These are: (i) Mineral extraction; (ii) Engineering operations; (iii) Local transport infrastructure that can demonstrate a requirement for a Green Belt location; (iv) The re-use of buildings provided that the buildings are of a permanent and substantial construction; and (v) Development brought forward under a Community Right to Build Order.	
Policy DM 5 Green and Blue Infrastructure	A. Development proposals must demonstrate that they have been designed to: (i) retain and where possible enhance existing green infrastructure, including trees, hedgerows, woods and meadows, green lanes, wetlands, ponds and watercourses; (ii) use native species where appropriate and take account of the need for biosecurity including control of non-native invasive species, and ensure all planting stock is supplied free of pests or disease, and uses non-invasive species;; (iii) incorporate appropriate provision of new green assets or space; (iv) enhance connectivity and integration by providing pedestrian / cycle access to existing and proposed Green Infrastructure networks and established routes, including footpaths, cycleways and bridleways/Public Rights of Way; and (v) enhance the public realm through the provision and/or retention of trees and/or designated and undesignated open spaces within built up areas. B. Development proposals must be accompanied by sufficient evidence to demonstrate that: (i) the retention and protection of trees (including veteran trees), landscape features or habitats will be successfully implemented in accordance with relevant guidance and best practice; (ii) the provision of new trees, new landscape and water features or habitat creation/improvement will be implemented in accordance with relevant guidance and best practice; and (iii) as a whole the proposals for Green and Blue Infrastructure are appropriate and adequate, taking into account the nature and scale of the development, its setting, context and intended use. C. In the Garden Communities a full concept plan of proposed green and blue infrastructure that incorporates existing features on the site and its links to the wider landscape and townscape will be required for submission with the application. Further requirements may be outlined within Strategic Masterplans in accordance with policies SP 3 and DM 9.	Potential HRA implications In general this is a positive policy with regards to biodiversity, however point A.iv. provides for enhanced connectivity and integration to existing Green Infrastructure. This could include access to the European designated sites, thus increasing unsustainable recreational pressure that impacts upon the integrity of the European designated site. Whilst this policy does not identify any locations for improved and enhanced links, **care should be taken to ensure that these increased links do not increase recreational pressure upon the designated sites.**
Policy DM 6 Designated and undesignated open spaces	A. Where appropriate development proposals will be required to provide open space, or links to open space in accordance with the guidance contained within the Infrastructure Delivery Plan and Open Space Strategy. Nationally adopted space standards will be used as a starting point for provision. B. Development on open spaces) will only be permitted if it does not result in a net loss of usable public open space or reasonable access to alternative open space within a settlement. Existing open	Potential HRA implications. This is a positive policy as it provides for open spaces that can detract recreational pressure away from internationally designated sites and ensures that there is no net loss of open space.

Policy number/ name	Policy detail	HRA implications
	space should not be built upon unless: i) an assessment has been undertaken showing the land to be surplus to requirements; or ii) where development would not have a detrimental impact upon the accessibility to open space; or iii) the loss would be replaced by equivalent or better provision in terms of quantity or quality in a suitable location; or iv) the development is for alternative sports and recreational provision, the needs for which clearly outweigh the loss. C. In circumstances where partial loss of the space is considered justified, the predominantly open nature of the remainder of the site should be maintained and enhanced together with the visual amenity and its function as appropriate for active play and recreation.	However it also provides for increased links to open spaces (which could include European designated sites), which could increase recreational pressure within the European designated sites. Whilst this policy does not identify any locations of the links, **care should be taken to ensure that these increased links do not increase recreational pressure upon the designated sites.**
Policy DM 7 Heritage Assets	Historic Environment A. The historic environment will be conserved and enhanced in a manner appropriate to its significance. Development proposals should seek to conserve and enhance the character, appearance and function of heritage assets and their settings, and respect the significance of the historic environment. B. Heritage assets are an irreplaceable resource and works which would cause harm to the significance of a heritage asset (whether designated or non-designated) or its setting, will not be permitted without a clear justification to show that the public benefits of the proposal considerably outweigh any harm to the significance or special interest of the heritage asset in question. Local Heritage Assets C. Development proposals that affect local heritage assets detailed on the Local List will be expected to demonstrate how they retain the significance, appearance, character and setting of the local heritage asset. D. There is a general presumption in favour of retaining local listed heritage assets and where this is not possible, recording of the heritage asset should be undertaken and submitted alongside development proposals.	No HRA implications. A development management policy relating to heritage assets including Registered Parks and Gardens. These spaces can act to divert recreational pressure away from internationally designated sites. There are no impact pathways present.
Policy DM 8 Heritage at Risk	A. The Council will expect property owners/ partners to work proactively with the authority in bringing forward proposals for the conservation and enhancement of Heritage Assets at Risk or under threat within the District to secure their future and seek a viable use consistent with their heritage value and significance.	No HRA implications A development management policy relating to Heritage at Risk. There are no impact pathways present.
Policy DM 9 High quality design	A. All new development must achieve a high specification of design and contribute to the distinctive character and amenity of the local area. The Council will require all development proposals to be design-led and: (i) relate positively to their context; (ii) make a positive contribution to a place; (iii) where appropriate, incorporate sustainable design and construction principles that consider adaptation and mitigation approaches to address climate change; (iv) are planned, where appropriate, to minimise vulnerability to climate change impacts and which will not exacerbate vulnerability in other areas; and (v) incorporate design measures to reduce social exclusion, the risk of crime, and the fear of crime. Strategic Sites B. The Council will require Strategic Masterplans to be prepared and developed for the Garden Town Communities set out in SP 5 and other relevant allocated sites as set out in Chapter 5. Strategic	No HRA implications. This is a development management policy relating to design. It is a positive policy as it includes text relating to sustainable design, which by definition would not have an impact upon designated sites. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	Masterplans will be produced by the applicant, in partnership with the Council, and the local community, and be capable of being adopted by the Council as Supplementary Planning Documents. Design Codes will be required to be produced and agreed with the Council to support the implementation of the Strategic Masterplans. All relevant applications will be required to conform with the agreed Strategic Masterplans and Design Codes C. The Council will require the use of the established Quality Review Panel for larger or contentious sites at appropriate stages, to be agreed with the Council, to inform detailed design proposals for major developments. Design Standards D. Development proposals must relate positively to their locality, having regard to: (i) building heights; (ii) the form, scale and massing prevailing around the site; (iii) the framework of routes and spaces connecting locally and more widely; (iv) the rhythm of any neighbouring or local regular plot and building widths and, where appropriate, following existing building lines; (v) the need to provide active frontages to the public realm; and (vi) distinctive local architectural styles, detailing and materials. Landscaping E. Development proposals must demonstrate how the landscaping and planting has been integrated into the development as a whole. The Council will expect development proposals to respond to: (i) levels, slopes and fall in the ground; (ii) trees on and close to the site; (iii) natural boundary features; (iv) the biodiversity of the site and its surroundings; and (v) the need to maximise the use of permeable surfaces. Public Realm F. Where appropriate development proposals must contribute positively to the public realm and to public spaces to which it is physically or functionally connected. Connectivity and Permeability G. Where appropriate, development proposals must maximise connectivity within, and through, the development and to the surrounding areas including the provision of high quality and safe pedestrian and cycle routes. Privacy and Amenity H. Development proposals must take account of the privacy and amenity of the development's users and neighbours. The Council will expect proposals to: (i) provide adequate sunlight, daylight and open aspects to all parts of the development and adjacent buildings and land (including any private amenity) space; (ii) avoid overlooking and loss of privacy detrimental to the living conditions of neighbouring residents and the residents of the proposed development; (iii) not result in an over-bearing or overly enclosed form of development which materially impacts on either the outlook of occupiers of neighbouring properties or the residents of the proposed development; and (iv) address issues of vibration, noise, fumes, odour, light pollution, air quality and microclimatic conditions likely to arise from any use or activities as a result of the development or from neighbouring uses or activities. I. All development proposals must demonstrate that they are in general conformity with the design principles set out in other relevant Local Development Documents, Design Guides,	

Policy number/ name	Policy detail	HRA implications
	Neighbourhood Plans or Village Design Statements (VDSs) adopted or endorsed by the Council.	
Policy DM 10 Housing design and quality	A. All new housing development is required to meet or exceed the minimum internal space standards set out in National Prescribed Space Standards and open space standards. B. Ground floor family housing must provide access to private garden/amenity space, and family housing on upper floors should have access to a balcony and/or terrace, subject to acceptable amenity, privacy and design considerations, or to shared communal amenity space and children's play space. C. Where appropriate development proposals should seek to include enhanced provision of green infrastructure, including the quantity and quality of landscaped areas, tree provision and the provision of additional open space as required by Policy DM 5 and DM 6. D. Mixed tenure residential development proposals must be designed to be 'tenure blind' to ensure homes across tenures are indistinguishable from one another in terms of quality of design, space standards and building materials. Residential Extensions E. Extensions or alterations to residential buildings will be required to respect and/or complement the form, setting, period, detailing of the original buildings. Matching or complementary materials should be used.	No HRA implications. This is a positive policy as it encourages the inclusion of amenity/ garden space, green infrastructure and open space. These have potential to divert recreational pressure away from internationally designated sites. There are no impact pathways present.
Policy DM 11 Waste recycling facilities on new development	A. All development which generates waste will be required to make on site provision for general waste, the separation of recyclable materials and organic material for composting. The on-site provision must: (i) ensure adequate dedicated internal and external storage space to manage the volume of waste arising from the site; (ii) provide accessible and safe access to on site storage facilities, both for occupiers and collection operatives including vehicles; and (iii) be located and screened to avoid nuisance and adverse impact on visual and other amenity to occupiers and neighbouring uses; and for mixed use development, suitably separate household and commercial waste. B. Proposals for new flatted residential development will be required to make provision for: (i) Adequate temporary storage space within each flat, allowing for separate storage of recyclable materials; and (ii) Adequate communal storage for waste, including separate storage for recyclables pending its collection	No HRA implications. This is a development management policy relating to waste recycling storage facilities on new development sites. This is a positive policy as it is likely to reduce any occurrences of fly tipping within an internationally designated site as a result of new development. There are no impact pathways present.
Policy DM 12 Subterranean, basement development and lightwells	A. Subterranean developments, basements, or extensions to existing basements, will only be permitted where it can be demonstrated that the proposal: (i) will not adversely affect the structural stability of the host building, neighbouring buildings and other infrastructure, including the adjoining highway, having regard to local geological conditions; (ii) does not increase flood risk to the property and adjacent properties from any source; (iii) avoids harm to the appearance or setting of the property or the established character of the surrounding area; (iv) will not adversely impact the amenity of adjoining properties by reason of noise or increased levels of internal or external activity; and (v) will not adversely impact the local natural and historic environment; B. The siting, location, scale and design of basements must have	Potential HRA implications. This is a development management policy relating to subterranean, basement development and lightwells. This policy ensures that new development should have regard to local geological conditions, thus ensuring that new development will not impact upon subterranean hydrological systems. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	minimal impact on, and be subordinate to, the host building and property. Basement development should: (i) not comprise of more than one storey; and (ii) not exceed 50% of each area of garden within the curtilage of the property; C. And during the construction phase: (i) will not cause harm to pedestrian, cycle, vehicular and road safety, adversely affect bus or other transport operations, significantly increase traffic congestion, nor place unreasonable inconvenience on the day to day life of those living, working or visiting nearby; (ii) will minimise construction impacts such as noise, vibration and dust for the duration of the works; and (iii) ensure compliance with the Construction Management Statement submitted (see Policy DM 21) D. The Council will not permit subterranean developments or basements which include habitable rooms or other sensitive uses in areas prone to flooding and where there is no satisfactory means of escape from flooding. E. In determining applications for light wells, the Council will protect: (i) the architectural character of the building; and (ii) the character and appearance of the surrounding area. F. In determining proposals for basements and other underground development the Council will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability in the form of a Basement Impact Assessment and where appropriate a Basement Construction Management Statement. G. Within the Green Belt basement developments may be considered acceptable provided they do not have a greater impact on the openness of the Green Belt, either themselves or cumulatively with other developments.	
Policy DM 13 Advertisements	A. Where advertisement consent is required, such consent will be permitted if the proposal respects the interests of public safety and amenity, and meets the following criteria: (i) the design, materials and location of the advertisement respects the scale and character of the building on which it is displayed and the surrounding area; (ii) the proposals would not result in a cluttered street scene, excessive signage, or proliferation of signs advertising a single site or enterprise; (iii) any illumination will be considered in relation to impact on visual amenity, potential light pollution, road safety and functional need; (iv) Internally illuminated signs will not be permitted where harm is caused to heritage assets including listed buildings and conservation areas; and (v) illuminated signs will not be permitted in residential areas.	No HRA implications. This is a development management policy relating to advertisements. There are no impact pathways present.
Policy DM 14 Shopfronts and on street dining	Shopfronts A. The Council requires shopfronts, including their signs, security shutters and canopies, to be designed to a high standard and contribute to a safe and attractive environment. In particular: (i) The Council will seek the retention of traditional shopfronts contributing to the visual, architectural or historic quality of the local townscape; (ii) Replacement shopfronts should relate to the host building and conserve original materials and features as far as possible; (iii) The alteration or replacement of an existing shopfront or the	No HRA implications. This is a development management policy relating to shopfronts and on street dining. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	development of a new shopfront must allow for easy access by all members of the community; and (iv) Security shutters must be open mesh and, wherever possible, be located internally. On Street Dining B. Proposals for on-street/forecourt dining must demonstrate the suitability of the proposed location having regard to the proximity of residential development and should: (i) be integral and functionally related to the business; and (ii) provide sufficient space to not obstruct the pavement space and not create a permanent enclosure.	
Policy DM 15 Managing and reducing flood risk	A. The Council will require all development proposals to demonstrate that they avoid and reduce the risk of all forms of flooding to future occupants and do not increase the risk of flooding elsewhere; B. The Local Plan allocations are directed towards Flood Zone 1 or to areas with the lowest probability of flooding. Any proposals for new development (except water compatible uses) within Flood Zone 2 and 3a will be required to provide sufficient evidence for the Council to assess whether the requirements of the Sequential Test and Exception Test, have been satisfied. C. Proposals within flood zones 2 and 3a must be informed by a site specific Flood Risk Assessment (FRA) taking account of all potential sources of flooding and climate change allowances and should: (i) demonstrate the application of a sequential approach for the development of individual sites to ensure that the highest vulnerability of land uses are located in areas of the site that are at lowest risk of flooding; (ii) preserve overland flood and flow routes and ensure there is no net loss of flood storage; (iii) ensure that there is no adverse effect on the operational functions of any existing flood defence infrastructure; (iv) provide adequate flood storage and compensation on site; (v) where appropriate, set out the mitigation measures that will be incorporated on site to manage residual flood risk including finished floor levels to accord with Environment Agency's Standing Advice; and (vi) naturalise water courses where opportunities arise, in line with Policy DM 17 (Watercourses and Flood Defences). D. All proposals for new development will be required to: (i) manage and reduce surface water run-off, in line with Policy DM 16 (Sustainable Drainage Systems); (ii) manage water and waste water discharges, in line with Policy DM 18 (On-site Management of Waste Water and Water Supply); (iii) ensure safe access and egress for future users of the development and an appropriate emergency evacuation plan where appropriate; and (iv) include measures to assist existing communities at risk of flooding where feasible. E. All proposals for development within a Critical Drainage Area (CDA) or an EFDC Flood Risk Assessment Zone (FRAZ) will be required to provide a site specific flood risk assessment consisting of: an assessment of the risks involved, focussing predominantly on surface water and ordinary watercourses; details of any mitigation measures on site where required (e.g. increased thresholds); and a drainage strategy incorporating the use of SuDS (Policy DM 16) to mitigate any impacts of site. F. With the exception of water compatible uses and essential infrastructure, subject to passing the Exception Test, development in areas designated in Epping Forest District's Strategic Flood Risk Assessment or as determined by specific Flood Risk Assessment	No HRA implications This is a positive development management policy relating to management and reduction of flood risk. It provides for the requirement for new development to manage and reduce surface run-off and waste water discharges. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	as being within Flood Zone 3b will not be permitted. G. Proposals for developments within identified Critical Drainage Areas could, based on the outcome of the site specific flood risk assessment, be subject to a Section 106 contribution or CIL funding for the delivery of appropriate flood alleviation schemes.	
Policy DM 16 Sustainable Drainage Systems	A. All proposals for new development must seek to manage surface water as close to its source as possible in line with the following drainage hierarchy: (i) store rainwater for later use; (ii) use infiltration techniques, such as porous surfaces in non-clay areas. Porous surfaces are suitable in areas of clay but must be adequately tanked with an outfall. Epping Forest District is predominantly clay so any infiltration proposals must be subject to and pass the relevant percolation tests; (iii) attenuate rainwater in ponds or open water features for controlled release; (iv) attenuate rainwater by storing in tanks or sealed water features for controlled release. B. Other methods must also reflect the stringent drainage hierarchy contained within the current CIRIA1 SuDS Manual (2015), which provides further detailed guidance over and above Building Regulations: (i) controlled discharge of rainwater direct to a watercourse/ surface water body; (ii) controlled discharge rainwater to a surface water sewer/drain; (iii) controlled discharge rainwater to the combined sewer. C. The Council will encourage the use of green, brown and blue roofs. D. The Council will require Sustainable Drainage Systems (SuDS) to be sensitively incorporated into new development by way of site layout and design, having regard to the following requirements: (i) all major development proposals will be required to reduce surface water flows to the 1 in 1 greenfield run-off rate and provide storage for all events up to and including the 1 in 100 year critical storm event including an allowance for climate change, and include at least one source control SuDS measure resulting in a net improvement in water quantity and quality discharging to a sewer; (ii) all brownfield development proposals should aim to achieve the 1 in 1 greenfield run-off rate and, at a minimum, achieve a 50 per cent reduction in existing site run-off rates for all events, including an allowance for climate change, SuDS measures resulting in a net improvement in water quantity and quality discharging to a sewer; (iii) all ‘minor’ and ‘other’ development proposals should aim to achieve the 1 in 1 greenfield run off rate where possible, including an allowance for climate change, or a rate as otherwise agreed with the Council; and (iv) for all development where the greenfield run off rate cannot be achieved justification must be provided to demonstrate that the run-off rate has been reduced as much as possible. E. Where Sustainable Drainage Systems are implemented they will be expected to: (i) meet the requirements set out in national standards, and meet the Council’s standards if they exceed national guidance; (ii) incorporate measures identified in Surface Water Management Plans; (iii) be designed to maximise biodiversity and local amenity benefits and where appropriate, ensure that SuDS techniques provide for clean and safe water at the surface; (iv) improve water quality; and (v) full details of the means of achieving future management and	No HRA implications. By definition, sustainable drainage systems would not result in likely significant effects upon internationally designated sites. This is a positive policy as it aims to improve water quality and reduce runoff. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	maintenance of the SuDS scheme to ensure that it will function effectively over the lifespan of the development will be required, including responsibilities and funding. F. The Council will give consideration to adopting SuDS. Contributions in the form of commuted sums or CIL will be sought for maintenance if adopted by the Council. G. Where SuDS cannot be implemented due to site constraints (such as land contamination robust justification must be provided along with proposed alternative approaches to surface water management. H. Where particular sites and the wider catchment have identified existing flood issues, the implementation of good practice on Natural Flood Management must be explored.	
Policy DM 17 Protecting and enhancing watercourses and flood defenses	A. New development must be set back at a distance of at least 8 metres from a main river and an ordinary watercourse3, or at an appropriate width as agreed by the Council and/or the Environment Agency, in order to provide a naturalised and undeveloped buffer zone, free of built development, other than for site access and other essential infrastructure connections. Buffer zones should be designed for the benefit of biodiversity and should be undisturbed by lighting. Planning applications must include a long term scheme to protect and enhance the conservation value of the watercourse and ensure access for flood defence maintenance, in line with the requirements of the Water Framework Directive and the Thames River Basin Management Plan. B. All major development will be required to and minor development will be expected to (i) investigate and secure the implementation of environmental enhancements to open4 sections of the river or watercourse if appropriate; and (ii) investigate and secure the implementation of measures to restore culverted sections of the river or watercourse, if appropriate. C. Where de-culverting or other river enhancements are shown to be unfeasible, the Council will seek a financial contribution to restore another section of the same watercourse. D. Proposals must not adversely affect the natural functioning of main rivers and ordinary watercourses, including through culverting. E. Where appropriate the Council will require planning applications to include a condition survey of existing watercourse infrastructure to demonstrate that it will adequately function for the lifetime of the development, if necessary, the proposal must make provision for repairs or improvements. F. Development on or adjacent to a watercourse must not result in the deterioration of the water quality of that watercourse. Development must not impact on the stability of the banks of a watercourse or river.	No HRA implications. This is a positive policy that ensures that development does not lead to deterioration to the quality or stability of a watercourse and refers to the WFD and TRBMP. There are no impact pathways present.
Policy DM 18 On site management of waste water and water supply	A. The Council will expect planning applications to set out how they will ensure that there is adequate surface water, foul drainage and treatment capacity to serve their development and demonstrate that it does not impact on the adequacy of existing development in this regard. All proposals for new development will be required to: (i) ensure the separation of surface and foul water systems; and (ii) implement sustainable drainage systems, in line with Policy DM 16. B. Where the local public sewer network does not have adequate capacity to serve the existing and proposed development proposals will be required to demonstrate that it provides for suitable alternative arrangements for storing, treating and	No HRA implications. This is a positive development management policy as it ensures that the public sewerage network has sufficient capacity to serve existing and new development, and that provision of new infrastructure is in place prior to occupation, thus preventing a reduction in water quality. There are no impact

Policy number/ name	Policy detail	HRA implications
	discharging foul water. Should there be capacity issues resulting from development that can be addressed through upgrades of the sewerage network, developers will are required to demonstrate how these will be delivered in advance of the occupation of development. C. The Council will expect new development to connect to mains foul drainage, and will restrict the use of non-mains drainage for foul water disposal, particularly in Groundwater Source Protection Zones, in line with Environment Agency guidance. The location of and likely impact on the private water supplies within the District must also be taken into account. Where non-mains drainage is proposed for the disposal of foul water, a foul drainage assessment will be required to ensure the most sustainable drainage option will be implemented. D. All proposals for new development will be required to: (i) ensure that there is adequate water supply infrastructure capacity both on and off site to serve the development with wholesome water of sufficient quantity, flow rate and pressure, without adversely impacting on existing users; and (ii) make provision for the installation and management of measures for the efficient use of mains water and where possible with direct connection to the mains public water supply. Please also refer to Policy DM 19.	pathways present.
Policy DM 19 Sustainable water use	A. Development will need to demonstrate that: (i) Water saving measures and equipment is incorporated in all new development (ii) New homes (including replacement dwellings) meet a water efficiency standard of 110 litres or less per person per day; and (iii) New non-residential development of 1000sqm gross floor area or more aims to achieve at least a 30% improvement over baseline building consumption B. The above applies unless it can be clearly demonstrated that it would not be feasible on technical or viability grounds. C. Where new national standards exceed those set out above, the national standards will take precedence.	No HRA implications. This is a positive development management policy that provides for enhanced water use efficiency, thus reducing the need for water abstraction. There are no impact pathways present.
Policy DM 20 Low carbon and renewable energy	A. The incorporation of low carbon and renewable energy measures in new and existing development will be encouraged with regard to both standalone installations and micro renewables integrated into development. B. Low carbon and renewable energy technologies will be permitted provided that: (i) they do not have any adverse impact on the integrity of any European sites, wildlife sites, protected species or habitats or the openness of the Green Belt; (ii) a positive assessment is provided demonstrating how any impacts on the environment and heritage assets, including cumulative landscape, noise, visual, air quality and emissions, and traffic generation impacts can be avoided or mitigated through careful consideration of location, scale and design; and (iii) the benefits of the proposal are clear with regard to the amount of heat or electricity generated and consequential reduction in greenhouse gases, and the local individual or community benefit. C. The use of combined heat and power (CHP), and/or combined cooling, heat and power (CCHP) and district heating will be encouraged in new developments. D. Strategic Masterplans will be required to demonstrate how the potential to incorporate infrastructure for district heating can be provided, and will be expected to connect to any existing suitable systems (including systems that will be in place at the time of construction), unless it is demonstrated that this would render development unviable or that alternative technologies are available that provide the same or similar benefits and opportunities. E. Where a district heating scheme is proposed the Council will	No HRA implications. This is a development management policy relating to low carbon and renewable energy. No type, location or extent of development is identified. In addition, this policy provides explicit protection for European sites. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	expect the scheme to demonstrate that the proposed heating and cooling systems (CHP/CCHP) have been selected considering the heat hierarchy in line with the following order of preference: (i) connection with existing CHP/CCHP distribution networks; (ii) site wide CHP/CCHP fed by renewables; (iii) communal CHP/CCHP fuelled by renewable energy sources; and (iv) gas fired CHP/CCHP.	
Policy DM 21 Local environmental impacts, pollution and land contamination	A. The Council will require that the residual local environmental impacts of all development proposals after mitigation do not lead to unacceptable impacts on the health, safety, wellbeing and amenity of existing and new users or occupiers of the development site, or the surrounding land. These potential impacts can include, but are not limited to, air and water (surface and groundwater) pollution, dust, noise, vibration, light pollution, odours, and fumes as well as land contamination. B. The Council will: (i) resist development that leads to unacceptable local environmental impacts, including, but not limited to, air pollution, noise and vibration, light pollution, odours, dust and land and water contamination; (ii) require that activities likely to generate pollution are located away from sensitive uses and receptors where possible, practical and economically feasible; (iii) require development proposals to mitigate and reduce to a minimum any adverse local environmental impacts and activities that may have wider cumulative effects; (iv) where there are unacceptable risks of contamination or land instability, require these to be properly and fully addressed through remediation. If remediation measures are not suitable then planning permission will be refused; and (v) where necessary, apply planning conditions to reduce local environmental impacts on adjacent land uses to acceptable levels. Land Contamination C. The Council will expect the remediation of contaminated land through development. Potential contamination risks will need to be properly considered and adequately mitigated before development proceeds. To deliver this the Council will require development proposals on contaminated land: (i) to be informed by a desk top study and preliminary risk assessment, including an assessment of the site's history, potential contamination sources, pathways and receptors; (ii) where necessary to undertake a site investigation and detailed risk assessment in line with current best practice guidance, including where appropriate physical investigations, chemical testing and assessments of ground gas risks and risks to groundwater; (iii) where necessary to provide a remediation strategy that sets out how any identified risks from the assessments above are going to be addressed. If remediation measures are not suitable then planning permission will be refused; (iv) where necessary to provide a long term maintenance and monitoring regime for the mitigation of any ongoing risk and identify the person/s responsible for the regime; (v) where necessary to provide a validation report once remediation has taken place, including evidence that demonstrates that risks from contamination have been controlled effectively; and (vi) to ensure that all above assessments and investigations are carried out by a competent person. Construction and Demolition D. The Council will seek to manage and limit environmental disturbances during construction and demolition as well as during	No HRA implications. This is a positive development management policy relating to environmental impact, pollution and land contamination. It is a positive policy as it provides for preventing detrimental impacts as a result of environmental conditions resulting from new development such as air quality, and provides for the reuse and recycling of building materials and the use of local products, thus reducing atmospheric pollutants further, and the use of water resources during the manufacturing process. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	excavations and construction of subterranean developments. To deliver this the Council requires the submission of Construction Management Statements for the following types of developments: (i) all major developments; (ii) any basement developments; (iii) developments of sites in confined locations or near sensitive receptors; and (iv) if substantial demolition/excavation works are proposed. E. In addition the Council supports the use of sustainable design and construction techniques, including where appropriate the local or on-site sourcing of building materials enabling reuse and recycling on site.	
DM 22 Air Quality	A. The Council will seek to ensure that the District is protected from the impacts of air pollution. Potential air pollution risks will need to be properly considered and adequate mitigation included in the design of new development to ensure neither future, nor existing residents, workers, visitors, or environmental receptors including the Epping Forest SAC are adversely impacted as a result of the development. B. Mitigation measures required will be determined by the scale of development, its location, the potential to cause air pollution, and the presence of sensitive receptors in the locality. C. Larger proposals or those that have potential to produce air pollution, will be required to undertake an air quality assessment that identifies the potential impact of the development, together with, where appropriate, contributions towards air quality monitoring. Assessments shall identify mitigation that will address any deterioration in air quality as a result of the development, having taken into account other permitted developments, and these measures shall be incorporated into the development proposals. This will include an assessment of emissions (including from traffic generation) and calculation of the cost of the development to the environment. All assessments for air quality shall be undertaken by competent persons.	No HRA implications. This is a positive development management policy that ensures that changes in air quality as a result of new development will not adversely impact upon Epping Forest SAC alone or in combination.
Chapter 5: Places		
Policy P 1 Epping	A. Proposals for development on allocated sites should accord with the site specific requirements in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) EPP.R1 Land South of Epping, West – approximately 450 homes ii) EPP.R2 Land South of Epping, East – approximately 500 homes iii) EPP.R3 Epping London Underground Car Park – approximately 89 homes iv) EPP.R4 Land at St Johns Road – approximately 34 homes v) EPP.R5 Epping Sports Centre – approximately 43 homes vi) EPP.R6 Cottis Lane Car park – approximately 47 homes vii) EPP.R7 Bakers Lane Car Park – approximately 31 homes viii) EPP.R8 Land and part of Civic Offices – approximately 44 homes ix) EPP.R9 Land at Bower Vale – approximately 50 homes x) EPP.R10 Land to rear of High Street – approximately 6 homes xi) EPP.R11 Epping Library – approximately 11 homes Employment Sites C. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) EPP.E1 Land at Eppingdene ii) EPP.E2 Land at Coopersale Hall	Potential HRA implications. This policy provides for residential and employment site allocations between 400m and 1.8km from Epping Forest SAC. **Potential linking impact pathways include:** • **Urbanisation** • **Recreational Pressure** • **Atmospheric Pollution** • **Water Abstraction** • **Water Quality.** However, this policy also provides positive provision for financial contributions towards access management and monitoring of visitors to Epping Forest SAC and the phasing of development in line with provision of water treatment facilities It acknowledges that these

Policy number/ name	Policy detail	HRA implications
	iii) EPP.E3 Falconry Court iv) EPP.E4 Bower Hill Industrial Estate Infrastructure Requirements D. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development proposals in Epping will be expected to contribute proportionately towards the following infrastructure items: (i) New primary school; (ii) Appropriate provision of health facilities; (iii) Highways and junction upgrades; (iv) Upgrades to Lindsey Street sub-station; (v) Necessary upgrades to existing waste water infrastructure; and (vi) Appropriate provision of green infrastructure and open space throughout the settlement. E. Development proposals must contribute proportionately towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these requirements have changed. Town Centre Uses F. In accordance with Policy E 2, in Epping Town Centre, at least 70% of the ground floor Primary Retail Frontage and at least 20% of the ground floor Secondary Retail Frontage will be maintained in A1 use. Air Pollution G. The development of the allocated sites within Epping have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure H. Due to their proximity to Epping Forest, development of the allocated sites within Epping will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk I. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1. South Epping Masterplan Area J. Development proposals in relation to sites EPP.R1 and EPP.R2 must comply with a Strategic Masterplan for the South Epping Area which has been formally endorsed by the Council. K. In addition to the requirements set out above, the Strategic Masterplan should make provision for: (i) a minimum of 950 homes; (ii) a new neighbourhood centre to include community facilities, employment and retail use; (iii) a new primary school and early years childcare provision (which could be accommodated through the relocation of Ivy Chimneys Primary School); (iv) appropriate provision of health facilities, exploring the potential for a new health hub to include an integrated GP surgery, pharmacy and any other necessary health services; (v) new road access and internal road layout to support a bus corridor; (vi) a new vehicular, pedestrian and cycling bridge over the railway	site allocations have potential to affect Epping Forest SAC from increased atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). **Residual impact pathways are:** • **Urbanisation** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.

Policy number/ name	Policy detail	HRA implications
	line; (vii) car clubs/car sharing or pooling arrangements, visitor parking and blue badge holders; (viii) minimising the impact upon the setting of the Grade II listed Gardners Farm and Grade II listed Farm Buildings; (ix) minimising the impact upon the BAP Habitat within the site and nearby Local Wildlife Site; (x) incorporation of an appropriate buffer to protect the amenity of future residents with regards to noise and air quality from the M25 and an appropriate buffer from the High Voltage Transmission Cables and land impacted by the BPA Oil Pipeline constraints; (xi) careful design to avoid or reduce impacts on the Ancient Woodland which may include providing a buffer zone of semi-natural habitat between built development and the Ancient Woodland; (xii) the continued protection of those trees benefitting from a Tree Preservation Order; (xiii) the strengthening and/or creation of new Green Belt boundaries to the east and west of the site; (xiv) the integration, retention and improvements to the existing watercourse and public rights of way, including the retention of the existing pedestrian footbridge over the M25, and enhanced linkages to Epping station; (xv) adequate levels of high quality public open space , including the replacement of Brook Road Informal Recreation Ground; and (xvi) contribute towards air quality monitoring within the Epping Forest. L. The Masterplan and subsequent applications should be considered and informed by the Quality Review Panel.	
Policy P 2 Loughton	A Proposals for development on allocated sites should accord with the site specific requirements in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) LOU.R1 Loughton London Underground car park – Approximately 165 homes ii) LOU.R2 Debden London Underground car park – Approximately 192 homes iii) LOU.R3 Land at Vere Road – Approximately 9 homes iv) LOU.R4 Borders Lane playing fields – Approximately 217 homes v) LOU.R5 Land at Jessel Green – Approximately 154 homes vi) LOU.R6 Royal Oak public house – Approximately 10 homes vii) LOU.R7 Loughton Library – Approximately 20 homes viii) LOU.R8 Land west of High Road – Approximately 29 homes ix) LOU.R9 Land at former Epping Forest College site – Approximately 111 homes x) LOU.R10 Land at Station Road – Approximately 12 homes xi) LOU.R11 Land west of Roding Road – Approximately 9 homes xii) LOU.R12 Land at 63 Wellfields – Approximately 10 homes xiii) LOU.R13 Land at 70 Wellfields – Approximately 6 homes xiv) LOU.R14 Land at Alderton Hill – Approximately 33 homes xv) LOU.R15 Land at Traps Hill – Approximately 6 homes xvi) LOU.R16 St Thomas More RC Church – Approximately 18 homes xvii) LOU.R17 Land to the rear of High Road – Approximately 12 homes	**Potential HRA implications.** This policy provides for residential and employment site allocations between less than 300m and 2.1km from Epping Forest SAC. **Potential linking impact pathways include:** • **Urbanisation** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** However, this policy also provides positive provision for financial contributions towards access management and monitoring of visitors to Epping Forest SAC and the phasing of development in line with provision of water treatment facilities. It acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires

Policy number/ name	Policy detail	HRA implications
	xviii) LOU.R18 Land at High Beech Road – Approximately 8 homes Employment Sites C. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) LOU.E1 – Oakwood Hill Industrial Estate ii) LOU.E3 – Buckingham Court D.In accordance with Policy SP 2 and Policy E 1 the following site is designated for employment uses with a further allocated expansion for B Use Class employment uses: i) LOU.E2 – Langston Road Industrial Estate Infrastructure Requirements E. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically , development in Loughton will be expected to contribute proportionately towards the following infrastructure items: (i) Expansion of Secondary Schools in the local area; (ii) Appropriate provision of health facilities; (iii) Highways and junction upgrades; (iv) Potential upgrades to existing water infrastructure; and (v) Improvements to open space throughout the settlement. F. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Town Centre Uses G. In accordance with Policy E 2, in Loughton High Road Town Centre, at least 70% of the ground floor Primary Retail Frontage and at least 35% of the ground floor Secondary Retail Frontage will be maintained in A1 use. Small District Centre Uses H. In accordance with Policy E 2, in Loughton Broadway District Centre, at least 60% of the ground floor Primary Retail Frontage will be maintained in A1 use. Air Pollution I. The development of the allocated sites within Loughton have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure J. Due to their proximity to Epping Forest development of the allocated sites within Loughton will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk K. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1. Jessel Green Masterplan L. Development proposals in relation to site LOU.R5 must comply with a Strategic Masterplan that has been formally endorsed by the Council. M. In addition to the requirements set out above, the Jessel Green Masterplan must make provision for: (i) a minimum of 154 homes;	developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). **Residual impact pathways are:** • **Urbanisation** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.

Policy number/ name	Policy detail	HRA implications
	(ii) approximately half the site as enhanced public open space; (iii) car clubs/car sharing or pooling arrangements, visitor parking and blue badge holders; (iv) improved vehicular access into the site, and, new and improved pedestrian and cycle linkages with the surrounding area and nearby London Underground stations; (v) be consistent and adhere to the approach to design set out in Policy SP 3; (vi) a new Local Centre; (vii) the varying levels throughout the site, taking the landscape into account; (viii) mitigating surface water flooding issues at the south of the site; and (ix) careful design to avoid or reduce impacts on the Ancient Woodland which may include providing a buffer zone of semi-natural habitat between built development and the Ancient Woodland. N. The Masterplan and subsequent applications should be considered and informed by the Quality Review Panel.	
Policy P 3 Waltham Abbey	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) WAL.R1 Land west of Galley Hill Road – Approximately 295 homes ii) WAL.R2* Lea Valley Nursery, Crooked Mile – Approximately 315 homes iii) WAL.R3 Land adjoining Parklands – Approximately 130 homes iv) WAL.R4 Fire Station, Sewardstone Road – Approximately 16 homes v) WAL.R5 Waltham Abbey Community Centre, Saxon Way – Approximately 67 homes and re-provision of a community centre vi) WAL.R6 Waltham Abbey Swimming Pool, Roundhills – Approximately 27 homes vii) WAL.R7 Pine Tree Nursery, Avey Lane – Approximately 8 homes Employment Sites C. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) WAL.E1 – Howard Business Park ii) WAL.E2 – Land at Breeches Farm iii) WAL.E3 – Land at Woodgreen Road iv) WAL.E4 – Cartersfield Road/Brooker Road Industrial Estate v) WAL.E5 – Meridian Business Park and Distribution Centre vi) WAL.E7 – Providence Nursery, Avey Lane D. In accordance with Policy SP 2 and Policy E 1 the following sites are allocated for B Use Class employment uses: i) WAL.E6 – Galley Hill Road Industrial Estate ii) WAL.E8 – Land north of A414 Traveller Sites E. In accordance with Policy SP 2 the following site in allocated for traveller accommodation: i) WAL.T1* Lea Valley Nursery, Crooked Mile – up to 5 pitches Infrastructure Requirements	**Potential HRA implications.** This policy provides for residential, traveller and employment site allocations between less than 1.9km and 3.2km from Epping Forest SAC and between 1.1km and 2.6km from Lee Valley SPA and Ramsar site. **Potential linking impact pathways include:** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy provides for pedestrian links to the Lee Valley Regional Park. **Whilst this policy does not identify any locations of the pedestrian links, care should be taken to ensure that these increased links do not increase recreational pressure upon the designated sites.** It is noted that, this policy provides positive provision for financial contributions towards access management and monitoring of visitors to Epping Forest SAC and the phasing of development in line with provision of water treatment facilities. It acknowledges that these site allocations have potential to affect Epping Forest SAC

Policy number/ name	Policy detail	HRA implications
	F. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development in Waltham Abbey will be expected to contribute proportionately towards the following infrastructure items: (i) Expansion of two primary schools within Waltham Abbey Forecast Planning Group; (ii) Appropriate provision of health facilities; (iii) Highways and junction upgrades; (iv) Potential upgrades to existing water infrastructure; and (v) Improvements and provision of open space throughout the settlement. G. The Council will seek the potential relocation and expansion of a secondary school in the local area in order to meet future needs arising from development. H. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Small District Centre Uses I. In accordance with Policy E 2, in Waltham Abbey Small District Centre, at least 45% of the ground floor Primary Retail Frontage and at least 25% of the ground floor Secondary Retail Frontage will be maintained in A1 use. Air Pollution J. The development of the allocated sites within Waltham Abbey have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure K. Due to their proximity to Epping Forest, development of the allocated sites within Waltham Abbey will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk L. In accordance with Policy DM 15, development on residential or traveller allocations must be located wholly within Flood Zone 1. Waltham Abbey North Masterplan M. Development proposals in relation to sites WAL.R1, WAL.R2, WAL.R3, WAL.T1 and WAL.E7 must comply with a Strategic Masterplan that has been formally endorsed by the Council. N. In addition to the requirements set out above the Strategic Masterplan should make provision for: (i) a minimum of 610 homes; (ii) effective integration with the Town Centre, supporting regeneration; (iii) up to 5 pitches for Traveller Accommodation; (iv) a new local centre and community facility; (v) Expansion of a Secondary School in the local area; (vi) new road links between Crooked Mile and Galley Hill and an internal road layout to support a bus corridor; (vii) the potential need to upgrade/widen the existing Galley Hill Road and Crooked Mile, in order to ensure a safe access point and sufficient capacity for the development they serve; (viii) car clubs/car sharing or pooling arrangements, visitor parking and blue badge holders; (ix) the strengthening and/or creation of new Green Belt	from increase atmospheric pollution. It requires developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2: Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.

Policy number/ name	Policy detail	HRA implications
	boundaries to the north and east of the site; (x) the integration, retention and improvements to the existing watercourses and public rights of way; (xi) new pedestrian and cycle links through the site to the Lee Valley Regional Park, the existing allotments to the north, and towards Waltham Abbey District Centre; (xii) adequate levels of public open space; and (xiii) ensure that vulnerability to Surface Water flooding as well as the potential consequences for surrounding sites is suitably mitigated through appropriate surface water drainage. O. The Masterplan and subsequent applications should be considered and informed by the Quality Review Panel. P. In accordance with Part F the Masterplan should explore and support the possible relocation and expansion of the King Harold Secondary School to an appropriate site within this Masterplan Area.	
Policy P 4 Ongar	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) ONG.R1 Land west of Ongar – Approximately 99 homes ii) ONG.R2 Land at Bowes Field – Approximately 135 homes iii) ONG.R3 Land southwest of Fyfield Road– Approximately 27 homes iv) ONG.R4 Land north of Chelmsford Road – Approximately 163 homes v) ONG.R5 Land at Greensted Road – Approximately 107 homes vi) ONG.R6 Land between Stamford Rivers Road and Brentwood Road – Approximately 33 homes vii) ONG.R7 Land south of Hunters Chase and west of Brentwood Road – Approximately 17 homes viii) ONG.R8 The Stag Pub – Approximately 9 homes C. Proposals for residential development will be expected to accord with the place shaping principles identified in Policy SP 3 and site specific guidance set out in Appendix 6. Employment Sites D. There are no new employment site allocations in Ongar. In accordance with Policy E 1 the following existing site is designated for employment uses: i) ONG.E1 – Essex Technology and Innovation Centre Infrastructure Requirements E. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development in Ongar will be expected to contribute proportionately towards the following infrastructure items: (i) Expansion of one of the Primary Schools; (ii) Highways and junction upgrades; (iii) Potential upgrades to existing waste water infrastructure; and (iv) The delivery/improvement of open space throughout the settlement. F. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above	**Potential HRA implications.** This policy provides for residential and employment site allocations more than 9km from Epping Forest SAC and more than 10km from Lee Valley SPA and Ramsar site. **Potential linking impact pathways include:** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** It is noted that, this policy provides positive provision for green infrastructure and the phasing of development in line with provision of water treatment facilities. It also requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.

Policy number/ name	Policy detail	HRA implications
	and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Small District Centre Uses G. In accordance with Policy E 2, in Ongar District Centre, at least 50% of the ground floor Primary Retail Frontage and at least 45% of the ground floor Secondary Retail Frontage will be maintained in A1 use. Air Pollution H. The development of the allocated sites within Ongar has the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Flood Risk I. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1. West Ongar Concept Framework J. In order to ensure that a comprehensive and cohesive approach is taken to the planning and delivery of certain sites and associated infrastructure, development proposals in relation to sites ONG.R1 and ONG.R2 will be required to be in accordance with a Concept Framework Plan, as defined in Policy SP 3. K. The Concept Framework Plans relate to a number of site allocations. These should be undertaken jointly between all applicants of the site allocations subject to the Concept Framework Plan. Details of the specific requirements of the Concept Framework Plans can be found within the site specific guidance set out in Appendix 6. L. These will be produced by the applicants of the site allocations and shall be endorsed by the Council prior to the submission of any planning applications. The Concept Framework Plan and the development proposals for each site located within it should be considered and informed by the Quality Review Panel.	
Policy P 5 Buckhurst Hill	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) BUCK.R1 Land at Powell Road – Approximately 31 homes ii) BUCK.R2 Queens Road car park – Approximately 41 homes iii) BUCK.R3 Stores at Lower Queens Road – Approximately 15 homes and retail floorspace. Infrastructure Requirements C. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically , development in Buckhurst Hill will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; (ii) The improvement and provision of open space throughout the settlement. D. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required.	Potential HRA implications. This policy provides for three residential site allocations all less than 400m from Epping Forest SAC. **Potential linking impact pathways include:** • **Urbanisation** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** It is noted that, this policy provides positive provision for financial contributions to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. It also requires larger developments to provide an air quality assessment of the individual site and requires

Policy number/ name	Policy detail	HRA implications
	Small District Centre Uses E. In accordance with Policy E 2, in Buckhurst Hill District Centre, at least 65% of the ground floor Primary Retail Frontage and at least 40% of the ground floor Secondary Retail Frontage will be maintained in A1 use. Air Pollution F. The development of the allocated sites within Buckhurst Hill have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure G. Due to their proximity to Epping Forest, development of the allocated sites within Buckhurst Hill will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk H. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1.	contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality) and the phasing of development in line with provision of water treatment facilities. **Residual impact pathways are:** • **Urbanisation** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
P 6 North Weald Bassett	A. Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential sites B. In accordance with Policy SP 2 the following sites are: i) NWB.R1 Land at Bluemans – Approximately 223 homes ii) NWB.R2 Land at Tylers Farm – Approximately 21 homes iii) NWB.R3 Land south of Vicarage Lane – Approximately 728 homes iv) NWB.R4 Land at Chase Farm – Approximately 27 homes v) NWB.R5 Land at The Acorns, Chase Farm – Approximately 51 homes Employment Sites C. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) NWB.E1 – New House Farm, Vicarage Lane ii) NWB.E2 – Tylers Green Industrial Estate iii) NWB.E3 – Weald Hall Farm and Commercial Centre D. In accordance with Policy SP 2 and Policy E 1 the following site is designated for employment uses with a further allocated expansion for B Use Class employment uses: i) NWB.E4 – North Weald Airfield Traveller Sites E. In accordance with Policy SP 2 the following sites are allocated for Traveller Accommodation: i) NWB.T1 Land west of Tylers Green – up to 5 pitches Infrastructure Requirements F. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development in North Weald Bassett will be expected to contribute proportionately towards the following infrastructure items: (i) A new primary school;	**Potential HRA implications.** This policy provides for residential, traveler and employment site allocations more than 4km from Epping Forest SAC and more than 10km from Lee Valley SPA and Ramsar site. **Potential linking impact pathways include:** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** It is noted that, this policy provides positive provision for green infrastructure and contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2 and the phasing of development in line with provision of water treatment facilities. It also requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). **Residual impact pathways are:** • **Water Abstraction**

Policy number/ name	Policy detail	HRA implications
	(ii) Appropriate provision of health facilities; (iii) Highways and junction upgrades; (iv) Local upgrades to the existing waste water network and drainage infrastructure; (v) Potential upgrades to existing water, gas and telecommunications infrastructure; and (vi) The improvement and provision of open space throughout the settlement. G. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution H. The development of the allocated sites within North Weald Bassett have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure I. Due to their proximity to Epping Forest development of the allocated sites within North Weald Bassett will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk J. In accordance with Policy DM 15, development on residential or traveler allocations must be located wholly within Flood Zone 1. North Weald Bassett Masterplan Area K. Development proposals in relation to sites NWB.R1, NMB.R2, NWB.R3, NWB.R4 and NWB.R5, NWB.T1 must comply with a Strategic Masterplan for the North Weald Bassett Area which has been formally endorsed by the Council. L. In addition to the requirements set out above, the Strategic Masterplan must make provision for: (i) a minimum of 1,050 homes and 5 Traveller pitches; (ii) local centre including, retail, community, and appropriate provision of health facilities; (iii) addressing surface water flooding; (iv) new primary school; (v) adequate levels of public open space to be provided on the site; (vi) careful design that mitigates any potential impact upon the Grade II Listed Buildings at Bluemans Farm/Tyler's Farmhouse; (vii) new and improved Public Rights of Way and cycle linkages with the surrounding area; (viii) careful design and layout to ensure that where sensitive land uses are proposed near the intermediate High Pressure Gas Pipeline they accord with the requirements set out in the HSE's Land Use Planning Methodology; (ix) the need to upgrade/widen the existing Vicarage Lane West access in order to ensure a safe access point which has sufficient capacity for the development it serves; and (x) the continued protection of those trees benefitting from a Tree Preservation Order, and other identified veteran trees. M. The Masterplan and subsequent applications should be considered and informed by the Quality Review Panel. North Weald Airfield Masterplan N. Development proposals at North Weald Airfield must comply	Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.

Policy number/ name	Policy detail	HRA implications
	with a Masterplan for the North Weald Airfield. O. In addition to the requirements set out in parts A-K, the Strategic Masterplan must make provision for: (i) a Leisure Centre and other community uses to the east of the main runway; (ii) retention and expansion of aviation uses to the west of the main runway; (iii) provision for c.10ha of additional Employment of B1, B2, B8 uses to the east; and (iv) a new access from Epping Road to service the west of the site. P. The Masterplan and subsequent applications should be considered and informed by the Quality Review Panel.	
Policy P 7 Chigwell	A. Proposals for development on allocated sites should accord with with the site specific requirements set out in Appendix 6. Residential sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) CHIG.R1 Land adjacent to The Paddock – Approximately 12 homes ii) CHIG.R2 Woodview – Approximately 23 homes iii) CHIG.R3 Land at Manor Road – Approximately 11 homes iv) CHIG.R4 Land between Froghall Lane and railway line – Approximately specialist 105 homes v) CHIG.R5 Land at Chigwell Nurseries – Approximately 65 homes vi) CHIG.R6 The Limes Estate – Approximately 100 homes vii) CHIG.R7 Land at Chigwell Convent – Approximately 28 homes viii) CHIG.R8 Land at Fencepiece Road – Approximately 6 homes ix) CHIG.R9 Land at Grange Court – Approximately 8 homes x) CHIG.R10 The Maypole – Approximately 11 homes xi) CHIG.R11 Land at Hainault Road – Approximately 7 homes Infrastructure Requirements C. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Development in Chigwell will be expected to contribute proportionately towards the following infrastructure items: (i) Secondary School expansion; (ii) Highways and junction upgrades; (iii) Potential upgrades to existing waste water infrastructure; and (iv) Improvement of open space throughout the settlement. D. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution E. The development of the allocated sites within Chigwell have the potential to produce air pollution that could impact air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Flood Risk	**Potential HRA implications.** This policy provides for residential site allocations between 1.7km and more than 4km from Epping Forest SAC. **Potential linking impact pathways include:** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy also provides positive provision for financial contributions towards access management and monitoring of visitors to Epping Forest SAC and the phasing of development in line with provision of water treatment facilities It acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on

Policy number/ name	Policy detail	HRA implications
	F. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1.	Figures 3A to 4B.
Policy P 8 Theydon Bois	A. Proposals for development on allocated sites should accord with and the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) THYB.R1 Land at Forest Drive – Approximately 39 homes ii) THYB.R2 Theydon Bois London Underground Station car park – Approximately 12 homes iii) THYB.R3 Land at Coppice Row – Approximately 6 homes Infrastructure Requirements C. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically , development in Theydon Bois will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; (ii) Local upgrades to the existing waste water network and drainage infrastructure; and (iii) The improvement of open space throughout the settlement. D. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution E. The development of the allocated sites within Theydon Bois has the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure F. Due to their proximity to Epping Forest, development of the above allocated sites within Theydon Bois will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk G. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1.	**Potential** HRA implications. This policy provides for residential site allocations between 260m and 0.7km from Epping Forest SAC. **Potential linking impact pathways include:** • **Urbanisation** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy provides positive provision for financial contributions to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. It also requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality) It also requires the phasing of development in line with provision of water treatment facilities and open space. **Residual impact pathways are:** • **Urbanisation** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 9 Roydon	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) ROYD.R1 The Old Coal Yard – Approximately 7 homes ii) ROYD.R2 Land at Kingsmead School – Approximately 21 homes	**Potential HRA implications.** This policy provides for residential site allocations between 1.2km and 1.7km from the Lee Valley SPA and Ramsar site. **Potential linking impact pathways include:** • **Recreational pressure**

Policy number/ name	Policy detail	HRA implications
	iii) ROYD.R3 Land at Epping Road – Approximately 14 homes iv) ROYD.R4 Land at Parklands Nursery – Approximately 20 homes Infrastructure Requirements C. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development in Roydon will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; (ii) Local utilities upgrades; and (iii) The improvement of open space throughout the settlement. D. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Flood Risk E. In accordance with Policy DM 15, development on residential or traveller allocations must be located wholly within Flood Zone 1.	• **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. It also requires the phasing of development in line with provision of water treatment facilities and open space. **Residual impact pathways are:** • **Water Quality.** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 10 Nazeing	A. Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) NAZE.R1 Land at Perry Hill – Approximately 33 homes ii) NAZE.R2 The Fencing Centre, Pecks Hill – Approximately 29 homes iii) NAZE.R3 Land to the rear of Pound Close – Approximately 39 homes iv) NAZE.R4 Land at St Leonards Farm – Approximately 21 homes Employment Sites C. There are no new employment site allocations in Nazeing. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) NAZE.E1 – The Old Waterworks ii) NAZE.E2 – Land west of Sedge Green iii) NAZE.E3 – Bridge Works and Glassworks, Nazeing New Road iv) NAZE.E4 – Hillgrove Business Park v) NAZE.E5 – Birchwood Industrial Estate vi) NAZE.E6 – Millbrook Business Park vii) NAZE.E7 – Land at Winston Farm Infrastructure Requirements D. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically , development in Nazeing will be expected to contribute proportionately towards the following infrastructure items:	**Potential HRA implications.** This policy provides for residential traveller and employment site allocations between 2.2km and 2.8km from the Lee Valley SPA and Ramsar site and between 3.9km and 4.7km from Wormley Hoddesdonpark Woods SAC. **Potential linking impact pathways include:** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality) It also requires the

Policy number/ name	Policy detail	HRA implications
	(i) Primary School expansion; (ii) Highways and junction upgrades; (iii) Local utilities upgrades; and (iv) The improvement of open space throughout the settlement. E. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution F. The development of the allocated sites within Nazeing have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Flood Risk G. In accordance with Policy DM 15, development on residential allocations must be located wholly within Flood Zone 1. South Nazeing Concept Framework H. In order to ensure that a comprehensive and cohesive approach is taken to the planning and delivery of certain sites and associated infrastructure, development proposals in relation to sites NAZE.R1, NAZE.R3 and NAZE.R4 will be required to be in accordance with a Concept Framework, as defined in Policy SP 3. I. Some Concept Framework Plans will relate to multiple allocation sites, whereby these should be undertaken jointly between all applicants of the site allocations subject to the Concept Framework Plan Details of the specific requirements of each Concept Framework Plan can be found within the site specific guidance set out in Appendix 6. J. These will be produced by the applicants of the site allocations and shall be endorsed by the Council prior to the submission of any planning applications. The Concept Framework Plan and the development proposals for each site located within it should be considered and informed by the Quality Review Panel.	phasing of development in line with provision of water treatment facilities and open space. **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 11 Thornwood	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) THOR.R1 Land at Tudor House – Approximately 124 homes ii) THOR.R2 Land east of High Road – Approximately 48 homes Employment Sites C. There are no new employment site allocations in Thornwood. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) THOR.E1 – Camfaud Concrete Pumps ii) THOR.E2 – Land at Esgors Farm iii) THOR.E3 – Woodside Industrial Estate iv) THOR.E4 – Weald Hall Lane Industrial area Infrastructure Requirements D. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically ,	**Potential HRA implications.** This policy provides for site allocations more than 4km from Epping Forest SAC, and more than 9km from Lee Valley SPA and Ramsar site. **Potential linking impact pathways include:** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring,

Policy number/ name	Policy detail	HRA implications
	development in Thornwood will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; (ii) Local utilities upgrades; (iii) The improvement of open space throughout the settlement; and (iv) Community uses. E. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution F. The development of the allocated sites within Thornwood have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Recreational Pressure G. Due to their proximity to Epping Forest development of the above allocated sites within Thornwood will be required to make a contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. Flood Risk H. In accordance with Policy DM 15, development on residential or traveller allocations must be located wholly within Flood Zone 1.	including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). It also requires for infrastructure (including open space) to be delivered in line with rate and scale of need. **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 12 Coopersale, Fyfield, High Ongar, Lower Sheering, Moreton, Sheering and Stapleford Abbotts	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential Sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) COOP.R1 Land at Parklands - Approximately 6 homes (Coopersale); ii) FYF.R1 Land at Gypsy Mead - Approximately 14 homes (Fyfield); iii) HONG.R1 Land at Mill Lane - Approximately 10 homes (High Ongar); iv) LSHR.R1 Land at Lower Sheering - Approximately 14 homes (Lower Sheering); v) SHR.R1 Land at Daubneys Farm- Approximately 10 homes, SHR.R2 Land to the East of the M11 Approximately 62 homes and SHR.R3 Land north of Primley Lane - Approximately 12 homes (Sheering); and vi) STAP.R1 Land at Oakfield Road - Approximately 33 homes; STAP.R2 Land to rear of Mountford and Bishops Brow, Oak Hill Road - Approximately 8 homes; STAP.R3 Land at The Drive - Approximately 6 homes (Stapleford Abbots). Travelling showpeople sites C. In accordance with Policy SP 3 the following site is allocated for travelling showpeople accommodation: i) MORE.T1 (Lakeview, Moreton) – 1 yard Employment sites D. There are no new employment site allocations in Coopersale, Fyfield, High Ongar, Lower Sheering, Moreton, Sheering or Stapleford Abbotts. In accordance with Policy E 1 the following	**Potential HRA implications.** This policy provides for site allocations within 3.3km from Epping Forest SAC. **Potential linking impact pathways include:** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality). It also requires for infrastructure (including open space) to be delivered in line with rate and scale of need

Policy number/ name	Policy detail	HRA implications
	existing sites are designated for employment uses: i) High Ongar – HONG.E1 Nash Hall Industrial Estate ii) Lower Sheering – LSHR.E1 Land at The Maltings iii) Stapleford Abbotts – STAP.E1 Land at High Willows Infrastructure Requirements E. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically , development in these settlements will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; (ii) Local utilities upgrades; and (iii) The improvement of open space throughout the settlements. F. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution G. The development of the allocated sites have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Flood Risk H. In accordance with Policy DM 15, development on residential or traveller allocations must be located wholly within Flood Zone 1.	and for residential development in Coopersale to contribution to the access management and monitoring of visitors to the Forest in accordance with Policy DM 2. **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 13 Rural sites in the east of the District	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Residential sites B. In accordance with Policy SP 2 the following sites are allocated for residential development: i) RUR.R1 Avenue Home, Latton Common – Approximately 11 homes ii) RUR.R2 Norton Heath Riding Centre – Approximately 30 homes Employment sites C. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) RUR.E1 – Brickfield House, Thornwood ii) RUR.E2 – Land at Kingstons Farm, Matching iii) RUR.E3 – Matching Airfield South iv) RUR.E4 – Land at London Road, Stanford Rivers v) RUR.E6 – Land at Housham Hall Farm, Matching vi) RUR.E7 – Land at Searles Farm, Foster Street vii) RUR.E8 – Fosters Croft, Foster Street viii) RUR.E9 – Horseshoe Farm, London Road ix) RUR.E10 – Land at Little Hyde Hall Farm, Sheering x) RUR.E11 – Land at Quickbury Farm, Sheering xi) RUR.E12 – New House Farm, Little Laver Road xii) RUR.E14 – Matching Airfield North xiii) RUR.E15 – Land at Rolls Farm Barns, Hastingwood Road xiv) RUR.E18 – Land at Dunmow Road, Fyfield	**Potential HRA implications.** This policy provides for residential, traveler and employment site allocations located between 2.5km and 4.7km from the Lee Valley SPA and Ramsar site. **Potential linking impact pathways include:** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** This policy acknowledges that these site allocations have potential to affect Epping Forest SAC from increase atmospheric pollution. It requires larger developments to provide an air quality assessment of the individual site and requires contributions towards air quality monitoring, including for the SAC. Additionally, this policy cross refers to Policy DM 2 (Epping Forest SAC and Lee Valley SPA) and Policy DM 22 (Air Quality).

Policy number/ name	Policy detail	HRA implications
	xv) RUR.E19 – Land at Dorrington Farm (see Policy SP 5 and allocation SP 4.1) xvi) RUR.E20 – Land at Stewarts Farm xvii) RUR.E21 – Land at Paslow Hall Farm, King Street, High Ongar xviii) RUR.E22 – Hastingwood Business Centre, Hastingwood xix) RUR.E23 – Hobbs Cross Business Centre, Theydon Garnon xx) RUR.E24 – Land at Holts Farm, Threshers Bush D. In accordance with Policy SP 2 and Policy E 1 the following site is designated for employment uses with a further allocated expansion for B Use Class employment uses: • RUR.E19 – Dorrington Farm, Rye Hill Road (see Poicy SP 5 and allocation SP 4.1) Traveller sites E. In accordance with Policy SP 3 the following site is allocated for Traveller Accommodation: i) RUR.T4 Land at Valley View, Curtis Mill Lane – up to 1 pitch Infrastructure Requirements F. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development on these allocations will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; and (ii) Local utilities upgrades; G. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or discussions with providers determine that these items are no longer required. Air Pollution H. The development of the allocated sites within the rural east of the District have the potential to produce air pollution that could impact upon air quality in the District, including Epping Forest. In accordance with Policy DM 2 and Policy DM 22, all proposals on sites which require a Transport Assessment/Transport Statement will be required to undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring. Flood Risk I. In accordance with Policy DM 15, development on residential or traveller allocations must be located wholly within Flood Zone 1.	It also requires for infrastructure (including open space and utilities upgrades) to be delivered in line with rate and scale of need. **Residual impact pathways are:** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 14 Rural sites in the west of the District	A Proposals for development on allocated sites should accord with the site specific requirements set out in Appendix 6. Employment sites B. There are no new employment site allocations in the rural locations in the west of the District. In accordance with Policy E 1 the following existing sites are designated for employment uses: i) RUR.E5 – Land at Hayleys Manor, Epping Upland ii) RUR.E13 – Warlies Park House, Horseshoe Hill Traveller sites C. In accordance with Policy SP 3 the following sites are allocated for Traveller Accommodation: i) RUR.T1 Land at Sons Nursery, Hamlet Hill – up to 2 pitches ii) RUR.T2 Land at Ashview, Hamlet Hill – up to 1 pitch iii) RUR.T3 Land at James Mead, Waltham Road – up to 4 pitches	**Potential HRA implications.** This policy provides for site allocations. **Potential linking impact pathways include:** • **Recreational pressure** • **Atmospheric pollution** • **Water Abstraction** • **Water Quality.** As this policy provides only for the allocation of existing employment sites and 12 Traveller sites the quantum of

Policy number/ name	Policy detail	HRA implications
	iv) RUR.T5 Land at Stoneshot View – up to 5 pitches Infrastructure Requirements D. Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan. Specifically, development on these allocations will be expected to contribute proportionately towards the following infrastructure items: (i) Highways and junction upgrades; (ii) Local utilities upgrades; E. The Council will only permit planning applications that contribute towards the delivery of those infrastructure items set out above and in the Infrastructure Delivery Plan, unless subsequent iterations of the Infrastructure Delivery Plan or items are no longer required. Flood Risk F. In accordance with Policy DM 15, development on residential or traveller allocations must be located wholly within Flood Zone 1.	development falls below the level required to submit an Air Quality Assessment although it has 'in combination' potential to affect Epping Forest SAC via increased atmospheric pollution. **Residual impact pathways are:** • **Air quality (in combination only)** • **Water Abstraction** Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Policy P 15 Rural sites in the south of the District	A Employment siteIn accordance with Policy E 1 the following existing sites are designated for employment uses: i) RUR.E16 – Taylors Farm, Gravel Lane ii) RUR.E17 – Brookside Garage, Gravel Lane Infrastructure Requirements B Infrastructure requirements must be delivered at a rate and scale to meet the needs that arise from the proposed development, in accordance with the Infrastructure Delivery Plan.	**Potential HRA implications.** This policy provides for the allocation of two existing employment sites. As such there no impact pathways present. Full screening of the Site Allocations can be found in Table 6, Table 7 and Table 8. Locations are illustrated on Figures 3A to 4B.
Chapter 6: Infrastructure and Delivery.		
Policy D 1 Delivery of Infrastructure	A. New development must be served and supported by appropriate on and off-site infrastructure and services as identified through the Infrastructure Delivery Plan. Proposals must demonstrate that there is sufficient appropriate infrastructure capacity to support the development or that such capacity will be delivered by the proposed development. Applications must be able to demonstrate that such capacity will prove to be sufficient and sustainable over time both in physical and financial terms. B. Where a proposed development requires additional infrastructure capacity to support the growth, measures must be agreed with the Council and the appropriate infrastructure provider. Such measures may include (not exclusively): (i) financial contributions towards new or expanded facilities and the maintenance thereof; (ii) on-site construction of new provision; (iii) off-site capacity improvement works; and/or (iv) the provision of land. For the purposes of this policy, a wide definition of infrastructure and infrastructure providers will be applied. C. Exceptions to this policy will only be considered if: (i) it can be demonstrated that the benefit of the development proceeding without full mitigation outweighs the harm; (ii) a financial and viability appraisal (with supporting evidence), which is transparent and complies with any relevant national or local guidance applicable at the time, demonstrates that full mitigation is not viable to allow the development to proceed; (iii) it can be demonstrated that a full and thorough investigation has been undertaken to find innovative solutions to make the necessary provision and all possible steps have been taken to	No HRA implications. This is a development management policy relating to the delivery of infrastructure. This is a positive policy as it required development to demonstrated sufficient appropriate infrastructure capacity to support the development or that such capacity will be delivered by the proposed development. It also includes for appropriate phasing of infrastructure and services. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
	minimise the residual level of unmitigated impacts; and (iv) Obligations are entered into by the developer that provide for appropriate additional mitigation in the event that viability improves prior to completion of the development. D. Infrastructure and services required as a consequence of development and provision for their maintenance, where appropriate, will be sought from developers and secured through planning obligations prior to the issue of planning permission. E. In negotiating planning obligations, the Council will take into account economic viability. Where relevant, development proposals should be supported by a financial and viability appraisal (with supporting evidence), which is transparent and complies with relevant national or local guidance applicable at the time. Where a financial and viability appraisal has been submitted the Council will undertake an independent review of that appraisal for which the applicant will bear the cost. F. Where viability constraints can be demonstrated by evidence, the Council may consider prioritising contributions in line with the IDP Schedule and phasing developer contributions appropriately. G. Development proposals within the Garden Town Communities (as identified by Policy SP 2) will be expected to contribute collectively, equitably and proportionally towards delivering the identified infrastructure requirements related to each of the sites.	
Policy D 2 Essential Facilities and Services	A. Development proposals will be permitted only where they provide or improve the essential facilities and services required to serve the scale of the proposed development. B. Development proposals which would be detrimental to or result in the loss of essential facilities and services that meet community needs and support well-being will only be permitted where it can be clearly demonstrated that: (i) The service or facility is no longer needed; or (ii) It is demonstrated that it is no longer practical, desirable or viable to retain them; or (iii) The proposals will provide sufficient community benefit to outweigh the loss of the existing facility or service C. Proposals for new facilities will be supported where they meet an identified local need. The Council will work with local communities and support proposals to retain, improve or re-use essential facilities and services, including those set out in Neighbourhood Plans or Development Orders, including Community Right to Build Orders, along with appropriate supporting development which may make such provision economically viable. All Use Class C2 developments and Use Class C3 residential development in excess of 50 units will be required to prepare a Health Impact Assessment that will measure the wider impact upon healthy living and the demands that are placed upon the capacity of health services and facilities arising from the development.	No HRA implications. This is a development management policy relating to essential facilities and services. There are no impact pathways present.
Policy D 3 Utilities	A. Planning permission will be granted for proposals only where there is sufficient capacity within the utilities infrastructure to meet the needs of the development. Applicants will be expected to consult with utilities providers to ensure this is the case, and may be required to undertake The Council will expect developers and utilities providers to work together to ensure the appropriate provision of required utilities. B. Where there is a capacity problem and no improvements are programmed by the utilities provider, the Council will require the developer to fund appropriate improvements which must be completed prior to occupation of the development, or the relevant phase of development. C. Large developments may need to be phased to ensure there is sufficient capacity, and that any required upgrades can take place prior to occupation.	No HRA implications. This is a positive development management policy relating to provision of utilities. It ensures that any required upgrades are in place prior to occupation/ phasing. There are no impact pathways present.

Policy number/ name	Policy detail	HRA implications
Policy D 4 Community, Leisure and Cultural Facilities	A. Development proposals will be permitted where they: (i) Retain and maintain existing facilities that are valued by the community; or (ii) Improve the quality and capacity of facilities valued by the community. B. Proposed developments should contribute to the provision of new or improved community, leisure and cultural facilities in a way that is proportionate to the scale of the proposed development and in accordance with the standards in the Infrastructure Delivery Plan and Essex County Council's Developers Guide. C. Strategic and larger developments will be expected to make on site provision for community, leisure and cultural facilities where feasible. For smaller developments a financial contribution will be sought where required. D. Financial contributions will be sought for the on-going maintenance of community facilities, where appropriate. E. The provision of new facilities will be appropriately phased to meet the needs of the community they are provided for. F. Where opportunities exist, the Council will support the co-location of community, leisure and culture facilities and other local services. G. Proposals that would result in the loss of valued facilities currently or last used for the provision of community, leisure and cultural activities will only be permitted if it is demonstrated that: (iii) The facility is no longer needed for any of the functions that it can perform; or (iv) It is demonstrated that it is no longer practical, desirable or viable to retain them; or (v) Any proposed replacement or improved facilities will be equivalent or better in terms of quality, quantity and accessibility and there will be no overall reduction in the level of facilities in the area in which the existing development is located; or (vi) The proposal will clearly provide sufficient community benefit to outweigh the loss of the existing facility, meeting evidence of a local need. H. Other than proposals which involve the comprehensive relocation of facilities, any development proposals that would result in the loss of community, leisure and cultural facilities must be accompanied by an assessment which demonstrates that the facility or land is surplus to requirements and that it has been unsuccessfully marketed for a minimum of 2 years. The assessment must also evaluate the quantity and quality of existing facilities in the locality and assess the need and value to the community. The views of the local community on any loss must be sought as part of this assessment. I. The Council will work positively with national governing bodies and communities, including local voluntary organisations, and support proposals to develop, retain, improve or re-use community, leisure or cultural facilities, including those set out in Neighbourhood Plan or Development Orders including Community Right to Build Orders, along with the appropriate supporting development which may make such provision economically viable.	No HRA implications. This is a development management policy relating to community, leisure and cultural facilities. Loss of leisure facilities has potential to lead to an increase in recreational pressure upon a designated site, as such provides policy to prevent this loss, except in some circumstances as outlined. There are no impact pathways present.
Policy D 5 Communications Infrastructure	A. The Council will promote enhanced digital connectivity throughout the District by supporting high speed broadband and telecommunication infrastructure. In particular applicants submitting planning applications for major development proposals should demonstrate how high speed broadband infrastructure will be accommodated within the development. B. Applications for telecommunications development (including for prior approval under Part 16 of the General Permitted Development Order, or any other such future Order) will be	No HRA implications. This is a development management policy relating to communications infrastructure. It does not identify any location, or type of development. This is a positive policy: the provision of high speed

Policy number/ name	Policy detail	HRA implications
	considered in accordance with national policy guidance. The visual impacts of telecommunications proposals should be minimised, particularly on rooftops/roof slopes.	internet and telecommunications has potential to reduce the need to travel, thus reducing atmospheric pollution. There are no impact pathways present.
Policy D 6 Neighbourhood Planning	A. The Council will support the preparation and production of Neighbourhood Plans. Neighbourhood Plans should: (i) Show how they are contributing towards the strategic objectives of the Local Plan and that they are in general conformity with its strategic approach and policies; and (ii) Clearly set out how they will promote sustainable development at the same level or above that which would be delivered through the Local Plan, and Neighbourhood Plan policies are supported by evidence on local need for new homes, jobs and facilities, for their Plan area.	No HRA implications. This is a development management policy relating to Neighbourhood Planning and ensures conformity with Local Plan documents. There are no impact pathways present.
Policy D 7 Monitoring and Enforcement	A. The Council will monitor the implementation of the Local Plan policies and infrastructure provision and report the results on an annual basis. It will deal with the enforcement of planning controls in accordance with the Council's Local Enforcement Plan.	No HRA implications. This is a development management policy providing for annual monitoring of implementation of Plan policies and infrastructure. There are no impact pathways present.

4.2 Table 5 identifies that District Plan policies provide potential linking impact pathways to European designated sites. Impact pathways include:

- Recreational pressure and Urbanisation
- Atmospheric pollution
- Water Abstraction
- Water Quality.

4.3 These impact pathways are discussed further in relation to Epping Forest SAC, Lee Valley SPA and Ramsar site and Worley-Hoddesdonpark Woods SAC in Chapters 5 to 8.

Screening of Site Allocations

4.4 Table 6 presents an initial sift of Residential Site Allocations within the Submission Version of the Local Plan from the point of view of HRA; Table 7 does the same for Travellers Site Allocations and Table 8 for Employment Site Allocations.

4.5 In Table 6, Table 7 and Table 8 where Site Allocations have been coloured green in the 'HRA implications' column, this indicates that the Allocations do not contain potential impact pathways linking to European designated sites and have been screened out from further consideration. Where Site Allocations have been coloured orange in the 'HRA implications' column, this indicates that the Allocations have potential impact pathways linking to European designated sites and have been screened in for further consideration in this report. Table 8 includes existing employment sites designated for employment uses. However, Plan policy does not identify any type or quantum of development at these locations; as such, they are not assessed further.

4.6 For Residential and Traveller Site Allocations, impacts relating to recreational pressure in combination have been screened out for Allocations located more than 4 km from Epping Forest SAC (although it is noted that visitor surveys currently underway may result in that threshold being revised prior to submission of the Local Plan and this HRA to the Secretary of State), 7 km from Worley-Hoddesdonpark Woods SAC and 6 km from Lee Valley SPA and Ramsar site. Issues relating to urbanisation as a specific issue distinct from recreational pressure are screened out where an Allocation is located more than 400m from a European designated site. The reasoning for these distances is discussed in Chapter 5.

Table 6: Screening Assessment of Residential Site Allocations

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
EPF/0055/17 (LOU.R17)	Loughton	Loughton	~12	157m from Epping Forest SAC; more than 6km from Lee Valley SPA/ Ramsar site; more than 10 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications.** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include: • Urbanisation
EPF/0329/17 (CHIG.R1)	Chigwell	Chigwell	~12	More than 4km from Epping Forest SAC; more than 10km from Lee Valley SPA/ Ramsar site; more than 17 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
EPF/0719/17 (LOU.R18)	Loughton	Loughton	~8	348m from Epping Forest SAC; more than 6km from Lee Valley SPA/ Ramsar site; more than 13 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications.** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include:

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
					• Urbanisation
EPF/0781/17 (STAP.R3)	Stapleford Abbotts	Stapleford Abbotts	~6	More than 8km from Epping Forest SAC; more than 14km from Lee Valley SPA/ Ramsar site; more than 20 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
EPF/2473/16 (CHIG.R2)	Chigwell	Chigwell	~23	More than 4km from Epping Forest SAC; more than 10km from Lee Valley SPA/ Ramsar site; more than 18 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
EPF/2881/16 (WAL.R7)	Waltham Abbey	Waltham Abbey	~8	1.9km from Epping Forest SAC; 2.6km from Lee Valley SPA/ Ramsar site; more than 8 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination effect of recreational pressure upon Epping Forest SAC; and in-combination recreational pressure impact pathway for Lee Valley SPA and Ramsar site are considered in Chapter 5
EPF/3034/16 (RUR.R2)	High Ongar	Rural sites (east)	~30	More than 15km from Epping Forest SAC; more than 22km from Lee Valley SPA/ Ramsar site; more than 25 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
EPF/3281/16 (CHIG.R3)	Chigwell	Chigwell	~11	2.8km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 17 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination effect of recreational pressure upon Epping Forest SAC.
EPP.R1 (West)	Epping	Epping	~450	400m from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 12 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** Due to its close proximity to Epping Forest SAC, in-combination effect of recreational pressure require consideration additional impact pathways present include: • Urbanisation Due to the large number of dwellings to be provided this site

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
					should consider bespoke greenspace provision
EPP.R2 (East)	Epping	Epping	~500	More than 970m from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 13 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** Due to its close proximity to Epping Forest SAC, in-combination effects of recreational pressure require consideration. However, due to the large number of dwellings to be provided this site should consider bespoke greenspace provision
Latton Priory	North Weald Bassett	Harlow	~1,050	More than 5km from Epping Forest SAC; more than 6km from Lee Valley SPA/ Ramsar site; more than 9 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
Water Lane Area	Roydon	Harlow	~2,100	More than 5km from Epping Forest SAC; 2.9km from Lee Valley SPA/ Ramsar site; 6.3 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination effect of recreational pressure upon Lee Valley SPA/ Ramsar site is considered in Chapter 5, along with in-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
East of Harlow	Sheering	Harlow	~750	More than 11km from Epping Forest SAC; more than 9km from Lee Valley SPA/ Ramsar site; more than 13 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0011 (NAZE.R1)	Nazeing	Nazeing	~33	More than 6km from Epping Forest SAC; 2.8km from Lee Valley SPA/ Ramsar site; 4.3km from Wormley-Hoddesdonpark Woods SAC;.	**HRA implications**. In-combination effect of recreational pressure upon Lee Valley SPA/ Ramsar site is considered in Chapter 5, along with in-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC.
SR-0032 (LSHR.R1)	Sheering	Lower Sheering	~14	More than 14km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0033 (SHR.R1)	Sheering	Sheering	~10	More than 14km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0036 (NWB.R1)	North Weald Bassett	North Weald Bassett	~223	More than 6km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present. However, due to the large size of this site, it may have potential to provide bespoke greenspace.
SR-0067i-N (ONG.R1)	Chipping Ongar	Ongar	~99	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0070 (THYB.R1)	Theydon Bois	Theydon Bois	~39	0.7km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0072 (NWB.R2)	North Weald Bassett	North Weald Bassett	~21	More than 6km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0073 (SHR.R2)	Sheering	Sheering	~62	More than 13km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0089A (WAL.R1)	Waltham Abbey	Waltham Abbey	~295	2.7km from Epping Forest SAC; 1.4km from Lee Valley SPA/ Ramsar site; more than 7km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC and the Lee Valley SPA/ Ramsar site are considered in Chapter 5.
SR-0099 (WAL.R2)	Waltham Abbey	Waltham Abbey	~315	2.7km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; within 1.1km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC, and the Lee Valley SPA and Ramsar site are considered in Chapter 5. However, due to the large size of this site, it may have potential to provide bespoke publically accessible green space.
SR-0102 (ONG.R2)	Chipping Ongar	Ongar	~135	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0104 (WAL.R3)	Waltham Abbey	Waltham Abbey	~130	2.5km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; within 1.5km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC, and the Lee Valley SPA and Ramsar site.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0120 (ONG R3)	Chipping Ongar	Ongar	~27	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0149 (THOR.R1)	North Weald Bassett	Thornwood	~124	4.4km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 9.5km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0150 (NAZE.R2)	Nazeing	Nazeing	~29	More than 7km from Epping Forest SAC; 3.9km from Wormley-Hoddesdonpark Woods SAC; 2.6km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC and the Lee Valley SPA and Ramsar site are considered in Chapter 5.
SR-0158A (NWB.R3)	North Weald Bassett	North Weald Bassett	~728	More than 5km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present. However, due to the large size of this site, it may have potential to provide ANG.
SR-0169 (ROYD.R1)	Roydon	Roydon	~7	More than 9km from Epping Forest SAC; 5.4km from Wormley-Hoddesdonpark Woods SAC; 1.7km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC and the Lee Valley SPA and Ramsar site are considered in Chapter 5.
SR-0176 (BUCK.R1)	Buckhurst Hill	Buckhurst Hill	~31	Within 400m of Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 6km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include: • Urbanisation
SR-0181	High Ongar	High Ongar	~10	More than 11km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods	No HRA implications.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
(HONG.R1)				SAC; more than 10km from Lee Valley SPA/ Ramsar site.	Due to the distances involved, there are no impact pathways present.
SR-0184 (ONG.R4)	Chipping Ongar	Ongar	~163	More than 11km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0185 (ONG.R5)	Chipping Ongar	Ongar	~107	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0186 (ONG.R6)	Chipping Ongar	Ongar	~33	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0197-N (ROYD.R2)	Roydon	Roydon	~21	More than 9km from Epping Forest SAC; 1.6km from Lee Valley SPA/ Ramsar site; 5.2 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC and for Lee Valley SPA and Ramsar site are considered in Chapter 5.
SR-0219 (WAL.R4)	Waltham Abbey	Waltham Abbey	~16	2.7km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; within 1.4km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination impacts relating to recreational pressure upon Epping Forest SAC and the Lee Valley SPA and Ramsar site are considered in Chapter 5.
SR-0225 (BUCK.R2)	Buckhurst Hill	Buckhurst Hill	~41	Less than 100m from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 6km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include: • Urbanisation

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0226-N (LOU.R1)	Loughton	Loughton	~165	0.6km from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 13 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications.** In-combination effect of recreational pressure upon Epping Forest SAC.
SR-0227 (LOU.R2)	Loughton	Loughton	~192	2.1km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0228i-N (THYB.R2)	Theydon Bois	Theydon Bois	~12	0.6km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 13 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications.** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0229 (EPP.R3)	Epping	Epping	~89	1.2km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 7km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0242-N (STAP.R1)	Stapleford Abbotts	Stapleford Abbotts	~33	More than 8km from Epping Forest SAC; more than 15km from Lee Valley SPA/ Ramsar site; more than 21km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0281-N (EPP.R4)	Epping	Epping	~34	1.3km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0289 (LOU.R3)	Loughton	Loughton	~9	1.9km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0300c (NAZE.R3)	Nazeing	Nazeing	~39	More than 6km from Epping Forest SAC; 2.2km from Lee Valley SPA/ Ramsar site; more than	**HRA implications** In-combination impacts relating to recreational pressure

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
				4.7 km from Wormley-Hoddesdonpark Woods SAC.	upon Lee Valley SPA/ Ramsar site and Wormley-Hoddesdonpark Woods SAC are considered in Chapter 5.
SR-0311 (SHR.R3)	Sheering	Sheering	~12	More than 14km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0317-N (CHIG.R4)	Chigwell	Chigwell	~105	3.1km from Epping Forest SAC; more than 9km from Lee Valley SPA/ Ramsar site; more than 17km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications.** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0318 (CHIG.R5)	Chigwell	Chigwell	~65	2.6km from Epping Forest SAC; more than 9km from Lee Valley SPA/ Ramsar site; more than 16km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0347 (EPP.R5)	Epping	Epping	~43	1.2km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 7km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0348 (EPP.R6)	Epping	Epping	~47	1.6km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 8km from Lee Valley SPA/ Ramsar site.	**HRA implications** Relating to in-combination effect of recreational pressure upon Epping Forest SAC.
SR-0349 (EPP.R7)	Epping	Epping	~31	1.6km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 8km from Lee Valley SPA/ Ramsar site.	**HRA implications** Relating to in-combination effect of recreational pressure upon Epping Forest SAC.
SR-0356 (LOU.R4)	Loughton	Loughton	~217	1.7km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications**. Relating to in-combination effect of recreational pressure upon Epping Forest SAC.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0361 (LOU.R5)	Loughton	Loughton	~154	1.2km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications**, Relating to in-combination effect of recreational pressure upon Epping Forest SAC.
SR-0390-N (ONG.R.7)	Chipping Ongar	Ongar	~17	More than 9km from Epping Forest SAC; more than 17km from Lee Valley SPA/ Ramsar site; more than 20 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0410 (THOR.R2)	North Weald Bassett	Thornwood	~48	More than 4km from Epping Forest SAC; more than 9km from Lee Valley SPA/ Ramsar site; more than 12 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0455 (NWB.R4)	North Weald Bassett	North Weald Bassett	~27	More than 6km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0473 (NAZE.R4)	Nazeing	Nazeing	~21	More than 6km from Epping Forest SAC; 4.4km from Wormley-Hoddesdonpark Woods SAC; 2.2-3km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC and the Lee Valley SPA and Ramsar site are discussed in Chapter 5.
SR-0478B (CHIG.R6)	Chigwell	Chigwell	~100	1.8km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0527 (LOU.R6)	Loughton	Loughton	~10	Within 400m of Epping Forest SAC (less than 100m); more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications.** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include:

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
					• Urbanisation
SR-0541 (WAL.R5)	Waltham Abbey	Waltham Abbey	~67	2.9km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; 1.1km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC, and the Lee Valley SPA and Ramsar site.
SR-0556 (EPP.R8)	Epping	Epping	~44	1.8km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 7km from Lee Valley SPA/ Ramsar site.	**HRA implications**. In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0557 (CHIG.R7)	Chigwell	Chigwell	~28	2.9km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** From review of freely available aerial mapping, this site comprises existing open amenity green space. The presence of this space acts to divert some recreational activity away from the SAC. Loss of this space could act to increase recreational pressure upon the SAC, further compounded by additional new dwellings. It is therefore assumed that development of this site would need to ensure no net loss of open space in line with Policy DM6. It is recognized that residents of the site (and others in the Chigwell area) have an ability to access either Hainault Forest Country Park or the Roding Valley (including the Nature Reserve which permits dog walking) which are in closer proximity to, or provide easier access than, Epping Forest.
SR-0565-N (LOU.R7)	Loughton	Loughton	~20	300m from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 12 km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include: • Urbanisation

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0587 (EPP.R9)	Epping	Epping	~50	1.3km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 7km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0588 (CHIG.R8)	Chigwell	Chigwell	~6	1.7km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0813 (BUCK.R3)	Buckhurst Hill	Buckhurst Hill	~15	Within 400m of Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 6km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include: • Urbanisation
SR-0834 (LOU.R8)	Loughton	Loughton	~29	Within 400m of Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination effect of recreational pressure upon Epping Forest SAC; moreover, due to its close proximity to Epping Forest SAC, additional impact pathways present include: • Urbanisation
SR-0835 (LOU.R9)	Loughton	Loughton	~111	1.5km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0842 (ONG.R8)	Chipping Ongar	Ongar	~9	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0873 (STAP.R2)	Stapleford Abbotts	Stapleford Abbotts	~8	More than 9km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0878 (LOU.R10)	Loughton	Loughton	~12	0.7km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0890 (ROYD.R3)	Roydon	Roydon	~14	More than 8km from Epping Forest SAC; 5.3km from Wormley-Hoddesdonpark Woods SAC; 1.7km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC and the Lee Valley SPA and Ramsar site are discussed in Chapter 5.
SR-0895 (CHIG.R9)	Chigwell	Chigwell	~8	2.9km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0898 (CHIG.R10)	Chigwell	Chigwell	~11	2.4km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0903 (WAL.R6)	Waltham Abbey	Waltham Abbey	~27	2.3km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; within 1.9km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC, and the Lee Valley SPA and Ramsar site are discussed in Chapter 5.
SR-0916 (CHIG.R11)	Chigwell	Chigwell Row	~7	More than 4km from Epping Forest SAC; more than 11km from Lee Valley SPA/ Ramsar site; more than 18 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0935 (FYF.R1)	Fyfield	Fyfield	~14	More than 12km from Epping Forest SAC; more than 17km from Lee Valley SPA/ Ramsar site; more than 20km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0937 (RUR.R1)	North Weald Bassett	Rural sites (east)	~11	More than 7km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 11km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
SR-0974 (LOU.R11)	Loughton	Loughton	~9	0.9km from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0976 (ROYD.R4)	Roydon	Roydon	~20	More than 9km from Epping Forest SAC; 1.2km from Lee Valley SPA/ Ramsar site; more than 4.8km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Lee Valley SPA/ Ramsar and Wormley-Hoddesdonpark Woods SAC are discussed in Chapter 5.
SR-0984 (LOU.R12)	Loughton	Loughton	~10	0.8km from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0986 (LOU.R13)	Loughton	Loughton	~6	0.9km from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0987 (COOP.R1)	Epping	Coopersale	~6	3.3km from Epping Forest SAC; more than 10km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-0991	North Weald	North Weald	~51	More than 6km from Epping Forest SAC; more than 11km from Lee Valley SPA/ Ramsar site;	No HRA implications.

Site Ref	Parish	Settlement	Number of dwellings	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
(NWB.R5)	Bassett	Bassett		more than 14km from Wormley-Hoddesdonpark Woods SAC.	Due to the distances involved, there are no impact pathways present.
SR-1020 (THYB.R3)	Theydon Bois	Theydon Bois	~6	260m from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 14km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC; additional impact pathways present include: • Urbanisation
SR-1021 (EPP.R10)	Epping	Epping	~6	1.7km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-1026 (LOU.R14)	Loughton	Loughton	~33	0.9km from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-1027 (LOU.R15)	Loughton	Loughton	~6	0.7km from Epping Forest SAC; more than 7km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-1032 (LOU.R16)	Loughton	Loughton	~18	0.9km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 14km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.
SR-1035 (EPP.R11)	Epping	Epping	~11	1.4km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 11km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC.

Table 7: Screening Assessment of Traveller Site Allocations

Site Ref	Parish	Settlement	Number of Pitches	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
T-E_11 (RUR.T2)	Roydon	Rural sites (west)	1	More than 4km from Epping Forest SAC; 4.7km from Lee Valley SPA/ Ramsar site; 5.3km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination recreational pressure impact pathway for the Lee Valley SPA/ Ramsar and Wormley-Hoddesdonpark Woods SAC.
T-E_12 (RUR.T4)	Stapleford Abbotts	Rural Sites (east)	1	More than 10km from Epping Forest SAC; more than 7 km from Lee Valley SPA/ Ramsar site; more than 20 km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications. Due to the distances involved, there are no impact pathways present.
T-I_02 (RUR.T3)	Roydon	Rural sites (west)	4	More than 4km from Epping Forest SAC; 3.4km from Lee Valley SPA/ Ramsar site; 6.0km from Wormley-Hoddesdonpark Woods SAC.	**HRA implications** In-combination recreational pressure impact pathway for the Lee Valley SPA/ Ramsar and Wormley-Hoddesdonpark Woods SAC.
GRT_N_07 (WAL.T1)	Waltham Abbey	Waltham Abbey	5	3.2km from Epping Forest SAC; 6.9km from Wormley-Hoddesdonpark Woods SAC; within 1.1km of Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination impacts relating to recreational pressure upon Epping Forest SAC, and the Lee Valley SPA and Ramsar site.
GRT_N_06 (NWB.T1)	North Weald Bassett	North Weald Bassett	5	More than 6km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
GRT_I-09 (MORE.T1)	Moreton, Bobbingworth and the Lavers	Moreton	1 yard	More than 10km from Epping Forest SAC; more than 7km from Wormley-Hoddesdonpark Woods SAC; more than 10km from Lee Valley SPA/ Ramsar site.	No HRA implications. Due to the distances involved, there are no impact pathways present.
GRT-1_08 (RUR.T1)	Roydon	Rural sites (west)	2	More than 7km from Epping Forest SAC; 5.2km from Wormley-Hoddesdonpark Woods SAC; within 4.7km from Lee Valley SPA/ Ramsar site.	**HRA implications** In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC, and the Lee Valley SPA and Ramsar site.
EPF/1105/17	Nazeing	Rural	5	More than 7km from Epping Forest SAC; 2.9km from Wormley-Hoddesdonpark Woods SAC; 2.5	**HRA implications**

Site Ref	Parish	Settlement	Number of Pitches	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
(RUR.T5)		Sites (west)		from Lee Valley SPA/ Ramsar site.	In-combination recreational pressure impact pathway for Wormley-Hoddesdonpark Woods SAC, and the Lee Valley SPA and Ramsar site.

4.7 The screening undertaken in Table 6 of Residential and Table 7 of Traveller Site Allocations identify sites that are located within 400m of Epping Forest SAC and as such are screened in for further discussion relating to urbanisation impact pathways. These tables also identified sites located within 4 km of Epping Forest SAC, 7 km of Worley-Hoddesdonpark Woods SAC and 6 km of Lee Valley SPA and Ramsar site. These are discussed in Chapter 5.

Table 8: Screening Assessment of Employment Site Allocations

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
EMP-0002b (LOU.E2)	Loughton	Loughton	1ha of B2 (General industrial) uses.	1.9km from Epping Forest SAC; more than 8km from Lee Valley SPA/ Ramsar site; more than 14km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction
SR-0006-N (RUR.E19)	North Weald Bassett	Harlow	1ha of B2 (General industrial)/ B8 (Storage or distribution) uses.	More than 5km from Epping Forest SAC; more than 6km from Lee Valley SPA/ Ramsar site; more than 9km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction
SR-0375-N (WAL. E7)	Waltham Abbey	Waltham Abbey	5,120 m^2 of B2 (General industrial)/ B8 (Storage or distribution) uses.	2.4km from Epping Forest SAC; 1.0km from Lee Valley SPA/ Ramsar site; more than 7km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction
SR-0940 (NWB.E4)	North Weald Bassett	North Weald Bassett	10ha of B1 (Business) / B2 (General industrial)/ B8 (Storage or distribution) uses.	More than 4km from Epping Forest SAC; more than 11km from Lee Valley SPA/ Ramsar site; more than 13km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-1034-Z (WAL.E9)	Waltham Abbey	Waltham Abbey	40,000 m^2 of B1c (Business) / B2 (General industrial)/ B8 (Storage or distribution) uses.	1km from Epping Forest SAC; more than 2km from Lee Valley SPA/ Ramsar site; more than 7km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction
EMP-0021 (WAL.E6)	Waltham Abbey	Waltham Abbey	1ha of B2 (General industrial)/ B8 (Storage or distribution) uses.	2.6km from Epping Forest SAC; 1.4km from Lee Valley SPA/ Ramsar site; more than 7km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction
SR-0945 (WAL.E8)	Waltham Abbey	Waltham Abbey	10ha of B1c (Business) / B2 (General industrial)/ B8 (Storage or distribution) uses.	1.8km from Epping Forest SAC; 2.7km from Lee Valley SPA/ Ramsar site; more than 8km from Wormley-Hoddesdonpark Woods SAC.	No HRA implications No impacts beyond in-combination effects: atmospheric pollution, water quality, and water abstraction
E-095 (EPP.E1)	Epping	Epping	Existing site designated for employment uses	N/A	N/A
ELR-0091 (EPP.E2)	Epping	Epping	Existing site designated for employment uses	N/A	N/A
EMP-0011 (EPP.E3)	Epping	Epping	Existing site designated for employment uses	N/A	N/A
EMP0013 (EPP.E4)	Epping	Epping	Existing site designated for employment uses	N/A	N/A
EMP-0002a (LOU.E1)	Loughton	Loughton	Existing site designated for	N/A	N/A

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
			employment uses		
EMP-0003 LOU.E3	Loughton	Loughton	Existing site designated for employment uses	N/A	N/A
E-066 (WAL.E1)	Waltham Abbey	Waltham Abbey	Existing site designated for employment uses	N/A	N/A
E-113 (WAL.E2)	Waltham Abbey	Waltham Abbey	Existing site designated for employment uses	N/A	N/A
ELR-0088 (WAL.E4)	Waltham Abbey	Waltham Abbey	Existing site designated for employment uses	N/A	N/A
EMP-0005 (WAL.E5)	Waltham Abbey	Waltham Abbey	Existing site designated for employment uses	N/A	N/A
E-058 (ONG.E1)	Ongar	Ongar	Existing site designated for employment uses	N/A	N/A
ELR-0097 (NWB.E1)	North Weald Bassett	North Weald Bassett	Existing site designated for employment uses	N/A	N/A
EMP-0019 (NWB.E2)	North Weald Bassett	North Weald Bassett	Existing site designated for employment uses	N/A	N/A
SR-0415 (NWB.E3)	North Weald Bassett	North Weald Bassett	Existing site designated for employment uses	N/A	N/A
E-112 (NAZE.E1)	Nazeing	Lower Nazeing	Existing site designated for employment uses	N/A	N/A

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
ELR-0099 (NAZE.E2)	Nazeing	Lower Nazeing	Existing site designated for employment uses	N/A	N/A
EMP-0007 (NAZE.E3)	Nazeing	Lower Nazeing	Existing site designated for employment uses	N/A	N/A
EMP-0009 (NAZE.E4)	Nazeing	Lower Nazeing	Existing site designated for employment uses	N/A	N/A
SR-0151 (NAZE.E5)	Nazeing	Nazeing	Existing site designated for employment uses	N/A	N/A
SR-0863-N (NAZE.E6)	Nazeing	Nazeing	Existing site designated for employment uses	N/A	N/A
SR-0965 (NAZE.E7)	Nazeing	Nazeing	Existing site designated for employment uses	N/A	N/A
E-092 (THOR.E1)	North Weald Bassett	Thornwood	Existing site designated for employment uses	N/A	N/A
ELR-0092 (THOR.E2)	North Weald Bassett	Thornwood	Existing site designated for employment uses	N/A	N/A
ELR 0093 (THOR.E3)	North Weald Bassett	Thornwood	Existing site designated for employment uses	N/A	N/A
EMP 0014 (THOR.E4)	North Weald Bassett	Thornwood	Existing site designated for employment uses	N/A	N/A
SR-0394 (HONG. E1)	High Ongar	High Ongar	Existing site designated for employment uses	N/A	N/A

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
SR-0017 (LSHR.E1)	Sheering	Lower Sheering	Existing site designated for employment uses	N/A	N/A
ELR-0074 (STAP.E1)	Stapleford Abbotts	Stapleford Abbotts	Existing site designated for employment uses	N/A	N/A
E-049 (RUR.E1)	North Weald Bassett	Thornwood	Existing site designated for employment uses	N/A	N/A
E068 (RUR.E2)	Matching	Matching	Existing site designated for employment uses	N/A	N/A
E-070 (RUR.E3)	Abbess Beauchamp and Berners Roding	Abbess Roding	Existing site designated for employment uses	N/A	N/A
E-078 (RUR.E4)	Stanford Rivers	Stanford Rivers	Existing site designated for employment uses	N/A	N/A
E-097 (RUR.E6)	Matching	Matching	Existing site designated for employment uses	N/A	N/A
E-101 (RUR.E7)	North Weald Bassett	Harlow	Existing site designated for employment uses	N/A	N/A
E-104 (RUR.E8)	North Weald Bassett	Harlow	Existing site designated for employment uses	N/A	N/A
E-105 (RUR.E9)	North Weald Bassett	Harlow	Existing site designated for employment uses	N/A	N/A
E-106 (RUR.E10)	Sheering	Lower Sheering	Existing site designated for employment uses	N/A	N/A

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
E-107 (RUR.E11)	Sheering	Lower Sheering	Existing site designated for employment uses	N/A	N/A
E-109 (RUR.E12)	Moreton, Bobbingworth and the Lavers	Moreton	Existing site designated for employment uses	N/A	N/A
E-119 (RUR.E14)	Abbess Beauchamp and Berners Roding	Abbess Roding	Existing site designated for employment uses	N/A	N/A
ELR-0095 (RUR.E15)	Moreton, Bobbingworth and the Lavers	Magdalen Laver	Existing site designated for employment uses	N/A	N/A
EMP-0020 (RUR.E18)	Fyfield	Fyfield	Existing site designated for employment uses	N/A	N/A
SR-0211 (RUR.E20)	Stanford Rivers	Stanford Rivers	Existing site designated for employment uses	N/A	N/A
ELR-0094 (RUR.E22)	North Weald Bassett	Hastingwood	Existing site designated for employment uses	N/A	N/A
E-065 (RUR.E23)	Theydon Garnon	Theydon Garnon	Existing site designated for employment uses	N/A	N/A
E-098 (RUR.E24)	Moreton, Bobbingworth and the Lavers	Threshers Bush	Existing site designated for employment uses	N/A	N/A
E-096 (RUR.E5)	Epping Upland	Epping Upland	Existing site designated for employment uses	N/A	N/A

Site Ref	Parish	Settlement	Area (m^2) and Type of Employment	Distance from Internationally Designated Sites	Pathways of Impact Requiring Investigation
E-115 (RUR.E13)	Waltham Abbey	Waltham Abbey	Existing site designated for employment uses	N/A	N/A
ELR-0104A (RUR.E16)	Chigwell	Chigwell	Existing site designated for employment uses	N/A	N/A
ELR-0104B (RUR.E17)	Chigwell	Chigwell	Existing site designated for employment uses	N/A	N/A

4.8 Screening of the Employment Site Allocations undertaken in Table 8 does not identify any potential impact pathways linking to European designated sites beyond in combination affects relating to changes in air quality as a result of increase traffic movement resulting from development provided by the Plan.

5. Recreational Pressure and Urbanisation

5.1 The following policies and site allocations could not be dismissed in the initial sift from potentially posing likely significant effects upon the Lee Valley SPA and Ramsar site, Wormley-Hoddesdonpark Woods SAC and Epping Forest SAC internationally designated sites as a result of increased recreational pressure including urbanisation affects. These are therefore discussed further in this Chapter:

Policies

- Policy SP 2: Spatial Development Strategy 2011-2033;
- Policy SP 4 Development & Delivery of Garden Communities in the Harlow and Gilston Garden Town;
- Policy SP 5 Garden Town Communities;

Site Allocations

5.2 In general, residential site allocations will not result in an impact alone upon internationally designated sites. The sites identified below are site allocations that will potentially result in loss of existing amenity space that may currently help divert recreational pressure away from internationally designated sites. Thus, any loss of these publically accessible green spaces could result in an increase in recreational pressure upon internationally designated sites. Distances from internationally designated sites and the quantum of development to be delivered are identified in Table 6.

- SR-0478B (CHIG.R6)
- SR-0361 (LOU.R5)

5.3 The following policies within the Plan provide a positive contribution that could result in a reduction in recreational pressure and urbanisation:

- Paragraph 4.12 of the pre-amble to Policy DM 2 (Epping Forest SAC and the Lee Valley SPA) provides a positive contribution requiring '*Habitats Regulation Assessments of development proposals likely to affect these sites are undertaken',* thus ensuring that no likely significant effects occur as a result of the Plan. It provides for HRA of projects or plans that are '*likely to give rise to significant impact on the integrity of the sites'*.
- Policy DM 2 (Epping Forest SAC and the Lee Valley SPA) is a positive policy as it expects all relevant development to '*assist in the conservation and enhancement of the biodiversity*' of Epping Forest SAC and Lee Valley SPA and also requires '*All outline or detailed planning applications for new homes within the settlements of Loughton, Epping, Waltham Abbey, North Weald Bassett, Theydon Bois and Chigwell will be required to make a financial contribution to access management and monitoring of visitors to the Epping Forest SAC*' and that '*the Council will ensure the provision of a meaningful proportion of Natural Green Space or access to Natural Green Space'*
- Policy DM 5 (Green and Blue Infrastructure) is a positive policy that provides for green and blue infrastructure for recreational use which can potential divert recreational pressure away from the designated sites.
- Policy DM 6 (Designated and Undesignated Open Spaces) is a positive policy as it provides for open spaces that can detract recreational pressure away from internationally designated sites and requires no net loss of open space.
- Policy DM 7 (Heritage Assets) is a development management policy relating to heritage assets including Registered Parks and Gardens. These spaces can act to divert recreational pressure away from internationally designated sites and this policy requires no net loss.
- Policy DM 10 (Housing Design and Quality) is a positive policy as it encourages the inclusion of amenity/ garden space, green infrastructure and open space. These have potential to divert recreational pressure away from internationally designated sites.

- Policy SP 7 (The Natural Environment, Landscape Character and Green and Blue Infrastructure) is a positive policy that provides for the retention and extension of green infrastructure which has potential to divert recreational pressure away from internationally designated sites. This policy includes the requirement for CIL/S106 agreements where appropriate green infrastructure cannot be provided on site.
- Furthermore, Policy DM 11 (Waste Recycling Facilities on New Development) is a development management policy relating to waste recycling storage facilities on new development sites. This is a positive policy as it is likely to reduce any occurrences of fly tipping within an internationally designated site as a result of new development.

5.4 Within the context of these policies, recreational pressure on each European site is discussed below.

Lee Valley SPA/Ramsar site

5.5 The following SSSI's are components of the SPA/ Ramsar site:

- Turnford & Cheshunt Pits SSSI straddles the boundary between Epping Forest District and Broxbourne and lies 300m from the settlement of Waltham Abbey. Most of the site is owned by the Lee Valley regional Park Authority and is managed as a Country Park (River Lee Country Park).
- Rye Meads SSSI is located approximately 70 metres north of Epping Forest District and 2.6km from the nearest significant village within that district (Lower Nazeing, with a population c. 4,500). The site is a Nature Reserve and is owned by Thames Water and the RSPB who manage the site with Herts and Middlesex Wildlife Trust.
- Amwell Quarry SSSI is located 2.5km north west of the District boundary. The site is a National Nature Reserve. It is owned and managed by Herts and Middlesex Wildlife Trust.

5.6 The Local Plan allocates a total of 3,178 dwellings between 1.1km and 2.9km from the SPA/Ramsar site on 16 development sites at Waltham Abbey, Roydon (near Harlow) and Nazeing. It does not allocate any dwellings closer to the SPA/Ramsar site than 1.1km and 2,203 of the dwellings (69% of the total) are located over 2.5km from the SPA. The majority of these (66% of the total) are the sites that comprise the SP 5.2 Water Lane Area (2,100 dwellings) located 2.9km from the Rye Meads part of the SPA/Ramsar site at its closest. Moreover, visiting Rye Meads from the Roydon area is more convoluted than suggested by a simple measure of 'as the crow flies' due to the intervening railway line and River Stort and the existence of a toll on Rye Road[43]. As such, the toll-free route requires one to drive north onto the A414, west along the A414 and then south into Hoddesdon to reach the reserve.

5.7 There are several reasons why this analysis considers that recreational pressure effects on this site from development in Epping Forest District are unlikely to be significant even 'in combination':

- Amwell Quarry SSSI (Amwell Nature Reserve) and Rye Meads SSSI (Rye Meads Nature Reserve) are both laid out in considerable detail with a network of hides (ten at Rye Meads, three at Amwell) and clearly marked footpaths/boardwalks with screening vegetation that are specifically laid out and designed to route people away from the sensitive areas and minimise disturbance while at the same time accommodating high numbers of visitors. Additionally, no dogs are allowed (except registered assistance dogs) and the wet and marshy/open water nature of the habitats on site inherently limits off-track recreational activity, rendering it difficult to accomplish and unappealing. For these reasons it is considered that the vulnerability of Amwell Nature Reserve and Rye Meads Nature Reserve to the potential adverse effects of recreational activity that can affect other less well-managed sites is very low. In Turnford and Cheshunt Pits SSSI, recreational activity is similarly regulated through zoning of water bodies. The majority of the site is already managed in accordance with agreed management plans in which nature conservation is a high or sole priority.
- Two of the three faunal species for which the SPA and Ramsar site are designated – gadwall and shoveler – are not inherently highly sensitive to disturbance and are readily able to adapt (habituate) to the presence of shore-based human recreational activities without being flushed (as opposed to water-based activities which are potentially highly disturbing).

[43] Although the toll is modest (currently £0.5) it is nonetheless likely to discourage casual visitors from using that route.

- Turnford & Cheshunt Pits is located within the Lee Valley Country Park, which is part of the Lee Valley Regional Park. In their response to the Regulation 18 Draft Epping Forest Local Plan the Lee Valley Regional Park Authority did not raise any concerns regarding future recreational pressure on the SPA from growth in Epping Forest District.
- The closest allocated housing sites in Epping Forest Local Plan (SR-0099 (WAL.R2) providing 316 dwellings and SR-0541 (WAL.R5) providing 67 dwellings) are more than 1km from the closest part of the SPA/Ramsar site (Turnford & Cheshunt Pits SSSI) and considerably further than that from other parts. Various investigations into the habits of recreational visitors to nationally and internationally important wildlife sites have found that the majority of dog walkers and casual walkers are generally disinclined to walk very far to visit sites for recreation. For example, in one of the most thorough studies visitor surveys were conducted at the Thames Basin Heaths Special Protection Area. The study found that the average distance between the visitor's home postcode and Thames Basin Heaths SPA when arriving by foot was 0.8 km, with 75% of foot-based visitors living within a 0.9 km straight line distance from the visitor survey point. Other surveys show a similar broad pattern, since there is a natural limit as to how far most people are prepared to walk to visit a particular countryside site, even when it is large and appealing. The Thames Basin Heaths is also extensively visited by people travelling by car, who typically live 5km from the SPA. However, that site has an abundance of parking whereas parking in the vicinity of Rye Meads, Turnford & Cheshunt Pits and Amwell Quarry will naturally restrict the number of car-based visitors at any time and, unlike Epping Forest SAC, informal roadside verge parking is very limited.

5.8 Nonetheless, Epping Forest District Council recognises that case-by-case decisions need to be made for individual planning applications. To facilitate this, Policy DM 2 (Epping Forest SAC and Lee Valley SPA) includes the following protective text: '*New residential development likely to have a significant effect, either alone or in combination with other development in these areas, will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects*' and this will apply explicitly to Lee Valley SPA/Ramsar site.

5.9 With these precautions in place it is concluded that there will be no recreational likely significant effect on Lee Valley SPA/Ramsar site.

Wormley-Hoddesdonpark Woods SAC

5.10 The site is a large, attractive area of ancient woodland with extensive public access and close to large urban centres. The majority of the woods in the complex are in sympathetic ownership, with no direct threat (Wormley-Hoddesdonpark Wood, for example, is managed by The Woodland Trust). No visitor survey data that identifies the recreational catchment could be sourced for Wormley-Hoddesdonpark Woods. However, data does exist for other large woodland European sites, such as Ashdown Forest[44] and Epping Forest SAC. These indicate that core visitor catchments (i.e. the zone within which the majority (c. 75%) of regular, frequent visitors are concentrated) tend to lie between c. 5km (Epping Forest) and 6-7km (Ashdown Forest) from the site. If the more precautionary figure of 7km is used for Wormley Hoddesdonpark Woods in the absence of bespoke visitor data for this site, the zone would include some small villages in the north-west of Epping Forest District (such as Nazeing, Lower Nazeing and Bumbles Green), but none of the larger settlements.

5.11 Natural England's Site Improvement Plan (SIP)[45] indicates that the site is heavily used by the public for recreational purposes. However, it also indicates that recreational activity is generally well-managed. Sensitive management of access points and routes by the site's main owners has been largely successful in mitigating the potential adverse effects of this high level of use. As such, general recreational pressure is not indicated in the Site Improvement Plan as a current or future obstacle to achieving or maintaining favourable conservation status and preserving the integrity of the SAC.

5.12 Recreation is actively promoted on this site and most recreation is concentrated on well-established paths. Most of the complex is covered by a High Forest Zone Plan (Hertfordshire County Council 1996) which sets out a framework for woodland management across the whole area. It aims to restore a varied age structure and natural stand types through sustainable forestry.

[44] Clarke RT, Sharp J & Liley D. 2010. Ashdown Forest Visitor Survey Data Analysis (Natural England Commissioned Reports, Number 048) and subsequent analyses
UE Associates and University of Brighton. 2009. Visitor Access Patterns on the Ashdown Forest: Recreational Use and Nature Conservation

[45] http://publications.naturalengland.org.uk/file/6541134543192064 [accessed 12/08/16]

5.13 The Local Plan does not propose to allocate any new residential sites at all within 2.9km of the SAC. The closest residential site is EPF-1105-17 (RUR.T5) providing a single travellers pitch. The next closest residential development site is SR-0150 (NAZE.R2) located 3.9km from the SAC and providing for 32 dwellings in Lower Nazeing. The Local Plan proposes to allocate a total of nine housing sites (2,317 dwellings) and five traveller sites within 7km of the SAC as identified below:

- SP 5.2 Water Lane Area - Approximately 2,100 homes
- SR-0011 (NAZE.R1) in Lower Nazeing– Approximately 63 dwellings
- SR-0150 (NAZE.R2) in Lower Nazeing – Approximately 32 dwellings
- SR-0169 (ROYD.R1) in Roydon – Approximately 7 dwellings
- SR-0197-N (ROYD.R2) in Roydon – Approximately 21 dwellings
- SR-0300c (NAZE.R3) in Lower Nazeing – Approximately 39 dwellings
- SR-0473 (NAZE.R4) in Lower Nazeing – Approximately 21 dwellings
- SR-0890 (ROYD.R3) in Roydon – Approximately 14 dwellings
- SR-0976 (ROYD.R4) in Roydon – Approximately 20 dwellings
- T-E_11 (RUR.T2) in Hamlet Hill, Roydon – Approximately 1 pitch
- T_I_02 (RUR.T3) in Roydon Hamlet, Roydon – Approximately 4 pitches
- GRT_N_07 (WAL.T1) in Waltham Abbey – Up to 5 pitches
- GRT-1_08 (RUR.T1) in Roydon – Up to 2 pitches
- EPF/1105/17 (RUR.T5) Lower Nazeing, Nazeing – Up to 1 pitch

5.14 Based on the issues identified in the Site Improvement Plan and the fact that concerns about recreational pressure on this site have not been flagged by Natural England during the preparation of the Local Plan and its HRA, which commenced in 2012, there is no basis to conclude that such an increase would result in a likely significant effect on the SAC.

In Combination

5.15 The Local Plan includes both new allocations (i.e. sites that do not currently have planning permission) and sites that have already received planning permission but which have not yet been implemented. The housing requirement for Epping Forest District over the Local Plan period 2011-2033 (including commitments and completed development) is 11,400 new homes.

5.16 Some parts of East Herts District also lie within the likely recreational catchment of the SAC (assumed as a worst case 7km), but the HRA of the East Herts District Plan identifies that the District Plan does not propose to allocate any new housing sites at all within 3km of the SAC and the nearest large housing site is 5km distant, to the east of Ware. It concludes that these will not be significant even in combination. Additionally, Wormley-Hoddesdonpark Woods SAC is located within the borough of Broxbourne. The screening assessment of Broxbourne's draft Local Plan[46] (undertaken in December 2016) enabled this impact pathway to be screened out alone and in combination with other projects and plans. Based on these conclusions and the quantum and location of new housing within Epping Forest District it is considered that it would not result in a likely significant effect in combination.

Epping Forest SAC

5.17 Epping Forest SAC receives a great many visits per year (estimated at over 4 million) and discussions with the City of London Corporation have identified long-standing concerns about increasing recreational use of the Forest resulting in damage to its interest features. A programme of detailed formal visitor surveys has been undertaken in recent years. A 2011 visitor survey report[47] identified that those living within 2km of the edge of the Forest comprise

[46] https://www.broxbourne.gov.uk/sites/default/files/Documents/Planning/pp_LC-218_Broxbourne_HRA_Screening_8_051216JE-compressed.pdf [accessed 06/11/2016]
[47] Alison Millward Associates. 2011. Epping Forest Visitor Survey 2011: Results Summary

at least 95% of all visitors. However, further analysis of these data was undertaken by Footprint Ecology in September 2016[48]. This further analysis identified that, although the scale of the data was substantial (in 2014 alone almost 900 questionnaires were returned) the catchment appeared to be larger than suggested by previous reports. Based on 2014 data it appeared that 89% of survey respondents originated from within 5km of the SAC and 76% originated from within 4km. Some uncertainties with the data were identified as follows:

- It is not clear to what extent the postcodes reflect a random sample of visitors due to the nature of the survey method, which enabled completion online as well as collection of data from people who attended the visitor centres, rather than based on encounters with people on footpaths and at car parks across the site. Therefore, although the scale of response is good, respondents are a self-selecting group to some extent. However, in order to try and address this staff and volunteers targeted visitors from the harder to reach groups such as under 16s, ethnic minorities, the elderly and disabled, at the busier locations with the hard copy version to be completed by themselves or with help from staff and volunteers; and
- The data show an uneven distribution of postcodes from which visitors originated. It showed that the southern portion of Epping Forest SAC (427ha of the total area of 2476ha), receives more than half of visitors, who focus on a few key honeypot sites (Wanstead Flats, Bush Wood, Wanstead Park, Hollow Ponds, Connaught Water and High Beach), with the northern portion of the SAC receiving a smaller proportion of visitors. This is not really surprising given that far more people live within 5km of the southern part of the SAC than the northern part. However, it does mean that, while the data indicate that 89% of 2014 survey respondents live within 5km this may over-estimate the catchment for the northern part of the SAC within Epping Forest district.

5.18 It should be noted that the distances mentioned above are distances measured from the SAC boundary because interview location wasn't always known and in many cases questionnaires were completed online or at visitor centres rather than out on site. This survey therefore applied a slightly different method to those for other European sites, where visitor origin data has been typically been presented as the distance between the interview location (which is usually an entry point such as a car park) and home postcode. This doesn't change the distribution of respondents' post-codes around Epping Forest SAC, but means that the catchment information from the Epping Forest visitor surveys is not directly comparable to data collected on other European sites by other methods.

5.19 The visitor survey work is currently being updated at time of writing (November 2017). However, the distribution of postcodes revealed by the existing analysis seems logical and intuitive as a 4km zone would cover all the larger settlements surrounding the SAC. There is therefore no reason to assume that the core catchment is either much larger or much smaller. The updated survey will inform a formal Mitigation Strategy and a more refined assessment of impacts and mitigation solutions will be required within the scope of the strategic commitment that all the HMA authorities have made in a Memorandum of Understanding between the HMA authorities and Essex County Council, Hertfordshire County Council, Natural England and the City of London Corporation. This survey will refine the catchment further but will also, by exclusively targeting visitors to the SAC (as opposed to local residents more broadly) in a thorough manner using a random sample of visitors, enable further details of recreational activities undertaken in particular locations to be collected. This would in turn provide possible support for use of the provision of green space and enable targeted use of access management contributions collected from new residential developments. Nonetheless, the authors do not currently expect that updated survey to materially change the relevance of Epping Forest District to recreation in Epping Forest SAC for the following reasons:

- If one defines the core catchment as the zone within which 75% of visitors to the SAC derive (as Natural England have most recently suggested in HMA-related discussions over recreational pressure in the SAC) then that is currently identified to be less than 4km based on historic data including visitors from Harlow;
- The historic data is imperfect because it consists of a self-selecting group (i.e. people who bothered to respond to the online questionnaire or return a form from one of the visitor centres) rather than a random sample of people interviewed on site. Therefore it is important to undertake the updated survey as intended. However, it is considered unlikely that the survey would result in the 'core catchment' altering significantly for the following reasons:
  - While the current survey respondents are self-selecting there is no reason to believe that residents of other boroughs/ settlements are significantly more/less likely to bother collecting or responding to the questionnaire than people who live closer.

[48] Footprint Ecology (2016). Initial review of current visitor data for Epping Forest

- Various visitor surveys around the country have identified that there appears to be a typical maximum distance beyond which most people simply don't bother to travel on a regular basis for recreational walking/dog-walking on inland countryside sites even by car; this seems to be c. 5km. In the vast majority of visitor surveys visitor numbers tend to level off and points of origin become much more dispersed after this distance.
- There has been a suggestion that expanding Harlow could change patterns of visitor activity, but the author wouldn't expect that increasing the size of an existing settlement of 82,000 people at a distance of more than 11km from the SAC should significantly change the proportion of residents of that area who wish to regularly visit Epping Forest SAC, relative to those of much closer towns/settlements who are likely to dominate the visitor makeup. In any case, one of the recommendations of the HRA (see above) is that large developments should deliver a large amount of natural accessible greenspace.

5.20 Based on the existing analysis and settlement patterns around the SAC it is reasonable to expect that most regular (i.e. at least weekly) visitors to the SAC are likely to derive from the London Boroughs of Waltham Forest, Enfield, and Redbridge and the following main settlements in Epping Forest District: Chigwell, Buckhurst Hill, Loughton, Theydon Bois, Epping and Waltham Abbey. These settlements all lie partially or wholly within 4km of the SAC.

5.21 Residential site allocations located wholly or in part within 4km of Epping Forest SAC are as follows:

Table 9: Site Allocations Providing Residential Development within 4km of Epping Forest SAC

EPF/0055/17 (LOU.R17)	EPF/0719/17 (LOU. R18)	EPF/2881/16 (WAL.R7)
EPF/3281/16 (CHIG.R3)	EPP.R2 (East)[49]	EPP.R1 (West)[50]
SR-0070 (THYB.R1)	SR-0089A (WAL.R1)	SR-0099 (WAL.R2)
SR-0104 (WAL.R3)	SR-0176 (BUCK.R1)	SR-0219 (WAL.R4)
SR-0225 (BUCK.R2)	SR-0226-N (LOU.R1)	SR-0227 (LOU.R2)
SR-0228i-N (THYB.R2)	SR-0229 (EPPP.R3)	SR-0281-N (EPP.R4)
SR-0289 (LOU.R3)	SR-0317-N (CHIG.R4)	SR-0318 (CHIG.R5)
SR-0347 (EPP.R5)	SR-0348 (EPP.R6)	SR-0349 (EPP.R7)
SR-0356 (LOU.R4)	SR-0361 (LOU.R5)	SR-0478B (CHIG.R6)
SR-0527 (LOU.R6)	SR-0541 (WAL.R5)	SR-0556 (EPP.R8)
SR-0557 (CHIG.R7)	SR-0565-N (LOU.R7)	SR-0587 (EPP.R9)
SR-0588 (CHIG.R8)	SR-0813 (BUCK.3)	SR-0834 (LOU.R8)
SR-0835 (LOU.R9)	SR-0878 (LOU.R10)	SR-0903 (WAL.R6)
SR-0895 (CHIG.R9)	SR-0898 (CHIG.R10)	SR-0986 (LOU.R13)
SR-0974 (LOU.R11)	SR-0984 (LOU.R12)	SR-1020 (THYB.R3)
SR-0987 (COOP.R1)		SR-1027 (LOU.R15)
SR-1021 (EPP.R10)	SR-1026 (LOU.R14)	SR-1035 (EPP.R11)
SR-1032 (LOU.R16)	GRT_N_07 (WAL.T1)	

5.22 Since Epping Forest SAC is already known to be under pressure from high levels of recreation, additional recreational activity resulting from new residential development located within 4km of the SAC (using the latest available data), or whatever alternative core catchment supplants it, would result in a likely significant effect without mitigation.

[49] Provides more than 400 new dwellings
[50] Provides more than 400 new dwellings

5.23 It is appropriate that Epping Forest District shares in delivering the HMA-wide commitment set out in the Epping Forest SAC Memorandum of Understanding to undertake an additional visitor survey of Epping Forest SAC if required to further refine the catchment (this survey is currently underway) and to devise strategic mitigation solutions (such as access management contributions and, if the visitor survey suggests it would be effective, alternative recreational natural greenspace). This is already facilitated by Policies DM 2: Epping Forest SAC and Lee Valley SPA[51], SP 7: The Natural Environment, Landscape Character and Green and Blue Infrastructure, Policy DM 5; Green and Blue Infrastructure, Policy DM 6: Designated and Undesignated Open Spaces, Policy DM 7: Heritage Assets, and Policy DM 10: Housing Design and Quality, but a full strategic mitigation strategy remains to be devised.

5.24 Epping Forest District Council has already committed to work with partners to produce a strategic mitigation strategy for Epping Forest SAC[52]. Since that commitment was made governance arrangements have been put in place and this commitment has been reflected in Local Plan policy. The first step in development of this strategy, through undertaking an updated visitor survey of the SAC, was in progress at time of writing (November 2017) and details such as the core recreational catchment of the SAC will be refined following analysis of the survey data. The size of the tariff to be placed on net new housing within the core catchment remains to be determined but should be confirmed prior to submission of the Local Plan to the Secretary of State.

5.25 The pre-amble to Policy DM2 sets out the Council's stance in some detail: '… *Policy DM 2 provides the mechanisms for managing future recreational pressures on the Forest in particular. The Council's approach is to facilitate the development of a green infrastructure network. Through improved links to other green spaces, and to the quality of those green spaces and links, the human pressure on these assets is intended to be more widely spread, with the aim of being less harmful to biodiversity.*

5.26 *In pursuit of protecting the vulnerable habitat of Epping Forest the Council seeks to provide alternative spaces and corridors that can relieve the recreational pressure on the Forest. It recognises that additional development in the District is likely to give rise to further visitor pressure on the Forest that needs to be mitigated. This can be achieved by increasing public access to land that is not in the Forest, and altering the character of existing open spaces and the links between open spaces. These linkages are intended to improve access for walkers, dog walkers, cyclists and horse riders, as well as provide space, including additional space for wildlife and plant species.*

5.27 *However, it is recognised that some housing sites will not be of a sufficient scale to make provision for a meaningful proportion of natural green space. Where those sites are within the 'sphere of influence' of the Forest (as determined by an up-to-date Visitor Survey, the most recent of which was undertaken in October/November 2017) the Council will seek contributions to support the development and implementation of an access management strategy by the City of London Corporation*'.

5.28 Policy DM 2 part C states that '…*New residential development likely to have a significant effect, either alone or in combination with other development in these areas, will be required to demonstrate that adequate measures are put in place to avoid or mitigate any potential adverse effects'*. For many developments this could be simply a contribution of the appropriate tariff but it is considered that some individual planning applications *may* be able to deliver their own bespoke mitigation. To facilitate this potential, all allocations above a certain size (such as for more than 400 dwellings[53]) in the core catchment of the SAC, and particularly the settlements of Loughton, Epping, Waltham Abbey, Theydon Bois and Chigwell, should consider any potential to deliver their own on-site accessible natural greenspace. This is facilitated by Policy DM 2 which states that '*To mitigate against potential or identified adverse effects of additional development in the District, in particular from strategic developments, on the Epping Forest SAC, the Council will ensure the provision of a meaningful proportion of Natural Green Space or access to Natural Green Space.*' If the visitor survey identifies a larger core catchment then, depending on its size, this same

[51] This policy requires new residential development within the settlements of '*Loughton, Epping, Waltham Abbey, North Weald Bassett, Theydon Bois and Chigwell will be required to make a financial contribution to access management and monitoring of visitors to the Epping Forest SAC, in accordance with Visitor Survey Information which demonstrates this is needed'* and *'To mitigate against potential or identified adverse effects of additional development in the District, in particular from strategic developments, on the Epping Forest SAC, the Council will ensure the provision of a meaningful proportion of Natural Green Space or access to Natural Green Space.'*

[52] The MoU states that '*It is intended this Joint Strategy will be in agreed and published prior to the determination of any of the planning applications on sites around Harlow that are part of The Spatial Option detailed in the "Distribution of OAN across West Essex and East Hertfordshire" MoU. If the Joint Strategy is not in place when planning applications are submitted, applicants will be required to submit the necessary information to ascertain whether any adverse impacts will be caused in Epping Forest, and if necessary any mitigation measures that may be necessary*'.

[53] Examples of site allocations within 4km of Epping Forest SAC that are to provide 400 dwellings or more are: EPP.R2 (East); 500 dwellings; and EPP.R1 (West): 450 dwellings.

principle could also be applied to the Garden Communities around Harlow set out in Policy SP 4 and Policy SP 5. In any event, all of those Garden Communities are of a sufficient size that it would be appropriate for them to provide extensive areas of accessible natural greenspace in order to maximise their recreational self-sufficiency[54].

5.29 Note that the provision of bespoke greenspace for a given strategic development is not intended to replace the delivery of strategic mitigation measures for Local Plan growth as a whole, to which the Council has already committed.

5.30 It is considered that the Epping Forest SAC Memorandum of Understanding, coupled with Policies DM 2: Epping Forest SAC and Lee Valley SPA, SP 7: The Natural Environment, Landscape Character and Green and Blue Infrastructure, Policy DM 5; Green and Blue Infrastructure, Policy DM 6: Designated and Undesignated Open Spaces, Policy DM 7: Heritage Assets, and Policy DM 10: Housing Design and Quality will provide an appropriate framework to ensure that Epping Forest SAC is protected from the adverse effects of new development and thus ensure no likely significant effect on the SAC would materialise in practice, either alone or in combination with other plans and projects.

Loss of Existing Green Space

5.31 It should be noted that the following site allocations (also located within 3km of Epping Forest SAC) could result in the loss of areas of existing green infrastructure that are used for recreational activities. The presence of these green areas is likely to divert a level of recreational activity away from the SAC, as such the loss of these green areas, could result in an increase in recreational pressure upon the SAC, which is then compounded by the provision of an increase in net new dwellings. The sites are as follows:

- SR-0361 (LOU.R5) which from review of aerial mapping appears to comprise existing open amenity green space (Jessel Green);
- SR-0478B (CHIG.R6) which from review of aerial mapping appears to comprise existing open amenity green space.

Urbanisation

5.32 The following residential site allocations are located within 400m of Epping Forest SAC. Distances from internationally designated sites and the quantum of development to be delivered are identified in Table 6:

- EPP.R1 (West)[55]
- EPF/0055/17 (LOU.R17)
- EPF/0719/17 (LOU.R18)
- SR-0527 (LOU.R6)
- SR-0565-N (LOU.R7)
- SR-0834 (LOU.R8)
- SR-0176 (BUCK. R1)
- SR-0225 (BUCK.R2)
- SR-0813 (BUCK.R3)
- SR-1020 (THYB.R3)

5.33 The closest of these is SR-0225 (BUCK.R2), which lies 80m from the SAC. The City of London Corporation have identified that effects from urbanisation is a problem within the Forest. For example, fly-tipping and litter costs the

[54] It is known from experience elsewhere that such mitigating greenspace, to be most effective, generally needs to be a minimum of 10ha in size not to feel unduly cramped and allow for a circular walk of at least 2.5km which, based on experience elsewhere, is likely to be ample for most people to obtain sufficient enjoyment. A given developer would not necessarily need to provide the entirety of this space themselves (for example they could provide an area of additional land that adequately enhances an existing area of greenspace), or they could facilitate delivery of a large area of greenspace elsewhere within the recreational catchment, since this could still result in a net absorption of additional visitors to the SAC.

[55] Whilst this site is located just beyond 400m from the SAC, it provides for a large quantum of housing (450 new dwellings), as such it is considered within this section.

Corporation approximately £250,000 per a year to address. This has a direct impact on their available budget and thus ability to sustainably manage and enhance the Forest's environment, including the SACs special features. As such, urbanisation and recreational pressure are inter-linked. Given this and the presence of sites within 400m of the SAC this impact cannot be dismissed. Policy DM 2 explicitly recognises this by stating that planning applications within 400m of Epping Forest SAC will be required to submit a site level Habitats Regulations Assessment.

5.34 Some urbanisation effects are intrinsically linked to recreational pressure (in that they increase with greater visitor use). As such it is appropriate that, in addition to the existing requirement of Policy DM2 for project–level HRA on all new housing sites within 400m of the SAC, the strategic mitigation strategy being devised to address recreational pressure in Epping Forest SAC also considers input into site management costs to cover, for example, the fly-tipping issue from new development and an increased population.

5.35 Furthermore, Policy DM 11 (Waste Recycling Facilities on New Development) is a development management policy relating to waste recycling storage facilities on new development sites. This is a positive policy as it is likely to reduce any occurrences of fly tipping within an internationally designated site as a result of new development.

In Combination

5.36 All authorities that plan to deliver net new housing within 4km of the SAC (or an alternative distance threshold if one is devised following the updated visitor survey) could contribute cumulatively to an in combination recreational pressure effect without mitigation. This will certainly include the London Borough of Waltham Forest and the London Borough of Redbridge.

5.37 Whilst the neighbouring authority of the London Borough of Waltham Forest provides for strategic site allocations within 400m of the SAC, its adopted Core Strategy contains suitable policy to avoid impacts relating to urbanisation effects. The London Borough of Waltham Forest Site Specific Allocations Preferred Options HRA identifies that CS Policy 7 (Promoting Sustainable Waste Management and Recycling) contains measures that support best practice in waste management and therefore mitigates against the possibility of unauthorised disposal occurring. Redbridge is in the process of preparing its new Local Plan and site allocations.

Recommendation

5.38 This section summarises the recommendations made regarding Epping Forest SAC:

5.39 It is recommended that all allocations above a certain size (such as for more than 400 dwellings[56]) in the core catchment of the SAC, and particularly the settlements of Loughton, Epping, Waltham Abbey, Theydon Bois and Chigwell as well as North Weald Bassett, should consider any potential to deliver their own on-site accessible natural greenspace. This is facilitated by Policy DM2 which states that '*To mitigate against potential or identified adverse effects of additional development in the District, in particular from strategic developments, on the Epping Forest SAC, the Council will ensure the provision of a meaningful proportion of Natural Green Space or access to Natural Green Space.*' Therefore, no specific change to policy is required and this recommendation only needs noting and exploring in practice. If the visitor survey identifies a larger core catchment then, depending on its size, this same principle could also be applied to the Garden Communities around Harlow set out in Policy SP 4 and SP 5. In any event, all of those Garden Communities are of a sufficient size that it would be appropriate for them to provide extensive areas of accessible natural greenspace in order to maximise their recreational self-sufficiency[57].

[56] Examples of site allocations within 4km of Epping Forest SAC that are to provide 400 dwellings or more are: EPP.R2 (East); 500 dwellings; and EPP.R1 (West): 450 dwellings.

[57] It is known from experience elsewhere that such mitigating greenspace, to be most effective, generally needs to be a minimum of 10ha in size not to feel unduly cramped and allow for a circular walk of at least 2.5km which, based on experience elsewhere, is likely to be ample for most people to obtain sufficient enjoyment. A given developer would not necessarily need to provide the entirety of this space themselves (for example they could provide an area of additional land that adequately enhances an existing area of greenspace), or they could facilitate delivery of a large area of greenspace elsewhere within the recreational catchment, since this could still result in a net absorption of additional visitors to the SAC.

6. Air Quality

6.1 The following policies and site allocations could not be dismissed in the initial sift from potentially posing likely significant effects upon the Lee Valley SPA/ Ramsar site and Epping Forest SAC, as a result of increased air pollution. Therefore further discussion is contained in this Chapter:

Policies and site allocations

- Policy SP 2 (Spatial Development Strategy 2011-2033). Provides for a minimum of 11,400 new homes, provision for Traveller sites and 23has of new employment land within Epping Forest District during the Plan period.
- Policy SP 4 Development & Delivery of Garden Communities in the Harlow and Gilston Garden Town provided for through three strategic allocations within Epping Forest District during the Plan period at Latton Priory, Water Lane Area and East of Harlow. A further Garden Community is to be delivered in Gilston (in East Herts District).
- Policy SP 5 Garden Town Communities. Allocates approximately 3,900 dwellings within the three strategic sites of Latton Priory, the Water Lane Area and East of Harlow that lie within Epping Forest District during the Plan period.
- Policy E 1 Employment Sites. Provides for the retention and enhancement of existing employment sites and that redevelopment, renewal, intensification or extension of sites will be encouraged. In addition new employment sites allocations provided for through Policies SP2, SP 5 and Chapter 5.The quantum and location of new employment site allocations is set out at Table 3.1.
- All residential and employment sites in combination

6.2 The following policies within the Plan that provide a positive contribution to atmospheric improvements are as follows:

- Policy DM 22: This policy seeks to ensure that residents and Epping Forest SAC are protected from impacts of air pollution, and for the proposer consideration and mitigation for inclusion in development deign to ensure no adverse effects. This policy identifies that larger developments will be required to provide an air quality assessment that includes contributions towards air quality monitoring, including within the Epping Forest SAC. The assessments shall identify mitigation that will address any deterioration in air quality as a result of the development, and these measures will be incorporated into the development proposals. This will also include an assessment of emissions and calculation of the cost of the development to the environment. All assessments for air quality will be undertaken by competent persons. Additionally the Council requires developers to provide improvements that facilitate the uptake of sustainable transport methods.
- The pre-amble to Policy DM 22 specifically states that '*As set out within the Memorandum of Understanding the Council is working with the City of London Corporation, Natural England and other Housing Market Area authorities to address both the requirement to avoid, or effectively mitigate, adverse impacts on the integrity of the SAC from Local Plan-led development and the requirement to prevent deterioration of the SAC features'*, acknowledging the commitment to produce a strategic mitigation strategy.
- The pre-amble to Policy DM 2 (Epping Forest SAC and the Lee Valley SPA) provides a positive contribution to the plan ensuring that no likely significant effects occur as a result of the Plan. It provides for HRA of projects or plans that are '*likely to give rise to significant impact on the integrity of the sites'* and acknowledges Epping Forest SAC's vulnerability to of air pollution.
- Policy T 1 (Sustainable Transport Choices). By definition sustainable transport would not result in likely significant effects upon internationally designated sites. Further, this policy does not identify any location, type or scale of development. This policy does not identify any scale or location of any transport schemes. It contains positive text to encourage modal shift away towards cycling, walking and use of public transport and electric cars which all have potential to reduce atmospheric pollution. This policy also facilitates this change by the provision of electrical car charging points.

- Policy DM 21 (Local Environmental Impacts, Pollution and Land Contamination). This is a positive development management policy relating to environmental impact, pollution and land contamination. It is a positive policy as it provides for the prevention of detrimental impacts as a result of environmental conditions resulting from new development such as air quality, and provides for the reuse and recycling of building materials and the use of local products, thus reducing atmospheric pollutants further, and the use of water resources during the manufacturing process.
- Policy D 5 (Communications Infrastructure). This is a development management policy relating to communications infrastructure. It does not identify any location, or type of development. It is a positive policy: the provision of high speed internet and telecommunications has potential to reduce the need to travel, thus reducing atmospheric pollution.
- Within the Plan, Policy DM 22 (Air Quality) states that larger developments will be required to provide financial contributions towards monitoring of air quality, including within the SAC. This is also echoed by a number of policies within Plan Chapter 5: Places that require larger allocated developments to '*undertake an air quality assessment that identifies the potential impact of the development, together with contributions towards air quality monitoring.*'

6.3 Within the context of these policies, air quality on each European site is discussed below.

Epping Forest SAC

Likely significant effects

6.4 Epping Forest SAC is known to be adversely affected by relatively poor local air quality alongside the roads that traverse the SAC and this has been demonstrated to have negatively affected the epiphytic lichen communities of the woodland. The nature of the road network around Epping Forest SAC is such that journeys between a number of key settlements around the Forest by car, van or bus effectively necessitate traversing the SAC. Modelling undertaken for the West Essex/East Hertfordshire Housing Market Area authorities in 2016 indicates that even on B roads through the SAC vehicle flows are substantial (e.g. a 2014 base case of c.20,000 AADT on the B1393 with roadside NOx concentrations of 60µgm^{-3}, twice the critical level) while the A121 between Wake Arms Roundabout and the M25 had 2014 base flows of 25,000 AADT. Moreover, lengthy queues are known to build around most arms of Wake Arms Roundabout, which increases emissions compared to the same volume and composition of free-flowing traffic.

6.5 In their response to the Regulation 18 Draft Local Plan HRA, Natural England requested that the air quality analysis constitute an appropriate assessment.

Appropriate Assessment

6.6 The critical level for NOx is set at 30 µgm^{-3} in order to capture the role of NOx in nitrogen deposition, and particularly in growth effects. The critical level for NOx is currently exceeded on most links indicating that existing traffic is likely to be making a meaningful contribution to nitrogen deposition and the 2016 modelling indicated that the critical level was likely to continue to be exceeded on most links by 2033. Since the principal role of NOx on vegetation is as a source of nitrogen, nitrogen deposition rates were forecast in order to examine the potential effect directly.

6.7 Comparing Do Something with Base in each table in Appendix D, it can be seen that the 2016 modelling was forecasting a net improvement in both NOx concentrations and nitrogen deposition on the modelled links over the period to 2033 even allowing for forecast growth in traffic due to all sources. In other words the scale of improvement was forecast to more than offset any additional emissions from the 'in combination' increase in road traffic. This net improvement was forecast even though the allowance made for such improvements in the 2016 modelling was considerably more conservative than that advised in Defra guidance. Comparing Do Something with Do Minimum (rather than Base) then enabled identification of the relative contribution of HMA growth to any retardation of that improvement. For nitrogen deposition, the 2016 data indicated that the role of the HMA Local Plans in retarding the expected improvement was forecast to be very small.

6.8 For NOx on all roads other than Theydon Road, there was forecast to be an increase in NOx concentration up to 10-20m from the roadside (depending on link modelled) varying from 0.4 µgm^{-3} (1.3% of the Critical Level) at the furthest distance, up to a maximum of 1.5 µgm^{-3} (5% of the Critical Level) immediately adjacent to the A104. DMRB

Interim Advice Note 174/12[58] classifies this as a 'small' change (which it defines in line with Institute of Air Quality Management practice as a change equivalent to 5% of the critical level or less). Effects of NOx that may arise other than through its role as a source of nitrogen could include biochemical effects e.g. enzyme activity, chlorophyll content and physiological effects e.g. CO_2 assimilation or stomatal conductivity, although many of these changes may still be due to increased nitrogen rather than other effects of the gas such as acidity.

6.9 Based on those studies, the physiological and biochemical effects of NOx do not appear to occur until much higher annual concentrations are reached than those forecast 'in combination' at Epping Forest SAC. Even in epiphytic plants, no research has been sourced that indicates effects, other than via nitrogen, at lower concentrations. This is reflected in WHO (2000) which states that the '*general effect threshold … would be substantially higher if biomass production* [i.e. growth stimulation] *of crops is not assumed to be an adverse effect*'. Reference to the data provided within the WHO report suggests that exposure to annual average concentrations below 100 μgm^{-3} are unlikely to cause direct biochemical or physiological effects based on the available studies and it may be that concentrations considerably above 100 μgm^{-3} would be required in the field before an effect was observed. From the tables above, the highest 'in combination' (Do Something) 2033 NOx concentration predicted on the modelled links in 2016 was 56.5 μgm^{-3} immediately adjacent to the A121 between the Wake Arms Roundabout and the M25. This is certainly high enough for nitrogen deposition to be well above the minimum critical load but is well below the likely minimum NOx concentration at which other effects, unrelated to growth stimulation and nitrogen deposition, are likely to occur.

6.10 Notwithstanding the results of the 2016 modelling, the authorities recognised the uncertainties inherent in any forecasting, the absence of ammonia forecasts from the 2016 work (not a standard component of road traffic impact assessment, but specifically requested in this case) and the inability at the time the 2016 modelling was undertaken to factor in the effect of queuing traffic at Wake Arms Roundabout. They also recognised that the air quality on many links was still forecast to be higher than the critical level and critical load even allowing for the improvement attributable to changes in vehicle emissions. The authorities thus considered that it was appropriate for them to take active steps to minimise the increase in traffic flows and improve air quality, rather than rely entirely on the (inter)national initiatives such as improvements in emission factors.

6.11 As a result of that modelling and broader discussion with Natural England and the City of London Corporation, the HMA authorities agreed that a mitigation strategy be devised[59]. Since that commitment was made governance arrangements have been put in place and traffic modellers have been working on potential traffic mitigation scenarios. That modelling includes a series of 'constrained' scenarios, which are the real-world scenarios accounting for traffic that might reassign given associated delay and congestion once flows on a link reach a certain point. In addition to the standard Do Nothing and Do Something scenarios (respectively presenting growth in other authorities and the entirely unmitigated contribution of Epping Forest Local Plan). There are currently two further Do Something scenarios which progressively factor in additional levels of mitigation:

- One (titled Scenario 4) allows for a realistic assumption of modal shift (and thus a reduced car demand compared to the unmitigated Do Something).
- Another (titled Scenario 5) includes potential mitigation to improve capacity at different junctions.

6.12 The current focus of the first stage of mitigation exploration (Scenario 5) has been Wake Arms Roundabout, as this is known to be the most congested part of the network in Epping Forest SAC. For all five approaches to the roundabout current modelling forecasts that the mitigation in Scenario 5 would be able to keep flows similar to (or better than) the current base case, or at least achieve flows that would be better than Do Minimum (i.e. the future baseline without the Epping Forest Local Plan or any mitigation initiatives). This is also the case for other links such as for the A112 (Sewardstone Road) at the junction with Avey Lane, and for the A104 (Epping New Road) between Wake Arms Roundabout and the Robin Hood Public House. Due to the expected improvements in vehicle emissions factors over the plan period, keeping flows at the current base case would be expected to result in a substantial net improvement in NOx emissions by 2033. Keeping flows at (or below) Do Minimum levels would at least address the contribution of the Epping Forest Local Plan and may also result in a net improvement in air

[58] The Design Manual for Roads and Bridges (Interim Advice Note 174/12 Updated advice for evaluating significant local air quality effects for users of DMRB Volume 11, Section 3, Part 1 'Air Quality (HA207/07))

[59] The MoU states that '*It is intended this Joint Strategy will be in agreed and published prior to the determination of any of the planning applications on sites around Harlow that are part of The Spatial Option detailed in the "Distribution of OAN across West Essex and East Hertfordshire" MoU. If the Joint Strategy is not in place when planning applications are submitted, applicants will be required to submit the necessary information to ascertain whether any adverse impacts will be caused in Epping Forest, and if necessary any mitigation measures that may be necessary*'.

quality given accompanying improvements in emissions technology. It should also be noted that the modelling does not yet factor in any other potential mitigation measures, such as any increase in uptake in electric vehicles (although this is part of Local Plan policy).

6.13 The traffic modelling needs to be further refined to take account of downstream impacts since introduction of mitigation on one part of the network can cause issues on another part of the network which then need to be addressed in turn. There is also scope for further improvements. Away from Wake Arms Roundabout there are still several links where a large net increase in vehicle flows is forecast 'in combination' and these will also need to be considered for mitigation. As the Submission Local Plan traffic modelling (including traffic mitigation options) is refined, the air quality modelling will be updated. A programme of long-term air quality monitoring is also being planned with input from the City of London Corporation. This will be useful in air quality model verification but its main value will be in tracking the expected improvement in emissions over the plan period. This will be useful in air quality model verification but its main value will be in tracking the expected improvement in emissions over the plan period. This can feed into any reviews of housing/employment quantum and mitigation measures over the plan period.

6.14 The updating of traffic and air quality modelling and the testing and securing of specific mitigation measures will clearly be an iterative process. However, it is considered that the firm commitment to the development of mitigation strategies to address air quality around Epping Forest SAC, the commencement of work on those solutions, the agreement to a deadline for devising those strategies, and the authorities commitment to monitor the efficacy of those strategies put a sufficient framework in place to ensure no adverse effect arose on the integrity of the SAC.

7. Water Abstraction

7.1 The following site allocations and policies could not be dismissed in the initial sift from potentially posing likely significant effects upon the Lee Valley SPA/ Ramsar site internationally designated sites as a result of changes to water levels due to abstraction for public water supply. They are therefore discussed further in this Chapter:

Policies

- Policy SP 2: Spatial Development Strategy 2011-2033
- Policy E 1 (Employment Sites). Provides for new employment sites as well as improvements to existing sites; however no quantum of development is identified.

Site Allocations

- All residential and employment sites in combination

7.2 Policies within the Plan do provide a positive contribution towards reducing the need for water supply as follows:

- The pre-amble to Policy DM 3 (Epping Forest SAC and the Lee Valley SPA) provides a positive contribution to the plan ensuring that no likely significant effects occur as a result of the Plan. It provides for HRA of projects or plans that are *'likely to give rise to significant impact on the integrity of the sites'.*
- Policy DM 19 (Sustainable Water Use). This is a positive development management policy that provides for enhanced water use efficiency, thus reducing the need for water abstraction. This policy also provides for the tightening the consumption of water to 110 litres per person per day or less (i.e. 30% less than the average).

Lee Valley SPA/Ramsar site

7.3 Almost all settlements within Epping Forest District receive their potable water supply through Affinity Water. Within its catchment Affinity Water abstracts water from tributaries of Lee Valley SPA/Ramsar site.

7.4 The Lee Valley SPA/Ramsar site consists of four Sites of Special Scientific Interest, of which Turnford and Cheshunt Pits SSSI, Rye Meads SSSI and Amwell Quarry SSSI all lie on the Hertfordshire/Essex border. Walthamstow Reservoirs SSSI lies within the London Borough of Waltham Forest. Walthamstow Reservoirs is a sealed storage reservoir and part of the public water supply infrastructure for London. Rye Meads is unlikely to ever suffer from a shortage in water quantity due to its close relationship with Rye Meads Wastewater Treatment Works. However, the quarries could theoretically be adversely affected if groundwater abstraction for public water supply was sufficiently great to cause drawdown of water levels.

7.5 Affinity Water's current Water Resource Management Plan covers the period up to 2040 and states that an HRA of the WRMP has been undertaken and that they have been able to demonstrate sufficient alternative supply options to ensure that adverse effects on European sites can be avoided. As such, it can be concluded that delivery of the Epping Forest Local Plan will not result in adverse effects on Lee Valley SPA/Ramsar site through excessive water drawdown, either alone or in combination with other plans and projects.

8. Water Quality

8.1 The following site allocations and policies could not be dismissed in the initial sift from potentially posing likely significant effects upon the Lee Valley SPA/ Ramsar site internationally designated sites as a result of changes to water quality from treated wastewater discharge. They are therefore considered further in this Chapter:

Policies

- Policy SP 2 (Spatial Development Strategy 2011-2033)
- Policy E 1 (Employment Sites). Provides for new employment sites as well as improvements to existing sites; however no quantum of development is identified.

Site Allocations

- All residential and employment sites in combination

8.2 Policies within the Plan do provide a positive contribution towards good water quality as follows:

- The pre-amble to Policy DM 2 (Epping Forest SAC and the Lee Valley SPA) provides a positive contribution to the plan ensuring that no likely significant effects occur as a result of the Plan. It provides for HRA of projects or plans that are '*likely to give rise to significant impact on the integrity of the sites'*.
- policy DM 16 (Sustainable Drainage Systems). By definition, sustainable drainage systems would not result in likely significant effects upon internationally designated sites. This is a positive policy as it aims to result in a net improvement in water quality discharge to a sewer, improve water quality and reduce runoff.
- Policy DM 18 (On Site Management of Waste Water and Water Supply). This is a positive development management policy as it ensures that the public sewerage network has sufficient capacity to serve existing and new development, thus preventing a reduction in water quality.

Lee Valley SPA/Ramsar site

8.3 Change in water quality is the main pathway through which the Lee Valley SPA/Ramsar site could be adversely affected. Two parts of the Lee Valley SPA/Ramsar site lie within East Herts: Amwell Quarry and Rye Meads. The nearest proposed development site to a part of Lee Valley SPA/Ramsar site is 760m distant, so direct surface water runoff effects on water quality will not arise. However, Rye Meads consists of non-operational land at and around the Rye Meads Wastewater Treatment Works (WwTW). Parts of the SPA consist of open water but other parts consist of fen or marsh vegetation that would theoretically be susceptible to nutrient enrichment from treated wastewater.

8.4 'Poor fens' (i.e. acidic fens) are strongly nitrogen limited. In other words, nitrogen availability is the factor which ultimately controls vegetation response to other nutrients and a small change in nitrogen inputs can result in a major change in the vegetation composition. In contrast, other types of fen with a relatively alkaline pH (called 'rich' fens) such as those at Rye Meads are phosphorus-limited, meaning that phosphorus availability is the factor which ultimately controls vegetation response to other nutrients. This also applies to fluvial flood-plain grasslands like those at Rye Meads SSSI. In a phosphorus limited system, high nitrogen availability will not result in a deleterious effect on vegetation provided that phosphorus availability is controlled[60]. That is not to say that nitrogen inputs would therefore be irrelevant, but it does mean that when nitrogen is already in excess (and phosphorus inputs can be controlled) a proportionate response must be made to the risk posed by small additional nitrogen inputs. Effluent discharges from Rye Meads Sewage Treatment Works (STW) into Tollhouse Stream. The stream flows through the SSSI and has been known to back up into the marsh grassland parts of the SSSI during periods of high flow.

[60] '*In a nutrient limited system, excess of the non-limiting nutrient may not result in any signs of enrichment in the vegetation as the plants are unable to make use of one nutrient without sufficient amounts of the other'*. Source: Understanding Fen Nutrients http://www.snh.gov.uk/docs/A416930.pdf

8.5 The current discharge consent for Rye Meads WwTW has been subjected to a review by the Environment Agency and Thames Water (Review of Consents) specifically for the purpose of determining whether the current consented phosphorus limits on the discharge are leading to an adverse effect on the Lee Valley SPA/Ramsar site, and if so, to amend the consent in order to avoid such an effect. As such, provided effluent from new development within the Rye Meads catchment can be accommodated within the existing volumetric discharge consent for the WwTW it can be concluded with confidence that an adverse effect on the SPA/Ramsar site is unlikely to occur from this pathway.

8.6 However, once the WwTW ceases to have capacity within its existing discharge consent for effluent from additional dwellings, it will be necessary for Thames Water to apply to the Environment Agency to increase the consented discharge volume, or direct flows to an alternative treatment facility. The Environment Agency is very unlikely to consent to an increase in discharge volume from the WwTW unless the phosphate concentration within the effluent can be further tightened to ensure no deterioration in water quality in Tollhouse Stream. There is a technical limit (known as the limit of Best Available Technology) to how much phosphorus removal a WwTW can incorporate. If this situation arises, there is a risk that future dwellings within the catchment could not be accommodated at Rye Meads WwTW, requiring an alternative treatment solution that does not as yet exist. Investigating these issues was one of the purposes of the Rye Meads Water Cycle Study (2009). Water quality is therefore an important pathway to investigate with regard to future development within the Rye Meads WwTW catchment.

8.7 With regard to Epping Forest District, as identified in Table 4, the Garden Communities around Harlow and the settlement of Lower Sheering are located within the catchment of Rye Meads WwTW, and are likely to provide approximately 3,970 new dwellings between them. The bulk of wastewater volumes treated by the WwTW come from Stevenage, Welwyn Garden City and Harlow but settlements in Epping Forest District also make a contribution, particularly the Garden Towns around Harlow.

8.8 Using less water per person will reduce the impact the new development on the hydraulic capacity at Rye Meads WwTW, allowing more development to be catered for within the existing capacity and delay the need for a larger volumetric discharge consent. A recent (June 2017) Position Statement issued by Thames Water to Epping Forest District Council and other relevant authorities has clarified that from a final effluent stream point of view (this being the relevant stream in terms of phosphate loading of discharged effluent) Rye Meads WwTW is expected to have headroom until 2036. This is beyond the plan period and therefore no capacity issues should arise for growth in the catchment. However, it will be necessary to ensure that development within the catchment of Rye Meads WwTW to keep pace with the provision of wastewater treatment infrastructure and environmental capacity there.

8.9 It is possible to conclude that the Local Plan will not result in a water quality effect on Lee Valley SPA/Ramsar site either alone or in combination with other projects and plans.

9. Summary of Recommendations and Conclusions

9.1 Provided that the recommendations made in this document are incorporated into the Local Plan, it would be possible to conclude that the Submission Version of the Epping Forest District Local Plan will not result in a likely significant effect, either alone or in combination, upon any European sites. Recommendations made will ensure that any issues that may arise regarding air quality, recreational pressure (including urbanisation) on Epping Forest SAC can be identified and addressed before they result in a likely significant effect.

9.2 The recommendations are as follows:

9.3 It is recommended that all allocations above a certain size (such as for more than 400 dwellings[61]) in the core catchment of the SAC, and particularly the settlements of Loughton, Epping, Waltham Abbey, Theydon Bois and Chigwell, should consider any potential to deliver their own on-site accessible natural greenspace. This is facilitated by Policy DM2 which states that '*To mitigate against potential or identified adverse effects of additional development in the District, in particular from strategic developments, on the Epping Forest SAC, the Council will ensure the provision of a meaningful proportion of Natural Green Space or access to Natural Green Space.*' Therefore, no specific change to policy is required and this recommendation only needs noting and exploring in practice. If the visitor survey identifies a larger core catchment then, depending on its size, this same principle could also be applied to the Garden Communities around Harlow set out in Policy SP4. In any event, all of those Garden Communities are of a sufficient size that it would be appropriate for them to provide extensive areas of recreationally accessible natural greenspace in order to maximise their recreational self-sufficiency[62].

[61] Examples of site allocations within 4km of Epping Forest SAC that are to provide 400 dwellings or more are: EPP.R2 (East); 500 dwellings; and EPP.R1 (West): 450 dwellings.

[62] It is known from experience elsewhere that such mitigating greenspace, to be most effective, generally needs to be a minimum of 10ha in size not to feel unduly cramped and allow for a circular walk of at least 2.5km which, based on experience elsewhere, is likely to be ample for most people to obtain sufficient enjoyment. A given developer would not necessarily need to provide the entirety of this space themselves (for example they could provide an area of additional land that adequately enhances an existing area of greenspace), or they could facilitate delivery of a large area of greenspace elsewhere within the recreational catchment, since this could still result in a net absorption of additional visitors to the SAC.

Appendix A European Designated Sites Background

Epping Forest SAC

Introduction

Part of the Epping Forest SAC is located within Epping Forest District. Approximately 70% of the 1,600 hectare site consists of broadleaved deciduous woodland, and it is one of only a few remaining large-scale examples of ancient wood-pasture in lowland Britain. Epping Forest SAC supports a nationally outstanding assemblage of invertebrates, a major amphibian interest and an exceptional breeding bird community.

Reasons for Designation[63]

Epping Forest qualifies as a SAC for both habitats and species. Firstly, the site contains the Habitats Directive Annex I habitats of:

- Beech forests on acid soils with *Ilex* and sometime *Taxus* in the shrublayer.
- Wet heathland with cross-leaved heath; and
- Dry heath

Secondly, the site contains the Habitats Directive Annex II species Stag beetle *Lucanus cervus*, with widespread and frequent records.

Current Pressures and Threats[64]

- Air pollution
- Under grazing
- Public disturbance
- Changes in species distribution
- Inappropriate water levels
- Water pollution
- Invasive species
- Disease

Conservation Objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site

[63] JNCC (2015) Natura 200 Standard Data Form: Epping Forest SAC
[64] Natural England (2015). Site Improvement Plan: Epping Forest SAC

Lee Valley SPA and Ramsar Site

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. In addition to the ornithological interest, the site also qualifies as a Ramsar site on account on rare and scarce plants and invertebrates present.

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 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.

Reasons for Designation

The Lee Valley site is designated as an SPA[65]: for its Birds Directive Annex I and Ramsar site under criterion 6[66] for species that over-winter, and these are:

- Bittern Botaurus stellaris;
- Gadwall Anas strepera;
- Shoveler Anas clypeata.

In addition, the site qualifies as a Ramsar under criterion 2[67], by supporting the nationally scarce plant species whorled water-milfoil *Myriophyllum verticillatum* and the rare or vulnerable invertebrate *Micronecta minutissima* (a water-boatman).

Current Pressures and Threats[68]

- Water pollution
- Hydrological changes
- Public disturbance
- Inappropriate scrub control
- Fishing
- Air pollution
- Inappropriate cutting and mowing
- Invasive species

Conservation Objectives[69]

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features

[65] http://jncc.defra.gov.uk/page-2047-theme=default [accessed 09/11/2017]
[66] http://jncc.defra.gov.uk/pdf/RIS/UK11034.pdf [accessed 09/11/2017]
[67] Ibid
[68] http://publications.naturalengland.org.uk/file/5788502547496960 [accessed 09/11/2017]
[69] http://publications.naturalengland.org.uk/file/5168095937167360 [accessed 09/11/2017]

- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Wormley-Hoddesdonpark Woods SAC

Introduction

This SAC consists of two SSSIs – Wormley-Hoddesdonpark Woods North and Wormley-Hoddesdonpark Woods South and is situated on the southern border of East Herts, with part of the SAC in Broxbourne. The 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. Additionally, small ponds and streams are important habitats for bryophytes.

Reasons for Designation[70]

Wormley-Hoddesdonpark Woods qualifies as a SAC through its habitats, containing the Habitats Directive Annex I habitat:

- Oak-hornbeam forests – this is one of only two outstanding locations for such habitat in the UK.

Current Pressures and Threats[71]

- Disease
- Invasive species
- Air pollution
- Deer
- Illicit vehicle
- Woodland/ forestry management
- Recreation

Conservation Objectives[72]

With regard to the SAC and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features'), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which qualifying natural habitats rely

[70] http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013696 [accessed 09/11/2017]
[71] http://publications.naturalengland.org.uk/file/6541134543192064 [accessed 09/11/2017]
[72] http://publications.naturalengland.org.uk/file/6475250191564800 [accessed 09/11/2017]

Appendix B Figures

Figure A1: Locations of Internationally Designated Sites

Figure A2: Location of Site Allocations

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LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDEINTIAL SITES OVERVIEW

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CN	JW	IHH	11/12/2017

AECOM Internal Project No.	Scale @ A3
60512493	1:125,000

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2 0 2 4 6 8 10 km

File Name:\\ba-wip-004.scottwilson.co.uk\4400 - Management Services\5004 - Information Systems\60512493_Epping_Forest_HRA\02_Maps\Figure 3A - Residential Sites Overview.mxd

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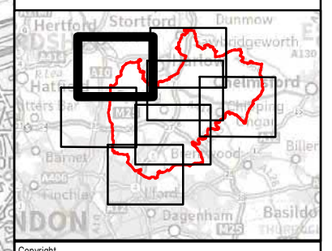
LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC



Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

Drawn	Checked	Approved	Date
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File Name:\\ba-wip-004.scottwilson.co.uk\4400 - Management Services\5004 - Information Systems\60512493_Epping_Forest_HRA\02_Maps\Figure 3B - Residential Sites.mxd

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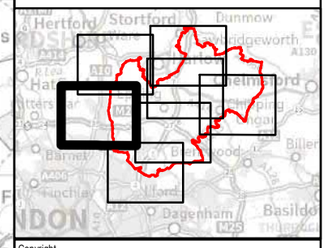
LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

NAZE.R1
NAZE.R3
NAZE.R4
RUR.T3
WAL.T1
WAL.R1
WAL.R2
WAL.R3
WAL.R4
WAL.R5
WAL.R6
WAL.R7



Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

Drawn	Checked	Approved	Date
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Drawing Number: FIGURE 3B.B

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LOU.R17
LOU.R13
LOU.R8
LOU.R9
LOU.R3
LOU.R6
LOU.R15
LOU.R7
LOU.R4
LOU.R2
LOU.R18
LOU.R10
LOU.R14
LOU.R11
LOU.R1
BUCK.R1
BUCK.R2
BUCK.R3
CHIG.R9
CHIG.R1
CHIG.R10
CHIG.R4
CHIG.R2
CHIG.R5
CHIG.R11
CHIG.R7
CHIG.R3
CHIG.R6
CHIG.R8

LOUGHTON
CHINGFORD
CHIGWELL
WOODFORD
WANSTEAD
REDBRIDGE

0.5 0 0.5 1 1.5 2 2.5 km

N

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LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

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EPP.R1
EPP.R2
EPP.R3
EPP.R4
EPP.R5
EPP.R6
EPP.R7
EPP.R8
EPP.R9
EPP.R10
EPP.R11
COOP.R1
THYB.R1
THYB.R2
THYB.R3
LOU.R1
LOU.R2
LOU.R3
LOU.R4
LOU.R5
LOU.R6
LOU.R7
LOU.R8
LOU.R9
LOU.R10
LOU.R11
LOU.R12
LOU.R13
LOU.R14
LOU.R15
LOU.R16
LOU.R17
LOU.R18
BUCK.R1
RUR.T4
STAP.R1
STAP.R2
STAP.R3

EPPING
EPPING FOREST DISTRICT
LOUGHTON
THEYDON BOIS
DEBDEN

0.5 0 0.5 1 1.5 2 2.5 km

N

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LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

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LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

RUR.R1
SP 4.1
MORE.T1
THOR.R1
THOR.R2
NWB.R1
NWB.R2
NWB.R3
NWB.R4
NWB.R5
NWB.T1
COOP.R1
EPP.R3
EPP.R4
EPP.R5
EPP.R6
EPP.R7
EPP.R8
EPP.R9
EPP.R10
EPP.R11
ONG.R1
ONG.R2
ONG.R3
ONG.R4
ONG.R5
ONG.R6
ONG.R7
ONG.R8

HARLOW DISTRICT
EPPING FOREST DISTRICT
EPPING

0.5 0 0.5 1 1.5 2 2.5 km

N

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

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LSHR.R1
SHR.R3
SHR.R2
SHR.R1
SP 4.3
RUR.R1
SP 4.1
MORE.T1

0.5 0 0.5 1 1.5 2 2.5 km

N

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LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

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MORE.T1
FYF.R1
ONG.R3
ONG.R1
ONG.R4
ONG.R2
HONG.R1
RUR.R2
ONG.R5
ONG.R8
ONG.R6
ONG.R7

0.5 0 0.5 1 1.5 2 2.5 km

N

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LEGEND

- Epping Forest Boundary
- Buffers
- Residential Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: RESIDENTIAL SITES

Drawn	Checked	Approved	Date
TD	JW	JR	11/12/2017

AECOM Internal Project No.: 60512493
Scale @ A3: 1:35,000

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LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES OVERVIEW

Drawn	Checked	Approved	Date
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AECOM Internal Project No.	Scale @ A3
60512493	1:125,000

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Drawing Number: FIGURE 4A

Rev: 01

N

2 0 2 4 6 8 10 km

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- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

NAZE.E1
NAZE.E2
NAZE.E3
NAZE.E4
NAZE.E5
NAZE.E6
NAZE.E7

0.5 0 0.5 1 1.5 2 2.5 km

N

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

Drawn	Checked	Approved	Date
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Drawing Number: FIGURE 4B.A
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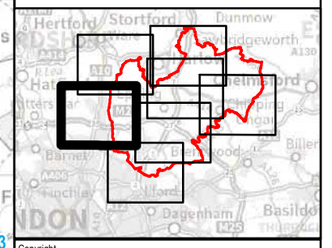
LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC



Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

Drawn	Checked	Approved	Date
TD	JW	JR	11/12/2017

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Drawing Number: **FIGURE 4B.B**

Rev: 01

File Name:\\ba-wip-004.scottwilson.co.uk\t4400 - Management Services\5004 - Information Systems\60512493_Epping_Forest_HRA\02_Maps\Figure 4B - Employment Sites.mxd

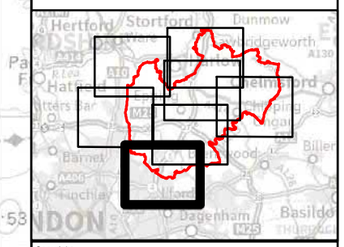
LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

LOU.E1
LOU.E2
RUR.E16
RUR.E17



Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

Drawn	Checked	Approved	Date
TD	JW	JR	11/12/2017

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Drawing Number: FIGURE 4B.C
Rev: 01

0.5 0 0.5 1 1.5 2 2.5 km

N

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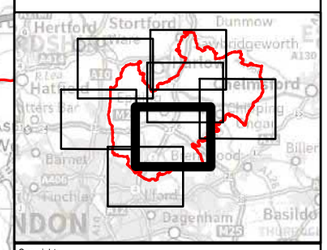
LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC



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Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

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TD	JW	JR	11/12/2017

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Drawing Number: FIGURE 4B.D

Rev: 01

0.5 0 0.5 1 1.5 2 2.5 km

N

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RUR.E19
RUR.E9
THOR.E2
RUR.E5
THOR.E1
THOR.E4
THOR.E3
RUR.E1
EPP.E3
EPP.E4
RUR.E8
RUR.E7
RUR.E24
RUR.E22
RUR.E22
RUR.E15
NWB.E1
NWB.E2
NWB.E3
NWB.E4
RUR.E12
ONG.E1
RUR.E20

0.5 0 0.5 1 1.5 2 2.5 km

N

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LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

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Drawing Number: FIGURE 4B.E

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LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

RUR.E10
LSHR.E1
RUR.E11
RUR.E6
RUR.E2
RUR.E14
RUR.E3
RUR.E24
RUR.E8
RUR.E7
RUR.E15
RUR.E22
RUR.E22
RUR.E12
RUR.E19

0.5 0 0.5 1 1.5 2 2.5 km

N

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

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Drawing Number: FIGURE 4B.F
Rev: 01

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RUR.E12
RUR.E18
ONG.E1
HONG.E1
RUR.E21
RUR.E20
RUR.E4

0.5 0 0.5 1 1.5 2 2.5 km

N

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LEGEND

- Epping Forest Boundary
- Buffers
- Employment Allocations
- Lee Valley Ramsar
- Lee Valley SPA

Special Area of Conservation (SAC)

- Epping Forest SAC
- Wormley-Hoddesdon Park Woods SAC

Purpose of Issue: DRAFT

Client: EPPING FOREST DISTRICT COUNCIL

Project Title: EPPING FOREST HRA

Drawing Title: EMPLOYMENT SITES

Drawn	Checked	Approved	Date
TD	JW	JR	11/12/2017

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Rev: 01

File Name:\\ba-wip-004.scottwilson.co.uk\4400 - Management Services\5004 - Information Systems\60512493_Epping_Forest_HRA\02_Maps\Figure 4B - Employment Sites.mxd

Appendix C 2016 Air Quality Impact Assessment data: Epping Forest SAC

Note that this assessment involves data and modelling from 2016. It is due to be updated in 2018.

Traffic flow data

The transport consultancy Jacobs used a spreadsheet model to generate flow data for the following roads within 200m of Epping Forest SAC:

- A121 (two sections);
- A104;
- B1393;
- B172; and
- Theydon Road

The flow data for each road are presented below as Annual Average Daily Traffic (AADT). Percentage heavy duty vehicles and average vehicle speeds are also provided. For the purposes of these analyses it was assumed that percentage HDV and average vehicle speeds would remain essentially similar to 2033; this is the standard assumption. Baseline is the AADT flow on each link as of 2014. Do Minimum is the change in flows due to delivery of existing planning permissions in the HMA and general background traffic growth as a result of population growth expected to 2033 without any of the HMA Options. The flows due to each HMA option are then shown in Columns 4 to 8. All Options A to E involved the same assumptions about employment traffic.

1	2			3	4	5	6	7	8
	Baseline (2014)			**2033 Do Minimum**	**Option A**	**Option B**	**Option C**	**Option D**	**Option E**
Link (NB = northbound lane etc.)	**AADT**	**% HDV**	**Speed (kph)**	**AADT**	**AADT**	**AADT**	**AADT**	**AADT**	**AADT**
B1393 NB	10593	2.9	62	12861	13719	13699	13713	13422	13827
B1393 SB	9477	1.3	45	12074	12853	12697	12858	12462	12646
B172 EB	3907	2.5	53	4472	4223	4222	4225	4190	4232
B172 WB	4241	4.9	40	4926	4992	4953	4957	4950	5035
A121 between Wake Arms Roundabout and Loughton NB	9980	1.2	19	11859	12075	12063	12051	11843	12181
A121 between Wake Arms Roundabout and Loughton SB	10430	2.1	56	12134	11607	11550	11589	11504	11593
A104 NB	8031	4.0	53	9680	9954	10000	10001	9669	10017
A104 SB	8165	2.7	48	10356	11684	11431	11599	11449	11660
A121 between Wake Arms Roundabout and the M25 EB	12228	2.8	34	13982	14029	13927	14001	14027	14074
A121 between Wake Arms Roundabout and the M25 WB	13008	3.5	40	15798	17075	16974	17023	16632	17130
Theydon Rd NB	4225	1.2	54	5174	5233	5251	5257	5092	5262
Theydon Rd SB	3677	1.5	53	4681	4976	4901	4973	4858	4903

The total change in two-way flows between Options A to E on the one hand and the Do Minimum Scenario on the other tells us the change specifically due to each Option (as distinct from the total change to 2033). These are the data that are used to determine the specific impact of each option in line with the Design Manual for Roads and Bridges.

		Change in two–way AADT compared to DM. Positive numerals mean an increase, negative numerals mean a decrease				
Link	**2033 Do Minimum two way flows**	**Option A**	**Option B**	**Option C**	**Option D**	**Option E**
B1393	24,935	1,637	1,461	1,636	949	1,538
B172	9,398	- 183	- 223	- 216	- 258	- 131
A121 (between Wake Arms Roundabout and Loughton)	23,993	- 311	- 380	- 353	- 646	- 219
A104	20,036	1,602	1,395	1,564	1,082	1,641
A121 (between Wake Arms Roundabout and M25)	29,780	1,324	1,121	1,244	879	1,424
Theydon Rd	9,855	354	297	375	95	310

From examining the changes in flows due to each Option, it can be seen that the change in flows is fairly small in all cases. This is probably because:

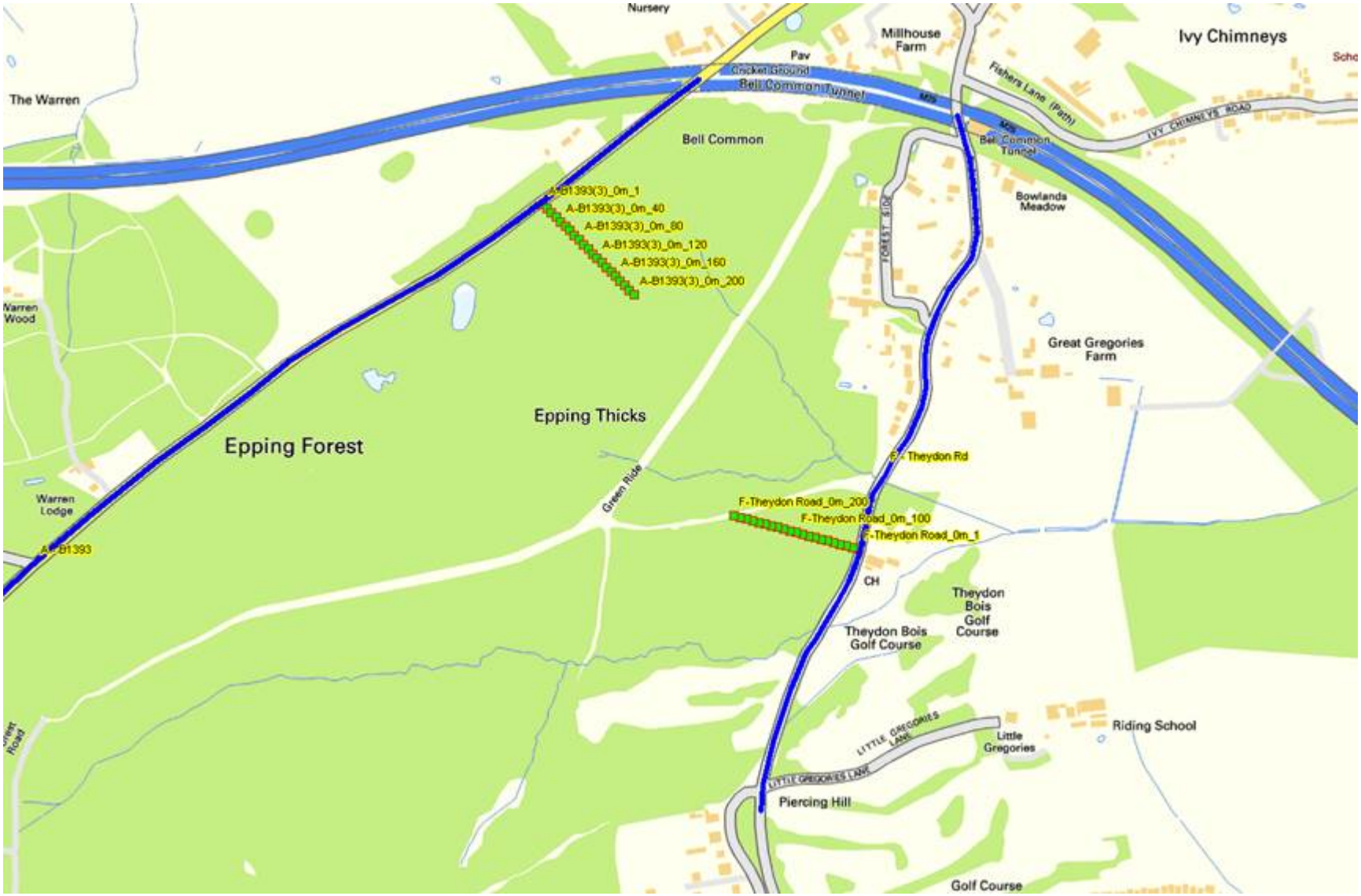
1. Although the total amount of housing being planned under each option is large, a significant proportion of that housing already has planning permission (and is thus counted as part of the Do Minimum Scenario, since it would occur whether or not any of the Scenarios were chosen);
2. Of the housing that does not have planning permission, a large amount in each case is situated between 5km and 10km north of Epping Forest SAC around Harlow, such that there are plenty of opportunities for traffic generated by that housing to disperse across the network before it reaches Epping Forest SAC; and
3. All of these scenarios involve some transport improvements and the model may have predicted that vehicle flows on some links will change due to those. Alternatively, the model may be assuming traffic is redeploying onto other roads for other reasons. For example, scrutiny of the data suggests that under each Option the traffic model expects slightly less traffic to head south from Wake Arms Roundabout to Loughton than would otherwise occur by 2033, but expects slightly more to move between Wake Arms Roundabout and the M25 in both directions.

It is important to remember that the numbers above are the changes in flows due to that option compared to the 2033 flows without that option. So, for example, Option D for Theydon Road is not saying that by 2033 flows will only have increased by 95 vehicles per day compared to 2014, but that a further 95 vehicles per day (average) is the difference which Option D would make compared to background traffic growth and delivery of existing planning permissions.

The two links (B172 and A121 from Wake Arms Roundabout to Loughton) that are predicted to experience an overall reduction in flows by 2033 due to every Option are not presented as air quality calculations below, since clearly the impact of the Options A to E will not be adverse compared to the situation without any Option.

Air quality calculations

For each of the roads air quality transects were calculated up to 200m back from the roadside as below. For some road sections (particularly around Wake Arms Roundabout) multiple transects were modelled to account for the influence of the predominant wind direction and emissions from the other nearby road links. In the summary tables below the worst case results are presented for each road link and option.


Nursery
Millhouse Farm
Ivy Chimneys
Pav
Cricket Ground
Bell Common Tunnel
The Warren
Bell Common
Fishers Lane (Path)
IVY CHIMNEYS ROAD
Bell Common Tunnel
Bowlands Meadow
A-B1393(3)_0m_1
A-B1393(3)_0m_40
A-B1393(3)_0m_80
A-B1393(3)_0m_120
A-B1393(3)_0m_160
A-B1393(3)_0m_200
Warren Wood
Great Gregories Farm
Epping Thicks
Epping Forest
F-Theydon Rd
Green Ride
Warren Lodge
F-Theydon Road_0m_200
F-Theydon Road_0m_100
F-Theydon Road_0m_1
A-B1393
CH
Theydon Bois Golf Course
Theydon Bois Golf Course
Riding School
LITTLE GREGORIES LANE
Little Gregories
Piercing Hill
Golf Course


St Thomas's Quarters
Stable Shaw
Woodredon Farm
Long Running
Car Park
Car Park
Car Park
Wake Arms Roundabout
Oak Hill
Oak Hill Farm
Hollow
Sunshine Plain
Copley Plain
Birch Hal Farm
Deershelter Plain
Car Park
Wake Valley Pond
Hangboy Slade
Birch Wood
Furze Ground

When calculating Do Minimum NOx concentrations, air quality impact assessment guidance from Department for Transport (HA207/07, Annex F) advises that baseline concentrations should be reduced by 2% per annum in order to reflect expected improvements in background air quality in the future. However, we are aware that some regard this as overambitious. Therefore, in the tables below we have made the assumption that that conditions in 2023 (the midpoint between the base year and the year of assessment) are representative of conditions in 2033 (the year of assessment). This approach is accepted within the professional air quality community and accounts for known recent improvements in vehicle technologies (new standard Euro 6/VI vehicles), whilst excluding the more distant and tenuous projections regarding the evolution of the vehicle fleet.

In the tables that follow, each option is analysed for each road link. The air quality impact of each option is reflected in the ‘Change’ column, this being the difference between the 2033 Do Minimum Scenario and each HMA Option. The model also shows the ‘in combination’ scenario by comparing the Do Something scenario with the Base scenario. This shows the effect of all forecast additional traffic on the network by 2033 irrespective of source (i.e. not just from within the HMA authorities), taking account of forecast improvements in emission technology.

Option A

A121 between Wake Arms Roundabout and M25												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	92.1	55.0	56.5	1.5	17.77	13.13	13.20	0.06	1.36	1.24	1.24	0.01
10	60.0	36.9	37.7	0.8	16.47	12.34	12.38	0.04	1.23	1.16	1.16	0.00
20	48.6	30.4	30.9	0.5	15.95	12.03	12.06	0.03	1.17	1.12	1.13	0.00
50	37.8	24.4	24.7	0.3	15.43	11.74	11.75	0.01	1.12	1.09	1.09	0.00
100	32.8	21.7	21.8	0.2	15.19	11.60	11.61	0.01	1.10	1.08	1.08	0.00
150	30.9	20.6	20.7	0.1	15.09	11.55	11.56	0.01	1.09	1.07	1.07	0.00
200	29.9	20.1	20.2	0.1	15.04	11.52	11.53	0.00	1.08	1.07	1.07	0.00
B1393												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	59.6	38.5	39.8	1.4	16.60	12.51	12.57	0.06	1.24	1.17	1.18	0.01
10	43.0	28.2	28.9	0.7	15.84	12.02	12.06	0.04	1.16	1.12	1.13	0.00
20	36.7	24.3	24.8	0.5	15.54	11.83	11.86	0.03	1.13	1.10	1.11	0.00
50	30.7	20.6	20.8	0.3	15.24	11.64	11.66	0.01	1.10	1.08	1.09	0.00
100	28.0	18.9	19.1	0.1	15.10	11.56	11.57	0.01	1.09	1.08	1.08	0.00
150	27.0	18.3	18.4	0.1	15.05	11.53	11.53	0.01	1.08	1.07	1.07	0.00
200	26.5	18.0	18.1	0.1	15.02	11.51	11.52	0.00	1.08	1.07	1.07	0.00
A104												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	59.1	37.2	38.8	1.6	16.57	12.42	12.50	0.07	1.24	1.16	1.17	0.01
10	42.2	27.4	28.2	0.8	15.80	11.96	11.99	0.04	1.16	1.12	1.12	0.00
20	36.2	24.0	24.5	0.5	15.50	11.79	11.81	0.03	1.13	1.10	1.10	0.00
50	30.5	20.7	21.0	0.3	15.21	11.62	11.64	0.01	1.10	1.08	1.08	0.00
100	28.0	19.3	19.4	0.2	15.08	11.55	11.56	0.01	1.09	1.07	1.07	0.00
150	27.0	18.7	18.9	0.1	15.04	11.52	11.53	0.01	1.08	1.07	1.07	0.00
200	26.6	18.5	18.6	0.1	15.01	11.51	11.51	0.01	1.08	1.07	1.07	0.00
Theydon Road												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	41.3	26.5	26.8	0.3	15.48	11.81	11.83	0.01	1.22	1.19	1.19	0.00
10	34.9	22.4	22.6	0.1	15.16	11.61	11.62	0.01	1.18	1.17	1.17	0.00

20	32.8	21.1	21.2	0.1	15.06	11.55	11.55	0.01	1.17	1.16	1.16	0.00
50	31.0	20.0	20.0	0.1	14.96	11.49	11.49	0.00	1.16	1.16	1.16	0.00
100	30.2	19.5	19.6	0.0	14.92	11.46	11.46	0.00	1.16	1.16	1.16	0.00
150	30.0	19.4	19.4	0.0	14.91	11.45	11.46	0.00	1.16	1.15	1.15	0.00
200	29.9	19.3	19.3	0.0	14.91	11.45	11.45	0.00	1.16	1.15	1.15	0.00

Option B

Theydon Road												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	41.3	26.5	26.8	0.2	15.48	11.81	11.83	0.01	1.22	1.19	1.19	0.00
10	34.9	22.4	22.6	0.1	15.16	11.61	11.62	0.01	1.18	1.17	1.17	0.00
20	32.8	21.1	21.2	0.1	15.06	11.55	11.55	0.00	1.17	1.16	1.16	0.00
50	31.0	20.0	20.0	0.0	14.96	11.49	11.49	0.00	1.16	1.16	1.16	0.00
100	30.2	19.5	19.6	0.0	14.92	11.46	11.46	0.00	1.16	1.16	1.16	0.00
150	30.0	19.4	19.4	0.0	14.91	11.45	11.46	0.00	1.16	1.15	1.15	0.00
200	29.9	19.3	19.3	0.0	14.91	11.45	11.45	0.00	1.16	1.15	1.15	0.00

A121 between Wake Arms Roundabout and M25												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	92.1	55.0	56.2	1.3	17.77	13.13	13.19	0.05	1.36	1.24	1.24	0.01
10	60.0	36.9	37.5	0.7	16.47	12.34	12.37	0.03	1.23	1.16	1.16	0.00
20	48.6	30.4	30.9	0.4	15.95	12.03	12.06	0.02	1.17	1.12	1.13	0.00
50	37.8	24.4	24.6	0.2	15.43	11.74	11.75	0.01	1.12	1.09	1.09	0.00
100	32.8	21.7	21.8	0.1	15.19	11.60	11.61	0.01	1.10	1.08	1.08	0.00
150	30.9	20.6	20.7	0.1	15.09	11.55	11.55	0.00	1.09	1.07	1.07	0.00
200	29.9	20.1	20.1	0.1	15.04	11.52	11.52	0.00	1.08	1.07	1.07	0.00
B1393												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	65.8	41.3	42.6	1.3	16.60	12.52	12.57	0.06	1.33	1.26	1.27	0.01
10	47.5	30.1	30.8	0.6	15.78	11.99	12.02	0.03	1.25	1.21	1.21	0.00
20	41.1	26.2	26.6	0.4	15.47	11.80	11.82	0.02	1.21	1.19	1.19	0.00
50	35.0	22.4	22.6	0.2	15.17	11.61	11.62	0.01	1.18	1.17	1.17	0.00
100	32.3	20.7	20.8	0.1	15.03	11.52	11.53	0.01	1.17	1.16	1.16	0.00
150	31.2	20.1	20.2	0.1	14.98	11.49	11.50	0.00	1.16	1.16	1.16	0.00
200	30.7	19.8	19.8	0.1	14.95	11.48	11.48	0.00	1.16	1.16	1.16	0.00
A104												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	59.1	37.2	38.6	1.4	16.57	12.42	12.49	0.06	1.24	1.16	1.17	0.01
10	42.2	27.4	28.1	0.7	15.80	11.96	11.99	0.03	1.16	1.12	1.12	0.00
20	36.2	24.0	24.4	0.5	15.50	11.79	11.81	0.02	1.13	1.10	1.10	0.00
50	30.5	20.7	20.9	0.2	15.21	11.62	11.63	0.01	1.10	1.08	1.08	0.00
100	28.0	19.3	19.4	0.1	15.08	11.55	11.56	0.01	1.09	1.07	1.07	0.00
150	27.0	18.7	18.8	0.1	15.04	11.52	11.53	0.01	1.08	1.07	1.07	0.00
200	26.6	18.5	18.6	0.1	15.01	11.51	11.51	0.00	1.08	1.07	1.07	0.00

Option C

Theydon Road												
	Annual Mean Nox Conc. (ug/m3)				Annual Mean N Dep (k N/ha/yr)				Annual Mean A Dep (keq/ha/yr)			
Distance (m)	BL	DM	DS	Change	BL	DM	DS	Change	BL	DM	DS	Change
1	41.3	26.5	26.8	0.3	15.48	11.81	11.83	0.02	1.22	1.19	1.19	0.00
10	34.9	22.4	22.6	0.2	15.16	11.61	11.62	0.01	1.18	1.17	1.17	0.00

20	32.8	21.1	21.2	0.1	15.06	11.55	11.55	0.01	1.17	1.16	1.16	0.00
50	31.0	20.0	20.0	0.1	14.96	11.49	11.49	0.00	1.16	1.16	1.16	0.00
100	30.2	19.5	19.6	0.0	14.92	11.46	11.46	0.00	1.16	1.16	1.16	0.00
150	30.0	19.4	19.4	0.0	14.91	11.45	11.46	0.00	1.16	1.15	1.15	0.00
200	29.9	19.3	19.3	0.0	14.91	11.45	11.45	0.00	1.16	1.15	1.15	0.00
A121 between Wake Arms Roundabout and M25												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	92.1	55.0	56.4	1.4	17.77	13.13	13.19	0.06	1.36	1.24	1.24	0.01
10	60.0	36.9	37.6	0.7	16.47	12.34	12.37	0.04	1.23	1.16	1.16	0.00
20	48.6	30.4	30.9	0.5	15.95	12.03	12.06	0.02	1.17	1.12	1.13	0.00
50	37.8	24.4	24.6	0.3	15.43	11.74	11.75	0.01	1.12	1.09	1.09	0.00
100	32.8	21.7	21.8	0.2	15.19	11.60	11.61	0.01	1.10	1.08	1.08	0.00
150	30.9	20.6	20.7	0.1	15.09	11.55	11.55	0.00	1.09	1.07	1.07	0.00
200	29.9	20.1	20.1	0.1	15.04	11.52	11.53	0.00	1.08	1.07	1.07	0.00

B1393												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	59.6	38.5	39.8	1.4	16.60	12.51	12.57	0.06	1.24	1.17	1.18	0.01
10	43.0	28.2	28.9	0.7	15.84	12.02	12.06	0.04	1.16	1.12	1.13	0.00
20	36.7	24.3	24.8	0.5	15.54	11.83	11.86	0.03	1.13	1.10	1.11	0.00
50	30.7	20.6	20.8	0.3	15.24	11.64	11.66	0.01	1.10	1.08	1.09	0.00
100	28.0	18.9	19.1	0.1	15.10	11.56	11.57	0.01	1.09	1.08	1.08	0.00
150	27.0	18.3	18.4	0.1	15.05	11.53	11.53	0.01	1.08	1.07	1.07	0.00
200	26.5	18.0	18.1	0.1	15.02	11.51	11.52	0.00	1.08	1.07	1.07	0.00
A104												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	59.1	37.2	38.8	1.5	16.57	12.42	12.49	0.07	1.24	1.16	1.17	0.01
10	42.2	27.4	28.2	0.8	15.80	11.96	11.99	0.04	1.16	1.12	1.12	0.00
20	36.2	24.0	24.5	0.5	15.50	11.79	11.81	0.03	1.13	1.10	1.10	0.00
50	30.5	20.7	21.0	0.3	15.21	11.62	11.64	0.01	1.10	1.08	1.08	0.00
100	28.0	19.3	19.4	0.2	15.08	11.55	11.56	0.01	1.09	1.07	1.07	0.00
150	27.0	18.7	18.8	0.1	15.04	11.52	11.53	0.01	1.08	1.07	1.07	0.00
200	26.6	18.5	18.6	0.1	15.01	11.51	11.51	0.00	1.08	1.07	1.07	0.00

Option D

Theydon Road												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	41.3	26.5	26.6	0.1	15.48	11.81	11.82	0.00	1.22	1.19	1.19	0.00
10	34.9	22.4	22.5	0.0	15.16	11.61	11.61	0.00	1.18	1.17	1.17	0.00
20	32.8	21.1	21.2	0.0	15.06	11.55	11.55	0.00	1.17	1.16	1.16	0.00
50	31.0	20.0	20.0	0.0	14.96	11.49	11.49	0.00	1.16	1.16	1.16	0.00
100	30.2	19.5	19.5	0.0	14.92	11.46	11.46	0.00	1.16	1.16	1.16	0.00
150	30.0	19.4	19.4	0.0	14.91	11.45	11.46	0.00	1.16	1.15	1.15	0.00
200	29.9	19.3	19.3	0.0	14.91	11.45	11.45	0.00	1.16	1.15	1.15	0.00
A121 between Wake Arms Roundabout and M25												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	92.1	55.0	56.0	1.0	17.77	13.13	13.18	0.04	1.36	1.24	1.24	0.00
10	60.0	36.9	37.4	0.5	16.47	12.34	12.36	0.02	1.23	1.16	1.16	0.00
20	48.6	30.4	30.8	0.3	15.95	12.03	12.05	0.02	1.17	1.12	1.13	0.00
50	37.8	24.4	24.6	0.2	15.43	11.74	11.75	0.01	1.12	1.09	1.09	0.00
100	32.8	21.7	21.8	0.1	15.19	11.60	11.61	0.01	1.10	1.08	1.08	0.00
150	30.9	20.6	20.7	0.1	15.09	11.55	11.55	0.00	1.09	1.07	1.07	0.00
200	29.9	20.1	20.1	0.1	15.04	11.52	11.52	0.00	1.08	1.07	1.07	0.00
B1393												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	65.8	41.3	42.2	0.8	16.60	12.52	12.55	0.04	1.33	1.26	1.27	0.00
10	47.5	30.1	30.5	0.4	15.78	11.99	12.01	0.02	1.25	1.21	1.21	0.00
20	41.1	26.2	26.4	0.3	15.47	11.80	11.81	0.01	1.21	1.19	1.19	0.00
50	35.0	22.4	22.5	0.1	15.17	11.61	11.61	0.01	1.18	1.17	1.17	0.00
100	32.3	20.7	20.8	0.1	15.03	11.52	11.53	0.00	1.17	1.16	1.16	0.00
150	31.2	20.1	20.1	0.1	14.98	11.49	11.49	0.00	1.16	1.16	1.16	0.00
200	30.7	19.8	19.8	0.0	14.95	11.48	11.48	0.00	1.16	1.16	1.16	0.00
A104												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	59.1	37.2	38.3	1.1	16.57	12.42	12.47	0.05	1.24	1.16	1.17	0.01
10	42.2	27.4	27.9	0.5	15.80	11.96	11.98	0.03	1.16	1.12	1.12	0.00

20	36.2	24.0	24.3	0.4	15.50	11.79	11.80	0.02	1.13	1.10	1.10	0.00
50	30.5	20.7	20.9	0.2	15.21	11.62	11.63	0.01	1.10	1.08	1.08	0.00
100	28.0	19.3	19.4	0.1	15.08	11.55	11.55	0.01	1.09	1.07	1.07	0.00
150	27.0	18.7	18.8	0.1	15.04	11.52	11.53	0.00	1.08	1.07	1.07	0.00
200	26.6	18.5	18.5	0.1	15.01	11.51	11.51	0.00	1.08	1.07	1.07	0.00

Option E

Theydon Road												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	41.3	23.3	23.5	0.2	15.48	10.21	10.22	0.01	1.22	1.18	1.18	0.00
10	34.9	20.2	20.3	0.1	15.16	10.06	10.06	0.00	1.18	1.17	1.17	0.00
20	32.8	19.2	19.3	0.1	15.06	10.01	10.01	0.00	1.17	1.16	1.16	0.00
50	31.0	18.3	18.3	0.0	14.96	9.96	9.97	0.00	1.16	1.16	1.16	0.00
100	30.2	17.9	18.0	0.0	14.92	9.95	9.95	0.00	1.16	1.15	1.15	0.00
150	30.0	17.8	17.9	0.0	14.91	9.94	9.94	0.00	1.16	1.15	1.15	0.00
200	29.9	17.8	17.8	0.0	14.91	9.94	9.94	0.00	1.16	1.15	1.15	0.00

A121 between Wake Arms Roundabout and M25												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	92.1	45.2	46.4	1.3	17.77	11.22	11.27	0.05	1.36	1.20	1.20	0.01
10	60.0	31.3	32.0	0.7	16.47	10.61	10.64	0.03	1.23	1.13	1.14	0.00
20	48.6	26.4	26.8	0.4	15.95	10.37	10.39	0.02	1.17	1.11	1.11	0.00
50	37.8	21.7	22.0	0.2	15.43	10.15	10.16	0.01	1.12	1.08	1.09	0.00
100	32.8	19.7	19.8	0.1	15.19	10.05	10.05	0.01	1.10	1.07	1.08	0.00
150	30.9	18.9	19.0	0.1	15.09	10.01	10.01	0.01	1.09	1.07	1.07	0.00
200	29.9	18.5	18.5	0.1	15.04	9.99	9.99	0.00	1.08	1.07	1.07	0.00
B1393												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	59.6	32.4	33.4	1.0	16.60	10.74	10.79	0.05	1.24	1.15	1.15	0.00
10	43.0	24.5	25.0	0.5	15.84	10.37	10.39	0.03	1.16	1.11	1.11	0.00
20	36.7	21.5	21.8	0.4	15.54	10.22	10.24	0.02	1.13	1.09	1.09	0.00
50	30.7	18.6	18.8	0.2	15.24	10.08	10.09	0.01	1.10	1.08	1.08	0.00
100	28.0	17.3	17.5	0.1	15.10	10.02	10.02	0.01	1.09	1.07	1.07	0.00
150	27.0	16.9	17.0	0.1	15.05	9.99	10.00	0.00	1.08	1.07	1.07	0.00
200	26.5	16.7	16.7	0.1	15.02	9.98	9.99	0.00	1.08	1.07	1.07	0.00
A104												
	Annual Mean Nox Conc. (ug/m3)				**Annual Mean N Dep (k N/ha/yr)**				**Annual Mean A Dep (keq/ha/yr)**			
Distance (m)	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**	**BL**	**DM**	**DS**	**Change**
1	59.1	31.6	32.8	1.2	16.57	10.67	10.73	0.06	1.24	1.14	1.14	0.01
10	42.2	24.0	24.6	0.6	15.80	10.32	10.35	0.03	1.16	1.10	1.11	0.00
20	36.2	21.4	21.8	0.4	15.50	10.19	10.21	0.02	1.13	1.09	1.09	0.00
50	30.5	18.9	19.1	0.2	15.21	10.06	10.07	0.01	1.10	1.08	1.08	0.00
100	28.0	17.8	17.9	0.1	15.08	10.01	10.01	0.01	1.09	1.07	1.07	0.00
150	27.0	17.4	17.5	0.1	15.04	9.99	9.99	0.00	1.08	1.07	1.07	0.00
200	26.6	17.2	17.2	0.1	15.01	9.98	9.98	0.00	1.08	1.07	1.07	0.00