

# Habitats Regulations Assessment of Harlow Local Development Plan

Submitted Strategic and Development Management Policies  
2018

Harlow Council

March 2019

## Quality information

### Prepared by

Isla Hoffmann Heap  
Consultant Ecologist

### Checked by

James Riley  
Associate Director

### Approved by

Max Wade  
Technical Director

## Revision History

Revision	Revision date	Details	Authorized	Name	Position
0	12/01/2018	Draft issue to client	JR	James Riley	Associate Director
1	19/01/2018	Amendments following client comments	JR	James Riley	Associate Director
2	01/02/2018	Minor update to reflect February 2018 Draft Pre-Submission Plan	IHH	Isla Hoffmann Heap	Senior Ecologist
3	21/03/18	Updates to reflect release of new visitor survey for Epping Forest SAC	JR	James Riley	Associate
4	04/05/2018	Updated to reflect Water Cycle Study	JR	James Riley	Associate Director
5	29/06/18	Updated to reflect Sweetman ruling		James Riley	Technical Director
6	08/03/19	Updated to reflect latest air quality modelling for Epping Forest, latest position on Epping Forest mitigation strategy and latest Water Cycle Study information		James Riley	Technical Director

Prepared for:

*Harlow Council*

Prepared by:

AECOM Infrastructure & Environment UK Limited  
Midpoint, Alencon Link  
Basingstoke  
Hampshire RG21 7PP  
United Kingdom

## **Limitations**

AECOM Infrastructure and Environment UK Limited (“AECOM”) has prepared this Report for the sole use of Harlow Council (“Client”) in accordance with the terms and conditions of appointment. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by AECOM. This Report may not be relied upon by any other party without the prior and express written agreement of AECOM.

Where any conclusions and recommendations contained in this Report are based upon information provided by others, it has been assumed that all relevant information has been provided by those parties and that such information is accurate. Any such information obtained by AECOM has not been independently verified by AECOM, unless otherwise stated in the Report. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate information supplied to AECOM from others.

The methodology adopted and the sources of information used by AECOM in providing its services are outlined in this Report. The work described in this Report was undertaken in December 2017 and March 2019 and is based on the conditions encountered and the information available during the said period of time. The scope of this Report and the services are accordingly factually limited by these circumstances. AECOM disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to AECOM’s attention after the date of the Report.

## **Copyright**

© 2019 AECOM Limited. All Rights Reserved.

This document has been prepared by AECOM Limited (“AECOM”) for sole use of our client (the “Client”) in accordance with generally accepted consultancy principles, the budget for fees and the terms of reference agreed between AECOM and the Client. Any information provided by third parties and referred to herein has not been checked or verified by AECOM, unless otherwise expressly stated in the document. No third party may rely upon this document without the prior and express written agreement of AECOM.

## Table of Contents

<b>1. Introduction</b> .....	<b>6</b>
Background to the Project.....	6
Legislation.....	7
Scope of the Project.....	8
Memoranda of Understanding.....	9
This Report.....	9
<b>2. Methodology</b> .....	<b>10</b>
Introduction.....	10
HRA Task 1: Likely Significant Effects (LSE).....	10
HRA Task 2: Appropriate Assessment (AA).....	11
Task 3: Avoidance & Mitigation.....	11
Principal Other Plans and Projects That May Act 'In Combination'.....	12
Air Quality Impact Assessment.....	13
<b>3. Pathways of Impact</b> .....	<b>19</b>
Introduction.....	19
Disturbance from Recreational Activities.....	19
Atmospheric Pollution.....	23
Water Abstraction.....	25
Water Quality.....	26
<b>4. Likely Significant Effects</b> .....	<b>27</b>
Screening of LDP Policies.....	27
Likely Significant Effect of Site Allocations.....	45
Air Quality Modelling Results: Likely Significant Effects.....	49
<b>5. Appropriate Assessment: Recreational Pressure</b> .....	<b>50</b>
Lee Valley SPA and Ramsar Site (In Combination).....	52
Epping Forest SAC (In Combination).....	53
<b>6. Appropriate Assessment: Air Quality</b> .....	<b>56</b>
Policies.....	56
Epping Forest SAC.....	57
<b>7. Appropriate Assessment: Water Abstraction</b> .....	<b>59</b>
Lee Valley SPA and Ramsar Site.....	59
<b>8. Appropriate Assessment: Water Quality</b> .....	<b>61</b>
Lee Valley SPA and Ramsar Site.....	61
<b>9. Conclusions</b> .....	<b>63</b>
<b>Appendix A European Designated Sites Background</b> .....	<b>64</b>
Epping Forest SAC.....	64
Lee Valley SPA and Ramsar Site.....	65
Wormley-Hoddesdonpark Woods SAC.....	67
<b>Appendix B Maps</b> .....	<b>69</b>

## Figures

Figure 1: Inter-related Memorandum of Understanding .....	9
Figure 2: Four Stage Approach to Habitats Regulations Assessment. Source CLG, 2006... 10	10
Figure 3: Traffic contribution to concentrations of pollutants at different distances from a road (Source: DfT) .....	13
Figure 4: Trends in background NOx concentrations and oxidised nitrogen deposition rates at Epping Forest (source: APIS) .....	16
Figure 5: Areas of water stress within England. ....	25

## Tables

Table 1: Housing levels to be delivered across Epping Forest District and surrounding authorities, provided for context. ....	12
Table 2: Main sources and effects of air pollutants on habitats and species .....	24
Table 3: Screening Assessment of Local Development Plan Policies .....	27
Table 4: Screening Assessment of Residential Site Allocations .....	45
Table 5: Screening Assessment of Employment Site Allocations .....	48

# 1. Introduction

## Background to the Project

- 1.1 AECOM has been appointed by Harlow District Council to assist the Council in undertaking a Habitats Regulations Assessment of its Local Development Plan Submitted Strategic and Development Management Policies 2018 (hereafter referred to as the 'Plan', 'Local Plan' or 'LDP'). Note that any modifications which are proposed post-submission will be assessed in an HRA of any Main Modifications consultation in the standard manner. 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 In spring 2018, the 'Sweetman' European Court of Justice ruling<sup>1</sup> determined that 'mitigation' (i.e. measures that are specifically introduced to avoid or reduce a harmful effect that would otherwise arise) should **not** be taken into account when forming a view on likely significant effects. Mitigation should instead only be taken into account at the 'appropriate assessment' stage. Appropriate assessment is not a technical term; it simply means 'an assessment that is appropriate' for the plan or project in question. As such, the law purposely does not prescribe what it should consist of or how it should be presented; these are decisions to be made on a case by case basis by the competent authority. The report has therefore been restructured to comply with this ruling.
- 1.3 In the summer 2018 Harlow Local Development Plan HRA it was noted that updated air quality modelling for the East Herts/West Essex Housing Market Area (HMA) was being produced and the HRA for the Harlow Local Development Plan would be updated once those data were available. That modelling has since been reported in an HRA of the Epping Forest Local Plan dated January 2019. Relevant excerpts from the modelling are therefore used in this updated HRA report.

---

<sup>1</sup> People Over Wind and Sweetman v Coillte Teoranta (C-323/17)

## Legislation

- 1.4 The need for Appropriate Assessment is set out within Article 6 of the EC Habitats Directive 1992<sup>2</sup>, and interpreted into British law by the Conservation of Habitats and Species Regulations 2017 (as amended)<sup>3</sup>. 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.
- 1.5 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.
- 1.6 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 2017 (as amended)**

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”.*

- 1.7 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 ‘Habitats Regulations Assessment’ for the overall process and restrict the use of ‘Appropriate Assessment’ to the specific stage of that name.

<sup>2</sup> <http://jncc.defra.gov.uk/page-1374> (accessed 05/03/2019)

<sup>3</sup> <https://www.legislation.gov.uk/ukssi/2017/1012/contents/made> [accessed 05/03/2019]. The regulations were subject to minor amendments in late 2018 but these do not affect the Local Plan HRA process or the tests that must be met



## Scope of the Project

- 1.8 There is no 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 Harlow 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 Ministry of Housing Communities and Local Government<sup>4</sup> 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*' (MHCLG, 2006, p.6).
- 1.10 No European sites are located within the District boundary. There are four European sites that lie beyond the District boundary but are located within sufficient proximity that the LDP could provide linking impact pathways that could impact the integrity of those European sites. These are:
- Epping Forest SAC;
  - Lee Valley SPA and Ramsar site; and
  - Wormley-Hoddesdonpark Woods SAC.
- 1.11 The reasons for designation of these sites, together with current trends in habitat quality and pressures on the sites, are indicated in Appendix A. All the European sites are illustrated in **Appendix B, Figure B1**.
- 1.12 In order to fully inform the screening process, a number of relevant studies have been consulted to determine likely significant effects that could arise from the LDP. These include:
- Final Water Resources Management Plan, 2015-2040. Affinity Water. June 2014
  - Rye Meads Water Cycle Study September 2018 and Addendum issued October 2018
  - Local Plans (and HRAs) for Epping Forest District, 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 – where available have used data that exists for individual European sites but in many cases these do not exist. In such circumstances have used appropriate proxy from other European sites designated for similar features and in similar settings;
  - The UK Air Pollution Information System ([www.apis.ac.uk](http://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](http://www.magic.gov.uk))

---

<sup>4</sup> CLG (2006) Planning for the Protection of European Sites, Consultation Paper.  
[http://webarchive.nationalarchives.gov.uk/20061101113831/http://www.communities.gov.uk/staging/embedded\\_object.asp?id=1502353](http://webarchive.nationalarchives.gov.uk/20061101113831/http://www.communities.gov.uk/staging/embedded_object.asp?id=1502353)



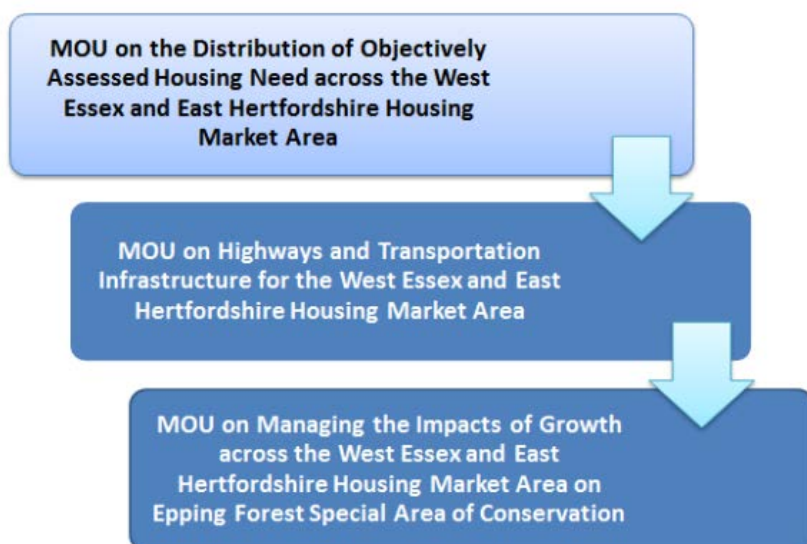
## Memoranda of Understanding

1.13 Harlow Council is a signatory to three Memoranda of Understanding (MoU). These MoU's have been prepared to support development within Uttlesford District, Epping Forest District, East Hertfordshire District and Harlow (also signed by Essex County Council, Hertfordshire County Council the City of London and relevant authorities including Natural England and Highways England). These are:

- Memorandum of Understanding on managing the impacts of growth within the West Essex / East Hertfordshire Housing Market Area on Epping Forest Special Area of Conservation (draft September 2016);
- Memorandum of Understanding on distribution of Objectively Assessed Housing. Need across the West Essex/East Hertfordshire; and
- Memorandum of Understanding on highways and Transport Infrastructure for the West Essex/ East Hertfordshire Housing Market Area.

1.14 These three MoU documents are interrelated as shown in Figure 1.

**Figure 1: Inter-related Memorandum of Understanding<sup>5</sup>**



1.15 The MoU documents will be referred to within this HRA report.

## This Report

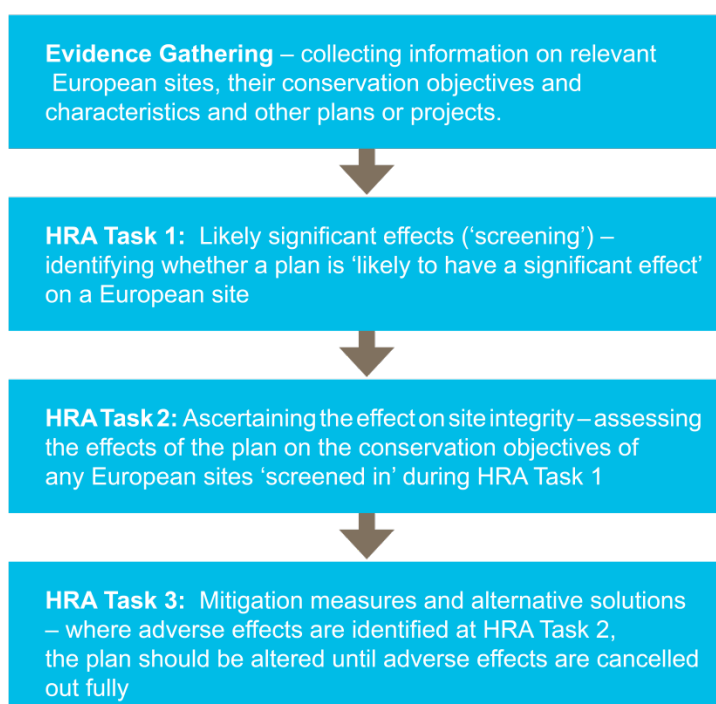
1.16 Chapter 2 of this report explains the process by which the HRA has been carried out. Chapter 3 explores the relevant pathways of impact. Chapter 4 contains an assessment of Likely Significant Effects of Local Plan policies. Chapters 5 to 8 then provide more detailed appropriate assessment of each impact pathway. An assessment of the Plan in respect of each European site is then carried out within the context of mitigation strategies. The key findings are summarised in Chapter 9 which provides overall conclusions.

<sup>5</sup> Taken from the MoU's

## 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<sup>6</sup>. The Ministry of Housing Communities and Local Government (MHCLG) released a consultation paper on the Appropriate Assessment of Plans in 2006<sup>7</sup>. As yet, no further formal guidance has emerged. However, Natural England has produced its own internal guidance<sup>8</sup> as has the RSPB<sup>9</sup>. Both of these have been referred to in undertaking this HRA.
- 2.2 **Figure 2** below outlines the stages of HRA according to current draft MHCLG guidance. The stages are essentially iterative, being revisited as necessary in response to more detailed information, recommendations and any relevant changes to the plan until no significant adverse effects remain.



**Figure 2: Four Stage Approach to Habitats Regulations Assessment. Source CLG, 2006<sup>10</sup>.**

### 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?”*

<sup>6</sup> 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.

<sup>7</sup> MHCLG (2006) Planning for the Protection of European Sites, Consultation Paper.

[http://webarchive.nationalarchives.gov.uk/20061101113831/http://www.communities.gov.uk/staging/embedded\\_object.asp?id=1502353](http://webarchive.nationalarchives.gov.uk/20061101113831/http://www.communities.gov.uk/staging/embedded_object.asp?id=1502353)

<sup>8</sup> [http://www.ukmpas.org/pdf/practical\\_guidance/HRGN1.pdf](http://www.ukmpas.org/pdf/practical_guidance/HRGN1.pdf)

<sup>9</sup> 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.

<sup>10</sup> MHCLG (2006) Planning for the Protection of European Sites, Consultation Paper.

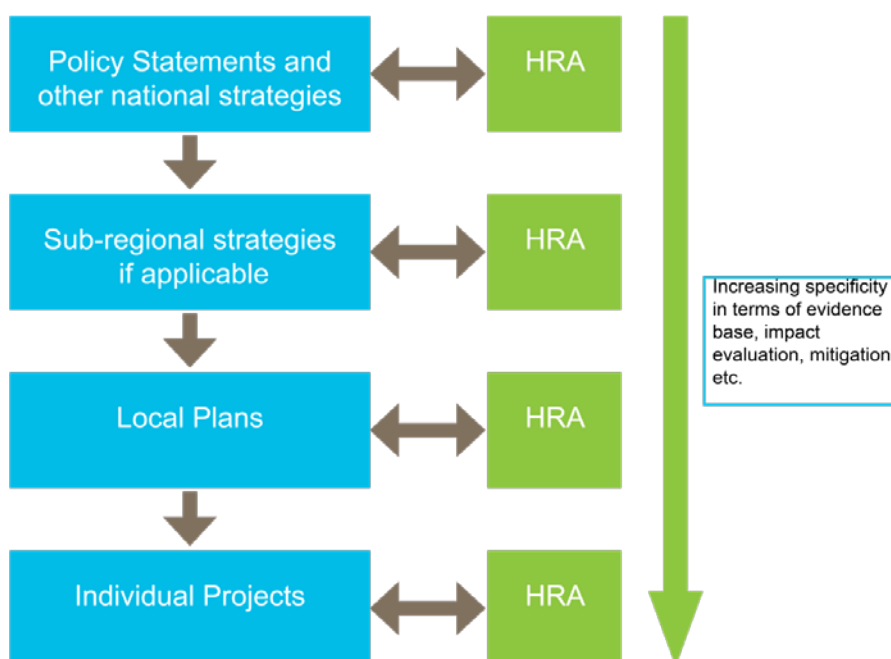
[http://webarchive.nationalarchives.gov.uk/20061101113831/http://www.communities.gov.uk/staging/embedded\\_object.asp?id=1502353](http://webarchive.nationalarchives.gov.uk/20061101113831/http://www.communities.gov.uk/staging/embedded_object.asp?id=1502353)

- 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.

## HRA Task 2: Appropriate Assessment (AA)

- 2.5 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.
- 2.6 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

- 2.7 Where necessary, measures were 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 Plan documents needs to contain regarding mitigation for recreational impacts on European sites.
- 2.8 A key source of guidance is the opinion that Advocate-General Kokott gave to the Court of Justice of the European Union (ECJ) in 2005 when the UK was first required to undertake

HRA of plans<sup>11</sup>. With regard to the level of detail required in a plan and its HRA in order to meet the tests of the Habitats Directive she commented that: *'It would ...hardly be proper to require a greater level of detail in preceding plans [rather than planning applications] or the abolition of multi-stage planning and approval procedures so that the assessment of implications can be concentrated on one point in the procedure. Rather, adverse effects on areas of conservation must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure'*.

- 2.9 This has been expanded upon in several UK court rulings. The Court of Appeal<sup>12</sup> has ruled that providing the Council (competent authority i.e. Harlow District Council in this case) was duly satisfied that proposed mitigation could be 'achieved in practice' to avoid an adverse effect, then this would suffice. The High Court<sup>13</sup> has 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'*.
- 2.10 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.
- 2.11 In evaluating significance, AECOM have relied on our professional judgement as well as the results of previous stakeholder consultation regarding development impacts on the European sites considered within this assessment.
- 2.12 When discussing 'mitigation' for a 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 Local Plan document is a high-level policy document. Where mitigation 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.

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

- 2.13 It is neither practical nor necessary to assess the 'in combination' effects of the Plan within the context of all other plans of neighbouring authorities within Essex and Hertfordshire. In practice therefore, in combination assessment is of greatest relevance when the plan would otherwise be screened out because its individual contribution is inconsequential. For the purposes of this assessment, we have determined that, due to the nature of the identified impacts, the key other plans and projects relate to the additional housing and commercial/industrial allocations proposed for other relevant Essex and Hertfordshire authorities over the lifetime of the District Plan. This is particularly relevant for Epping Forest District and the London Borough of Waltham Forest, which between them contain the majority of Epping Forest SAC and a large amount of the Lee Valley SPA/Ramsar site, but also the London Borough of Redbridge, Borough of Broxbourne, East Herts District and others further afield. The London Plan targets identify that 36,400 dwellings are expected to be delivered in the London Boroughs of Redbridge and Waltham Forest between 2019 and 2029 (19,700 in Redbridge and 18,200 in Waltham Forest).

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

<sup>11</sup> Opinion of Advocate-General Kokott, 9th June 2005, Case C-6/04. Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland, paragraph 49. <http://curia.europa.eu/juris/document/document.jsf?docid=58359&doclang=EN>

<sup>12</sup> No Adastral New Town Ltd (NANT) v Suffolk Coastal District Council Court of Appeal, 17<sup>th</sup> February 2015

<sup>13</sup> High Court case of R (Devon Wildlife Trust) v Teignbridge District Council, 28 July 2015

Local Authority	Total housing provided
Uttlesford	These three authorities with Harlow are working together as part of a HMA. Where impacts in combination such as air quality impacts are considered, these assessments will be based on the level of development provided within the HMA.
East Hertfordshire	
Epping Forest	
Broxbourne	7,718 (2016-2033) <sup>14</sup>
Chelmsford	18,515 (to 2036) <sup>15</sup>
Brentwood	7,240 (to 2033) <sup>16</sup>
Havering	17,550 (2016 - 2031) <sup>17</sup>
Redbridge	16,845 (2015-2030) <sup>18</sup>
Waltham Forest	10,320 (2012 - 2026) <sup>19</sup>
Enfield	13,480 (to 2030) <sup>20</sup>

- 2.14 The Minerals and Waste Development Plans for Hertfordshire, Essex, London and Cambridgeshire are also of some relevance, since these may well 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 in the short term. However, the major impact is likely to be that of housing and commercial development within the surrounding districts as set out in Local Plans and these have therefore been the main focus of cumulative ‘in combination’ effects with regard to this HRA.
- 2.15 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 Harlow: Lee Valley Regional Park Authority Site Management Plan and Epping Forest Management Plan and visitor surveys.

## Air Quality Impact Assessment

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

<sup>14</sup> [https://www.broxbourne.gov.uk/sites/default/files/Documents/Planning/pp\\_PreSubmission%20Local%20Plan%20-%20Track%20Changes%20version%20V2.pdf](https://www.broxbourne.gov.uk/sites/default/files/Documents/Planning/pp_PreSubmission%20Local%20Plan%20-%20Track%20Changes%20version%20V2.pdf) [accessed 05/12/2017]

<sup>15</sup> <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 05/12/2017]

<sup>16</sup> <https://brentwood.jdi-consult.net/localplan/readdoc.php?docid=8&chapter=5&docelemid=d1160#d1160> [accessed 05/12/2017]

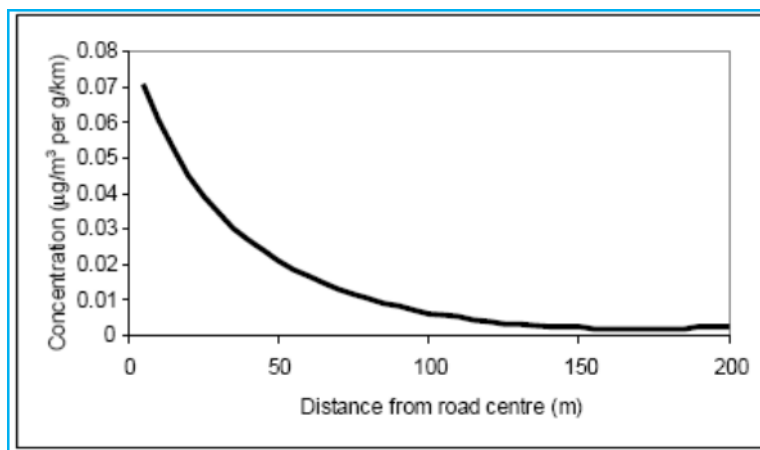
<sup>17</sup> <http://havering.objective.co.uk/file/4645335http://havering.objective.co.uk/file/4645335> [accessed 05/12/2017]

<sup>18</sup> [https://www.redbridge.gov.uk/media/2268/final-web-pdf\\_redbridge-local-plan\\_reduced.pdf](https://www.redbridge.gov.uk/media/2268/final-web-pdf_redbridge-local-plan_reduced.pdf) [accessed 05/12/2017]

<sup>19</sup> <https://branding.walthamforest.gov.uk/Documents/adopted-core-strategy.pdf> [accessed 31/10/2017]

<sup>20</sup> <https://new.enfield.gov.uk/services/planning/planning-policy/local-plan/planning-policy-information-enfield-core-strategy.pdf> [accessed 31/10/2017]



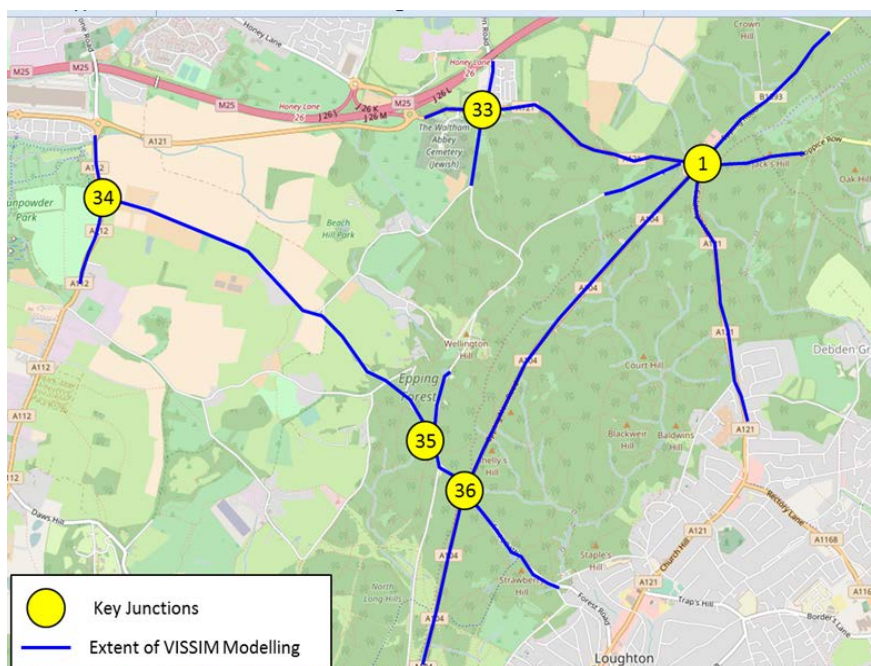


- 2.17 There are two measures of particular relevance regarding air quality impacts from vehicle exhausts (although a third, ammonia concentrations, is also being modelled for Epping Forest SAC). The first is the concentration of oxides of nitrogen (known as NO<sub>x</sub>) in the atmosphere. The main 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<sup>21</sup>, but also biochemical and physiological effects such as changes to chlorophyll content. NO<sub>x</sub> 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 NO<sub>x</sub> are reached. The guideline atmospheric concentration of NO<sub>x</sub> advocated by Government for the protection of vegetation is 30 micrograms per cubic metre (µg m<sup>-3</sup>), known as the Critical Level. This is driven by the role of NO<sub>x</sub> in nitrogen deposition and in particular in growth stimulation and inhibition. If the total NO<sub>x</sub> 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 NO<sub>x</sub> 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 NO<sub>x</sub> concentrations has the advantage of being habitat specific (the critical level for NO<sub>x</sub> 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 NO<sub>x</sub>. Unlike NO<sub>x</sub>, 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](http://www.apis.ac.uk)) and is expressed as a quantity (kilograms) of nitrogen over a given area (hectare) per year (kgNha<sup>-1</sup>yr<sup>-1</sup>). More recently, there has also been research compiled<sup>22</sup> which investigates nitrogen dose-response relationships in a range of habitats.
- 2.19 Epping Forest District Council have been leading on a programme to update the air quality modelling undertaken for the East Herts/West Essex HMA in 2016 and the outcome of that modelling is presented in detail in the January 2019 HRA of the Epping Forest Local Plan. The details of the modelling methodology and results are lengthy and only certain aspects of the results are relevant to consideration of the 'in combination' effect of Harlow Local Plan. Therefore the full modelling is not reproduced in this document but only those elements necessary to understand the effect of Harlow Local Plan 'in combination' with other plans and projects.

<sup>21</sup> 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.

<sup>22</sup> 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.

2.20 The traffic modelling and an air quality impact assessment was undertaken using a modified form of the Design Manual for Roads and Bridges (DMRB) methodology<sup>23</sup>, the primary modification being the inclusion of ammonia emissions from traffic which is not part of the standard DMRB methodology. The predicted change in vehicle flows and mean maximum queue length and duration as a result of all expected growth over the plan period (i.e. the development within the HMA, background traffic growth arising from development in surrounding authorities and delivery of existing planning permissions within the HMA authorities) were modelled on a series of roads within 200m of Epping Forest SAC. The roads were selected as being those most likely to experience the greatest change in flows (and therefore impact) due to housing and employment growth in the East Herts/West Essex Housing Market Area. The modelling also took account of the fact that traffic on the modelled links is not free-flowing but includes queues during peak times. The modelled network is shown below.



2.21 Using the generated traffic scenarios, and information on queue length and duration, average vehicle speeds and percentage heavy duty vehicles (all of which influence the emissions profile), air quality specialists calculated expected NO<sub>x</sub> concentrations, ammonia concentrations and nitrogen deposition rates for the modelled links. For some road sections (particularly around Wake Arms Roundabout which lies within the Epping Forest SAC) multiple transects were modelled in order to capture the effects of queuing traffic.

2.22 The predictions of nitrogen deposition and annual mean NO<sub>x</sub> 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)<sup>24</sup> for the assessment of impacts on sensitive designated ecosystems due to highways works, modified in agreement with Natural England. Annual mean concentrations of NO<sub>x</sub> were calculated at 200m transects modelled at 1m, 10m, 20m, 50m, 100m, 150m, and 200m back from all modelled road links. Predictions were made using the latest version of ADMS-Roads using emission rates derived from the Defra Emission Factor Toolkit (version 8.0.1) which utilises traffic data in the form of 24-hour Annual Average Daily Traffic (AADT)<sup>25</sup>, 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.

2.23 Background data for the predictions for 2033 were sourced from the Department of

<sup>23</sup> Design Manual for Roads and Bridges, Volume 11, Section 3 Part 1 (HA207/07) and subsequent Interim Advice Notes

<sup>24</sup> Highways England (May 2007), Design Manual for Roads and Bridges, HA207/07: Air Quality

<sup>25</sup> Derived from Peak Flow data



Environment, Food and Rural Affairs (Defra) background maps for 2013 projected forward to 2033<sup>26</sup>. Background nitrogen deposition rates and ammonia concentrations were sourced from the Air Pollution Information System (APIS) website<sup>27</sup>. The DMRB does not provide a method for forecasting ammonia emissions from traffic. A method has therefore been devised for this modelling. This method has been used by AECOM in other traffic related air quality impact assessments, in agreement with Natural England.

- 2.24 The general long-term trend for NOx has been one of improvement (particularly since 1990) despite an increase in vehicles on the roads.<sup>28</sup> Total nitrogen deposition<sup>29</sup> to the UK decreased by 13% between 1988 and 2008, while NOx concentrations decreased by 50% over the same time period.<sup>30</sup> More recent improving trends in background NOx and oxidised nitrogen deposition are shown in the area local to Epping Forest SAC in the graphs in Figure 4 overleaf, which have been taken from APIS ([www.apis.ac.uk](http://www.apis.ac.uk)).
- 2.25 The graphs in Figure 4 relate to the 1km grid square (for NOx) and 5km grid square (for nitrogen deposition) within which Epping Forest SAC is situated. The data are presented as midyear 3-year averages, and show that average NOx concentrations across the grid square fell from 37 µgm<sup>-3</sup> in 2003 (2002-2004 average) to 28 µgm<sup>-3</sup> in 2014 (2013-2015 average). Oxidised nitrogen deposition to forest fell from 13 kgN/ha/yr in 2005 (2004-2006) to 9.4 kgN/ha/yr in 2014 (2013-2015), while deposition to short vegetation fell from 10.4 kgN/ha/yr to 7.4 kgN/ha/yr. This is an average annual rate of improvement of c. 2% for NOx and c. 3-4% for oxidised nitrogen deposition, when expressed as a percentage of the starting concentration. In other words, oxidised nitrogen deposition fell by an annual average of 0.4 kgN/ha/yr over the period in question.

**Figure 4: Trends in background NOx concentrations and oxidised nitrogen deposition rates at Epping Forest (source: APIS)**

<p><b>Trend in background NOx concentrations at Epping Forest SAC from 2003 to 2014</b></p>	<p><b>Trend in background oxidised nitrogen deposition<sup>31</sup> at Epping Forest SAC from 2005 to 2014. The yellow line is deposition to forest, the red line is deposition to short vegetation such as heathland</b></p>
---	---

<sup>26</sup> Air Quality Archive Background Maps. Defra, 2013. Available from: <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>

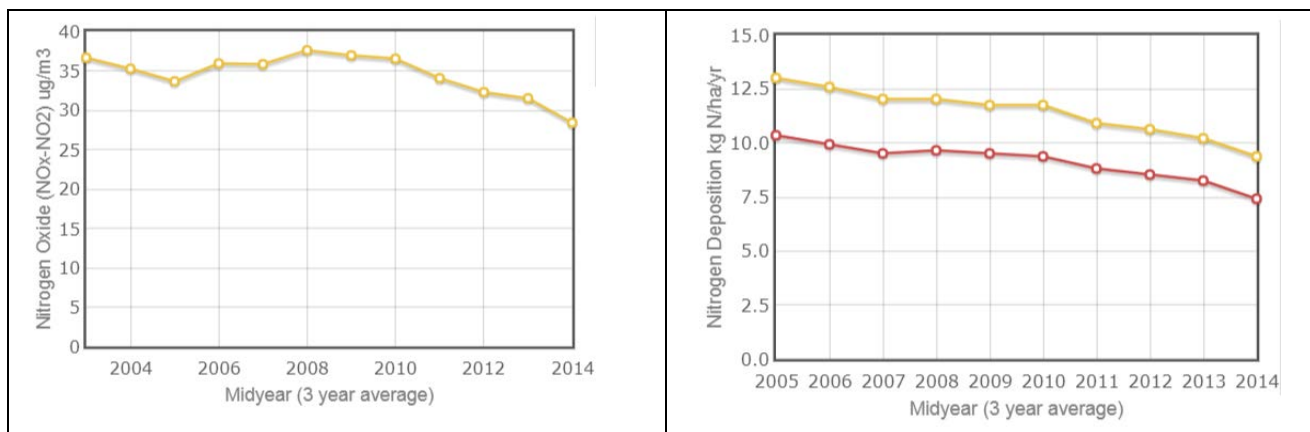
<sup>27</sup> Air Pollution Information System (APIS) [www.apis.ac.uk](http://www.apis.ac.uk)

<sup>28</sup> Emissions of nitrogen oxides fell by 69% between 1970 and 2015. Source: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/579200/Emissions\\_airpollutants\\_statisticalrelease\\_2016\\_final.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/579200/Emissions_airpollutants_statisticalrelease_2016_final.pdf) [accessed 04/07/18]

<sup>29</sup> Nitrogen deposition consists of two components: oxidised nitrogen from combustion, such as vehicle exhausts, and reduced nitrogen from ammonia, primarily from agriculture. Total nitrogen deposition is both oxidised and reduced nitrogen combined.

<sup>30</sup> Rowe EC, Jones L, Stevens CJ, Vieno M, Dore AJ, Hall J, Sutton M, Mills G, Evans CD, Helliwell RC, Britton AJ, Mitchell RJ, Caporn SJ, Dise NB, Field C & Emmett BA (2014) Measures to evaluate benefits to UK semi-natural habitats of reductions in nitrogen deposition. Final report on REBEND project (Defra AQ0823; CEH NEC04307)

<sup>31</sup> Total nitrogen deposition (i.e. oxidised nitrogen from NOx plus reduced nitrogen from ammonia) within the same 5km grid square covering the SAC actually increased by 2-3 kgN/ha/yr over the period 2005-2015. However, APIS shows that this was due to an increase in reduced nitrogen from ammonia, deriving principally from agriculture. According to APIS, UK road traffic is responsible for only 2% of the ammonia and thus a negligible amount of the reduced nitrogen within the grid squares at Epping Forest, but is responsible for 19% of the NOx and 34% of the oxidised nitrogen. In contrast, livestock and fertiliser are responsible for almost 80% of the ammonia and 22% of the reduced nitrogen but none of the NOx or oxidised nitrogen deposited. Therefore, within 200m of the roadside, where the effect of local road traffic will be greatest, trends in oxidised nitrogen can be expected to be more representative of total nitrogen deposition than they are over the 5km grid square as a whole. It is therefore reasonable to postulate an improving trend in total nitrogen deposition within 200m of the roadside due to improving NOx concentrations, continuing the existing trend in oxidised nitrogen deposition seen across the SAC.



- 2.26 This improving trend is expected to continue, firstly due to the changing composition of the vehicle fleet as drivers replace vehicles compliant with older emission standards with those compliant with more recent emission standards, and secondly due to further improvements in vehicle emissions technology beyond Euro6.
- 2.27 In preparing the modelling, Natural England commented that a view should be taken on the implications of what is becoming known as the ‘Dutch Nitrogen’ CJEU ruling<sup>32</sup>, with regard to the court’s opinion on the extent to which autonomous measures (i.e. improvements in baseline nitrogen deposition that are not attributable to the plan or project in question) can be taken into account in appropriate assessment. The CJEU ultimately ruled that it was legally compliant to take such autonomous measures into account provided the benefits were not ‘uncertain’<sup>33</sup>. (paras. 130&132). Note that previous case law on the interpretation of the Habitats Directive has clarified that ‘certain’ does not mean absolute certainty but ‘where no reasonable scientific doubt remains’<sup>34</sup> [emphasis added]. In the Dutch Nitrogen cases the CJEU recognised that the measures with which they were concerned had either “not yet been taken or have not yielded any results, so that their effects are still uncertain” (para. 127). It is in that context that the CJEU stated “The appropriate assessment of the implications of a plan or project for the sites concerned is not to take into account the future benefits of such ‘measures’ if those benefits are uncertain, inter alia because the procedures needed to accomplish them have not yet been carried out or because the level of scientific knowledge does not allow them to be identified or quantified with certainty” (para. 130).
- 2.28 As explained above, the allowance made for improvements in baseline NOx concentrations and nitrogen deposition rates is notably lower than that which would be justified by recent precedent and is associated with procedures that have already been implemented (i.e. the introduction of vehicles into the fleet which are compliant with increasingly stringent emissions standards up to Euro 6/VI). Therefore, they are scientifically reasonable.
- 2.29 In April 2017 a High Court judgment<sup>35</sup> (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 2017 (as amended).

<sup>32</sup> Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu v College van gedeputeerde staten van Limburg C-293/17 and C-294/17

<sup>33</sup> The context for this ruling is that the improvements in agricultural ammonia emissions and associated reduced nitrogen deposition that the Dutch government were taking into consideration in permitting a range of farm expansion projects, as set out in their Integrated Approach to Nitrogen (PAS), were novel, highly uncertain and in some cases would not be implemented until after than projects in question had been permitted.

<sup>34</sup> Case C-239/04 Commission v Portugal [2006] ECR I-10183, para. 24; Hobban et al vs. An Bord Pleanála (C-461/17), para. 33

<sup>35</sup> <http://www.bailii.org/ew/cases/EWHC/Admin/2017/351.html> [accessed 26/10/2017]

- 2.30 The air quality modelling undertaken for the West Essex/East Herts HMA authorities avoids 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 HRA was in accordance with standard methodology in Volume 11 of the Design Manual for Roads and Bridges, modified in agreement with Natural England. This method inherently involves modelling growth in surrounding authorities outside the HMA (such as Redbridge, Waltham Forest and Broxbourne).
- 2.31 Natural England confirmed on 21 November 2018 that the updated modelling scenarios have taken on board its advice as detailed in the letter of 29 March 2018 and this approach has been incorporated into the updated HRA that has recently been published for Epping Forest Local Plan and from which the model results cited in this document have been obtained.
- 2.32 The modelling has covered a large range of model scenarios and produced a vast amount of data. Of relevance to the Harlow Local Plan are the scenarios which identify the contribution of planned growth in Harlow, Uttlesford and East Herts (i.e. the HMA authorities excluding Epping Forest District). The collective contribution of future growth in Harlow, East Herts and Uttlesford together is added to the model to create the data in scenario DS1. The difference between Scenario DS1 and the preceding scenario (DM) therefore shows the contribution of planned growth in the three HMA authorities other than Epping Forest District to changes in roadside ammonia concentrations, NO<sub>x</sub> concentrations and nitrogen deposition rates. It is the difference between scenarios DM and DS1 that is therefore the focus of the data discussed in this report.
- 2.33 A programme of long-term air quality monitoring has also been commissioned 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 can feed into any regular reviews of housing/employment quantum and mitigation measures over the plan period.
- 2.34 For the original 2016 modelling, a series of road links within 200m of Lee Valley SPA/ Ramsar site were also identified for further investigation. However, 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 with regard to air quality.

## 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.

### Disturbance from Recreational Activities

- 3.2 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.
- 3.3 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

- 3.4 Most types of terrestrial 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.
- 3.5 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)<sup>36</sup> 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)<sup>37</sup> 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

<sup>36</sup> 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

<sup>37</sup> 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

weeks and were considered most resistant to trampling, while tall forbs (non-woody vascular plants other than grasses, sedges, rushes and ferns) were considered least resistant. Cover of hemicryptophytes and geophytes (plants with buds below the soil surface) was heavily reduced after two weeks, but had recovered well after one year and as such these were considered most resilient to trampling. Chamaephytes (plants with buds above the soil surface) were least resilient to trampling. It was concluded that these would be the least tolerant of a regular cycle of disturbance.

- Cole (1995c)<sup>38</sup> conducted a follow-up study (in 4 vegetation types) in which shoe type (trainers or walking boots) and trampler weight were varied. Although immediate damage was greater with walking boots, there was no significant difference after one year. Heavier trampers caused a greater reduction in vegetation height than lighter trampers, but there was no difference in effect on cover.
  - Cole & Spildie (1998)<sup>39</sup> 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.
- 3.6 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<sup>40</sup> 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

- 3.7 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<sup>41</sup>. 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<sup>42</sup>.
- 3.8 The potential for disturbance may be less in winter than in summer, in that there are often a smaller number of recreational users. In addition, the consequences of disturbance at a population level may be reduced because birds are not breeding. However, winter activity can still cause important disturbance, especially as birds are particularly vulnerable at this time of year due to food shortages, such that disturbance which results in abandonment of suitable feeding areas through disturbance can have severe consequences. Several empirical studies have, through correlative analysis, demonstrated that out-of-season (October-March) recreational activity can result in quantifiable disturbance:

---

<sup>38</sup> 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

<sup>39</sup> 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

<sup>40</sup> 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

<sup>41</sup> Riddington, R. *et al.* 1996. The impact of disturbance on the behaviour and energy budgets of Brent geese. *Bird Study* 43:269-279

<sup>42</sup> Gill, J.A., Sutherland, W.J. & Norris, K. 1998. The consequences of human disturbance for estuarine birds. *RSPB Conservation Review* 12: 67-72



- Underhill et al<sup>43</sup> 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<sup>44</sup> found that on Sundays total water bird numbers (including shoveler and gadwall) were 19% higher on Stocker's Lake LNR in Hertfordshire, and attributed this to displacement of birds resulting from greater recreational activity on surrounding water bodies at weekends relative to week days.
  - Tuite et al<sup>45</sup> 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<sup>46</sup> 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.
  - In a three-year study of wetland birds at the Stour and Orwell SPA, Ravenscroft<sup>47</sup> found that walkers, boats and dogs were the most regular source of disturbance. Despite this, the greatest responses came from relatively infrequent events, such as gun shots and aircraft noise. Birds seemed to habituate to frequent 'benign' events such as vehicles, sailing and horses, but there was evidence that apparent habituation to more disruptive events related to reduced bird numbers – i.e. birds were avoiding the most frequently disturbed areas. Disturbance was greatest at high tide and on the Orwell, but birds on the Stour showed greatest sensitivity.
- 3.9 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<sup>48</sup>.
- 3.10 Underhill-Day<sup>49</sup> 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%.
- 3.11 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<sup>50</sup>. A literature review undertaken for the

<sup>43</sup> 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

<sup>44</sup> 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

<sup>45</sup> 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

<sup>46</sup> 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.

<sup>47</sup> 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.

<sup>48</sup> 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.

<sup>49</sup> Underhill-Day, J.C. (2005). A literature review of urban effects on lowland heaths and their wildlife. Natural England Research Report 623.

<sup>50</sup> Gill et al. (2001) - Why behavioural responses may not reflect the population consequences of human disturbance. *Biological Conservation*, 97, 265-268

RSPB<sup>51</sup> 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.

- 3.12 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.
- 3.13 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.
- 3.14 The Site Improvement Plan (SIP)<sup>52</sup> for the Lee Valley SPA identifies that '*Areas of the SPA are subject to a range of recreational pressures including watersports, angling and dog walking. This has the potential to affect SPA populations directly or indirectly*'. It does not conclude that current recreational activity on the site is unsustainable; rather it identifies a project to first '*Investigate whether there is a need for change to access management*'. The SIP for Epping Forest identifies that '*Epping Forest is subject to high recreational pressure. There is a high general level of footfall in Epping Forest throughout the year, including periods of significant use, and resulting in a diverse range of impacts which include mountain biking and unmanaged fires. Population and visitor numbers are likely to continue to increase*'. As such these sites have the potential to be sensitive to any increases in recreational pressure stemming from new development.
- 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.
- 3.16 The Epping Forest SAC and Lee Valley SPA and Ramsar site lies 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 Harlow.
- 3.17 It is therefore necessary to perform an initial screening exercise to determine whether the Local Plan contains policy measures that 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.

## Wormley-HoddesdonPark Woods SAC

- 3.18 Wormley-HoddesdonPark Woods SAC is located 6.3km from the boundary of Harlow District. The SAC 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<sup>53</sup> and Epping Forest SAC. These indicate

<sup>51</sup> Woodfield & Langston (2004) - Literature review on the impact on bird population of disturbance due to human access on foot. *RSPB research report* No. 9.

<sup>52</sup> <http://publications.naturalengland.org.uk/file/5788502547496960> [accessed 17/01/2018]

<sup>53</sup> 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



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 small portions of the built up areas in the west of Harlow such as Eastend which is largely industrial, but none of the larger residential areas.

- 3.19 Natural England's Site Improvement Plan (SIP)<sup>54</sup> 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.
- 3.20 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.
- 3.21 Based on the issues identified in the Site Improvement Plan<sup>55</sup> 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.
- 3.22 Additionally, Wormley-Hoddesdonpark Woods SAC is located within the borough of Broxbourne. The screening assessment of Broxbourne's draft Local Plan<sup>56</sup> (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.
- 3.23 As recreational pressure is the only potentially impact pathway linking the LDP to this SAC, it can be concluded that the LDP will not impact on the SAC in isolation or combination and as such is not discussed further within this document.
- 3.24 As such impacts relating to recreational pressure are discussed with regards to Epping Forest SAC and Lee Valley SPA and Ramsar site later in this document.

## Atmospheric Pollution

- 3.25 The main pollutants of concern for European sites are oxides of nitrogen (NO<sub>x</sub>), ammonia (NH<sub>3</sub>) and sulphur dioxide (SO<sub>2</sub>). Ammonia can have a directly toxic effect upon vegetation and research suggests that this may also be true for NO<sub>x</sub> at very high concentrations. More significantly, greater NO<sub>x</sub> 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.

<sup>54</sup> <http://publications.naturalengland.org.uk/file/6541134543192064> [accessed 05/12/2017]

<sup>55</sup> <http://publications.naturalengland.org.uk/file/6541134543192064> [accessed 05/12/2017]

<sup>56</sup> [https://www.broxbourne.gov.uk/sites/default/files/Documents/Planning/pp\\_LC-218\\_Broxbourne\\_HRA\\_Screening\\_8\\_051216JE-compressed.pdf](https://www.broxbourne.gov.uk/sites/default/files/Documents/Planning/pp_LC-218_Broxbourne_HRA_Screening_8_051216JE-compressed.pdf) [accessed 05/12/2017]

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

Pollutant	Source	Effects on habitats and species
Acid deposition	SO <sub>2</sub> , NO <sub>x</sub> and ammonia all contribute to acid deposition. Although future trends in S emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased N emissions may cancel out any gains produced by reduced S levels.	Can affect habitats and species through both wet (acid rain) and dry deposition. Some sites will be more at risk than others depending on soil type, bed rock geology, weathering rate and buffering capacity.
Ammonia (NH <sub>3</sub> )	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 <sub>2</sub> and NO <sub>x</sub> emissions to produce fine ammonium (NH <sub>4</sub> <sup>+</sup> ) - 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 <sub>3</sub> is rapidly deposited, some of the most acute problems of NH <sub>3</sub> deposition are for small relict nature reserves located in intensive agricultural landscapes.
Nitrogen oxides (NO <sub>x</sub> )	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 <sub>3</sub> ), nitrogen dioxide (NO <sub>2</sub> ) and nitric acid (HNO <sub>3</sub> )) can lead to both soil and freshwater acidification. In addition, NO <sub>x</sub> 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 <sub>x</sub> and NH <sub>3</sub> 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 <sub>3</sub> )	A secondary pollutant generated by photochemical reactions from NO <sub>x</sub> 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	Concentrations of O <sub>3</sub> 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.

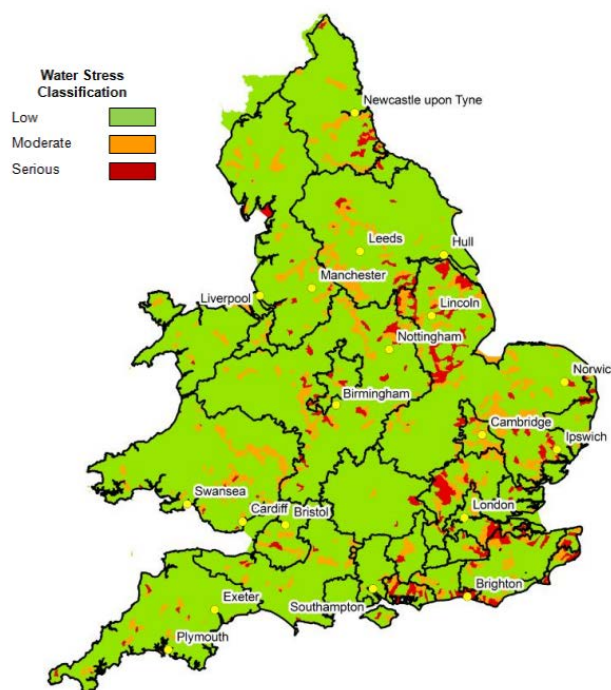
	at international level to reduce levels of the precursors that form ozone.	
Sulphur Dioxide (SO <sub>2</sub> )	Main sources of SO <sub>2</sub> emissions are electricity generation, industry and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO <sub>2</sub> emissions have decreased substantially in the UK since the 1980s.	Wet and dry deposition of SO <sub>2</sub> 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.

3.26 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. NO<sub>x</sub> emissions, however, are dominated by the output of vehicle exhausts (more than half of all emissions). Within a 'typical' housing development, by far the largest contribution to NO<sub>x</sub> (92%) will be made by the associated road traffic. Other sources, although relevant, are of minor importance (8%) in comparison<sup>57</sup>. Emissions of NO<sub>x</sub> could therefore be reasonably expected to increase as a result of greater vehicle use as an indirect effect of the plan.

## Water Abstraction

3.27 The East of England is generally an area of high water stress. It is particularly vulnerable to climate change now and in the future. It is already the driest region in the country and the predicted changes will 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.

Figure 5: Areas of water stress within England.<sup>58</sup>



<sup>57</sup> 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>

<sup>58</sup> Figure adapted from Environment Agency. 2013. Water stressed areas – final classification [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/244333/water-stressed-classification-2013.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf)

- 3.28 Climate change is expected to result in variations in patterns and frequencies of drought, floods and other extreme weather conditions which are likely to result in a reduction in potable water resources<sup>59</sup>. 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.
- 3.29 Harlow District lies within the Affinity Water supply area, specifically their Central Region, WRZ 5. According to Affinity Water's revised draft Water Resource Management Plan<sup>60</sup> 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<sup>61</sup>.

## Water Quality

- 3.30 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:
- 3.31 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.
- 3.32 Sewage and some industrial effluent discharges contribute to increased nutrients in the European sites and in particular to phosphate levels in watercourses. Rye Meads SSSI component of the Lee Valley SPA and Ramsar site is situated 2.6km to the west of Harlow and is particularly sensitive to eutrophication (nutrient enrichment) resulting from the discharge of treated sewage effluent from Rye Meads STW. The draft detailed Rye Meads Water Cycle Study has indicated that the growth in the Stevenage and East Hertfordshire areas is constrained by the environmental capacity of the River Lee and associated Lee Valley SPA and by wastewater infrastructure issues in terms of timescale for delivery.
- 3.33 Diffuse pollution (for example from agricultural practices or urban runoff) is a key contributor to water pollution in rivers. Through its Review of Consents process, the Environment Agency has identified diffuse pollution to be a major factor in causing unfavourable conservation status of European sites. Although agriculture remains a primary source of eutrophication and pollution, urban runoff is a significant source of aquatic contamination. The rate of conversion of land to residential use has been shown to be related to poor water quality.

---

<sup>59</sup> The Affinity Water (2014) Final Water Resource management Plan, 2015-2040 identifies that within the Affinity Water catchment there will be a reduction of 32.31 peak DO MI/d to 2040.

<sup>60</sup> Affinity Water (2019) Revised Draft Water Resource management Plan, 2020-2080.

<sup>61</sup> Ibid

## 4. Likely Significant Effects

### Screening of LDP Policies

4.1 **Table 3** presents an assessment of likely significant effects of policies within the submitted LDP, from the point of view of HRA. Note that any main modifications which have been proposed post-submission will be assessed in an HRA of any Main Modifications consultation in the standard manner. Where Policies have been coloured green in the 'HRA Screening Implications' column, this indicates that the Policies do not contain potential impact pathways linking to European designated sites and have been screened out from further consideration. Where Policies have been coloured orange in the 'HRA Screening Implications' column, this indicates that the Policies have potential impact pathways linking to European sites and have been screened in for further consideration in this report.

**Table 3: Screening Assessment of Local Development Plan Policies**

Policy	Policy Detail	Likely Significant Effects?
<p><b>HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities</b></p>	<p>Four strategic Garden Communities are planned in the Harlow and Gilston Garden Communities and the relevant site/s are allocated in the Harlow, Epping Forest and East Hertfordshire District Local Plans:</p> <p>(a) South of Harlow (Latton Priory) – delivering approximately 1,050 dwellings over the Local Plan period (within Epping Forest District);</p> <p>(b) West of Harlow (Water Lane Area) – delivering approximately 2,100 dwellings over the Local Plan period (within Epping Forest District);</p> <p>(c) East of Harlow – delivering approximately 3,350 dwellings over the Local Plan period (750 dwellings within Epping Forest District and approximately 2,600 dwellings within Harlow District);</p> <p>(d) Gilston - delivering approximately 3,000 dwellings over the Local Plan period with a further 7,000 dwellings beyond the Plan period (within East Herts District).</p> <p>Provides development principals with which all each Garden Community must accord/ these include:</p> <ul style="list-style-type: none"> <li>• Pro-active and collaborative working with the public and private sector;</li> <li>• Community and stakeholder engagement and a long-term community engagement strategy;</li> <li>• Provision of sustainable long-term governance and stewardship arrangements for the community assets including Green Infrastructure;</li> <li>• Provision of a Strategic Masterplan;</li> <li>• Provision of on-site and off-site infrastructure ahead or in tandem with the proposed development;</li> </ul>	<p><b>Likely Significant Effect.</b></p> <p>This policy provides for 2,600 new dwellings on the strategic site to the east of Harlow town during the Plan period, and another 13,500 dwellings across the remainder of Harlow and Garden Communities located in East Hertfordshire and Epping Forest Districts. It also encourages small scale employment, but does not identify any location or quantum.</p> <p>This policy provides for 2,600 dwellings within Harlow District at an allocation (East of Harlow) that is located more than 9km from a European site.</p> <p><b>Potential linking impact pathways are:</b></p> <ul style="list-style-type: none"> <li>• <b>Recreational Pressure</b></li> <li>• <b>Atmospheric pollution</b></li> <li>• <b>Water quality</b></li> <li>• <b>Water abstraction</b></li> </ul>






	<ul style="list-style-type: none"> <li>• Provides for housing mix, promotes small scale employment generation;</li> <li>• Create a change in modal shift towards Sustainable Transport Modes that maximises the use of sustainable transport modes including walking, cycling and use of public and community transport, and creating walkable communities</li> </ul>	<p>It is noted that this policy does provide positive provision of a modal shift towards sustainable transport such as walking, cycling and public and community transportation which has potential to reduce atmospheric pollution contributions. Supporting text states '5.16... Aspirations include a modal travel shift towards 60% by sustainable modes of transport and 40% car-based.' This policy also provides for the delivery of infrastructure ahead or in tandem with the delivery of development which has the potential to prevent impacts on a sensitive designated site. <b>Nonetheless this policy cannot be screened out alone.</b></p> <p>It is noted that this policy includes the provision of development beyond the District boundary that is to be located within the neighbouring districts of Epping Forest District and East Hertfordshire District Council. Following the Housing Market Area HMA assessment (that includes Harlow Council, Epping Forest District Council, East Herts District Council and Uttlesford District Council), under the Duty to Cooperate (DtC), the neighbouring authorities are working with Harlow District Council to accommodate Harlow's housing need. However, the development provided outside of Harlow District boundary is not specifically allocated within this plan document, but rather the plan documents of the relevant neighbouring authorities (and their HRAs). As such in combination consideration will be required.</p>
<p><b>SD1 Presumption in Favour of Sustainable Development</b></p>	<p>Development that accords with the Local Plan will normally be supported, unless material considerations indicate otherwise.</p>	<p>No HRA implications. A Development management (DM) policy</p>

	<p>Where there are no policies specifically relevant to the proposed development, it will normally be supported, unless material considerations indicate otherwise and/or either of the following apply:</p> <p>(a) any adverse impacts arising from the development would significantly and demonstrably outweigh the benefits, when assessed against national planning policies;</p> <p>(b) specific national policies indicate that the development should be restricted.</p>	<p>providing criteria under which the Council will/ will not support development.</p> <p>There are no HRA implications.</p>
<b>HS1 Housing Delivery</b>	<p>The Local Plan identifies sites to deliver at least 9,200 dwellings for the period of 1 April 2011 to 31 March 2033.</p>	<p><b>Likely Significant Effect</b></p> <p>Provides for 9,200 dwellings in Harlow District Council boundary during the Plan period (2011 to 2033).</p> <p><b>Potential impact pathways present are:</b></p> <ul style="list-style-type: none"> <li>• <b>Recreational pressure</b></li> <li>• <b>Atmospheric pollution</b></li> <li>• <b>Water quality</b></li> <li>• <b>Water abstraction</b></li> </ul> <p><b>This policy cannot be screened out</b></p>
<b>HS2 Housing Allocations</b>	<p>See screening <b>Table 4 provided in Chapter 4</b> for site by site analysis</p>	<p><b>Likely Significant Effect</b></p> <p>Provides residential site allocations during the Plan period (2011 to 2033). Screening for individual allocations undertaken in <b>Table 5 of Chapter 4</b> identifies that all allocations can be screened out in isolation. However in combination the residential allocations could provide the following linking impact pathways:</p> <ul style="list-style-type: none"> <li>• <b>Recreational pressure</b></li> <li>• <b>Atmospheric pollution</b></li> <li>• <b>Water quality</b></li> <li>• <b>Water abstraction</b></li> </ul>
<b>HS3 Strategic Housing Site East of Harlow</b>	<p>Provides for 2,600 dwellings and associated infrastructure is allocated on land to the east of Harlow.</p> <p>Identifies the need for Master Planning to be provided in partnership with stakeholders, including infrastructure providers.</p> <p>Provides for highway solutions to address impacts on the wider road network (including new Junction 7a on the M11).</p>	<p><b>Likely Significant Effect</b></p> <p>Provides for 2,600 dwellings in Harlow District Council boundary during the Plan period (2011 to 2033). This site is located more than 9km from both Epping Forest SAC and Lee Valley SPA/ Ramsar site.</p>



	<p>Provides the relevant infrastructure (this policy does not limit the infrastructure type).</p> <p>Provides for footpaths, cycleways and bridleways</p> <p>Provide sustainable drainage solutions and flood mitigation measures for areas of the site which are identified in the Strategic Flood Risk Assessment.</p> <p>Infrastructure must be delivered at a pace which meets the needs of the proposed and developers will be expected to contribute towards the strategic highway and other infrastructure requirements.</p>	<p>Potential impact pathways present are:</p> <ul style="list-style-type: none"> <li>• <b>Recreational Pressure</b></li> <li>• <b>Atmospheric pollution</b></li> <li>• <b>Water quality</b></li> <li>• <b>Water abstraction</b></li> </ul> <p>This policy provides positive provision for the inclusion of partnerships with stakeholders including infrastructure providers, provision of footpaths and cycleways that could lead to a reduction in atmospheric pollution contributions; and developer contributions towards infrastructure required for development. <b>Nonetheless this policy cannot be screened out</b></p>						
<p><b>HS4 Gypsies and Travellers</b></p>	<p>To fulfil the need for nine pitches for the Travelling Community in Harlow, 12 pitches at Fern Hill Lane site will be restored.</p> <p>Applications for additional pitches over the remainder of the Local Plan period will be assessed for suitability using criteria in Development Management policy H10.</p>	<p><b>Likely Significant Effect</b></p> <p>Identifies the provision of 12 pitches at Fern Hill Lane. Fern Hill Lane is located more than 6km from both Epping Forest SAC and Lee Valley SPA and Ramsar site.</p> <p>It also provides DM criteria under which additional pitches would be assessed but no location or quantum is identified.</p> <p>Whilst this policy provides for a small quantum of development <b>in combination implications relating to atmospheric pollution exist.</b></p>						
<p><b>ED1 Future Employment Floorspace</b></p>	<p>Provides for 18.8ha of B1 uses at Harlow Business Park at the Pinnacles and at the Harlow Enterprise Zone at London Road.</p> <p>2.2ha of land will be delivered for employment uses at Templefields.</p> <p>These employment sites are allocated on the Policies Map with the following reference numbers.</p> <table border="1" data-bbox="622 1294 1568 1422"> <thead> <tr> <th>Ref</th> <th>Location</th> <th>Capacity</th> </tr> </thead> <tbody> <tr> <td>ED1-01</td> <td>Harlow Business Park, The Pinnacles</td> <td>4.6ha</td> </tr> </tbody> </table>	Ref	Location	Capacity	ED1-01	Harlow Business Park, The Pinnacles	4.6ha	<p><b>Likely Significant Effect</b></p> <p>Provides for approximately 20ha of new employment space. See screening <b>Table 4 provided in Chapter 4 for detailed assessment.</b></p> <p><b>Potential impact pathways present are:</b></p> <ul style="list-style-type: none"> <li>• <b>Atmospheric pollution</b></li> <li>• <b>Water quality</b></li> </ul>
Ref	Location	Capacity						
ED1-01	Harlow Business Park, The Pinnacles	4.6ha						

	<table border="1"> <tr> <td>ED1-02</td> <td>London Road</td> <td>14.2ha</td> </tr> <tr> <td>ED1-03</td> <td>East Road, Templefields</td> <td>2.2ha</td> </tr> <tr> <td></td> <td><b>Total Employment Provision</b></td> <td><b>20ha</b></td> </tr> </table> <p>Opportunities for office floorspace in Harlow Town Centre will be identified through the Harlow Town Centre Area Action Plan.</p>	ED1-02	London Road	14.2ha	ED1-03	East Road, Templefields	2.2ha		<b>Total Employment Provision</b>	<b>20ha</b>	<ul style="list-style-type: none"> <li><b>Water abstraction</b></li> </ul>
ED1-02	London Road	14.2ha									
ED1-03	East Road, Templefields	2.2ha									
	<b>Total Employment Provision</b>	<b>20ha</b>									
<b>ED2 Protecting Existing Employment Floorspace</b>	<p>Provides for the retention of existing strategic employment sites at The Pinnacles, Templefields and London Road.</p> <p>Growth will be supported at The Pinnacles (ED01) and Templefields (ED03).</p> <p>Provides for the protection and provision of smaller employment units.</p>	<p>No HRA implications.</p> <p>This policy provides for the protection of existing employment sites and supports growth and development, however no quantum is provided.</p> <p>There are no impact pathways present</p>									
<b>ED3 Developing a Skills Strategy for Harlow</b>	<p>A Skills Strategy which improves the skills and education attainment of Harlow residents will be prepared and delivered in partnership with existing and new businesses, Harlow College and University Centre and other partners including the education authority and Education and Skills Funding Agency.</p>	<p>No HRA implications.</p> <p>A strategy relating to the delivery of a strategy to develop skills within Harlow.</p> <p>There are no impact pathways present.</p>									
<b>ED4 Developing a Visitor Economy</b>	<p>A visitor economy will be developed, building upon the district's arts and cultural attractions, the 'Sculpture Town' status, the New Town heritage and natural features such as the River Stort.</p> <p>Proposals which enhance Harlow's visitor economy will be supported where they are of a scale, type and appearance appropriate to the locality, provide local economic benefits and are underpinned by appropriate infrastructure.</p>	<p><b>Likely Significant Effect</b></p> <p>A DM policy supporting the development of the visitor economy. This type of development has potential to link to the <b>following impact pathways are:</b></p> <ul style="list-style-type: none"> <li><b>Recreational pressure</b></li> <li><b>Atmospheric pollution</b></li> <li><b>Water quality</b></li> <li><b>Water abstraction</b></li> </ul>									
<b>RS1 Retail Hierarchy</b>	<p>Provides the retail hierarchy.</p>	<p>No HRA implications.</p> <p>A DM policy relating to retail hierarchy.</p> <p>There are no impact pathways present.</p>									

	<p>Retail development <b>must</b> be directed to Harlow Town Centre first, followed by the centres set out in the retail hierarchy below.</p> <table border="1" data-bbox="629 233 1447 735"> <thead> <tr> <th></th> <th>POSITION IN RETAIL HIERARCHY</th> <th>RETAIL CENTRE</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center; vertical-align: middle;"> <b>TOP</b>    <b>BOTTOM</b> </td> <td><b>Town Centre</b></td> <td>Harlow Town Centre</td> </tr> <tr> <td><b>Neighbourhood Centres</b></td> <td>Bush Fair    The Stow Old Harlow    Church Langley Staple Tye</td> </tr> <tr> <td><b>Hatches</b></td> <td>Burgoyne    Maunds Crawley    Mill Clifton    Prentice Place Colt    Pollards Coppice    Pypers Elm    Sherards Fishers    Slacksbury Katherines    Sumners Manor    Ward</td> </tr> <tr> <td><b>Out-of-Centre Retail Parks</b> (on Edinburgh Way)</td> <td>Queensgate Centre    The Oaks St James Centre    Princes Gate Harlow Retail Park</td> </tr> </tbody> </table> <p>Harlow's Retail Centres are identified on the Policies Map.</p>		POSITION IN RETAIL HIERARCHY	RETAIL CENTRE	<b>TOP</b>  <b>BOTTOM</b>	<b>Town Centre</b>	Harlow Town Centre	<b>Neighbourhood Centres</b>	Bush Fair    The Stow Old Harlow    Church Langley Staple Tye	<b>Hatches</b>	Burgoyne    Maunds Crawley    Mill Clifton    Prentice Place Colt    Pollards Coppice    Pypers Elm    Sherards Fishers    Slacksbury Katherines    Sumners Manor    Ward	<b>Out-of-Centre Retail Parks</b> (on Edinburgh Way)	Queensgate Centre    The Oaks St James Centre    Princes Gate Harlow Retail Park	
	POSITION IN RETAIL HIERARCHY	RETAIL CENTRE												
<b>TOP</b>  <b>BOTTOM</b>	<b>Town Centre</b>	Harlow Town Centre												
	<b>Neighbourhood Centres</b>	Bush Fair    The Stow Old Harlow    Church Langley Staple Tye												
	<b>Hatches</b>	Burgoyne    Maunds Crawley    Mill Clifton    Prentice Place Colt    Pollards Coppice    Pypers Elm    Sherards Fishers    Slacksbury Katherines    Sumners Manor    Ward												
	<b>Out-of-Centre Retail Parks</b> (on Edinburgh Way)	Queensgate Centre    The Oaks St James Centre    Princes Gate Harlow Retail Park												
<p><b>RS2 Future Retail Floorspace</b></p>	<p>There is an identified need to provide up to 18,100sqm of comparison floorspace and up to 3,200sqm of convenience floorspace in Harlow up to 2026.</p> <p>In order to plan for residential development coming forward in the Harlow and Gilston Garden Communities beyond this period, an indicative requirement for up to 40,200sqm of comparison floorspace and up to 5,500sqm of convenience floorspace has been identified.</p> <p>Identifies that a Town Centre Area Action Plan will be prepared for Harlow Town Centre. The HTCAAP will look to deliver a significant proportion of the retail floorspace requirements through site redevelopment and regeneration opportunities, and will identify the future retail floorspace capacity of the town centre.</p> <p>The remaining floorspace requirement will be delivered through redevelopment opportunities in the district's Neighbourhood Centres and Hatches.</p>	<p><b>Likely Significant Effect.</b></p> <p>The provision of increased retail floorspace has the potential to increase the need for goods to be transported and thus result in increased traffic flows.</p> <p><b>Potential impact pathways present are:</b></p> <ul style="list-style-type: none"> <li>• <b>Atmospheric pollution</b></li> </ul>												
<p><b>RS3 Protecting and Enhancing Existing Retail Centres</b></p>	<p>Protects and enhances existing retail centres.</p> <p>This policy does support residential development.</p>	<p>No HRA implications.</p> <p>A DM policy relating to the protection and enhancement of existing retail centres. No quantum is identified.</p> <p>There are no impact pathways</p>												

		Present.
<b>WE1 Strategic Green Infrastructure</b>	<p>The Strategic Green Infrastructure in Harlow includes the Green Belt, Green Wedges and Green Fingers which will be protected and enhanced.</p> <p>Other Open Spaces, landscaping, trees and hedgerows which contribute to the Green Infrastructure will also be protected and enhanced.</p> <p>New Green Infrastructure must be planned into new development and, where possible, linked to existing Green Infrastructure.</p> <p>The new linear 'Stort Riverpark', connecting the Lee Valley Regional Park to Bishop's Stortford through Harlow, will be delivered by contributions from new development.</p>	<p><b>Likely Significant Effect.</b></p> <p>Whilst this policy provides positive provision of the protection and enhancement of existing green infrastructure and the inclusion of new GI in all new development, it also provides for 'Stort Riverpark' that connects with the Lee Valley Regional Park and thus potentially also the Lee Valley SPA.</p> <p><b>Potential linking impact pathways are:</b></p> <ul style="list-style-type: none"> <li>• <b>Increased recreational pressure</b></li> </ul> <p>It is noted that not the entirety of the Regional Park comprises European sites, as such this policy does have the positive ability to funnel people into the regional park that could also serve to spread out visitor activity if delivered appropriately.</p>
<b>WE2 Green Wedges and Green Fingers</b>	<p>Provides for Green Wedges. These are to provide Green Infrastructure, including open spaces for sport, recreation and quiet contemplation, wildlife corridors, footpaths, cycleways and bridleways amongst other provisions. Provides for Green Fingers. These are to provide Green Infrastructure, wildlife corridors, footpaths, cycleways and bridleways.</p>	<p>No HRA implications.</p> <p>This is a positive DM policy providing for green Wedges and Green Fingers (i.e. increased GI).</p> <p>There are no impact pathways present.</p>
<b>WE3 Biodiversity and Geodiversity</b>	<p>All biodiversity and geodiversity assets in the district will be preserved and enhanced. Assets of sufficient importance have a designation. The types of asset designations are:</p> <ul style="list-style-type: none"> <li>• National designations (e.g. Sites of Special Scientific Interest)</li> <li>• Local designations (e.g. Local Wildlife Site)</li> <li>• Ancient woodland</li> <li>• Aged or veteran trees outside ancient woodland</li> </ul> <p>Nationally and locally designated assets are identified on the Policies Map.</p>	<p>No HRA implications.</p> <p>A DM policy relating to Biodiversity and Geodiversity.</p> <p><b><i>For robustness it is recommended that this policy also provides for the protection of internationally designated wildlife sites both within and outside of the District as impact pathways stemming from Harlow have the potential to interact with European sites located within surrounding authorities.</i></b></p>
<b>WE4 Heritage</b>	<p>Provides for the preservation and enhancement of heritage assets as follows:</p>	<p>No HRA implications</p>

	<ul style="list-style-type: none"> <li>• Conservation Areas</li> <li>• Scheduled Monuments</li> <li>• Listed buildings and their curtilage</li> <li>• Historic parks and gardens</li> <li>• Archaeological remains</li> </ul>	<p>A DM policy relating to heritage assets. There are no impact pathways present.</p>														
<p><b>SIR1 Infrastructure Requirements</b></p>	<p>The Council will work with infrastructure and service providers, other statutory bodies and neighbouring local authorities to deliver the timely provision of infrastructure necessary to support development in Harlow and Harlow and Gilston Garden Town.</p> <p>An IDP identifies and prioritises infrastructure projects required in the LP. Details funding mechanisms for infrastructure development.</p> <p>Individual development proposals will be required to secure related infrastructure both on and off site necessary to make the development acceptable in accordance with Development Management policy IN6.</p> <p>The following infrastructure items have land use implications:</p> <table border="1" data-bbox="622 715 1570 1098"> <thead> <tr> <th>Ref</th> <th>Infrastructure Item</th> </tr> </thead> <tbody> <tr> <td>SIR1-01</td> <td>North-South Sustainable Transport Corridor and River Stort Crossing to Eastwick Roundabout</td> </tr> <tr> <td>SIR1-02</td> <td>East-West Sustainable Transport Corridor</td> </tr> <tr> <td>SIR1-03</td> <td>Second River Stort Crossing at River Way</td> </tr> <tr> <td>SIR1-04</td> <td>Access route for Strategic Housing Site East of Harlow</td> </tr> <tr> <td>SIR1-05</td> <td>Cemetery extension</td> </tr> <tr> <td>SIR1-06</td> <td>New allotment provision</td> </tr> </tbody> </table>	Ref	Infrastructure Item	SIR1-01	North-South Sustainable Transport Corridor and River Stort Crossing to Eastwick Roundabout	SIR1-02	East-West Sustainable Transport Corridor	SIR1-03	Second River Stort Crossing at River Way	SIR1-04	Access route for Strategic Housing Site East of Harlow	SIR1-05	Cemetery extension	SIR1-06	New allotment provision	<p>No HRA implications.</p> <p>A positive DM policy relating to the delivery and timely provision of new infrastructure to support development.</p> <p>This policy also identifies priority infrastructure projects in line with the IDP. The DM policy identifies funding mechanisms for these projects.</p> <p>There are no impact pathways present.</p>
Ref	Infrastructure Item															
SIR1-01	North-South Sustainable Transport Corridor and River Stort Crossing to Eastwick Roundabout															
SIR1-02	East-West Sustainable Transport Corridor															
SIR1-03	Second River Stort Crossing at River Way															
SIR1-04	Access route for Strategic Housing Site East of Harlow															
SIR1-05	Cemetery extension															
SIR1-06	New allotment provision															
<p><b>SIR2 Enhancing Key Gateway Locations</b></p>	<p>The following gateway locations have been identified in the district:</p> <ol style="list-style-type: none"> <li>1. Routes to and from Junction 7a of the M11 along Gilden Way</li> <li>2. The A414 where it meets with Junction 7 of the M11</li> <li>3. River Stort Crossing where Fifth Avenue enters and exits the Harlow district boundary</li> <li>4. Eastern Stort Crossing which enters Templefields Employment Area at River Way</li> <li>5. The southern terminus of the Sustainable Transport Corridor where it first enters Harlow from development sites in Epping</li> </ol>	<p>No HRA implications</p> <p>This policy provides for the enhancement of gateways. There are no linking impact pathways present.</p>														

	<p>6. Vehicular and pedestrian access points to the north of the Town Centre</p> <p>7. Vehicular and pedestrian access points at as you first enter the strategic employment sites</p> <p>The gateway locations above will be seamlessly integrated within the wider transport and green infrastructure network of Harlow and enhanced and improved.</p>	
<b>SIR3 Waste and Minerals</b>	<p>The Council will work with Essex County Council to bring forward the Waste and Minerals DPD.</p> <p>These documents form part of the Development Plan for Harlow and include Site SIR3-1 Harlow Mill Rail Station which is safeguarded as a Transshipment Site and Coated Stone Plant.</p>	<p>No HRA implications.</p> <p>A policy detailing the provision of a Waste and Minerals DPD</p>
<b>PL1 Design Principles for Development</b>	<p>Details the expectation of high standard of urban and architectural design for all development.</p> <p>Development will be supported if it provides criteria. These include: protecting, enhancing and providing Green Infrastructure</p>	<p>No HRA implications.</p> <p>A DM policy relating to design principles. There are no impact pathways present.</p>
<b>PL2 Amenity Principles for Development</b>	<p>Development which protects or improves the level of amenity of existing and future occupants and neighbours in the local area will be supported.</p>	<p>No HRA implications.</p> <p>A DM policy relating to amenity principles for development. There are no impact pathways present.</p>
<b>PL3 Sustainable Design, Construction and Energy Usage</b>	<p>New development will be expected to deliver high standards of sustainable design and construction and efficient energy usage. Such development will be supported where it meets or exceeds the minimum standards required by Building Regulations.</p>	<p>No HRA implications.</p> <p>A positive policy that provides for efficient energy use. This has potential to reduce atmospheric pollution contributions.</p> <p>There are no impact pathways present.</p>
<b>PL4 Green Wedges and Green Fingers</b>	<p>Provides criteria under which development on land designated as Green Wedge or Green Finger will be supported.</p>	<p>No HRA implications.</p> <p>A DM policy relating to development on Green Wedge and Green Finger land</p> <p>There are no impact pathways present.</p>
<b>PL5 Other Open Spaces</b>	<p>Provides criteria under which development on Other Open Spaces will be supported.</p> <p><i>Development on Other Open Spaces will be supported unless one or more of the following criteria are met:</i></p> <p><i>(a) the development would compromise the landscape character, openness, biodiversity or urban design principles of the town and/or the surrounding area;</i></p> <p><i>(b) the development would remove access to an open space which, in</i></p>	<p><b>Likely Significant Effect</b></p> <p>Loss of publically accessible open space has the potential to increase recreational pressure within sensitive European sites.</p> <p><b>Potential impact pathways present include:</b></p> <ul style="list-style-type: none"> <li>• <b>Increased recreational pressure.</b></li> </ul>

	<p><i>accordance with the current evidence, is of high quality and/or high public value in providing opportunities for sport and recreation;</i></p> <p><i>(c) the development would prejudice the potential for comprehensive development of adjacent land.'</i></p>	
<b>PL6 Trees and Hedgerows</b>	<p>Development and tree works applications, which ensure that trees and hedges are protected and enhanced, will be supported.</p> <p>Where development has a negative impact on existing trees and hedges, the proposal will be assessed based criteria listed.</p> <p>Development which includes the planting of new trees and hedges will be supported where criteria are met.</p>	<p>No HRA implications.</p> <p>A DM policy relating to trees and hedgerows.</p> <p>There are no linking impact pathways present.</p>
<b>PL7 Green Infrastructure and Landscaping</b>	<p>Green Infrastructure and landscaping must be protected and enhanced as part of development.</p> <p>Development will be supported where all the following criteria are met:</p> <p>(a) new Green Infrastructure and landscaping are well planned, taking into consideration the practicalities and requirements of future management and maintenance, and providing appropriate footpaths, cycleways and bridleways;</p> <p>(b) existing Green Infrastructure and landscaping are, where possible, protected and enhanced and in all cases are sympathetically integrated into the development; and</p> <p>(c) development makes connections wherever possible to landscaping and Green Infrastructure outside of the site.</p>	<p>No HRA implications</p> <p>A positive DM policy providing for the protection and enhancement of GI.</p> <p>There are no impact pathways present.</p>
<b>PL8 Biodiversity and Geodiversity Assets</b>	<p>Development should contribute to and enhance biodiversity or geodiversity assets.</p> <p>The potential harm caused by development on these assets and their surroundings will be assessed based on the harm caused by the development.</p> <p>The greater the significance of the asset, the greater the weight that is given to the asset's protection.</p>	<p>No HRA implications.</p> <p>A DM policy relating to Biodiversity and Geodiversity Assets.</p> <p>There are no impact pathways present.</p>
<b>PL9 Pollution and Contamination</b>	<p>All development proposals must minimise and, where possible, reduce all forms of pollution and contamination. This includes impacts on noise, light, air quality and the natural environment amongst others.</p> <p>Where it can be demonstrated that pollution and/or contamination is unavoidable, appropriate measures must mitigate the negative effects of the development.</p>	<p>No HRA implications.</p> <p>A positive DM policy relating to pollution and contaminants.</p> <p>This policy identifies the need to minimise and reduce pollution and that development will not be supported if it will result in unacceptable impacts from pollutants (alone or in combination). It also identifies for the need for mitigation where pollution and contamination are</p>



		unavoidable. There are no impact pathways present.
<b>PL10 Water Quality, Water Management, Flooding and Sustainable Drainage Systems</b>	<p>1. Water Quality Development will be supported unless it adversely affects water quality.</p> <p>2. Water Management To minimise impact on the water environment, all new dwellings should achieve the Optional Technical Housing Standard for water efficiency of no more than 110 litres per person per day as described by Building Regulations.</p> <p>3. Flooding All development proposals will be considered against the NPPF (including application of the sequential test and, if necessary, the exception test) and against the European Water Framework Directive (or any subsequent equivalent). Development must follow a risk-based and sequential approach, so that it is located in the lowest flood risk area. If this cannot be achieved, the exception test must be applied and the appropriate mitigation measures must be undertaken.</p> <p>4. Sustainable Drainage Systems Provides criteria which development must meet relating to flooding and provides criteria relating to requirement of SuDS.</p>	<p>No HRA implications. A positive DM policy relating to water management. This policy provides for increased efficiency in water use, prevents development adversely affecting water quality, and provides for the use of SuDS. There are no linking impact pathways present.</p>
<b>PL11 Heritage Assets and their Settings</b>	Provides DM policy relating to Heritage Assets and their Settings	<p>No HRA implications. A DM policy relating to Heritage Assets and their Settings. There are no impact pathways present.</p>
<b>PL12 Advertisements</b>	Provides DM Policy relating to Advertisements	<p>No HRA implications. A DM policy relating to Advertisements. There are no impact pathways present.</p>
<b>H1 Housing Allocations</b>	<p>Provides support for Strategic Housing sites and other housing sites allocated within the Strategic polices. Development of the Strategic Housing Site will require a Master Plan to be submitted which takes into consideration the relevant policies in the Local Plan.</p>	<p>No HRA implications. A DM policy supporting housing provision. This policy does not itself provide for any quantum or location of housing development, as such there are no linking impact pathways present.</p>
<b>H2 Residential Development</b>	Supports residential development including infill development, the sub-division of garden plots, minor redevelopment schemes and the development of vacant plots provided it meets criteria listed	<p>No HRA implications. A DM policy providing criteria which residential development is required to</p>

		meet. Whilst the type of residential development supported by this policy could result in an increase in population. However, this policy does not identify any quantum or location of development and as such there are no linking impact pathways present.
<b>H3 Houses in Multiple Occupation</b>	Supports the creation or conversion of a dwelling to a House in Multiple Occupation (HMO) provided it meets criteria stated.	No HRA implications. A DM policy providing criteria which creation or conversion of HMO must meet. Whilst the type of residential development supported by this policy could result in an increase in population, it is likely that this increase will be small. Additionally this policy does not identify any quantum or location of development and as such there are no linking impact pathways present.
<b>H4 Loss of Housing</b>	Provide criteria where loss of housing will be supported.	No HRA implications. A DM policy providing criteria where loss of housing will be supported. There are no linking impact pathways present.
<b>H5 Accessible and Adaptable Housing</b>	Identifies requirements relating to accessible and adaptable housing including the need to provide at least Building Control Part M4(2), Building Control Part M4(3) and The provision of specialist housing developments will be supported on appropriate sites that will meet the needs of older people and other such groups.	No HRA implication. A DM policy relating to accessible and adaptable housing. Whilst the type of residential development supported by this policy could result in an increase in population, it is likely that this increase will be small. This policy does not identify any quantum or location of development and as such there are no linking impact pathways present.
<b>H6 Housing Mix</b>	A range of housing types and sizes, across a range of tenures, must be provided in major residential development. The Council will support community-led housing developments on appropriate sites.	No HRA implications. A DM policy relating to housing mix. There are no linking impact pathways present.

<p><b>H7 Residential Annexes</b></p>	<p>Provision for a domestic annex will be supported where it meets criteria listed.</p>	<p>No HRA implication. A DM policy relating to residential annexes. Whilst the type of residential development supported by this policy could result in an increase in population this policy does not identify any quantum or location of development and as such there are no linking impact pathways present.</p>
<p><b>H8 Affordable Housing</b></p>	<p>Major residential development will be supported where affordable housing is provided at a rate of at least 30%. Reduction of this rate will require an independent viability assessment.</p>	<p>No HRA implications. A DM policy relating to affordable housing. There are no linking impact pathways present.</p>
<p><b>H9 Self-build and Custom-build Housing</b></p>	<p>Provides criteria under which self/ custom build housing plots should be made available. It also provides criteria relating to the provision of self build housing</p>	<p>No HRA implication. A DM policy relating to custom and self build housing. Whilst the type of residential development supported by this policy could result in an increase in population this policy does not identify any quantum or location of development and as such there are no linking impact pathways present.</p>
<p><b>H10 Travellers' Pitches and Plots</b></p>	<p>If evidence indicates there is a need for additional pitches or plots, new sites will be supported providing criteria listed are met.</p>	<p>No HRA implication. A DM policy relating to Traveller's Pitches and Plots. Whilst the type of residential development supported by this policy could result in an increase in population, this policy does not itself identify any quantum or location of development and as such there are no linking impact pathways present.</p>
<p><b>PR1 Development within Employment Areas</b></p>	<p>Supports development in employment areas provided it is for: B1 (Business - Offices (other than those that fall within A2), research and development of products and processes, light industry appropriate in a residential area); B2 (General industrial - Use for industrial process other than one falling within class B1 (excluding incineration purposes, chemical treatment or landfill or hazardous waste)); and B8 (Storage or distribution). Provides criteria under which other</p>	<p>No HRA implications A DM policy relating to development within employment areas. Whilst this policy supports development, no type, quantum or location is identified.</p>

	types of development will be supported	There are no linking impact pathways present.
<b>PR2 Development within Neighbourhood Service Areas</b>	Supports development in Neighbourhood Service Areas (NSA) provided it meets criteria. This includes: the provision of offices, light industrial uses and start-up units falling within use class B1; it is for uses other than B1 and evidence has been provided to demonstrate that the unit has been vacant and actively marketed to the satisfaction of the Council for at least 12 months or for an appropriate period of time agreed with the Council, and that there is no realistic prospect of B1 uses occupying the unit or any other more suitable alternative sites being available for the proposal; and/ or it does not involve the amalgamation of units in Neighbourhood Service Areas into larger units and meets other criteria	No HRA implications. A DM policy relating to development within NSAs. This policy does not identify any location, type or quantum of development. There are no linking impact pathways present.
<b>PR3 Employment Development Outside Employment Areas and Neighbourhood Service Areas</b>	Employment development outside Employment Areas and Neighbourhood Service Areas will be supported where it meets criteria. Development resulting in the loss of B1, B2, B8 and waste uses will not be supported outside of the district's Employment Areas and Neighbourhood Service Areas unless it meets criteria identified	No HRA implications. A DM policy relating to development outside of NSA and Employment Areas. This policy does not identify any location type or quantum of development. There are no linking impact pathways present.
<b>PR4 Improving Job Access and Training</b>	For major development, provision through planning obligations will be sought for: 1. employment of local people; 2. work related training provision; 3. education opportunities; 4. affordable childcare.	No HRA implications A DM policy to relating to improving job access and training. There are no linking impact pathways present.
<b>PR5 The Sequential Test and Principles for Main Town Centre Uses</b>	A DM Policy providing criteria concerning the Sequential Approach to Main Town Centre Uses and the General Principles for Main Town Centre Uses	No HRA implications. A DM Policy providing the Sequential Approach to Main Town Centre Uses and the General Principles for Main Town Centre Uses. There are no linking impact pathways present.
<b>PR6 Primary and Secondary Frontages in the Town Centre</b>	A DP policy providing criteria where development in the Town Centre primary frontages will be supported and that Main Town Centre Uses (with the exception of office uses), evening and night-time uses will be supported in the Town Centre secondary frontages.	No HRA implications A DM Policy relating to development of Primary and Secondary Town Centre frontages. There are no linking impact pathways present.

<p><b>PR7 Sub-division and Internal Alteration of Town Centre Units</b></p>	<p>The sub-division of retail units in the Town Centre and the internal alteration of existing retail units will be supported where both the criteria listed are met.</p>	<p>No HRA implications A DM policy relating to the sub-division and internal alteration of Town Use units. This policy does not identify and type, location or quantum of development. There are no linking impact pathways present.</p>
<p><b>PR8 Primary and Secondary Frontages in Neighbourhood Centres</b></p>	<p>Provides criteria where development of Primary and Secondary frontages in Neighbourhood Centres will be supported.</p>	<p>No HRA implications. A DM policy providing criteria where development of Primary and Secondary frontages in Neighbourhood Centres will be supported. There are no linking impact pathways present.</p>
<p><b>PR9 Development in Hatches</b></p>	<p>Development in Hatches will be supported where it meets both the following criteria: (a) development at ground floor level falls within use classes A1 (shops), A2 (financial and professional services), A3 (restaurants and cafes), A4 (drinking establishments), A5 (hot food takeaways), D1 (non-residential institutions) or D2 (assembly and leisure) or a mix of these uses and does not result in the loss of all convenience facilities, public houses and community facilities; and (b) development on the first floor or above falls within use classes B1(a) (business) or C3 (dwelling houses).</p>	<p>No HRA implications. A DM policy concerning development in Hatches. This policy does not identify any location, type or quantum of development. There are no linking impact pathways present</p>
<p><b>PR10 Development in Retail Parks</b></p>	<p>Provides criteria under which the Council will support development in retail parks. For sub-division, evidence must be provided to demonstrate that the existing unit has been actively marketed, to the satisfaction of the Council, for at least twelve months.</p>	<p>No HRA implications. A DM policy relating to development in Retail Parks. This policy does not identify any location, type or quantum of development. There are no linking impact pathways present.</p>
<p><b>PR11 Evening and Night Time Economy</b></p>	<p>1. Sequential Test Evening and night time uses must be directed to the Town Centre first, then to Neighbourhood Centres and then to Hatches, and applicants must demonstrate that this sequential approach has been undertaken. 2. Development Principles Evening and night time uses will be supported where they meet criteria detailed</p>	<p>No HRA implications. A DM policy relating to the evening and night time economy. There are no linking impact pathways present.</p>

<p><b>L1 Open Spaces, Play Areas and Sporting Provision and Facilities in Major Development</b></p>	<p>In major development, public open space, allotments, play space and sporting provision and facilities are to be required, together with their management and maintenance.</p>	<p>No HRA implication. A positive DM policy identifying the need for major development to provide public open space and other outdoor amenities which have the potential to divert recreational activity away from sensitive designated sites. There are no linking impact pathways present.</p>
<p><b>L2 The Provision and Loss of Recreational, Sporting, Cultural and Community Facilities</b></p>	<p>Provides criteria where the provision of recreational, sporting, cultural and community uses and/or facilities, including playing fields, play spaces, allotments and sports clubs will be supported. Identifies that the loss of all or part of any recreation, sports, cultural or community uses and/or facilities will not be supported unless it meets one or more of the criteria listed</p>	<p>No HRA implications. A DM policy relating to the provision and loss of recreational, sporting, cultural and community facilities. It is noted that the provision of recreational facilities has the potential to reduce recreational pressure on sensitive designated sites, whilst the loss of it could increase recreational pressure. However, no location or extent of development gain/ loss is identified. There are no linking impact pathways present.</p>
<p><b>L3 Development Involving the Provision or Relocation or Loss of Public Art</b></p>	<p>1. Provision of Public Art in Major Developments In major developments, public art should be provided. 2. Development Involving the Provision, Relocation or Loss of Public Art The commissioning, maintenance and de-commissioning of public art must be agreed with the Council.</p>	<p>No HRA implications. A DM policy concerning public art. There are no linking impact pathways present.</p>
<p><b>IN1 Development and Sustainable Modes of Travel</b></p>	<p>1. Sustainable Accessibility All development should have regard to the modal hierarchy as set out in the Strategic policies. New developments including redevelopments, changes of use and Town Centre and transport interchange improvements will be required to link to the existing cycleway, footway, public right of way and bridleway network. Where appropriate this will include cycleways, footways and bridleways within the development, and contribute to the improvement of these facilities 2. Provision of Electric Charging Points for Vehicles Development must provide electric vehicle charging points (EVCPs) in accordance with the latest government guidance.</p>	<p>No HRA implications. A positive DM policy providing for the inclusion of sustainable transport modes including cycleways, footpaths and bridleways and the provision of EVCPs. These provisions have the potential to reduce the need for use of polluting vehicles and reduce atmospheric pollution contributions. There are no linking impact pathways present</p>



<p><b>IN2 Impact of Development on the Highways Network including Access and Servicing</b></p>	<p>Development will be supported where it meets all the following criteria:                  (a) it would not cause a significant detrimental impact on road congestion and movement;                  (b) it would not cause a detrimental impact on the safety of all road users including pedestrians and cyclists; and                  (c) the development provides for adequate, safe and convenient loading and servicing arrangements, access points and drop-off areas and consideration has been given to the movement and turning of emergency vehicles and refuse vehicles.</p>	<p>No HRA implications.                  A DM policy relating to the impact of development on the Highways Network. This policy does not identify any location or type of development.                  There are no linking impact pathways present.</p>
<p><b>IN3 Parking Standards</b></p>	<p>Vehicle parking must be provided in accordance with the adopted Essex Vehicle Parking Standards, unless otherwise indicated elsewhere in the Local Plan and/or supporting documents.</p>	<p>No HRA implications.                  A DM policy associated with parking standards.                  There are no linking impact pathways present</p>
<p><b>IN4 Broadband and Development</b></p>	<p>1. Broadband Provision in Major Development                  Major development should contribute towards the provision of infrastructure suitable to enable the delivery of high-speed broadband services across the Harlow area.                  2. Broadband Infrastructure Development                  Broadband infrastructure development will be supported where a report is submitted which meets criteria including that pertinent to adverse impacts on the natural built environment.</p>	<p>No HRA implications.                  A positive DM Policy associated with broadband provision and development. This policy has the potential to reduce the need for journeys and as such could reduce atmospheric pollution contributions.                  There are no linking impact pathways present.</p>
<p><b>IN5 Telecommunications Equipment</b></p>	<p>Development of telecommunications equipment will be supported where it meets both the following criteria:                  (a) evidence has been provided to show that opportunities have been explored to share existing masts or sites with other providers; and                  (b) where equipment has become redundant it is removed before it is replaced, or if not replaced it is removed within a time period to be agreed with the Council</p>	<p>No HRA implications.                  A DM policy associated with telecommunications equipment. No location or type of development is identified. There are no linking impact pathways present.</p>
<p><b>IN6 Planning Obligations</b></p>	<p>Planning permission will only be granted for development if the provision is secured for related infrastructure, affordable housing, services, facilities and environmental protection which are necessary to make the development acceptable in planning terms, directly related to the development, and fairly and reasonably related in scale and kind.                  The provision of such requirements shall be secured either as part of development proposals, through the use of conditions attached to planning permissions, or through planning obligations. Where it can be demonstrated that</p>	<p>No HRA implications.                  A DM policy associated with Planning Obligations.                  There are no linking impact pathways present.</p>

	<p>provision on site is not feasible then provision elsewhere, or a contribution towards this provision, will be required.</p> <p>Where a planning application extends beyond the district boundary, prior agreement for the provision and location of any necessary obligations will need to be obtained from relevant parties.</p>	
--	--	--

4.2 **Table 4** identifies that LDP policies pose the potential for likely significant effects on European sites. These policies are:

- HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities
- HS1 Housing Delivery
- HS2 Housing Allocations
- HS3 Strategic Housing Site East of Harlow
- HS4 Gypsies and TravellersED1 Future Employment Floorspace
- ED4 Developing a Visitor Economy
- RS2 Future Retail Floorspace
- WE1 Strategic Green Infrastructure
- PL5 Other Open Spaces

4.3 Potential linking impact pathways identified include:

- Disturbance from recreational activities (Lee Valley SPA and Ramsar site and Epping Forest SAC)
- Atmospheric pollution (Epping Forest SAC)
- Water abstraction (Lee Valley SPA and Ramsar site)
- Water quality (Lee Valley SPA and Ramsar site)

4.4 These impact pathways are subject to appropriate assessment in relation to Epping Forest SAC, and Lee Valley SPA and Ramsar site in **Chapters 5 to 8**.

## Likely Significant Effect of Site Allocations

- 4.5 **Table 4** presents an assessment of likely significant effects of Residential Site Allocations within the LDP from the point of view of HRA, whilst **Table 5** represents the same analysis Employment Site Allocations.
- 4.6 Where Site Allocations have been coloured green in the 'Likely Significant Effects' 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 'Likely Significant Effects' column, this indicates that the Site Allocations have potential impact pathways linking to European sites and have been screened in for appropriate assessment.
- 4.7 For Residential and Traveller Site Allocations, impacts relating to recreational pressure in combination have been screened out for Allocations located more than 6.2km from Epping Forest SAC or Lee Valley SPA and Ramsar site. The reasoning for these distances is discussed in Chapter 5.

**Table 4: Screening Assessment of Residential Site Allocations**

Site Allocation Reference	Site Allocation Name	Capacity	Distance from Epping Forest SAC	Distance from Lee Valley SPA/ Ramsar	Likely Significant Effects?
HS2-1	Princess Alexandra Hospital	650	More than 7km from Epping Forest SAC	Located less than 6km (between 4km and 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-4	Lister House, Staple Tye Mews, Staple the Depot and The Gateway Nursery	42	More than 7km from Epping Forest SAC	Less than 6km from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-6	Ridding Lane	35	Between 6km and 7 km from Epping Forest SAC	More than 7km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-7	Kingsmoor Recreation Centre	35	Between 6km and 7 km from Epping Forest SAC	Located less than 6km from Lee Valley SPA/ Ramsar (4.9km)	<b>Likely Significant Effect</b> Located within an area of existing recreational land associated with Kingsmoor Recreational Centre. Freely available online mapping indicates that this land is used for recreational activities that have the potential to divert recreational pressure away from sensitive designated sites. Loss of this land could result in increased recreational pressure. Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>

Site Allocation Reference	Site Allocation Name	Capacity	Distance from Epping Forest SAC	Distance from Lee Valley SPA/ Ramsar	Likely Significant Effects?
HS2-8	The Evangelical Lutheran Church, Tawneys Road	35	More than 7km from Epping Forest SAC	More than 6km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-9	Land east of 144-154 Fennells	23	6.1km from Epping Forest SAC	Located less than 6km (although more than 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect</b> This land parcel is located adjacent to Kingsmoor Recreation Ground and Parndon Wood Nature Reserve. It is 6.1km from Epping Forest SAC. From review of freely available online mapping, imagery identifies that this land parcel is part of the Nature reserve. The imagery also indicates that the site is used for recreational activities. As such, the loss of this land parcel could result in increased recreational pressure within sensitive designated sites. Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar site and Epping Forest SAC is a potential linking impact pathway</b>
HS2-10	Pollard Hatch plus garages and adjacent land	20	More than 7km from Epping Forest SAC	Located less than 6km (between 4km and 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-11	Land between Second Avenue and St. Andrews Meadow	16	More than 7km from Epping Forest SAC	More than 6km from Lee Valley SPA/ Ramsar	This allocation is located in a land parcel that from review of freely available online mapping appears to be used as recreational green space connecting Netteswell Pond and the Recreation Ground. Loss of this land could result in increased recreational pressure. However, due to the distance of this site from designated sites, it is considered that this site can be screened out.
HS2-12	Coppice Hatch and garages	16	More than 7km from Epping Forest SAC	Located less than 6km (although more than 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-13	Sherards House	15	More than 7km from Epping Forest SAC	Located less than 6km (between 4km and 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-14	Elm Hatch and public house	13	More than 7km from Epping Forest SAC	Located less than 6km (between 4km and 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-15	Playground west of 93	12	More than 7km	More than 8km from	Due to the distances involved there are no linking impact pathways

Site Allocation Reference	Site Allocation Name	Capacity	Distance from Epping Forest SAC	Distance from Lee Valley SPA/ Ramsar	Likely Significant Effects?
	- 100 Jocelyns		from Epping Forest SAC	Lee Valley SPA/ Ramsar	present. This site can be screened out.
HS2-16	Fishers Hatch	10	More than 7km from Epping Forest SAC	More than 6km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-17	Slacksbury Hatch and associated garages	10	More than 7km from Epping Forest SAC	Located less than 6km (between 4km and 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-18	Garage blocks adjacent to Nicholls Tower	10	More than 7km from Epping Forest SAC	More than 7km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-19	Stewards Farm	10	More than 6.2km from Epping Forest SAC	More than 6km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-20	Land between Barn Mead and Five Acres	10	More than 7km from Epping Forest SAC	Partially located less than 6km from the SPA/ Ramsar (3.9km)	<b>Likely Significant Effect.</b> Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway.</b>
HS2-21	Pypers Hatch	10	More than 7km from Epping Forest SAC	More than 6km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-2	The Stow Services Bays	70	More than 7km from Epping Forest SAC	More than 6km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.
HS2-3	Land east of Katherines Way, west of Deer Park	69	More than 7km from Epping Forest SAC	Located less than 6km (between 4km and 5km) from Lee Valley SPA/ Ramsar	<b>Likely Significant Effect</b> This allocation is located in a land parcel that from review of freely available online mapping appears to be used as recreational green space. Loss of this land could result in increased recreational pressure. Due to the distances involved <b>recreational pressure on Lee Valley SPA/Ramsar is a potential linking impact pathway</b>
HS2-5	Land, south of Clifton Hatch	36	More than 7km from Epping Forest SAC	More than 7km from Lee Valley SPA/ Ramsar	This allocation is located in a land parcel that from review of freely available online mapping appears to be used as recreational green space. Loss of this land could result in increased recreational pressure.

Site Allocation Reference	Site Allocation Name	Capacity	Distance from Epping Forest SAC	Distance from Lee Valley SPA/ Ramsar	Likely Significant Effects?
					However, due to the distance of this site from designated sites, it is considered that this site can be screened out.
HS3	Strategic Housing Site East of Harlow	2,600	More than 9km from Epping Forest SAC	More than 9km from Lee Valley SPA/ Ramsar	Due to the distances involved there are no linking impact pathways present. This site can be screened out.

4.8 **Table 4** identifies Residential Site Allocations that are located within 6km of Lee Valley SPA and Ramsar site and as such cannot be screened out due to the potential linking impact pathway of recreational pressure. These are: HS2-1, HS2-4, HS2-7, HS2-9, HS2-10, HS2-12, HS2-13, HS2-14, HS2-17, HS2-20, and HS2-3. Additionally, four of these sites are located within parcels of land that appear to be currently used for recreational activity, so loss of these could exacerbate an increase of recreational pressure within a sensitive European site. In contrast, only one housing allocation is located within 6.2km of Epping Forest SAC.

**Table 5: Screening Assessment of Employment Site Allocations**

Allocation Ref.	Allocation name	Employment Area	Likely Significant Effects?
ED1-01	Harlow Business Park, The Pinnacles	4.6ha	No HRA implications Located 3km from Lee Valley SPA/ Ramsar and more than 9km from Epping Forest SAC. Can be screened out in isolation
ED1-02	London Road	14.2ha	No HRA implications Located more than 7km from Lee Valley SPA/ Ramsar and more than 9km from Epping Forest SAC. Can be screened out in isolation
ED1-03	East Road, Templefields	2.2ha	No HRA implications Located 7km from Lee Valley SPA/ Ramsar and more than 10km from Epping Forest SAC. Can be screened out in isolation

4.9 Screening of the Employment Site Allocations undertaken in **Table 5** does not identify any potential impact pathways linking to European sites beyond in combination effects relating to changes in air quality as a result of increase traffic movement resulting from development provided by the LDP. The remainder of the report consists of an appropriate assessment of those policies and allocations for which likely significant effects cannot be dismissed, including 'in combination' air quality effects.



## Air Quality Modelling Results: Likely Significant Effects

- 4.10 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 the modelled part of 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. Moreover, queues are known to build around most arms of Wake Arms Roundabout, primarily during the AM and PM peak, which increases emissions compared to the same volume and composition of free-flowing traffic.
- 4.11 Published internal Natural England guidance on air quality assessment for HRA<sup>62</sup> indicates that the first step once it is has been confirmed that a site is air quality sensitive is to determine whether the change in pollutant concentrations (in this case NOx and ammonia) due to growth 'in combination' exceeds 1% of the critical level. If it does not exceed 1% of the critical level then it can be concluded that no likely significant effect will arise since the total change in pollutant concentrations is imperceptible.
- 4.12 The full data are presented in the Epping Forest Local Plan HRA (January 2019) but in summary, when all growth (including permissions and planned growth in Epping Forest District) are taken into consideration there is no link or transect for which the 'dose' attributable to growth 'in combination' is less than 1% of the critical level for NOx and ammonia. Since the 1% of the critical level threshold is exceeded for both NOx and ammonia at the majority of receptors due to growth 'in combination', appropriate assessment is required. The appropriate assessment will specifically consider the relative contribution of growth in Harlow, Uttlesford and East Herts to this 'in combination' effect.

---

<sup>62</sup> NE Internal Guidance – Approach to Advising Competent Authorities on Road Traffic Emissions and HRAs V1.4 Final - June 2018

## 5. Appropriate Assessment: Recreational Pressure

5.1 The following LDP Policies could not be dismissed in the assessment of likely significant effects from potentially impacting the integrity of the Lee Valley SPA and Ramsar site as a result of increased recreational pressure. These LDP Policies are therefore discussed further in this Chapter:

### Policies

- HS1 Housing Delivery: provides for 9,200 new dwellings between 2011 to 2033
- HS3 Strategic Housing Site East of Harlow – screen in and then dismiss later as it lies outside core catchment.
- HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities
- HS2 Housing Allocations
- ED4 Developing a Visitor Economy
- WE1 Strategic Green Infrastructure
- PL5 Other Open Spaces

### Site Allocations

5.2 Residential site allocations provided by the Plan include land parcels that from review of freely available online imagery appear to be currently used as publically accessible recreational spaces. These are:

- HS2-3: Land east of Katherines Way, west of Deer Park
- HS2-5: Land south of Clifton Hatch
- HS2-7 Kingsmoor Recreation Centre
- HS2-9: Land east of 144-154 Fennells
- HS2-11: Land between Second Avenue and St. Andrews Meadow

5.3 Loss of these recreational spaces could increase recreational pressure on sensitive European sites. However, due to the distances involved (see **Table 5** for distances of individual site allocations from European sites; the closest allocation to a European site is HS2-3: Land east of Katherines Way, west of Deer Park located 4.3km from Lee Valley SPA and Ramsar site) it is unlikely that people displaced from HS2-3: Land east of Katherines Way, west of Deer Park would choose the European site as an alternative. A conclusion of no adverse effect on integrity can therefore be drawn regarding this specific issue.

5.4 Policy L2 (The Provision and Loss of Recreational, Sporting, Cultural and Community Facilities) is a DM policy relating to the provision and loss of such facilities. The provision of recreational facilities has the potential to reduce recreational pressure on sensitive designated sites, whilst the loss of it could increase recreational pressure. However, loss of recreational facilities will only be supported under certain criteria including where:

*(a) it can be demonstrated that the use and/or facility is surplus to requirements and an alternative replacement is not required;*

*(b) replacement uses and/or facilities of equivalent or better quantity and quality are provided in a suitable location before the existing use and/or facility is replaced. The replacement should be provided in an agreed location;*

*(c) such a development is ancillary or will support and enhance the existing use and/or facility;*

*(d) the development would redress the deficiency of other recreational provision within the locality.'*

- 5.5 Within this context it can be concluded that the loss of the above mentioned recreational spaces will not result in a net loss of usable recreational provision and no adverse effects on integrity will result.

#### Positive Policy Provision

- 5.6 It is noted that the Plan includes positive policies that have the potential to reduce recreational pressure on sensitive European sites. These are:
- WE1 Strategic Green Infrastructure: provides for the protection and enhancement of existing green infrastructure and that new GI '**must be planned into new development**'.
  - WE2 Green Wedges and Green Fingers: provides for green Wedges and Green Fingers. The role of Green Wedges and Fingers are to '*...provide Green Infrastructure, including open spaces for sport, recreation and quiet contemplation, wildlife corridors, footpaths, cycleways and bridleways;...*'
  - PL7 Green Infrastructure and Landscaping: provides for the protection and enhancement of GI.
  - L1 Open Spaces, Play Areas and Sporting Provision and Facilities in Major Development: identifies the need for '*major development*' to provide public open space and other outdoor amenities which have the potential to divert recreational activity away from sensitive designated sites.
  - L2 The Provision and Loss of Recreational, Sporting, Cultural and Community Facilities: a DM policy relating to the provision and loss of recreational, sporting, cultural and community facilities. It is noted that the provision of recreational facilities has the potential to reduce recreational pressure on sensitive designated sites, whilst the loss of it could increase recreational pressure. Loss of recreational facilities will only be supported under certain criteria.
- 5.7 Due to the distances from Harlow to sensitive European sites (the nearest site to Epping Forest SAC is HS2-9: Land east of 144-154 Fennells located 6.1 km away, whilst the nearest to Lee Valley SPA and Ramsar site is HS2-3: Land east of Katherines Way, west of Deer Park located 4.3km away), individual residential site allocations in Harlow are unlikely to result in an impact due to increased recreational pressure alone. For example, in the most recent visitor survey for Epping Forest SAC 8 visitor postcodes (0.4% of the total) were located within Harlow District, which probably primarily reflects the distance of most dwellings in the town from the SAC: an increasing number of visitor surveys of European sites are indicating that most recreational visitors are reluctant to regularly travel more than 5-7km to visit inland countryside European sites. As such only in combination assessment is required in relation to impacts from increased recreational pressure and that is the subject of the remainder of this chapter.

## Lee Valley SPA and Ramsar Site (In Combination)

5.8 The following SSSI's are components of the SPA and Ramsar site:

- Rye Meads SSSI is the closest component of the European site to Harlow. It is located approximately 2.6 km west of the District. The site is a Nature Reserve and is owned by Thames Water and the RSPB who manage the site with Hertfordshire and Middlesex Wildlife Trust.
- Amwell Quarry SSSI is located 4km north west of the District. The site is a National Nature Reserve. It is owned and managed by Herts and Middlesex Wildlife Trust.
- Turnford & Cheshunt Pits SSSI is located more than 7km south west of the District. Most of the site is owned by the Lee Valley Regional Park Authority and is managed as a Country Park (River Lee Country Park).

5.9 At its closest Harlow district is located 2.6km from Lee Valley SPA and Ramsar site (Rye Meads), although the closest residential site allocation (HS2-3: Land east of Katherines Way, west of Deer Park, allocated for 69 dwellings) is located 4.3km from the European site. Visiting Rye Meads from Harlow is convoluted (rather than via 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<sup>63</sup>. 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.

5.10 This analysis considers that recreational pressure effects on this site from development in Harlow will not lead to adverse effects even 'in combination' for the following reasons:

- 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.
- Gadwall and shoveler are the most widely distributed and numerous faunal species for which the SPA and Ramsar site are designated and thus the most likely to encounter visitors. These species 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).
- 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 HRAs for Epping Forest Local Plan and East Herts Local Plan the Lee Valley Regional Park Authority did not raise any concerns regarding ability to manage future recreational pressure on the SPA from growth.

---

<sup>63</sup> Although the toll is modest (currently £0.5) it is nonetheless likely to discourage casual visitors from regularly using that route.

- 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. As identified above the nearest site allocation to the SPA in Harlow is more than 4km distant. 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 limitations 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, opportunities for informal roadside verge parking are very limited.
- 5.11 As such it is considered that development provided by the LDP will not adversely affect the integrity of the Lee Valley SPA and Ramsar site via increased recreational pressure alone or in combination.

## Epping Forest SAC (In Combination)

- 5.12 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 and has identified that 75% of visitors to Epping Forest SAC arise from within approximately 6km (6.2km) of the site. This is relevant because the 75<sup>th</sup> percentile is often used to define the core recreational catchment of a European site. Within that 6.2km zone visitors are not evenly spread; the vast majority of Essex-resident visitors live within 3km of the SAC with few living further afield; the 6.2km distance appears to be influenced particularly by residents to the south of the SAC in north London who are dispersed over a wider area. Nonetheless, Harlow Council is using 6.2km as a definition of the core catchment of Epping Forest SAC for purposes of determining mitigation. This is in line with the approach being taken in Epping Forest District and the latest advice provided on the issue by Natural England<sup>64</sup>.
- 5.13 It can be seen that, based on the visitor survey report, only one residential site allocation proposed in the Harlow Local Plan is located within 6.2km of the SAC. This is site HS2-9: Land east of 144 – 154 Fennells, allocated for up to 23 dwellings, and is located 6.1km from the SAC boundary at its closest. Based on current data therefore, all but one of the Local Plan allocations are located beyond the indicated core recreational catchment for Epping Forest SAC and even that site is located on the periphery of the recreational catchment of the SAC. The vast majority of Harlow District within 6.2km of the SAC consists of greenspace and woodland with no housing development, and this is unlikely to change. Site H3 (East of Harlow) is situated between 9.5km and 12km from Epping Forest SAC; there is already a considerable amount of residential development within Harlow at this distance from the SAC and yet the visitor survey indicates that (probably due to a combination of sheer distance and a generous supply of greenspace with good access in and around Harlow) few Harlow residents visit the SAC. Given this it is considered unlikely that the delivery of Site H3 will materially alter existing patterns of recreational visits to the SAC.

---

<sup>64</sup> Letter from Natural England Thames Team to various local authorities regarding the recommended approach to recreational pressure at Epping Forest SAC dated 06/03/19

- 5.14 Notwithstanding the distance of Harlow District and its allocations from Epping Forest SAC, the Council have signed up to delivering the HMA-wide commitment set out in the Epping Forest SAC Memorandum of Understanding to collaboratively devise strategic mitigation solutions (such as access management contributions and, alternative recreational natural greenspace as necessary). This commitment is also detailed within the Plan as follows: '1.31: ...Additionally, a MoU has been prepared, focussing on the management of growth from development on the Epping Forest Special Area of Conservation. For robustness and clarity with regard to recreational pressure on Epping Forest SAC and the commitment of the Council to work collaboratively to protect the site from adverse effects on integrity, it was recommended in an earlier draft of this HRA that paragraph 1.31 be amended to state: '... Additionally, a MoU has been prepared, focussing on the management of growth from development on the Epping Forest Special Area of Conservation to ensure no adverse effects on integrity of the SAC' in order to reflect the explicit objective of the management of growth (i.e. prevention of adverse effects on the SAC). For the submitted version of the LDP this change was made.
- 5.15 Based on the most recent visitor survey these commitments mean that the recreational pressure effect of a single housing allocation (Site HS2-9: Land east of 144 - 154 Fennells, allocated for up to 23 dwellings) to be delivered within 6.2km of the Epping Forest SAC may require financial contributions to be made to the Epping Forest Mitigation Strategy for recreational pressure being devised by Epping Forest District Council, before planning permission is granted for that development<sup>65</sup>.
- 5.16 Since that commitment to develop a recreation mitigation strategy was made governance arrangements have been put in place. The first step in development of the recreation mitigation strategy, through undertaking an updated visitor survey of the SAC has been completed and an interim mitigation strategy has been devised. The interim strategy will be replaced by the long-term mitigation strategy during the course of 2019 (as the full mitigation strategy is to be informed by further visitor survey which is due to be undertaken in early Summer 2019). However, in reviewing the interim mitigation strategy Natural England commented in a letter to the Council dated 1<sup>st</sup> October 2018 that '*This interim proposal provides a solid base on which to further develop the final Mitigation Strategy...*' This has been reaffirmed in a more recent letter from Natural England dated 06/03/19.
- 5.17 Therefore there is considerable certainty that the long-term mitigation strategy will be in place prior to site HS2-9 being granted planning permission. Since this issue only affects one allocated site in Harlow, it can be effectively dealt with through the planning application process. As such, the Harlow Local Plan can be found sound even though the long-term recreation mitigation strategy for Epping Forest SAC does not yet exist.
- 5.18 Whilst the LDP itself only provides for 9,200 new dwellings over the Plan period, the wider HMA provides for 51,710 new dwellings between the four Districts of East Hertfordshire, Epping Forest, Uttlesford and Harlow to 2033. Most of the larger housing allocations located outside of Harlow District (i.e. the garden communities) are located on the outskirts of Harlow under a Memorandum of Understanding (MoU)<sup>66</sup>. As such it was recommended in previous iterations of this HRA that Harlow is rendered effectively recreationally 'self-sufficient' to help to minimise impacts from increased recreational pressure stemming from the LDP to assist the neighbouring authorities deliver the quantum of housing in close proximity to Harlow. Policy WE1 Strategic Green Infrastructure does identify the need for new Green Infrastructure to be

<sup>65</sup> The latest advice from Natural England dated 06/03/19 actually suggests that smaller sites (less than 100 dwellings) within the 3-6.2km zone around Epping Forest SAC may not need to provide any mitigation due to the fact that the majority of visitors to the SAC live within 3km of the site and the contribution of smaller sites located more distantly will thus be adequately addressed by the mitigation solutions being delivered by sites within 3km or larger sites within 6.2km.

<sup>66</sup> Memorandum of Understanding on Distribution of Objectively Assessed Housing Need Across the West Essex/ East Hertfordshire Housing Market Area (March 2017) Between East Hertfordshire District Council, Epping Forest District Council, Harlow District Council and Uttlesford District Council.



planned into all new development. In line with this, the garden communities being created around Harlow (including site H3) should deliver a suitably large amount of natural accessible greenspace to maximise their recreational self-sufficiency which could be achieved through a green infrastructure strategy<sup>67</sup>. Ultimately the quantum of Green Infrastructure required and achievable will be dependent on the layout of these larger developments and detail will need to be established for individual planning applications<sup>68</sup>. Further mitigation measures may be devised for these sites as the strategic recreational management strategy for the SAC develops.

- 5.19 It is concluded that a conclusion of no adverse effect on integrity via the recreational pressure impact pathway can be drawn both in isolation and in combination. This is firstly because available data suggests that Harlow is likely to lie on the fringes of the core catchment of the SAC and secondly because there is a framework in place via both the MoU and a Local Plan commitment to manage the effects of growth on Epping Forest SAC collaboratively with the other MoU authorities.

---

<sup>67</sup> It is noted that the Gilston Area Concept Framework (September 2016) provides Aspirational Objectives including to 'Create major publically accessible parklands, as well as extensive hard and soft landscaping within the villages. Every house within 300m of open space.'

<sup>68</sup> The use of Natural England's ANGST standards would be a good starting point in determining a quanta of green infrastructure required.

## 6. Appropriate Assessment: Air Quality

6.1 Due to the large distances involved, it is considered very unlikely that any individual site allocations (either employment or residential) in Harlow, would affect the integrity of a European site in isolation; however in combination effects with other plans and projects require further consideration. The following policies could not be dismissed as being unlikely to lead to significant effects 'in combination' (see **Table 4**), as a result of increased atmospheric pollution contributions. Therefore further discussion is contained in this Chapter.

### Policies

6.2 The key drivers for potential increased atmospheric pollution as a result of the LDP stem from increased residential development (approximately 9,200 dwellings), and increased employment development (approximately 18.8ha of floorspace). Additionally, and to a lesser extent, an increased visitor economy has the potential to increase road traffic within Harlow District and possibly more widely. This is considered in the context of an additional 51,710 net new dwellings identified to be provided in Harlow, Uttlesford, East Hertfordshire and Epping Forest Districts under the HMA. This type of development is provided within the following Plan policies:

- HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities
- HS1 Housing Delivery
- HS2 Housing Allocations
- HS3 Strategic Housing Site East of Harlow
- ED1 Future Employment Floorspace
- ED4 Developing a Visitor Economy
- RS2 Future Retail Floorspace

6.3 In addition to those policies which promote delivery of development, the following policies within the Plan that provide a positive contribution to atmospheric improvements:

- HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities: this policy provides positive provision to '(i) *Create a step change in modal shift by contributing to the delivery of the Sustainable Transport Corridors and establishing an integrated, accessible and safe transport system which maximises the use of the sustainable high quality transport modes of walking, cycling and the use of public and community transport to promote healthy lifestyles*'.
- HS3 Strategic Housing Site East of Harlow: provides positive provision of '*footpaths, cycleways and bridleways*' that could lead to a reduction in atmospheric pollution contributions
- PL3 Sustainable Design, Construction and Energy Usage: provides for efficient energy use. This has potential to reduce atmospheric pollution contributions. '*New development will be expected to deliver high standards of sustainable design and construction and efficient energy usage...*'
- PL9 Pollution and Contamination: identifies the need to for all development proposals to '*minimise and where possible reduce all forms of pollution*' and that development will not be supported if it will result in unacceptable impacts from pollutants (alone or in combination). It also identifies for the need for mitigation where pollution and contamination are unavoidable.

- IN1 Development and Sustainable Modes of Travel: providing for the inclusion of sustainable transport modes including cycleways, footpaths and bridleways and that *‘Development must provide electric vehicle charging points (EVCPs) in accordance with the latest government guidance’*. These provisions have the potential to reduce the need for use of polluting vehicles and reduce atmospheric pollution contributions.
  - IN4 Broadband and Development: provision of broadband infrastructure has the potential to reduce the need for journeys and as such could reduce atmospheric pollution contributions.
- 6.4 Supporting text also provides for a modal shift in transport types used during the Plan period as follows: *‘5.16... Aspirations include a modal travel shift towards 60% by sustainable modes of transport and 40% car-based.’*
- 6.5 Within the context of these LDP policies and supporting text, air quality on each European site is discussed below.

## Epping Forest SAC

- 6.6 The latest (January 2019) HRA for the Epping Forest Local Plan incorporates a comprehensively updated traffic and air quality modelling exercise for Epping Forest SAC which explicitly took account of planned growth in the rest of the East Herts/West Essex HMA including Harlow. Paragraph 4.14 of that HRA states that *‘... growth in Epping Forest District between 2014 and 2033 is the primary source of additional ammonia and NOx emissions on the modelled road sections and all other plans and projects make a negligible contribution to the in combination effect...’*. This reinforces the conclusion of the Harlow Local Plan HRA as it relates to air quality.
- 6.7 Scrutiny of the data provided in Appendix F of the Epping Forest Local Plan HRA report (January 2019) supports that conclusion. The key data showing the collective ‘in combination’ contribution of Harlow Local Development Plan, Uttlesford Local Plan and East Herts Local Plan to changes in NOx, ammonia and nitrogen deposition on the modelled transects is shown in the Table below.

Transect	NOx ( $\mu\text{g}\text{m}^{-3}$ )	Ammonia ( $\mu\text{g}\text{m}^{-3}$ )	Nitrogen deposition
	<i>Contribution of planned growth in Harlow, Uttlesford and East Herts at the closest point to the road, expressed as a percentage of the critical level (<math>30 \mu\text{g}\text{m}^{-3}</math>)</i>	<i>Contribution of planned growth in Harlow, Uttlesford and East Herts at the closest point to the road, expressed as a percentage of the lower critical level for lichens (<math>1 \mu\text{g}\text{m}^{-3}</math>)</i>	<i>Contribution of planned growth in Harlow, Uttlesford and East Herts at the closest point to the road, expressed as a percentage of the lower critical load for woodland (<math>10 \text{ kgN/ha/yr}</math>)</i>
<b>Wake Arms Roundabout</b>			
A1	-0.05 (<1%)	0.00 <sup>69</sup> (<1%)	0.00 (<1%)
A2	-0.02 (<1%)	0.00 (<1%)	0.00 (<1%)
B1	0.08 (<1%)	0.00 (<1%)	0.00 (<1%)
B2	0.01 (<1%)	0.00 (<1%)	0.00 (<1%)
C1	0.15 (<1%)	0.00 (<1%)	0.01 (<1%)
C2	-0.08 (<1%)	0.00 (<1%)	0 (<1%)
D1	0.06 (<1%)	0.00 (<1%)	0.01 (<1%)
D2	0.06 (<1%)	0.00 (<1%)	0.01 (<1%)
E1	0.07 (<1%)	0.00 (<1%)	0.01 (<1%)

<sup>69</sup> Note that a concentration/deposition rate of zero does not necessarily denote no contribution to emissions but does mean that any emissions attributable to planned growth in Harlow, East Herts and Uttlesford are too small to show in the concentration/deposition data, which are reported to no more than 2 decimal places to avoid false precision

<b>Transect</b>	<b>NOx (<math>\mu\text{g}\text{m}^{-3}</math>)</b> <i>Contribution of planned growth in Harlow, Uttlesford and East Herts at the closest point to the road, expressed as a percentage of the critical level (<math>30 \mu\text{g}\text{m}^{-3}</math>)</i>	<b>Ammonia (<math>\mu\text{g}\text{m}^{-3}</math>)</b> <i>Contribution of planned growth in Harlow, Uttlesford and East Herts at the closest point to the road, expressed as a percentage of the lower critical level for lichens (<math>1 \mu\text{g}\text{m}^{-3}</math>)</i>	<b>Nitrogen deposition</b> <i>Contribution of planned growth in Harlow, Uttlesford and East Herts at the closest point to the road, expressed as a percentage of the lower critical load for woodland (<math>10 \text{kgN/ha/yr}</math>)</i>
E2	0.12 (<1%)	0.00 (<1%)	0.01 (<1%)
P (transect taken directly from the traffic island itself)	0.33 (1%)	0.01(1%)	0.02 (<1%)
<b>Robin Hood Roundabout</b>			
H	0.27 (<1%)	0.00 (<1%)	0.02 (<1%)
I	0.10 (<1%)	0.00 (<1%)	0.01 (<1%)
J	0.02 (<1%)	0.00 (<1%)	0 (<1%)
K	0.04 (<1%)	0.00 (<1%)	0 (<1%)
L	0.01 (<1%)	0.00 (<1%)	0 (<1%)
M	0.01 (<1%)	0.00 (<1%)	0 (<1%)
N	0.01 (<1%)	0.00 (<1%)	0 (<1%)
<b>Honey Lane</b>			
O	- 1.00 (<1%)	-0.01 (<1%)	-0.05 (<1%)

- 6.8 The collective 'in combination' contribution of future growth in Harlow, East Herts and Uttlesford together is added to the model to create the data in scenario DS1. When one compares the numbers in this column of Appendix F with those in the preceding scenario/column (DM) it is seen that they are either identical or imperceptibly different (i.e. the difference is below, generally well below, 1% of the critical level or load for all pollutants, even when the three plans (Harlow, Uttlesford and East Herts) are modelled together). This shows the negligible contribution that growth within the boundaries of these three authorities is forecast to make to changes in air quality along the modelled roads. Annual average deposition rates and concentrations are used in air quality modelling, but the 'true' concentrations/deposition rates on a given day will vary around this average figure. Very small changes in average concentration/deposition rate lie well within the normal variation (known as the standard deviation or variance) and would not make a statistically significant difference in the annual average.
- 6.9 Moreover, as identified in paragraph 6.4 above, the Harlow Local Plan contains a suite of policies that are intended to reduce reliance on the private car for journeys to work generally and to promote sustainable transport. The LDP also contains policies intended to increase employment opportunities within Harlow itself which will reduce the desire and need to travel outside Harlow for work. Collectively these policies (which are not taken into account in the modelling results shown above) will effectively address the extremely small contribution to additional vehicle emissions on the modelled road links attributable to growth in Harlow.
- 6.10 The air quality effect of growth on the SAC can therefore be addressed by focussing on mitigating growth in Epping Forest District. The new data therefore supports a conclusion of no adverse effect of the Harlow Local Plan on the integrity of Epping Forest SAC either alone or as part of an 'in combination' effect.

## 7. Appropriate Assessment: Water Abstraction

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

### Policies

- HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities
- HS1 Housing Delivery
- HS2 Housing Allocations
- HS3 Strategic Housing Site East of Harlow
- ED1 Future Employment Floorspace
- ED4 Developing a Visitor Economy

### 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:

- PL10 Water Quality, Water Management, Flooding and Sustainable Drainage Systems: provides for increased efficiency in water use, prevents development adversely affecting water quality, and provides for the use of SuDS.

## Lee Valley SPA and Ramsar Site

7.3 All urban areas of Harlow District receive their potable water supply through Affinity Water within its Central Region. Within its catchment Affinity Water abstracts water from tributaries of Lee Valley SPA and Ramsar site.

7.4 The Lee Valley SPA and Ramsar site consists of four Sites of Special Scientific Interest (SSSI), 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. 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 (WwTW). 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 The Water Cycle Study (WCS) undertaken to support the preparation of the Plan<sup>70</sup> identifies that within the Upper Lee Catchment Abstraction Management Strategy area water is only available for abstraction 10% to 11% of the time with the Environment Agency recommending water storage reservoirs to prolong water availability. The WCS states *'Across the Upper Lee CAMS area, water availability is very low, with abstraction tightly restricted. Recent actual abstractions have resulted in lower water levels than allocated for the environment (Ecological Flow Indicator, or EFI)... As a consequence, no further consumptive licences are available. New consumptive surface water abstractions will only be considered at times of very high flows, however these are infrequent in groundwater-fed watercourses.'*
- 7.6 The WCS recommends the following water management practices to increase water efficiency and manage demand:
- Testing the level of water efficiency before granting an abstraction licence,
  - Promoting efficient use of water,
  - Taking actions to limit the demand,
  - Reducing leakage; and
  - Embedding policies for low-water consumption design in new buildings into spatial plans.
- 7.7 Not all of these are within the remit of a Local Plan.
- 7.8 Affinity Water's current Water Resource Management Plan (WRMP)<sup>71</sup> 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 Harlow LDP will not result in adverse effects on Lee Valley SPA and Ramsar site through excessive water drawdown, either in isolation or in combination.
- 7.9 Additionally Affinity Water is in the process of updating its WRMP. The Affinity Water Draft WRMP<sup>72</sup> covers the period from 2020 to 2080, with planned adoption in 2019. The Draft WRMP identified options to maintain the supply-demand balance. This includes metering, managing leakages, options relating to water efficiency, water re-use and the creation of new water storage facilities. The Draft WRMP concluded *'The WRMP demonstrates the pressures on water resources in the Affinity Water supply zones with increasing demand, population growth, resource uncertainty, the impacts of climate change and the need to reduce environmental impacts.'* However *'the overall RAG [Red / Amber / Green] assessment for Harlow water resources is green, on the basis that there is sufficient time to address the supply demand issues identified in the WRMP.'* Affinity Water's revised draft WRMP has been subject to its own Habitat Regulations Assessment. It is understood that increased abstraction from the Lee Valley catchment is not part of the proposed strategy for achieving necessary future water resources.
- 7.10 As such it is can still be concluded that the Harlow LDP will not result in adverse effects on the integrity of Lee Valley SPA and Ramsar site through excessive water drawdown, either in isolation or in combination.

---

<sup>70</sup> JBA Consulting (September 2018) Harlow-Gilston Garden Town Water Cycle Study update (Final Report)

<sup>71</sup> Affinity Water (2014) Final Water Resource management Plan, 2015-2040

<sup>72</sup> Affinity Water (2018) Draft Water Resources Management Plan.

[https://www.affinitywater.co.uk/docs/Draft\\_Water\\_Resources\\_Management\\_Plan\\_2020-2080\\_March%202018.pdf](https://www.affinitywater.co.uk/docs/Draft_Water_Resources_Management_Plan_2020-2080_March%202018.pdf) [accessed 01/05/2018]



## 8. Appropriate Assessment: Water Quality

- 8.1 The following policies could not be dismissed from potentially posing likely significant effects upon the Lee Valley SPA and 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

- HGT1 Development and Delivery of Garden Communities in the Harlow and Gilston Garden Communities
- HS2 Housing Allocations
- HS3 Strategic Housing Site East of Harlow
- ED1 Future Employment Floorspace
- ED4 Developing a Visitor Economy

### 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:
- PL10 Water Quality, Water Management, Flooding and Sustainable Drainage Systems: This policy provides for increased efficiency in water use (*'no more than 110 litres per person per day'*), prevents development adversely affecting water quality, and provides for the use of SuDS.
  - HS3 Strategic Housing Site East of Harlow: This positive policy provision for the inclusion of partnerships with stakeholders including infrastructure providers and the provision of infrastructure in line with development delivery.
  - SIR1 Infrastructure Requirements: A positive DM policy relating to the delivery and timely provision of new infrastructure to support development. *'Individual development proposals will be required to secure related infrastructure both on and off site necessary to make the development acceptable in accordance with Development Management policy IN6.'*

## Lee Valley SPA and Ramsar Site

- 8.3 Change in water quality is the main pathway through which the Lee Valley SPA and Ramsar site could be adversely affected. The SPA and Ramsar site is located 2.6km from the Harlow District boundary, and as such impacts from run off are not feasible. However, Rye Meads consists of non-operational land at and around the Rye Meads 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<sup>73</sup>. 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 WwTW 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.
- 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 and Ramsar site, and if so, to amend the consent in order to avoid such an effect. The Harlow WCS<sup>74</sup> undertook a headroom assessment of Rye Meads WwTW in relation to committed and planned future growth scenarios with Harlow and six neighbouring authorities (East Herefordshire, North Hertfordshire, Stevenage, Welwyn Hatfield, Epping Forest and Broxbourne). The catchment of Rye Meads WwTW is expected to accommodate growth within Harlow as well as a large portion of development within the neighbouring six authorities. The WCS states: the *'headroom assessment undertaken by JBA ... indicates that Rye Meads has capacity to accommodate growth within Harlow and surrounding authorities over the plan period, within the current permitted DWF discharge of 110 ML/d.*
- 8.6 Additionally Rye Meads WwTW is undergoing an upgrade in treatment capacity and to improve discharge quality standards (up to 447,134 Population Equivalent) that is due for completion in 2019<sup>75</sup>. Thames Water currently expects that Rye Mead WwTW will have sufficient headroom capacity until 2036 and thus be able to cover the plan period. As such, since 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 and Ramsar site is unlikely to occur from this pathway alone or in combination with other plans and projects.
- 8.7 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.

---

<sup>73</sup> '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>

<sup>74</sup> JBA Consulting (September 2018) Harlow Gilston Garden Town Water Cycle Study update (Final Report)

<sup>75</sup> Thames Water October 2018 Position Statement On Development In The Greater Harlow Area

## 9. Conclusions

- 9.1 This HRA has been able to conclude no adverse effect on the integrity of Wormley Hoddesdonpark Woods SAC, Lee Valley SPA or Lee Valley Ramsar site through any pathway of impact. In the light of the updated HMA air quality modelling released in January 2019 this HRA is also able to conclude no adverse effect on the integrity of Epping Forest SAC through the air quality pathway due to a combination of the negligible contribution made by planned growth in Harlow, Uttlesford and East Herts to the 'in combination' changes in air quality on the modelled road links and the existence of policies within the Harlow Local Plan promoting sustainable transport, reducing reliance on the private car and (through delivery of additional employment) reducing the need to travel for work out of Harlow.
- 9.2 A conclusion of no adverse effect on the integrity of Epping Forest SAC can also be drawn for the recreational pressure impact pathway provided the following are achieved:
- The recreational pressure effect of Site HS2-9: Land east of 144 – 154 Fennells, allocated for 23 dwellings (this being the only housing allocation in Harlow that lies within 6.2km of the Epping Forest SAC) is addressed, if required<sup>76</sup>, by financial contributions being made to the Epping Forest Mitigation Strategy for recreational pressure being led by Epping Forest District Council, before that development is granted planning permission. This can be addressed through the planning application process for this development site.
  - Policy WE1 Strategic Green Infrastructure identifies the need for new Green Infrastructure to be planned into all new development. In line with this, the garden communities being created around Harlow, including HS3 (East of Harlow) should deliver a suitably large amount of natural accessible greenspace to maximise their recreational self-sufficiency. the quantum of new Green Infrastructure required and achievable to make these developments recreationally self-sufficient will be dependent on the layout of these larger developments and detail will need to be established through a green infrastructure strategy associated with the outline planning applications for each garden village. This is in line with the approach being taken to the same garden villages in East Herts District and Epping Forest District.
- 9.3 Provided that the above measures are undertaken, it can be concluded that the Harlow LDP has a suitable framework in place to ensure that development delivered will not affect the integrity of any European sites either alone or in combination.

---

<sup>76</sup> The latest advice from Natural England dated 06/03/19 suggests that smaller sites (less than 100 dwellings) located between 3km and 6.2km from the SAC may not need to deliver mitigation but this is subject to the results of a second visitor survey in summer 2019

# Appendix A European Designated Sites Background

## Epping Forest SAC

### Introduction

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<sup>77</sup>

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<sup>78</sup>

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

---

<sup>77</sup> JNCC (2015) Natura 200 Standard Data Form: Epping Forest SAC

<sup>78</sup> Natural England (2015). Site Improvement Plan: Epping Forest SAC

- 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

## **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 and 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<sup>79</sup>: for its Birds Directive Annex I and Ramsar site under criterion 6<sup>80</sup> for species that over-winter, and these are:

---

<sup>79</sup> <http://jncc.defra.gov.uk/page-2047-theme=default> [accessed 05/12/2017]

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

In addition, the site qualifies as a Ramsar under criterion 2<sup>81</sup>, 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<sup>82</sup>**

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

### **Conservation Objectives<sup>83</sup>**

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

---

<sup>80</sup> <http://jncc.defra.gov.uk/pdf/RIS/UK11034.pdf> [accessed 05/12/2017]

<sup>81</sup> Ibid

<sup>82</sup> <http://publications.naturalengland.org.uk/file/5788502547496960> [accessed 05/12/2017]

<sup>83</sup> <http://publications.naturalengland.org.uk/file/5168095937167360> [accessed 05/12/2017]



- 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<sup>84</sup>

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<sup>85</sup>

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

### Conservation Objectives<sup>86</sup>

---

<sup>84</sup> <http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUCode=UK0013696> [accessed 05/12/2017]

<sup>85</sup> <http://publications.naturalengland.org.uk/file/6541134543192064> [accessed 05/12/2017]

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

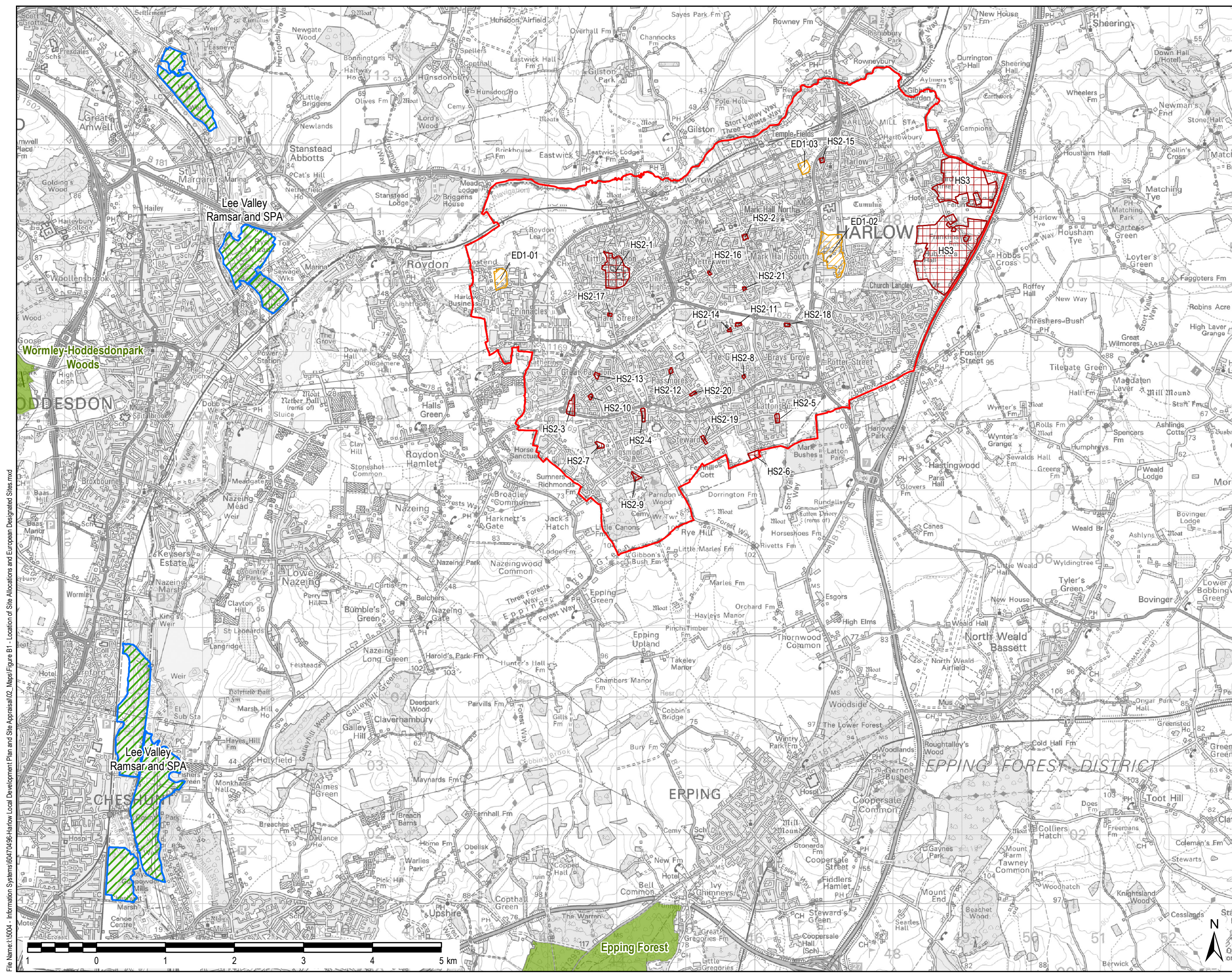
---

<sup>86</sup> <http://publications.naturalengland.org.uk/file/6475250191564800> [accessed 05/12/2017]

## Appendix B Maps

Figure B1: Locations of Site Allocations and Internationally Designated Sites





THIS DRAWING IS TO BE USED ONLY FOR THE PURPOSE OF ISSUE THAT IT WAS ISSUED FOR AND IS SUBJECT TO AMENDMENT

- LEGEND**
- Harlow District Boundary
  - Employment Allocation
  - Housing Allocation
  - Ramsar
  - Special Area of Conservation (SAC)
  - Special Protection Area (SPA)

Copyright  
 Reproduced from Ordnance Survey digital map data © Crown copyright 2017. All rights reserved.  
 Licence number 0100031673.  
 This map is based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office © Crown copyright. Unauthorised reproduction infringes Crown copyright and may lead to prosecution or civil proceedings.  
 Harlow District Council Licence No.100019627 (2018)

Purpose of Issue **DRAFT**

Client **HARLOW COUNCIL**

Project Title  
**HABITATS REGULATIONS ASSESSMENT SCREENING OF HARLOW LOCAL DEVELOPMENT PLAN**

Drawing Title  
**LOCATION OF SITE ALLOCATIONS AND EUROPEAN DESIGNATED SITES**

Drawn TD	Checked JW	Approved IHH	Date 10/01/2018
AECOM Internal Project No. 60470496		Scale @ A3 1:50,000	

THIS DOCUMENT HAS BEEN PREPARED PURSUANT TO AND SUBJECT TO THE TERMS OF AECOM'S APPOINTMENT BY ITS CLIENT. AECOM ACCEPTS NO LIABILITY FOR ANY USE OF THIS DOCUMENT OTHER THAN BY ITS ORIGINAL CLIENT OR FOLLOWING AECOM'S EXPRESS AGREEMENT TO SUCH USE, AND ONLY FOR THE PURPOSES FOR WHICH IT WAS PREPARED AND PROVIDED.

AECOM  
 Midpoint  
 Alconon Link, Basingstoke  
 Hampshire, RG21 7PP  
 Telephone (01256) 310200  
 Fax (01256) 310201  
 www.aecom.com



Drawing Number **FIGURE B1**

File Name: I:\5004 - Information Systems\60470496-Harlow Local Development Plan and Site Appraisal\02 - Maps\Figure B1 - Location of Site Allocations and European Designated Sites.mxd





