Local Plan Review: Habitats Regulations Assessment

Stage 1: Initial Screening Report for Core Strategy Review

Epsom & Ewell Borough Council

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1) Introduction

1.1 The purpose of this Habitats Regulations Assessment (HRA) is to identify any aspects of the emerging Core Strategy Review that would have the potential to cause a likely significant effect on Natura 2000 or European sites (Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Ramsar Sites), either in isolation or in combination with other plans and projects.

Requirements of the Habitats Regulations

1.2 The European Directive (92/43/EEC) on the conservation of Natural Habitats and Wild Flora and Fauna (the Habitats Directive) protects habitats and species of European nature conservation importance. The Habitats Directive established a network of internationally important sites designated for their ecological status. These are referred to as Natura 2000 sites or European Sites and comprise of Special Areas of Nature Conservation (SAC) and Special Protection Areas (SPAs).

1.3 Article 6 of the Habitats Directive and Regulation 48 of the Habitats Regulations 2010 states the need to determine if an Appropriate Assessment (AA) is required for proposed plans or projects which are not necessary for the management of the site but which are likely to have a significant effect on one or more Natura 2000 site.

1.4 The amended 2007 Habitats Regulations are currently only supported by draft guidance on "Planning for the Protection of European Sites: Appropriate Assessment" (Department of Communities and Local Government (DCLG), 2006), although European guidance also exists. Guidance on HRA suggests a three-stage process as follows:

1) Screening – determining whether a plan in itself or 'in combination' is likely to have a significant effect on a European site. If 'yes' then proceed to full AA.
2) Appropriate Assessment – determining whether, in view of the site's conservation objectives, the plan, in itself or in combination, would have an adverse effect (or risk of this) on a European site
3) Mitigation and Alternatives – assessment of mitigation and alternative solutions - where the plan is assessed as having an adverse effect (or risk of this) on the integrity of the site, there should be an examination of the alternatives. If it is not possible to identify mitigation or alternatives, it will be necessary to establish the 'imperative reasons of overriding public interest' (IROPI). This is not considered a standard part of the process and will only be carried out in exceptional circumstances.

1.5 The HRA addresses the screening stage of this process and seeks to determine whether the Council's options, as set out in the 2017 Issues and Options Paper, will have any significant adverse impacts on nearby Natura 2000 sites either on its own or in combination with other plans or proposals.

Partial Review of Core Strategy Housing Policies

1.6 The Epsom and Ewell Local Plan comprises a number of individual documents that together guide the future development of the Borough. The Council has in place an adopted Core Strategy DPD (2007), which sets out the vision and broad strategy for accommodating growth together with key policies to manage development.

1.7 Since the adoption of the Core Strategy in 2007, there have been significant changes to national planning policy, specifically in relation to planning for future housing growth. In order to ensure the Borough Council continues to plan positively for growth across the Borough, a decision has been made to partially review the Local Plan and the relevant associated evidence base.

1.8 A Strategic Housing Market Assessment (October 2016) has identified an Objectively Assessed Housing Needs (OAHN) figure of 418 homes per annum. This is significantly higher than Borough's current housing and affordable housing targets as adopted in Core Strategy Policies CS7 (Housing Provision) & CS9 (Affordable Housing).

1.9 Similarly, an assessment of housing land supply, the Strategic Housing Land Availability Assessment (SHLAA July 2017) has been undertaken. The SHLAA demonstrates that there is insufficient available housing land to deliver the OANH figure on sites that are in accordance with current Local Plan policy.

1.10 It has become clear that there is a need to update the Core Strategy strategic housing policies planning for the period 2015-2032, so that these policies remain in accordance with national policy and guidance. The Issues and Options paper represents the first stage in this process and focuses on choosing between alternative options.

1.11 The Issues and Options paper contains four strategic options for the future strategy of housing delivery within the Borough and these options are the subject of the HRA Screening Assessment. The options are as follows:

Option 1: Urban intensification

- Increase development density to around 200 homes per hectare across all potential housing sites in the urban area
- Use employment land for housing
- Make land swaps by building on open spaces, play pitches and allotments in the urban area and re-providing them in the Green Belt
- Allow development on garden land

Option 2: Release some Green Belt land for new homes

- Continue to build on previously developed sites over the next five years
- Create a number of new areas for housing by undertaking a detailed review of the Green Belt to identify areas potentially suitable for new homes and supporting infrastructure to meet the shortfall in housing need

Option 3: Significant Green Belt release to meet all our housing need and more

- Continue to build on previously developed sites over the next five years
- Seek to extensively amend the Green Belt land not protected by environmental designation (primary constraints)
- Release enough Green belt land to meet the large majority of the new homes needed
- Seek to take some of our neighbours unmet housing need

Option 4: Finding the balance

- Continue to build on previously developed sites over the next five years
- Increase densities and building heights on sites in accessible locations, where it will not negatively impact on character
- Continue to protect employment land, parks, allotments and play pitches
- Create a number of new areas for housing by undertaking a detailed review of our Green Belt to identify areas potentially suitable for new homes its supporting infrastructure and where there is a clear commitment to delivery.

1.12 The above options focus on where new housing in the Borough could be delivered. There is some variation in the volume of housing each option could deliver, although at this stage the precise numbers are unknown. However, in general terms option 3 could deliver the greatest amount of new housing, option 4 the least, while options 1 and 2 could deliver similar amounts.

1.13 As the Issues and Options Paper is considering strategic options it is unlikely at this stage that the screening process will be able to entirely 'screen out' sites. However, the HRA attempts to identify sites that could be 'screened out' if effects are considered to be unlikely. It also provides a starting point for identifying issues that may need to be examined as part of the development of the Local Plan.

Structure of the Report

1.14 This initial screening report explains the methodology for carrying out the HRA assessment. A breakdown is as follows:

- Chapter 2 explains the methodology for screening the options.
- Chapter 3 identifies the European sites, which should be considered in the assessment
- Chapter 4 explores the impact pathways and mechanisms for effects
- Chapter 5 presents information on neighbouring plans
- Chapter 6 contains the screening assessment
- Chapter 7 provides a conclusion

2) Methodology

2.1 Regulation 102 of the Habitats Regulations sets out the stages for assessing the likely effects a plan or project could have on a European site.

2.2 There are four stages in producing an assessment of a plan:

- Stage 1: Screening – the process which identifies whether the plan is required for the management of European site(s) and if not whether there are likely to be any effects upon a European site as a result of the plan, either alone or in combination with other projects or plans, and considers whether these effects are likely to be significant;
- Stage 2: Appropriate Assessment – the consideration of the impact of the plan on the integrity of the European site, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where adverse effects on site integrity exist, an assessment of the effectiveness of potential mitigation of those impacts will be made;
- Stage 3: Assessment of alternative solution – the process which examines alternative ways of achieving the objectives of the plan that avoid significant effects on the integrity of the European site identified at Stage 2.
- Stage 4: Assessment where no alternative solutions exist and where adverse impact remain – an assessment of contemporary measures where, in light of an assessment of imperative reasons for overriding public interest (IROPI), it is deemed that the plan should proceed.

2.3 Each stage determines whether a further stage in the process is required. If, for example, the conclusions at the end of the screening stage are that there are no likely significant effects on the European sites, then there is no requirement to proceed further.

Stage 1: Screening – Detailed methodology

2.4 As part of the screening stage, a range of information needs to be considered in order to complete a Screening Assessment for each protected site. Key environmental conditions must be considered and any possible effects the plan (in this case the options identified in the Issues and Options Paper) may have on these.

2.5 The screening methodology uses sources, pathways and receptors as described in Table 1 below. Each of these elements is considered and used to screen out/in sources/pathways and receptors.

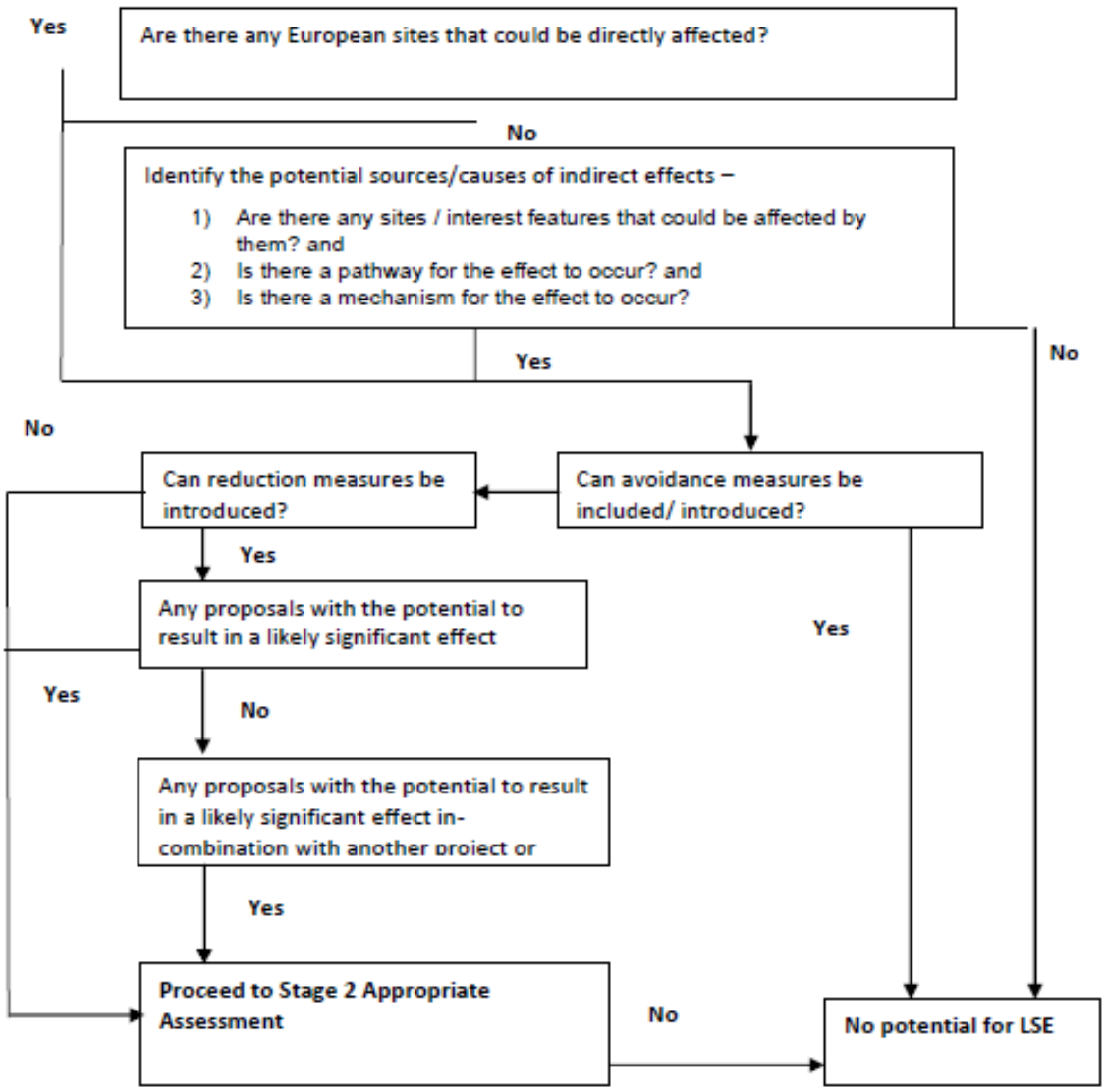
Table 1: Sources, pathways and receptors

	Definition	**Example**
Sources:	Where pollution comes from	Vehicle exhaust / oil drums
Pathway:	How the pollution can travel through the environment	Air, land, water, animal dispersal, air conditioning ducts and people
Receptor:	Who and what could be affected	People, animals and the environment

2.6 Only if there is an identifiable source, a pathway and a receptor is there likely to be a significant effect. Where there are no sources or pathways to affect a European site from the options identified in the Issues and Options Paper, then this site/ interest feature will not be given further consideration.

2.7 For greater transparency the assessment process breaks down the Screen Methodology into further sub stages in order to clearly demonstrate how conclusions have been reached. These are illustrated in Figure 1.

Figure 1: Screening Methodology



2.8 Using the above, the following process has been identified to conduct the initial screening stage of the HRA:

1) Identification of the European Sites that could be directly affected by the options set out in the Issues and Options paper, documenting the qualifying features of those sites, vulnerabilities and key environmental conditions to support the sites' integrity. (Chapter 3)

2) Highlight the potential sources, pathways and receptors and identify those that could have 'possible effects' on the European sites. (Chapter 4)
3) List the projects and plans that could affect the European sites 'in combination' with other plans and projects on European sites (chapter 5)
4) Screening assessment considering whether the identified 'possible effects' could impact upon the identified European sites alone or 'in combination' with other plans / programmes. (chapter 6)
5) Identification of those sites that could be 'screened out', based on the information available, as they are considered unlikely to be affected and those sites that are likely to require further detailed assessment / analysis and where there is considered to be a risk of adverse effects. (chapter 7)

Stage 2: Appropriate Assessment Methodology

2.9 The options which have been identified as having the potential to result in Likely Significant Effects (LSE) proceed to the Appropriate Assessment (AA) which will consider the effects of the proposals on European sites in relation to their conservation objectives and whether they have the potential to have adverse effects on site integrity (AEOSI) as a whole.

2.10 The AA should consider the favourable conservation status (FCS) of the qualifying features in the site and current site conditions. Should the citations of the European sites include any threats or vulnerabilities these will be considered in the assessment. The AA utilises information that is freely available in the public domain and in light of the best scientific knowledge in the field.

2.11 Consultation with Natural England takes place throughout the HRA process. By virtue of Regulation 5 (1), statutory consultation is required in respect of the appropriate assessment by virtue of Regulation 102 (2) which states:

"The plan-making authority must for the purposes of the assessment consult the appropriate nature conservation body and have regard to any representations made by that body within such reasonable time as the authority may specify."

3) Identification of European Sites

3.1 The first stage in the process is the identification of the European sites that should be considered in the assessment. These are the sites which may potentially suffer from any 'significant effects' arising from the Borough's Core Strategy review. An 'effect' includes anything, which would impact upon a protected site. Temporary, permanent, direct and indirect effects need to be considered. A plan or project does not need to be located on a site in order to impact on it. Generally the closer an activity is, the greater the chance it will affect a site, although operations taking place far from a protected site may still be capable of having a significant effect.

3.2 While the Borough itself does not contain any European sites, a precautionary approach has been adopted, and all sites within 15 km (linear) of the Borough boundary have been included. This approach has previously been supported by Natural England in the screening work undertaken by other boroughs and districts. The extent of the area of search reflects the likely 'reach' of any impacts arising from the Borough's Core Strategy review. However, any wider impacts identified would also have to be considered.

3.3 Table 2 below identifies the European sites lying within 15km (linear) of the Borough boundary. All information relating to the description of the sites has been obtained from the Joint Nature Conservation Committee (JNCC) via the DEFRA website.

Table 2 European sites within 15km of the Borough boundary

Site Name	Designation	Straight line distance from Borough Boundary (km)	Site area (ha)	Brief reason for designation
Mole Gap to Reigate Escarpment	SAC	2	887.68	Calcareous grassland important for its box scrub
Richmond Park and Wimbledon Common	SAC	5	846.68 and 351.38	Important for Stag Beetle
South West London Waterbodies	SPA and Ramsar	Parts of the site 7km while the majority is 15km	828.14	Important over wintering site for Gadwell and Shoveler
Thames Basin Heaths	SPA	10	8,274.74	Important populations of Nightjar, Dartford Warbler and Woodlark

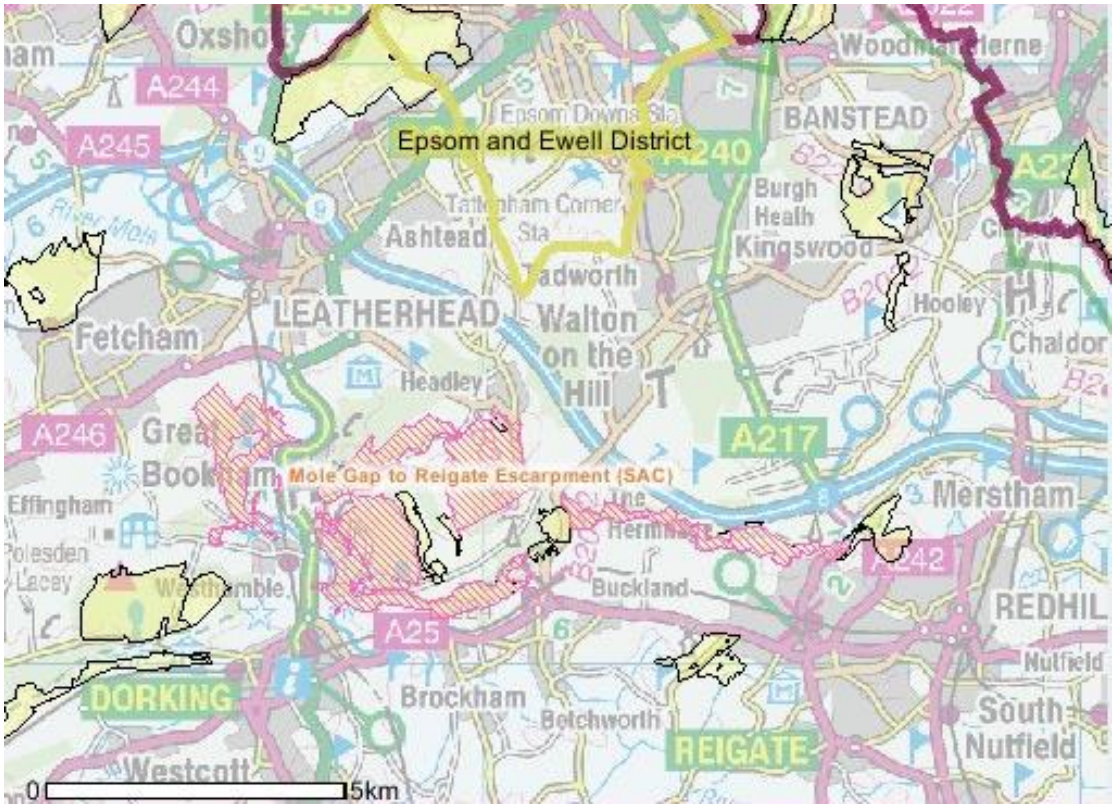
3.4 A map showing the broad locations of the European sites relative to the Borough is set out in Appendix 1.

3.5 Details of the European sites are provided below. This includes information on:

- their qualifying features,
- the key environmental conditions required to support the site's integrity and conservation importance and,
- the vulnerabilities for each European site

Mole Gap to Reigate Escarpment SAC

Figure 2: Location of Mole Gap to Reigate Escarpment SAC



Source: natureonthemap.org.uk

Summary:

Distance from Borough boundary: Approximately 2km

Most of this site is a mosaic of chalk downland habitats, ranging from open chalk grassland to scrub and broadleaved semi-natural woodland on the scarp slope of the North Downs. Headley Heath is an area of heathland, grassland and woodland located on clay-with-flints on the dip slope. Both box and yew are well represented.
Recreational pressure is high and requires management and monitoring. Bechstein's bats use the site throughout the year, as a winter hibernacula, autumn 'swarming' site, and as feeding habitat.

Qualifying features:

- Natural box scrub
- Dry grasslands and scrublands on chalk or limestone
- Dry grasslands and scrublands on chalk or limestone, including important orchid sites
- Yew dominated woodland
- Dry heaths
- Beech forests on neutral to rich soils
- Great Crested Newt
- Bechstein’s bat

Key environment conditions to support site integrity:

- Appropriate management – grazing
- Absence of direct fertilization
- Minimal air pollution
- Low recreational pressure
- Absence of urbanization effects, e.g. introduction of invasive non-native species
- Suitable foraging and refuge habitat within 500m of the pond
- Relatively unpolluted water of roughly neutral pH
- Some ponds deep enough to retain water throughout February to August at least one year in every three
- In a wider context, Great Crested Newts require good connectivity of landscape features (ponds, hedges etc…) as they often live as a meta population; and
- In a wider context, bats require good connectivity of landscape features to allow foraging and commuting

Comments on nature conservation importance and vulnerability:

- Supports the only area of stable box scrub in the UK (due to natural erosion on a steep slope)
- Also supports a wide range of calcareous grassland types and is particularly important for orchids including the nationally scarce musk orchid and man orchid
- Also significant in exhibiting transitions to scarce scrub, woodland and dry heath types, notable yew woods and chalk heath.

Richmond Park and Wimbledon Common

Figure 3: Location of Richmond Park and Wimbledon Common SACs

Source: natureonthemap.org.uk

Summary:

Distance from Borough boundary: Approximately 5km

The park and the common have a large number of ancient and old trees with decaying / fallen timber. They are at the heart of the south London centre of distribution for stag beetle *Lucanus cervus.* The site supports a number of other scarce invertebrate species associated with decaying timber. The sites are located in an urban area and therefore experience heavy recreational pressure.

Qualifying features:

Wimbledon Common

- Important for Stag Beetle (*Lucanus Cervus*).
- North Atlantic dry wet heaths and European dry heaths

Richmond Park

- Important for Stag Beetle (*Lucanus Cervus*)

Key environment conditions to support site integrity:

Wimbledon Common

- The number of old broad-leaved trees and state of decay;
- Condition of old broad-leaved trees – state of decay;
- Position and degree of exposure of old broad-leaved trees and stumps;

- Quantity and size of broad-leaved dead wood;
- Condition and position of available dead timber.
- Proximity to urban area means it suffers heavy recreational pressure.
- Habitat for Stag Beetle, for which this is only one of 4 known outstanding localities in the UK.
- Site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees.

Richmond Park

- The number of old broad-leaved trees and state of decay;
- Condition of old broad-leaved trees – state of decay;
- Position and degree of exposure of old broad-leaved trees and stumps;
- Quantity and size of broad-leaved dead wood;
- Condition and position of available dead timber

Comments on nature conservation importance and vulnerability:

Wimbledon Common

- Proximity to urban area means it suffers heavy recreational pressure.
- Habitat for Stag Beetle, for which this is only one of 4 known outstanding localities in the UK.
- Site of national importance for the conservation of the fauna of invertebrates associated with the decaying timber of ancient trees

Richmond Park

- Proximity to urban area means it suffers heavy recreational pressure. However this does not directly affect the European interest feature.
- Habitat for Stag Beetle, for which this is only one of 4 known outstanding localities in the UK.

South West London Waterbodies

Distance from Borough boundary: Part of the site is approximately 7 km away, with the majority of the protected areas being approximately 15km.

Summary:

The site is comprised of a series of discrete waterbodies in the Thames Valley between Windsor and Hampton Court. The site contains a series of reservoirs and former gravel pits that support internationally important numbers of wintering Northern shoveler *Anas clypeata* and Gadwall *Anas strepera.*

Qualifying features:

- Comprises a series of reservoirs and former gravel pits that support internationally important numbers of wintering Gadwell and Northern Shoveler
- Also Great crested grebe, great cormorant, Tufted duck, Black-necked grebe and Smew

Key environment conditions to support site integrity:

- Lack of disturbance during winter months;
- Areas of open water;
- Areas of shallow water (<300mm) for feeding;
- Presence and abundance of aquatic plant and invertebrate food;
- Adjacent banks for loafing; and
- Relevant nearby waterbodies used for feeding and as refuges.
- Good air quality is vital for lichens which the notified birds feed on

Comments on nature conservation importance and vulnerability:

- Current research indicates that birds are using a range of waterbodies within the area but outside the SPA boundaries and that these sites are relevant to the integrity of the SPA.

Thames Basin Heaths SPA

Distance from Borough boundary: Part of the SPA is approximately 10km away

Summary:

This SPA covers thirteen Sites of Special Scientific Interest (SSSI) and is spread over three counties, and within 5 km of fifteen local authorities. The SPA is an internationally important nature conservation site, classified in order to protect three bird species that are rare across Europe: the Dartford Warbler *Sylvia undata*, Nightjar *Caprimulgus europaeus* and Woodlark *Lullula arborea*. These birds rely on the heathland habitats, which are also important for a wide range of other wildlife species and for their landscape, historical and cultural values. Three of the SSSIs that comprise the SPA (Chobham Common, Ash to Brookwood Heaths and Colony Bog and Bagshot Heath) are also classified as part of the Thusley, Ash, Pirbright and Chobham Special Area for Conservation (SAC) for the wet and dry heathland habitats and bog communities of the Rhynchosporion vegetation alliance on peat substrates in depressions.

Qualifying features:

- Nationally important breeding populations of Nightjar, Woodlark and Dartford Warbler

Key environment conditions to support site integrity:

- Acid soils;
- Minimal air pollution;
- Unpolluted water;
- Un-fragmented habitat;
- Minimal recreational pressure and low incidence of wild fires; and
- Appropriate grazing pressure

Comments on nature conservation importance and vulnerability:

- Dependent on active management.
- Lack of grazing and other traditional management practices pose a threat. Traditional management is being implemented through schemes such as Countryside Stewardship and Wildlife Enhancement Scheme.
- Development pressure on neighbouring land and the cumulative and indirect effects of neighbouring developments also pose a potential long-term problem, e.g. housing developments.
- Natural England comment on planning applications and provide input into structural and local plans. A strategic approach to accommodating development whilst ensuring the compatibility with Habitats Regulations is being addressed through the Thames Basin Heaths Delivery Project.
- Tenure is mixture of public, private, local authorities and non-governmental organisations. MoD and local authorities' significant landowners. Local authority land often designated as public open space and used heavily for informal recreation. Private owners - management addressed through Site Management Statement process.

4) Sources, Pathways and Receptors

4.1 This section identifies the possible sources and pathways for (unmitigated) effects arising from the Core Strategy review in the context of the European sites. These include:

1. **Air Quality - that includes atmospheric pollution, diffuse air pollution and nutrient enrichment**
2. **Water Quality**
3. **Species Disturbance**
4. **Water Quantity**

Air Quality

4.2 The continued use and development of the transport network and reliance on carbon based energy provision inevitably gives rise to atmospheric emissions. These emissions contribute to air pollution at the local and regional scales leading to continued deterioration in air quality.

4.3 The main pollutants of concern for European sites are outlined in Table 3 below. Of particular concern are oxides of nitrogen (NOx), ammonia (NH_3) and sulphur dioxide (SO_2). NOx can have a directly toxic effect upon vegetation found on heathland but its most significant role is through its contribution to nitrogen deposition to soils leading to an increase in soil fertility, which can have a serious effect on the quality of semi-natural, nitrogen-limited habitats.

Table 3: Main atmospheric pollutants of concern

Pollutants (critical levels)[1]	Source	Exceedance Effects on Ecosystems[2]
Nitrogen (N) deposition [12 kg ha^{-1} yr^{-1}]3	The pollutants that contribute to nitrogen deposition derive mainly from NO_X and NH_3 emissions.	**Terrestrial Impacts** • Changes in species composition especially in nutrient poor ecosystems with a shift towards species associated with higher nitrogen availability (e.g. dominance of tall grasses) • Reduction in species richness • Increases in plant production • Decrease or loss of sensitive lichens and bryophytes. • Increases in nitrate leaching **Freshwater Impacts** • There is a potential in N-limited systems for N deposition to change algal productivity and nutrient regimes in upland lakes. • Increase rate of succession

[1] Levels are taken from the EU ambient air quality directive (2008/50/EC) obligations that have been translated into UK law by the Air Quality Standard Regulations 2010 http://www.legislation.gov.uk/uksi/2010/1001/schedule/3/made

[2] Source: http://www.apis.ac.uk/overview/issues/overview_Cloadslevels.htm#_Toc279788050

Acid deposition [NOx = 30 µg/m3 yr-1] [SO_2 = 20 µg/m_3 yr_{-1} and winter (1st October – 31st March)]	SO_2, NOx and ammonia all contribute to acid deposition. Although future trends in sulfur dioxide emissions and subsequent deposition to terrestrial and aquatic ecosystems will continue to decline, it is likely that increased nitrogen oxides emissions may cancel out any gains produced by reduced sulfar dioxide levels.	**Terrestrial Impacts** • Leaching will cause a decrease in soil base saturation, increasing the availability of Al^{3+} ions, mobilisation of Al^{3+} may cause toxicity to plants and mycorrhiza, and have a direct effect on lower plants (bryophytes and lichens). **Freshwater Impacts** • Increase Al^{3+} concentration associated with freshwater acidification, impact on invertebrate populations, toxicity to fish.
Ammonia (NH_3) [3 µg/m_3 (with an uncertainty range of 2-4 µg/m_3)]	Ammonia is released following decomposition and volatilisation of animal wastes. It is a naturally occurring trace gas, but levels have increased considerably with expansion in numbers of agricultural livestock. Ammonia reacts with acid pollutants such as the products of SO_2 and NO_X emissions to produce fine ammonium (NH_{4+}) containing aerosol, which may be transferred much longer distances.	• Direct damage to sensitive species, for example, leaf discoloration, bleaching, observed in Sphagnum species at high concentrations. • Increase in algal growth over Sphagnum. • Suppression of root uptake of cations such as Ca, Mg and K leading to nutrient imbalances. • Changes in species composition of ground flora, bryophyte, and lichen communities.
Sulphur Dioxide (SO_2) [SO_2 = 20 µg/m_3 yr_{-1} and winter (1st October – 31st March)]]	Main sources of SO2 emissions are electricity generation, industry, and domestic fuel combustion. May also arise from shipping and increased atmospheric concentrations in busy ports. Total SO2 emissions in the UK have decreased substantially since the 1980s.	Visible symptoms, for example, leaf discoloration. • Stimulated growth at low concentrations of sulfar dioxide potentially changing community composition. • The vulnerability to direct damage of mosses, liverworts and lichens which are often sensitive to lower concentrations than those causing injury to higher plants.
Nitrogen oxides (NO_x) [NO_x = 30 µg/m_3 yr_{-1}]	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.	• Visible symptoms for example, leaf discoloration. • The vulnerability to direct damage of mosses, liverworts and lichens which receive their nutrients largely from the atmosphere. • Changes in species composition
Ozone (O3)	A secondary pollutant generated by	• Visible injury to foliage

[AOT 40 (calculated from 1 h values) 18,000 µg/m^3 h^{-1} averaged over five years**]**	photochemical reactions from NO_x and volatile organic compounds (VOCs). These are mainly released by the combustion of fossil fuels. The increase in combustion of fossil fuels in the UK has led to a large increase in background ozone concentration, leading to an increased number of days when levels across the region are above 40ppb.	• Reduction in growth rate and yield • Selection against ozone sensitive genotypes • Changed reaction to water stress

4.4 Currently, more than half of all NO_x emissions derive from vehicle use. Therefore it is reasonable to expect an increase in NO_x emissions to accompany greater vehicle use as an indirect effect of the options set out in the Issues and Options Paper, as all the options promote increased housing.

4.5 Ammonia (NH_3) emissions tend to be dominated by agriculture. Epsom and Ewell is not a major agriculture location, and none of the options propose to intensify the use of existing agricultural land. It is therefore unlikely any of the options will result in a material increase in either SO_2 or NH_3 emissions.

4.6 SO_2 emissions primarily originate from power stations and industrial processes that require the combustion of coal and oil. In addition, SO_2 levels can be influenced locally by shipping. The National Expert Group on Transboundary Air Pollution (Fowler et al. 2001) concluded that reductions in SO_2 concentrations virtually eliminated its direct impacts on vegetation.

4.7 The same group (ibid) concluded that the then current ozone concentrations threaten crops and forest production nationally and further go on to suggest that the effects of ozone deposition are likely to remain significant beyond 2010. As this secondary pollutant is generated by photochemical reactions from NO_x and VOCs it is possible that the options could contribute to increased emissions of both NO_x and VOCs accompanying greater vehicle use as an indirect effect of its policies that promote increased housing.

Diffuse air pollution

4.8 The level of development envisaged in the options will only make a marginal contribution to the overall background change in air quality across an entire region. This is therefore considered beyond the scope of this assessment as responsibility for addressing such issues sits with national government.

Water quality

4.9 Increased amounts of housing or business development can lead to reduced water quality of rivers and estuarine environments. Sewage and industrial effluent discharges can contribute to increased nutrients on European sites leading to unfavourable conditions. In addition, diffuse pollution, partly from

urban run-off has been identified during an Environment Agency Review of Consents process, as being a major factor in causing unfavourable condition of European sites.

4.10 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.

4.11 For sewage treatment works close to capacity, further development may increase the risk of effluent escape into aquatic environments.

4.12 The Council is consults with infrastructure providers on development plan proposals to ensure that there is sufficient sewerage capacity to support the housing numbers set out across the options. It should also be noted that the treatment of waste water is governed by a variety of regulatory and legislative measures including the EU Water Framework Directive which addresses the environmental impacts of waste water including the impacts on Natura 2000 sites. This should therefore provide sufficient protection to the integrity of the European sites.

Species Disturbance / Recreational Pressure

4.13 During consultation of the South East Plan[3] HRA revealed that potentially damaging levels of recreational pressure are already faced by many European sites. Recreational use of a site has the potential to:

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

4.14 Different types of European sites (e.g. heathland, chalk grassland) 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.

4.15 Most of the European sites identified in this screening assessment are at least 5km from the Borough and therefore residents within the Borough are likely to use facilities which are closer. However, the Mole Gap to Reigate Escarpment site lies approximately 2km to the south of the Borough.

Water quantity

4.16 The Borough is located within an area that has been classified by the Environment Agency as being under serious water stress. Over the next 30 years water resources are expected to experience an increase in pressures from the rising population and associated development (Environment Agency 2008). These development pressures will be amplified by the impact of climate change. It is therefore reasonable to conclude that European sites

[3] The South East of England RSS was revoked on 6 July 2010; with the exception of Policy NRM6 that seeks to protect the Thames Basin Heaths SPA.

with features that are dependent upon adequate resource levels and sensitive to changes to this level could suffer significant impacts.

4.17 It is considered that reduced water levels can affect European sites and the species the support in a variety of ways including:

- Shallow rooted trees like beech can be damaged and die;
- Heathlands can become more prone to fire damage;
- Reduced river flows can effect fish, and can lead to algal blooms which can kill fish;
- Wetlands can dry out, affecting the birds that feed and nest in them;
- Reduced water levels in ditches, rivers, ponds and wetlands can reduce the number of insects available for bats and birds to feed on;
- A loss of freshwater habitats can cause the loss of amphibians that depend on such habitats

4.18 The water supply for the Borough is provided by two providers; SES Water (formerly Sutton and East Surrey) and Thames Water.

4.19 In the case of SES Water, 85% of their supplied water comes from groundwater and 15% from river sources. SES Water's most recent Water Resource Management Plan (2014) forecasts that there will be a supply-demand deficit over the next 25 years. To address this they are using a combination of measures. These include efficiency improvements to ensure there is sufficient water available for use.

4.20 For Thames Water London region (in which Epsom and Ewell is located) 80% of water supply derives from the River Thames and the River Lee via reservoirs, and 20% from groundwater. The latest Thames Water Resource Management Plan (2014) states that a growing deficit on a dry year annual average is forecast for the London region. To address the projected deficit, Thames Water are proposing to use a combination of demand reduction and resource development.

4.21 As Water Management Plans are legally required to take account of environmental limits - the implication is that there should be no damaging levels of abstraction that would negatively impact any of the protected sites.

5) In combination effects of other plans

5.1 In accordance with Article 6 (3) of the Habitats Directive, it is necessary to consider the implications of the options set out in the issues and Options Paper for European sites 'in combination' with other plans and projects. In order to do this plans and projects that may result in combination in significant effects with the options set out in the Issues and Options Paper have been identified.

5.2 The assessment focuses on Local Plans for the authorities adjacent to the Borough and within the wider region. Specifically the focus is on housing targets and the identified need for housing in the future as this is anticipated to be the main type of development which will occur.

5.3 Table 4 provides information on Local Plans under preparation in neighbouring local planning authorities and others in the wider area. The Table provides information on existing housing delivery targets, OAHN and the stages authorities are at in their local plan preparation. The majority have undertaken Strategic Housing Market Assessments to identify their OAHN. In accordance with national planning policy this is normally translated into land provision targets. It should be noted that in most cases the OAHN are not adopted targets and most have yet to be tested against other constraints to development. Nevertheless they provide a good indication of the scale of demand for new housing.

5.4 The government has recently published a consultation paper entitled 'Planning for the Right Homes in the Right Places: Consultation Proposals'. This proposes a new standard methodology for assessing housing need. The impact of this new methodology upon local OAHN figures could be significant. As part of the consultation process the government has published indicative calculations of OAHN using the proposed standard methodology. Their indicative figure is included under an additional column in Table 4. The government intends to revise the National Planning Policy Framework (NPPF) in spring 2018, which will most likely contain reference to the new standard methodology.

5.5 As Table 4 shows, the OAHN figures generated by the proposed standard methodology are much higher than the housing figures in adopted plans. Collectively this could result in significant environmental impacts on all of the European sites depending on location.

Table 4: Local Authorities Plans

Local Authority	Existing Target	Source of Data	Objectively Assessed Housing Need (OAN)	OAN using standardised methodology	Current stage in local plan preparation
Epsom & Ewell	2,715 (to 2022)	Core Strategy (adopted 2007)	8,352 (2015 to 2035)	11,580	Consultation underway on Issues and Options Paper
Elmbridge	3,375 (to 2026)	Core Strategy (adopted 2011)	9,480 (2015 to 2035)	12,240	Strategic Options consultation ended early 2017
Guildford	Expired target	Local Plan 2003	13,080 (2013 to 2033)	15,780	Submission of new Local Plan anticipated in December 2017
Kingston	6,434 (to 2025)	Current London Plan 2016	14,3840 (2015 to 2035)	30,540	Issues and Options Paper consulted upon
Mole Valley	3,760 (to 2026)	Core Strategy (adopted 2009)	7,820 (2015 to 2035)	8,820	Consultation on strategic options ended Sept 2017
Reigate & Banstead	6,900 (to 2027)	Core Strategy (adopted 2014)	9,750 (2012 to 2033)	13,524	Working on Development Management Document
Runnymede	Expired target	Local Plan 2001	10,700 (2013 to 2033)	11,140	Additional Sites and Options Consultation Document consulted upon summer 2017
Spelthorne	3,320 (to 2026)	Core Strategy (adopted 2009)	15,140 (2013 to 2033)	11,800	Consultation on Issues and Options unlikely to take place before 2018
Sutton	Expired target although new Local Plan target currently at examination 6,405 (to 2031)	Draft Sutton Local Plan 2016-2031 Proposed Submission Consultation	19,800 (2013 to 2031) 1,100 per annum	31,932	Local Plan currently at examination
Woking	4,964 (to 2027)	Core Strategy (adopted 2012)	10,340 (2013 to 2033)	8,180	Work on Site Allocations and Development Management Policies document

6) Screening Assessment

6.1 This section provides the HRA Screening Assessment results for the options as set out in the Issues and Options Paper for both the 'alone' and 'in combination' assessments.

6.2 As work on the Core Strategy Review is at an early stage, it is difficult to identify differences between the options in terms of their potential for significant effects on the protected European sites. As the options progress, further information will become available and more detailed judgements will be able to be made. Therefore, at this stage if there is some possibility of significant effects on a European site, they will need to be assessed in greater detail at the next stage.

6.3 Under Chapter 4, a number of potential impacts which could arise from the options were considered. Some were identified as having the potential to result in significant effects on the protected sites and therefore should be considered in the screening assessment. The potential impacts are summarised in Table 5 below:

Table 5: Summary table of potential effects

Potential Effects	**To be considered in screening assessment?**	**Brief justification**
Air pollution: NOx emissions	Yes	Emissions arise mostly from vehicle use
Air pollution: Ammonia	No	Emissions arise mostly from agriculture – limited in the Borough
Air pollution: SO2	No	Emissions arise mostly from power stations and industrial processes – limited in the Borough
Air pollution: Ozone	Yes	Pollutant is generated from reactions between NOx and VOCs
Diffuse air pollution	No	To be considered at a national level
Water quality	No	Adequate capacity for sewage treatment in the Borough.
Recreational disturbance	Yes	Increased levels of development could result in increased visitor numbers to the protected sites
Water quantity	No	Water Management Plans for water supply companies must take account of environmental limits

6.4 On the basis of the outcomes from Table 5, the screening assessment focusses upon the potential for both air pollution (specifically NOx and ozone) and recreational pressure to have a significant impact on the protected European sites identified in chapter 3. Each site is discussed in turn.

Mole Gap to Reigate Escarpment SAC

Recreational disturbance:

6.5 Recreational disturbance can have a negative impact on the chalk grassland, with dog walking and related nutrient enrichment of grassland potentially impacting on the integrity of the site. It is anticipated that recreational pressure is most likely to occur around popular key locations such as Boxhill.

6.6 The level of planned development across other administrative areas could, in combination, with the options set out in the Issues and Options Paper give rise to increased visitor numbers.

6.7 At this stage, it cannot be ascertained whether increased recreational pressure from the options will affect the integrity of the site either alone or in combination with other plans. While the main built up area of the Borough is located approximately 4km from this protected site, many of the options suggest Green Belt release. This could result in new settlements being located closer. Until specific sites are identified, it is considered prudent to consider this impact at the next stage of the HRA. In addition, it is difficult to quantify the impact from the volume of development which will occur in neighbouring authorities until there is further clarity as to the housing numbers.

Air quality:

6.8 Increased levels of development are likely to give rise to greater vehicle use and thus increased in NOx emissions. The M25 passes close to the protected site and development within the Borough could result in increases of traffic on this primary route. Again, until there is further clarification as to the volumes of development which are planned for across other local authorities this impact cannot be screened out at this stage.

Richmond Park and Wimbledon Common SAC

Recreational disturbance:

6.9 Both these sites are located in an urban area and therefore experience intensive recreational pressure. For Richmond Park SAC this pressure does not directly affect the European interest feature; stag beetles, as the main factor affecting them is the availability of dead and rotting wood. This factor is altered through habitat management and not significantly affected by visitor pressure.

6.10 Wimbledon Common SAC is also a popular destination for recreational activities, and supports heathland habitat, which is more sensitive to recreational pressure. The SAC is located approximately 5km from the Borough's boundaries and, with adequate open space provision within the Borough it is unlikely that development in the authority will lead to a significant increase in visitor numbers.

Air quality:

6.11 The qualifying heathland habitats of Wimbledon Common are known to be particularly vulnerable to increases in air pollution[4]. The A3 runs adjacent to the north western boundary of Wimbledon Common and new development could generate additional traffic along this route.

South West London Waterbodies SPA

Recreational disturbance:

6.12 Due to the distance of the SPA from the Borough (between 7 to 15km), it is considered unlikely that development within the Borough will give rise to significantly increased levels of recreational disturbance.

Thames Basins Heath SPA

Recreational disturbance:

6.13 Natural England believes that housing developments at a distance of up to 5km away from an SPA will create disturbance to rare bird populations. This is believed to be the distance that many people will travel to visit the heaths for leisure and recreation, especially for dog walking, thus potentially increasing the disturbance of the birds and the pressure on their habitats. At a distance of approximately 10km from the nearest part of the Thames Basin Heath SPA, it is considered that housing development within the Borough will not add to the recreational pressure on the SPA.

[4] Wimbledon Common SAC Site Improvement Plan

7) Conclusion

7.1 At this stage all of the options have been identified as having the potential for causing significant effects on a number of the protected European sites. It may be that when the options are developed in more detail, in terms of the amount, location and distribution of development, they may not give rise to any significant effects. This screening report will therefore need to be updated when the plan reaches a more developed stage. This will enable a more detailed assessment of likely impacts to be undertaken.

7.2 To summarise, as a result of this screening assessment the likely significant effects on identified European sites which remain screened in are:

European Site	**Potential Significant Effect**
Mole Gap to Reigate Escarpment SAC	Recreational disturbance and air quality
Wimbledon Common SAC	Air quality

Appendix 1: Overview of International and European protected sites within the vicinity of Epsom & Ewell