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Greater Cambridge Local Plan

HRA Scoping Report

Prepared by LUC
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1.3	12/12/19	Issue following Natural England comments	Rebecca Turner	David Green	David Green

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1 Introduction

1.1 LUC has been commissioned by South Cambridgeshire District Council and Cambridge City Council (the Councils) to carry out a Habitats Regulations Assessment (HRA) of the Greater Cambridge Local Plan (GCLP).

1.2 This HRA Scoping relates to the 'Greater Cambridge Local Plan: The first conversation' document, also referred to as the Issues and Options document, and it should be read in conjunction with that document. The Issues and Options consultation is the first stage in the plan-making process, which seeks the opinions of stakeholders and local people as to what the key issues are that the Local Plan should seek to address. Given the broad nature of this consultation, this HRA Scoping contains a high-level commentary on the HRA considerations for the Local Plan. HRA of the more detailed options for the Local Plan will be undertaken as they are developed.

1.3 The main purpose of this report is to identify which European sites have potential to be affected by the GCLP, evidence key information on these sites and outline the pathways by which they could be affected, and to set out the scope of the subsequent HRA Screening and Appropriate Assessment stages in agreement with Natural England, who will be consulted on this report.

Context for the Greater Cambridge Local Plan

1.4 Comprising Cambridge City and South Cambridgeshire District, Greater Cambridge covers approximately 360 square miles, with a total population of 285,000 people across the city. Cambridge City and South Cambridgeshire have a unique relationship, in that South Cambridgeshire entirely surrounds Cambridge City. Greater Cambridge borders Huntingdonshire and East Cambridgeshire to the north; Central Bedfordshire to the west; North Hertfordshire, Uttlesford and Braintree to the south, and to the east, it borders St Edmundsbury in Suffolk.

1.5 Whilst Cambridge City is distinctly urban, South Cambridgeshire is a mainly rural district with Cambourne in the west, Histon to the north and Sawston in the south being the most populated settlements in Greater Cambridge, after Cambridge City.

1.6 Cambridge is a city of international importance in terms of its world-class university, research, heritage, culture and science. Cambridge also plays a key functional role in planning terms as the dominant centre in Cambridgeshire and as a main nodal point of the Oxford-Milton Keynes-Cambridge Arc and M11 corridor.

1.7 As a prominent hub for research and the dominant centre of Cambridgeshire, Cambridge has strong north-south transport links to London and north Cambridgeshire via train and the M11 corridor. Approximately 23,367 people commute daily from South Cambridgeshire to the city. Whilst South Cambridgeshire currently has limited access to bus services and other more sustainable modes of transport, particularly in the more remote west and eastern parts of Greater Cambridge, the emerging Cambridgeshire and Peterborough Local Transport Plan sets out a number of measures to improve transport links in the area.

1.8 Greater Cambridge contains a wealth of historic assets, with over 4,000 listed buildings, 32 conservation areas and 24 registered parks and gardens across Cambridge and South Cambridgeshire. A variety of mineral resources are also found in the Greater Cambridge Local Plan area, including sand, gravel and chalk. These extensive deposits often occur under high quality agricultural land or in areas valued for their biodiversity and landscapes, such as river valleys.

The New Local Plan

1.9 Cambridge City Council and South Cambridgeshire District Council have committed to preparing a joint Local Plan for their combined area, referred to as Greater Cambridge, a strand of work which originated as part of the City Deal agreement with central government established in 2014. The individual Councils both adopted separate Local Plans in October 2018 which set out the development needs of the local authority areas up to 2031.

1.10 The adopted Local Plans acknowledged the commitment to an early review of their Local Plans beginning in 2019. This decision to take forward the early review of the Local Plans was made in order to establish what impact the anticipated changed infrastructure and economic growth in the area might have on housing need and other aspects of spatial and transport planning. Further, during Examination of the individual Local Plans, a number of issues were highlighted for specific attention. These related to the assessment of housing needs, progress in delivering the development strategy and in particular the proposed new settlements and provision to meet the requirements of caravan dwellers.

1.11 The plan period for the Greater Cambridge Local Plan is yet to be determined, but is likely to cover the period to either 2040 or 2050. It will replace policies contained within the Cambridge Local Plan (2018) and the South Cambridgeshire Local Plan (2018). The Joint Local Development Scheme 2018 identified that the Plan will be submitted to the Secretary of State for examination at the end of summer 2022. Public consultation on the Issues and Options for the plan is proposed for late 2019

The requirement to undertake Habitats Regulations Assessment of Development Plans

1.12 The requirement to undertake HRA of development plans was confirmed by the amendments to the Habitats Regulations published for England and Wales in 2007[1;] the currently applicable version is the Conservation of Habitats and Species Regulations 2017[2] (as amended). When preparing the Greater Cambridge Local Plan, the Councils are required by law to carry out an HRA. The Councils can commission consultants to undertake HRA work on its behalf and this (the work documented in this report) is then reported to and considered by the Councils as the 'competent authority'. The Councils will consider this work and may only progress the GCLP if it considers that the Plan will not adversely affect the integrity of any European site. The requirement for authorities to comply with the Habitats Regulations when preparing a Local Plan is also noted in the Government's online planning practice guidance.

1.13 HRA refers to the assessment of the potential effects of a development plan on one or more European sites, including Special Protection Areas (SPAs) and Special Areas of Conservation (SACs):

- SACs are designated under the European Habitats Directive and target particular habitat types (Annex 1) and species (Annex II). The listed habitat types and species (excluding birds) are those considered to be most in need of conservation at a European level.
- SPAs are classified in accordance with Article 4(1) of the European Union Birds Directive[3] for rare and vulnerable birds (as listed in Annex I of the Directive), and under Article 4(2) for regularly occurring migratory species not listed in Annex I.
- Potential SPAs (pSPAs)[4], candidate SACs (cSACs)[5], Sites of Community Importance (SCIs)[6] and Ramsar sites should also be included in the assessment.

[1] *The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007* (2007) SI No. 2007/1843. TSO (The Stationery Office), London.

[2] *The Conservation of Habitats and Species Regulations 2017* (2017) SI No. 2017/1012, TSO (The Stationery Office), London.

[3] *Council Directive 2009/147/EC of 30 November 2009 on the conservation of wild birds* (the codified version of Council Directive 79/409/EEC, as amended).

[4] Potential SPAs are sites that have been approved by the Minister for formal consultation but not yet proposed to the European Commission, as listed on the GOV.UK website.

- Ramsar sites support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

1.14 For ease of reference during HRA, these designations can be collectively referred to as European sites[7] despite Ramsar designations being at the international level.

1.15 The overall purpose of the HRA is to conclude whether or not a proposal or policy, or the whole development plan, would adversely affect the integrity of the European site in question either alone or in combination with other plans and projects. This is judged in terms of the implications of the plan for the 'qualifying features' for which the European site was designated, i.e.:

- SACs – Annex I habitat types and Annex II species[8];
- SPAs – Annex I birds and regularly occurring migratory species not listed in Annex I[9];
- Ramsar sites – the reasons for listing the site under the Convention[10].

1.16 Significantly, HRA is based on the precautionary principle meaning that where uncertainty or doubt remains, an adverse impact should be assumed.

Stages of HRA

1.17 The HRA of development plans is undertaken in stages (as described below) and should conclude whether or not a proposal would adversely affect the integrity of the European site in question.

1.18 The HRA should be undertaken by the 'competent authority', in this case South Cambridgeshire District Council and Cambridge City Council, and LUC has been commissioned to do this on the Council's behalf. The HRA also requires close working with Natural England as the statutory nature conservation body[11] in order to obtain the necessary information, agree the process, outcomes and mitigation proposals. The Environment Agency, while not a statutory consultee for the HRA, is also in a strong position to provide advice and information throughout the process as it is required to undertake HRA for its existing licences and future licensing of activities.

Requirements of the Habitats Regulations

1.19 In assessing the effects of a Plan in accordance with Regulation 105 of the Conservation of Habitats and Species Regulations 2017, there are potentially two tests to be applied by the competent authority: a 'Significance Test', followed if necessary by an Appropriate Assessment which would inform the 'Integrity Test'. The relevant sequence of questions is as follows:

- Step 1: Under Reg. 105(1)(b), consider whether the plan is directly connected with or necessary to the management of the sites. If not, as is the case for the Greater Cambridge, proceed to Step 2.
- Step 2: Under Reg. 105(1)(a) consider whether the plan is likely to have a significant effect on a European site, either alone or in combination with other plans or projects (the 'Significance Test'). If yes, proceed to Step 3.
- Step 3: Under Reg. 105(1), make an Appropriate Assessment of the implications for the European site in view of its current conservation objectives (the 'Integrity Test'). In so doing,

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[5] Candidate SACs are sites that have been submitted to the European Commission, but not yet formally adopted, as listed on the JNCC's SAC list.

[6] SCIs are sites that have been adopted by the European Commission but not yet formally designated as SACs by the UK Government.

[7] The term 'Natura 2000 sites' can also be used interchangeably with 'European sites' in the context of HRA, although the latter term is used throughout this report.

[8] As listed in the site's citation on the JNCC website (all features of European importance, both primary and non-primary, need to be considered).

[9] As identified in sections 3.1, 3.2 and 4.2 of the SPA's standard data form on the JNCC website; at sites where there remain differences between species listed in the 2001 SPA Review and the extant site citation in the standard data form, the relevant country agency (Natural England or Natural Resources Wales) should be contacted for further guidance.

[10] As set out in section 14 of the relevant 'Information Sheet on Ramsar Wetlands' available on the JNCC website.

[11] Regulation 5 of the Habitats Regulations 2017.

it is mandatory under Reg. 105(2) to consult Natural England, and optional under Reg. 105(3) to take the opinion of the general public.

- Step 4: In accordance with Reg. 105(4), but subject to Reg. 107, give effect to the land use plan only after having ascertained that the plan would not adversely affect the integrity of a European site.
- Step 5: Under Reg. 107, if Step 4 is unable to rule out adverse effects on the integrity of a European site and no alternative solutions exist then the competent authority may nevertheless agree to the plan or project if it must be carried out for 'imperative reasons of overriding public interest' (IROPI).

Stages of HRA

1.20 **Table 1.1** summarises the stages and associated tasks and outcomes typically involved in carrying out a full HRA, based on various guidance documents[12] [13] [14]. The Scoping detailed within this report precedes the formal stages described below but nevertheless it provides a useful exercise in identifying and agreeing which European sites have potential to be affected by the GCLP, and to set out the scope of the subsequent HRA Screening and Appropriate Assessment stages.

Table 1.1 Stages of HRA

Stage	Task	Outcome
Stage 1: HRA Screening	Description of the development plan. Identification of potentially affected European sites and factors contributing to their integrity. Review of other plans and projects. Assessment of likely significant effects of the development plan alone or in combination with other plans and projects.	Where effects are unlikely, prepare a 'finding of no significant effect report'. Where effects judged likely, or lack of information to prove otherwise, proceed to Stage 2.
Stage 2: Appropriate Assessment (where Stage 1 does not rule out likely significant effects)	Information gathering (development plan and European Sites). Impact prediction. Evaluation of development plan impacts in view of conservation objectives. Where impacts are considered to affect qualifying features, identify how these effects will be avoided or reduced.	Appropriate assessment report describing the plan, European site baseline conditions, the adverse effects of the plan on the European site, how these effects will be avoided or reduced, including the mechanisms and timescale for these mitigation measures. If effects remain after all alternatives and mitigation measures have been considered proceed to Stage 3.
Stage 3: Assessment where no alternatives exist and adverse	Identify 'imperative reasons of overriding public interest' (IROPI).	This stage should be avoided if at all possible. The test of IROPI and the requirements

[12] European Commission (2001) Assessment of plans and projects significantly affecting European Sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.
[13] DCLG (2006) Planning for the Protection of European Sites: Appropriate Assessment
[14] RSPB (2007) The Appropriate Assessment of Spatial Plans in England. A guide to why, when and how to do it.

Stage	Task	Outcome
impacts remain taking into account mitigation	Demonstrate no alternatives exist. Identify potential compensatory measures.	for compensation are extremely onerous.

1.21 It is normally anticipated that an emphasis on Stages 1 and 2 of this process will, through a series of iterations, help ensure that potential adverse effects are identified and eliminated through the inclusion of mitigation measures designed to avoid, reduce or abate effects. The need to consider alternatives could imply more onerous changes to a plan document. It is generally understood that so called 'imperative reasons of overriding public interest' (IROPI) are likely to be justified only very occasionally and would involve engagement with both the Government and European Commission.

Recent case law changes

1.22 This HRA will be prepared in accordance with recent case law, including most notably the 'People over Wind' and 'Holohan' rulings from the Court of Justice for the European Union (CJEU).

1.23 The *People over Wind, Peter Sweetman v Coillte Teoranta* (April 2018) judgment ruled that Article 6(3) of the Habitats Directive should be interpreted as meaning that mitigation measures should be assessed as part of an Appropriate Assessment, and should not be taken into account at the screening stage. The precise wording of the ruling is as follows:

"Article 6(3) ……must be interpreted as meaning that, in order to determine whether it is necessary to carry out, subsequently, an appropriate assessment of the implications, for a site concerned, of a plan or project, it is not appropriate, at the screening stage, to take account of measures intended to avoid or reduce the harmful effects of the plan or project on that site."

1.24 In light of the above, the HRA screening stage will not rely upon avoidance or mitigation measures to draw conclusions as to whether the Strategic Plan could result in likely significant effects on European sites, with any such measures being considered at the Appropriate Assessment stage as relevant.

1.25 The HRA will also fully consider the recent *Holohan v An Bord Pleanala* (November 2018) judgement which stated that:

"Article 6(3) of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora must be interpreted as meaning that an 'appropriate assessment' must, on the one hand, catalogue the entirety of habitat types and species for which a site is protected, and, on the other, identify and examine both the implications of the proposed project for the species present on that site, and for which that site has not been listed, and the implications for habitat types and species to be found outside the boundaries of that site, provided that those implications are liable to affect the conservation objectives of the site.

Article 6(3) of Directive 92/43 must be interpreted as meaning that the competent authority is permitted to grant to a plan or project consent which leaves the developer free to determine subsequently certain parameters relating to the construction phase, such as the location of the construction compound and haul routes, only if that authority is certain that the development consent granted establishes conditions that are strict enough to guarantee that those parameters will not adversely affect the integrity of the site.

Article 6(3) of Directive 92/43 must be interpreted as meaning that, where the competent authority rejects the findings in a scientific expert opinion recommending that additional information be obtained, the 'appropriate assessment' must include an explicit and detailed statement of reasons capable of dispelling all reasonable scientific doubt concerning the effects of the work envisaged on the site concerned".

1.26 LUC will fully consider the potential for effects on species and habitats, including those not listed as qualifying features, to result in secondary effects upon the qualifying features of European

sites, including the potential for complex interactions and dependencies. In addition, the potential for offsite impacts, such as through impacts to functionally linked land, and or species and habitats located beyond the boundaries of European site, but which may be important in supporting the ecological processes of the qualifying features, has also been fully considered in this HRA.

1.27 This Scoping report has been informed by initial consultation with Natural England as detailed in **Appendix 1**. In summary, Natural England advised the following:

- The HRA Scoping Report provides sufficient evidence to demonstrate that there is no potential risk of air pollution beyond the 200m threshold that could potentially result in an adverse effect to Wicken Fen Ramsar, Chippenham Fen Ramsar and Fenland SAC.
- Reference should be made to the recently updated Cambridgeshire Recreational Pressure Impact Risk Zones (IRZ), bespoke visitor surveys, including survey data commissioned by the National Trust for Wicken Fen Ramsar and relevant information relating to the SSSIs, which underpin the European sites.
- The HRA Scoping Report provides evidence to demonstrate no likely significant effect to Chippenham Fen Ramsar, which was scoped out of the screening assessment that will be completed in relation to water quantity and quality.

1.28 The comments provided by Natural England will be used to inform the HRA report that will be undertaken for the Local Plan.

Structure of this report

1.29 This chapter (**Chapter 1**) has described the background to the production of the GCLP and the requirement to undertake HRA. The remainder of the report is structured into the following sections:

- **Chapter 2** describes the European sites in Greater Cambridge and within a 15km buffer that could be affected by the GCLP and summaries the key issues that will need to be considered during the HRA.
- **Chapter 3** sets out the assumptions that will underpin the HRA judgements made and also identifies which sites and impacts can be scoped in or out of the subsequent HRA screening.
- **Chapter 4** describes the next steps that will be carried out in the HRA of the GCLP.

1.30 The information in the main body of the report is supported by the following appendices:

- **Appendix 1** provides consultation response from Natural England.
- **Appendix 2** provides a map of European Sites within 15km of Greater Cambridge.
- **Appendix 3** details the attributes of European Sites including detailed information about key vulnerabilities, conservation objectives and dependencies on certain habitats and species.
- **Appendix 4** provides a map of strategic roads within Greater Cambridge.

2 European Sites

2.1 This chapter identifies European sites located in Greater Cambridge or within a 15km buffer, which have potential to be affected by proposed development within the GCLP and will be considered as part of the HRA process.

Identification of European sites which may be affected by the Strategic Plan

2.2 In order to initiate the search of European sites that could potentially be affected by the GCLP, it is established practice in HRAs to consider European sites within the local planning authority areas covered by a Plan, and also within a buffer distance from the boundary of the Plan area.

2.3 A distance of 15km was used to identify European sites likely to be affected by impacts relating to development in Greater Cambridge. In addition to this, consideration was also given to European sites connected to the plan area beyond this distance, for example through hydrological pathways or recreational visits by residents of Greater Cambridge.

2.4 European sites identified for inclusion in the HRA are listed below in **Table 2.1** below and **Figure 2.1** in **Appendix 2**. Detailed information about each site is provided in **Appendix 3**:

Table 2.1 European sites within Greater Cambridge and within 15km of the Greater Cambridge boundary

European Site	Closest Distance / Location from GCLP Area
SACs	
Eversden and Wimpole Woods SAC	Within – in west of Greater Cambridge
Ouse Washes SAC	Adjacent to north
Portholme SAC	4km / North West
Devils Dyke SAC	5.8km / North East
Fenland SAC	1km / North East
SPAs	
Ouse Washes SPA	Adjacent to north
Ramsar Sites	
Ouse Washes Ramsar	Adjacent to north
Wicken Fen Ramsar	1km / North East
Chippenham Fen Ramsar	10.3km to North East

Ecological attributes of the European sites

2.5 The designated features and conservation objectives of the European sites, together with current pressures on and potential threats, was established using the Standard Data Forms for SACs and SPAs and the Information Sheets for Ramsar Wetlands published on the JNCC website[15] as well as Natural England's Site Improvement Plans[16] and the most recent conservation objectives published on the Natural England website (most were published in 2014)[17].

2.6 An understanding of the designated features of each European site and the factors contributing to its integrity will inform the assessment of the potential likely significant effects of the JSP. This approach will be useful for informing the inter-dependencies of non-qualifying species and habitats which the qualifying species depend, as recently highlighted as a requirement by the 'Holohan' ruling.

[15] www.jncc.defra.gov.uk
[16] http://publications.naturalengland.org.uk/category/5458594975711232
[17] http://publications.naturalengland.org.uk/category/6490068894089216

3 Approach to HRA

3.1 This chapter describes the approach that will be taken to the HRA of the GCLP throughout its development including the specific tasks that will be undertaken and the assumptions that will underpin the HRA judgements made.

Scoping

3.2 For many of the types of impacts, screening for likely significant effects will be determined on a proximity basis, using GIS data to determine the proximity of potential development locations to the European sites that are the subject of the assessment. However, there are many uncertainties associated with using set distances as there are very few standards available as a guide to how far impacts will travel. Therefore, the following section applies a number of precautionary assumptions to enable specific impacts on European Sites to be either scoped in or out of the subsequent HRA screening.

Physical Damage and Loss

3.3 Any development resulting from the GCLP would take place within Greater Cambridge; therefore only European sites within the boundary could be affected direct by physical damage or loss of habitat within the site boundaries. Eversden and Wimpole Woods SAC is the only site located within Greater Cambridge and therefore with the potential to be directly affected by physical damage and/or loss from development.

3.4 Habitat loss from development in areas outside of the European site boundaries may also result in likely significant effects where that habitat contributes towards maintaining the interest feature for which the European site is designated. This includes land which may provide offsite movement corridors or feeding and sheltering habitat for mobile species such as bats, birds and fish.

3.5 With regards to bird, Natural England has advised that their recognised distance for the consideration of offsite functionally linked land is generally 2km, but for certain species, including most notably golden plover and lapwing, a greater distance of 15km may be appropriate. The Ouse Washes SPA and Ramsar sites are located immediately adjacent to the north of Greater Cambridge and support wetland bird species with potential to be affected by indirect physical damage and/or loss to offsite habitat, and therefore the potential for physical damage and loss of habitat to affect functionally linked land will require assessment within the HRA.

3.6 The Ouse Washes SAC is designated for supporting populations of spined loach. This species occur patchily in a variety of waterbodies, including small streams, large rivers and both large and small drainage ditches. Whilst it appears to have limited means of dispersal, potentially suitable waterbodies within Greater Cambridge share direct hydrological connectivity with the Ouse Washes SAC, and therefore the potential for physical damage and loss of habitat to affect functionally linked land upon which this species may depend will require assessment within the HRA

3.7 Important foraging areas for the barbastelle bat, which is the qualifying feature of the Eversden and Wimpole Woods SAC, are likely to be focused within 8km of their core breeding zones. Development as a result of the GCLP will include areas located within 8km of Eversden and Wimpole Woods SAC, and therefore the potential for physical damage and loss of habitat to affect functionally linked land upon which the SAC qualifying feature depends will require assessment within the HRA.

3.8 Other sites have been scoped out from further assessment on the basis of distance from Greater Cambridge and/or because their qualifying features are unlikely to be dependent upon habitats occurring within the Greater Cambridge area.

3.9 **Therefore, the potential for likely significant effects as a result of physical damage and loss needs to be considered in relation to Ouse Washes SAC, SPA and Ramsar sites, and Eversden and Wimpole Woods SAC.**

Non-physical disturbance

3.10 Noise and vibration effects, e.g. during the construction of new housing or employment development, are most likely to disturb bird and bat species and are thus a key consideration with respect to European sites where these species are the qualifying features. Artificial lighting at night (e.g. from street lamps, flood lighting and security lights) has the potential to affect species where it occurs in close proximity to key habitat areas, such as key roosting sites of SPA birds and movement or feeding areas of bats.

3.11 It has been assumed that the effects of noise, vibration and light are most likely to be significant within a distance of 500 metres. There is also evidence of 300 metres being used as a distance up to which certain bird species can be disturbed by the effects of noise[18]; however, it has been assumed (on a precautionary basis) that the effects of noise, vibration and light pollution are capable of causing an adverse effect if development takes place within 500 metres of a European site with qualifying features sensitive to these disturbances. Scoped in European sites that support qualifying species which are therefore vulnerable to non-physical disturbance are Ouse Washes SPA and Ramsar sites, and Eversden and Wimpole Woods SAC.

3.12 All other European sites were scoped out of the assessment because they occur over 500 metres from the Greater Cambridge boundary.

3.13 **Therefore, the potential for likely significant effects as a result of non-physical disturbance needs to be considered in relation to Ouse Washes SPA and Ramsar sites, and Eversden and Wimpole Woods SAC.**

Non-toxic contamination

3.14 Habitats can be subject to non-toxic contamination, such as nutrient enrichment, changes in salinity and smothering from dust, due to industrial action, agriculture, construction and water abstraction and discharge. European sites with potential to be affected by non-toxic contamination are likely to be those sites that lie within close proximity, or those that are hydrologically connected to areas of development provided for by the plan but potential changes to water quantity and quality are considered separately below.

3.15 Ouse Washes SAC, SPA and Ramsar sites, and Eversden and Wimpole Woods SAC lie within or adjacent to Greater Cambridge and have potential to be susceptible to impacts from non-toxic contamination. Due to the distance, all other European sites have been scoped out of the assessment.

3.16 **Therefore, the potential for likely significant effects of non-toxic contamination needs to be considered in relation to Ouse Washes SAC, SPA and Ramsar sites, and Eversden and Wimpole Woods SAC.**

Air pollution

3.17 Air pollution is most likely to affect European sites where plant, soil and water habitats are the qualifying features, but some qualifying animal species may also be affected, either directly or indirectly, by deterioration in habitat as a result of air pollution. Deposition of pollutants to the ground and vegetation can alter the characteristics of the soil, affecting the pH and nitrogen levels, which can then affect plant health, productivity and species composition.

[18] British Wildlife Magazine. October 2007

3.18 In terms of vehicle traffic, nitrogen oxides (NOx, i.e. NO and NO_2) are considered to be the key pollutants. Deposition of nitrogen compounds may lead to both soil and freshwater acidification, and NOx can cause eutrophication of soils and water.

3.19 Based on the Highways Agency Design Manual for Road and Bridges (DMRB) Manual Volume 11, Section 3, Part 114 (which was produced to provide advice regarding the design, assessment and operation of trunk roads including motorways), it is assumed that air pollution from roads is unlikely to be significant beyond 200m from the road itself. Where increases in traffic volumes are forecast, this 200m buffer needs to be applied to the relevant roads in order to make a judgement about the likely geographical extent of air pollution impacts.

3.20 The DMRB Guidance for the assessment of local air quality in relation to highways developments provides criteria that should be applied at the Screening Stage of an assessment of a plan or project, to ascertain whether there are likely to be significant impacts associated with routes or corridors. Based on the DMRB guidance, affected roads which should be assessed are those where:

- Daily traffic flows will change by 1,000 AADT (Annual Average Daily Traffic) or more; or
- Heavy duty vehicle (HDV) flows will change by 200 AADT or more; or
- Daily average speed will change by 10 km/hr or more; or
- Peak hour speed will change by 20 km/hr or more; or
- Road alignment will change by 5 m or more.

3.21 Where significant increases in traffic are possible on roads within 200m of European sites, traffic forecast data may be needed to determine if increases in vehicle traffic are likely to be significant. In line with the Wealden judgment[19], the traffic growth considered by the HRA should be based on the effects of development provided for by the Plan in combination with other drivers of growth such as development proposed in neighbouring districts and demographic change.

3.22 It has been assumed that only those roads forming part of the primary road network (motorways and 'A' roads) are likely to experience any significant increases in vehicle traffic as a result of development (i.e. greater than 1,000 AADT). As such, where a site is within 200m of only minor roads, no significant effect from traffic-related air pollution is considered to be the likely outcome.

3.23 The key commuting corridor for new housing and employment development will likely include the M11, A10, A11, A14, A142, A428, A603 and A1307, which are highlighted in **Figure 3.1** in **Appendix 4**. European sites within 15km of the Greater Cambridge boundary and also within 200m of a strategic road include Devils Dyke SAC (A14), Ouse Washes SAC, SPA and Ramsar (A1123 and A142), and Portholme SAC (A14).

3.24 In addition to this, it was advised by Natural England that "*the HRA should provide sufficient evidence to demonstrate that there is no credible risk of air pollution beyond the 200m threshold that could potentially result in an adverse effect to*" Wicken Fen Ramsar, Chippenham Fen Ramsar and Fenland SAC. In line with a precautionary approach, these European sites were considered further in relation to air pollution.

3.25 All other sites were situated over 200m from a strategic road and were therefore scoped out.

3.26 **Therefore, likely significant effects relating to increased air pollution need to be considered in relation to Devils Dyke SAC, Ouse Washes SAC, SPA and Ramsar, Portholme SAC, Wicken Fen Ramsar, Chippenham Fen Ramsar and Fenland SAC.**

Recreation

3.27 Recreational activities and human presence can result in significant effects on European sites as a result of erosion and trampling, associated impacts such as fire and vandalism or disturbance to sensitive features, such as birds through both terrestrial and water-based forms of recreation.

3.28 The GCLP will result in housing growth, and associated population increase within Greater Cambridge. Where increases in population are likely to result in significant increases in recreation

[19] Wealden v SSCLG [2017] EWHC 351 (Admin)

at a European site, either alone or in-combination, the potential for likely significant effects will require assessment. At this stage, there is no definitive figure of the number and location of dwellings the GCLP will make provision for over the plan period.

3.29 European sites with qualifying bird species are likely to be particularly susceptible to recreational disturbances from walking, dog walking, angling, illegal use of off-road vehicles and motorbikes, wildfowling, and water sports. An increase in recreational pressure from development therefore has the potential to disturb bird populations of SPA and Ramsar sites as a result of both terrestrial and water-based recreation.

3.30 In addition, recreation can physically damage habitat as a result of trampling and also through erosion associated with boat wash and terrestrial activities such as use of vehicles.

3.31 Following advice provided by Natural England on an earlier draft of this Scoping Report, a 'zone of potential risk' for recreational pressure of 2km and 5km, which has been derived from the Impact Risk Zones (IRZ), has been applied to inform initial impacts to recreation on European sites. IRZs have been developed by Natural England as a tool to define zones of key sensitivities, including recreational pressure to SSSIs from proposed development. Given the overlap between SSSI and European sites, this zone of potential influence can therefore be used to appropriately identify the potential risks to European sites from the Local Plan in this assessment. **Table 3.1** below outlines the zones of potential of risk for each European site, which are considered to be at a significant risk from recreational pressure.

Table 3.1 Cambridgeshire Recreational Pressure IRZ Component SSSIs

SSSI	Zone of Potential Risk: Higher (H) or Lower (L)
Eversden and Wimpole Woods SAC	H – 5km
Ouse Washes SAC, SPA and Ramsar	L – 2km
Portholme SAC	H – 5km
Devil's Dyke SAC	H – 5km

3.32 All other SSSIs (including overlapping European sites) within Cambridgeshire were not considered be at significant risk from recreational pressure and therefore have not been given a zone of potential risk. However, to ensure that a precautionary approach is taken, this assessment has applied a 5km zone of potential risk to all remaining European sites within 15km of Greater Cambridge.

3.33 More specific Zones of Influence (ZOI) may be defined following targeted visitor surveys and discussions with land managers, such as National Trust at Wicken Fen Ramsar, as it is not always appropriate to apply a generic ZOI. It may also for example be possible to extrapolate appropriate ZOIs from studies and approaches used for similarly comparable sites elsewhere in the UK.

3.34 This approach is precautionary and broadly consistent with the approach that was established for the Thames Basin Heath Delivery Framework, which identified a ZOI of 7km from the European site.

3.35 A review of the European sites in Greater Cambridge and within 15km from the boundary identified the following European sites within 5km of the district boundary:

- Eversden and Wimpole Woods SAC
- Ouse Washes SAC
- Portholme SAC
- Fenland SAC
- Ouse Washes SPA
- Ouse Washes Ramsar

- Wicken Fen Ramsar

3.36 On the basis of the above, Devils Dyke SAC and Chippenham Fen Ramsar have been scoped out of the assessment from significant recreational effects because they are located over 5km from Greater Cambridge.

3.37 **Therefore, the potential for likely significant effects needs to be assessed in relation to Eversden and Wimpole Woods SAC, Ouse Washes SAC, Portholme SAC, Fenland SAC, Ouse Washes SPA, Ouse Washes Ramsar, and Wicken Fen Ramsar.**

Water quantity and quality

3.38 An increase in demand for water abstraction and treatment resulting from the growth proposed in the Strategic Plan could result in changes in hydrology at European sites. Depending on the qualifying features and particular vulnerabilities of the European sites, this could result in likely significant effects; for example, due to changes in environmental or biotic conditions, water chemistry and the extent and distribution of preferred habitat conditions. To fully understand the potential impacts of proposed development on European sites a review of relevant Water Cycle Studies (WCS) and liaison with the Environment Agency and relevant water companies will be required.

3.39 Portholme SAC, Ouse Washes SAC, SPA and Ramsar, Fenland SAC, Devils Dyke SAC and Wicken Fen Ramsar are hydrologically linked to waterbodies in Greater Cambridge, so at this stage hydrological connectivity or a reliance on water resources connected with the European sites cannot be ruled out. Changes in water quantity and quality through increased demand for water supply and increased wastewater discharges is therefore considered likely to be a key issue for these sites.

3.40 In addition to this, it was advised that the HRA '*demonstrate the lack of hydrological connectivity between water resources which could be affected as a result of the GCLP and Chippenham Fen.*" In line with a precautionary approach, this European site was considered further in relation to air pollution.

3.41 Eversden and Wimpole Woods SAC was scoped out because the qualifying features were not considered susceptible to changes in water quantity and quality and because there was a lack of hydrological connectivity to water resources which could be affected as a result of the GCLP.

3.42 Following consultation from the Environment Agency (EA) of the Sustainability Appraisal Scoping Report, it was highlighted that phosphates and nitrates arising from growth and development and those from agriculture "*will be a significant issue in the HRA to consider the in-combination effects of development in other plan areas (duty to cooperate) and other pollutant sources including nitrates from air pollution".* In-combination impacts from water quantity and quality will be considered in detail at the screening stage.

3.43 **Therefore, likely significant effects relating to changes in water quality and quantity need to be considered in relation to Portholme SAC, Ouse Washes SAC, SPA and Ramsar, Devils Dyke SAC, Fenland SAC, Wicken Fen Ramsar and Chippenham Fen Ramsar.**

Summary of Scoping

3.44 **Table 3.1** below summarises the results of scoping and identifies those potential impacts on European sites which will require further consideration at the HRA Screening stage or can be scoped out from further assessment. Where certain types of effects are scoped out in **Table 3.1** they do not need to be considered further.

Table 3.2 Summary of Scoping Assumptions

	Physical damage/ loss of habitat	Non-physical disturbance	Non-toxic contamination	Air pollution	Recreation pressure	Water quantity and quality
Eversden and Wimpole Woods SAC	Scoped in	Scoped in	Scoped in	Scoped out	Scoped in	Scoped out
Ouse Washes SAC	Scoped in	Scoped out	Scoped in	Scoped in	Scoped in	Scoped in
Portholme SAC	Scoped out	Scoped out	Scoped out	Scoped in	Scoped in	Scoped in
Devils Dyke SAC	Scoped out	Scoped out	Scoped out	Scoped in	Scoped out	Scoped in
Fenland SAC	Scoped out	Scoped out	Scoped out	Scoped in	Scoped in	Scoped in
Ouse Washes SPA	Scoped in	Scoped in	Scoped in	Scoped in	Scoped in	Scoped in
Ouse Washes Ramsar	Scoped in	Scoped in	Scoped in	Scoped in	Scoped in	Scoped in
Wicken Fen Ramsar	Scoped out	Scoped out	Scoped out	Scoped in	Scoped in	Scoped in
Chippenham Fen Ramsar	Scoped out	Scoped out	Scoped out	Scoped in	Scoped out	Scoped in

Stage 1: Screening Methodology

3.45 As required under Regulation 105 of The Conservation of Habitats and Species Regulations 2017 (the 'Habitats Regulations'), an assessment will be undertaken of the 'likely significant effects' of the Plan. The assessment will be prepared in order to identify which policies or site allocations would be likely to have a significant effect on European sites. The screening assessment will be conducted without taking pre-embedded mitigation into account, in accordance with the 'People over Wind' judgment.

3.46 Consideration will be given to the potential for the development proposed to result in significant effects associated with:

- Physical loss of/damage to habitat;
- Non-physical disturbance (noise, vibration and light);
- Non-toxic contamination;
- Air pollution;

- Recreation pressure; and
- Changes to hydrology including water quality and quantity.

3.47 This approach will also allow for consideration to be given to the cumulative effects of the site allocations rather than focussing exclusively on individual developments provided for by the GCLP.

3.48 A risk-based approach involving the application of the precautionary principle will be adopted in the assessment, such that a conclusion of 'no significant effect' will only been reached where it is considered very unlikely, based on current knowledge and the information available, that a proposal in the GCLP would have a significant effect on the integrity of a European site.

3.49 The below section identifies assumptions that have been applied at this early Scoping Stage to enable specific impacts on European sites to either be scoped in or out of subsequent

Interpretation of 'likely significant effect'

3.50 Relevant case law helps to interpret when effects should be considered as being likely to result in a significant effect, when carrying out a HRA of a plan.

3.51 In the Waddenzee case[20], the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive (translated into Reg. 102 in the Habitats Regulations), including that:

- An effect should be considered 'likely', "if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site" (para 44).
- An effect should be considered 'significant', "if it undermines the conservation objectives" (para 48).

3.52 Where a plan or project has an effect on a site "but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned" (para 47).

3.53 An opinion delivered to the Court of Justice of the European Union[21] commented that:

3.54 "The requirement that an effect in question be 'significant' exists in order to lay down a de minimis threshold. Plans or projects that have no appreciable effect on the site are thereby excluded. If all plans or projects capable of having any effect whatsoever on the site were to be caught by Article 6(3), activities on or near the site would risk being impossible by reason of legislative overkill."

3.55 This opinion (the 'Sweetman' case) therefore allows for the authorisation of plans and projects whose possible effects, alone or in combination, can be considered 'trivial' or de minimis; referring to such cases as those "which have no appreciable effect on the site". In practice such effects could be screened out as having no likely significant effect; they would be 'insignificant'.

In-combination effects

3.56 Regulation 102 of the Amended Habitats Regulations 2017 requires an Appropriate Assessment where "a land use plan is likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and is not directly connected with or necessary to the management of the site". Therefore, it will be necessary to consider whether any impacts identified from the GCLP may combine with other plans or projects to give rise to significant effects in combination.

3.57 This exercise will be carried out as part of the screening stage of the HRA. The potential for in-combination effects will only be considered for those Plan components identified as unlikely to have a significant effect alone, but which could act in combination with other plans and projects to produce a significant effect. This approach accords with recent guidance on HRA.

3.58 The first stage in identifying 'in-combination' effects involves identifying which other plans and projects in addition to the GCLP may affect the European sites that will be the focus of this

[20] European Court of Justice in Case C-127/02 Landelijke Vereniging tot Behoud van de Waddenzee
[21] Advocate General's Opinion to CJEU in Case C-258/11 Sweetman and others v An Bord Pleanala 22nd Nov 2012.

assessment. This exercise will seek to identify those components of nearby plans that could have an impact on the European sites considered as part of this HRA, e.g. areas or towns where additional housing or employment development is proposed near to the same European sites (as there could be effects from the transport, water use, infrastructure and recreation pressures associated with the new developments).

3.59 There are a large number of potentially relevant plans; therefore the review will focus on planned spatial growth within authorities adjacent to Greater Cambridge. The findings of any associated HRA work for those plans will be reviewed where available. With help from the Councils, any strategic projects in the area that could have in-combination effects with the GCLP will also be identified and reviewed, if applicable.

3.60 Should any other plans or projects be identified throughout the HRA process that could lead to in-combination effects on European sites with the GCLP, they will be included in the review.

3.61 The HRA Screening will identify and review other plans and projects for consideration of in-combination effects, and will outline the components of each plan or project that could have an impact on nearby European sites and considering the findings of the accompanying HRA work (where available). This information will be updated as the HRA work for the GCLP progresses. The local plans and associated HRAs of the following authorities will been included as a minimum:

- Huntingdonshire
- Fenland
- East Cambridgeshire
- Forest Heath
- St Edmundsbury
- Braintree
- Uttlesford
- East Hertfordshire
- North Hertfordshire
- Central Bedfordshire
- Bedford
- Stevenage

3.62 In addition, the following key plans will be included as they are developed further:

- The Oxford-Cambridge Arc
- Cambridgeshire and Peterborough Minerals and Waste Local Plan
- Cambridgeshire and Peterborough Strategic Spatial Framework
- Cambridgeshire Local Transport Plan

3.63 The Government's National Infrastructure Planning website[22] will also be reviewed for major projects that could have significant effects in combination with those of the GCLP.

Stage 2: Appropriate Assessment Methodology

3.64 Should it not be possible at the screening stage to conclude that there will be no significant effects on European sites as a result of the GCLP, it will be necessary to undertake an Appropriate Assessment.

3.65 The Appropriate Assessment stage of the HRA focuses on those impacts judged likely at the screening stage to have a significant effect, and seeks to conclude whether they would result in

[22] https://infrastructure.planninginspectorate.gov.uk/projects/south-east/

an adverse effect on the on the integrity of the qualifying features of a European site(s), or where insufficient certainty regarding this remains. The integrity of a site depends on the site being able to sustain its 'qualifying features' across the whole of the site and ensure their continued viability.

3.66 An Appropriate Assessment will be prepared for each of those European sites where significant effects from the GCLP could not be ruled out. The Appropriate Assessment would set out each European site's qualifying features and conservation objectives, standards and factors which are needed to maintain the site's integrity, existing trends and pressures at the site including the use of areas of off-site functional land (where data are available), as well as the conservation objectives, and the site vulnerabilities identified during the screening stage. For each European site and likely significant effect identified we would aim to distinguish between direct and indirect effects, short or long term effects, construction, operational or decommissioning effects, isolated, interactive or cumulative effects and permanent, intermittent or temporary effects. The impacts will vary, depending on the habitat or species in question for each site.

3.67 As stated in HRA Guidance[23], assessing the effects on the site(s) integrity involves considering whether the predicted impacts of the plan policies and site allocations (either alone or in combination) have the potential to:

- Cause delays to achieving the conservation objectives of the site.
- Interrupt progress towards achieving the conservation objectives of the site.
- Disrupt those factors that help to maintain favourable condition of the site.
- Interfere with the balance, distribution and density of key species that are the indicators of favourable condition of the site.
- Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem.
- Change the dynamics of relationships that define the structure or function of the site (e.g. Relationships between soil and water, or animals and plants).
- Interfere with anticipated natural changes to the site.
- Reduce the extent of key habitats or the population of key species.
- Reduce the diversity of the site.
- Result in disturbance that could affect the population, density or balance between key species.
- Result in fragmentation.
- Result in the loss of key features

3.68 The latest available data sources will be drawn on to inform the Appropriate Assessment. The results of this analysis should enable a conclusion to be reached regarding whether the integrity of any European site would be affected. If this were the case, an assessment of alternative solutions or the provision of avoidance and mitigation measures which would avoid adverse effects on integrity would be undertaken. In the context of the GCLP, such measures may include the clarification of policies to remove areas of uncertainty leading to predicted impacts or to include avoidance and mitigation measures such as conditions or restrictions relating to their implementation, the modification of policies to include alternative solutions or locations for particular developments or the omission of policies where no alternatives exist.

Stage 3: Assessment where no alternatives exist

3.69 If adverse effects on the integrity of a European site cannot be ruled out the plan would not be able to proceed in its current form unless IROPI could be demonstrated. At this stage, we consider it unlikely that the GCLP would need to demonstrate IROPI because the plan should, as

[23] *Assessment of plans and projects significantly affecting European sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission Environment DG, November 2001.

part of the iterative process of HRA, seek to avoid or mitigate potential adverse effects in the first instance, and therefore this has not been discussed in this document.

4 Consultation and Next Steps

4.1 This Scoping document has been produced to provide guidance and parameters for developing the GCLP in the context of European sites and as a reference point for stakeholders wishing to comment on the document. This document will be subject to consultation with Natural England to confirm that the proposed scope of the assessment is considered appropriate.

4.2 Once the GCLP preferred options are confirmed, the Draft Local Plan will be subject to HRA in line with the methodology described in **Section 3** of this report.

4.3 The HRA report will be updated at the Draft Local Plan and the Proposed Submission Local Plan, and iterations will be published during the corresponding consultation periods. Specific consultation will be undertaken with Natural England throughout as the statutory consultation body for HRA.

Appendix 1
Natural England: Consultation Response

Appendix 2

Map of European Sites within 15km of Greater Cambridge

Appendix 3
Attributes of European Sites

This appendix contains information about the European sites scoped into the HRA. Information about each site's area, the site descriptions, qualifying features and pressures and threats are drawn from Natural England's Site Improvement Plans (SIPs)[24] and the Standard Data Forms or Ramsar Information Sheets available from the JNCC website[25]. Site conservation objectives are drawn from Natural England's website and are only available for SACs and SPAs[26].

[24] Site Improvement Plans: East of England, Natural England, http://publications.naturalengland.org.uk/category/4873023563759616

[25] JNCC Data Forms http://jncc.defra.gov.uk/default.aspx?page=4

[26] European Site Conservation Objectives, Natural England, http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/conservationobjectives.aspx

Site	Summary of reasons for designation	European site pressures and threats	Conservation objectives	Non-qualifying habitats and species on which the qualifying habitats and/or species depend	Other comments
Eversden and Wimpole Woods SAC	Qualifying species: S1308 Barbastelle *Barbastella barbastellus* which is a medium sized species of bat and is one of the UK's rarest mammals. Breading season for Barbastelle bat is between April and September[27]. The site is ancient woodland of ash-maple type which is now localised and in lowland England as a whole. Eversden and Wimpole Woods is one of the largest remaining woods of its type on the chalky boulder clay in Cambridge and contains a rich assemblage of woodland plants including some	**Feature Location/ Extent/ Condition Unknown.** Two transects within the site are monitored each year as part of the National Bat Monitoring Programme (NBMP) however, there is some evidence that there could be other important foraging sites and other Barbastelle roosts close but not within the site. **Offsite Habitat Availability** The bats have a limited area to roost and forage within the site and it is unclear which habitats they use in the wider countryside. Additional suitable habitat should be identified and managed long-term to improve and maintain it, in order to maintain a sustainable population. Local landowners should be given advice on how to	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 the habitats of qualifying species; • The structure and function of the habitats of qualifying species; • The supporting processes on which the habitats of qualifying species rely; • The populations of qualifying species; and	Depends upon the maintenance of the extent, connectivity and quality of key habitat types for movement and foraging within the landscape including woodlands, treelines, linear ecological corridors such as rivers and species rich open habitats such grasslands, heathlands and wetlands.	

[27] *European Site Conservation Objectives: supplementary advice on conserving and restoring site features. Available at:* http://publications.naturalengland.org.uk/publication/6736081810620416 *Accessed 17/09/2019*

	uncommon species such as the Barbastelle bat *Barbastella barbastellus.* The bats use the trees as a summer maternity roost where female bats gather to give birth to their young. The woodland is also used as a foraging area by the bats and it is also a flight path when they are foraging outside the site[28].	manage important bat habitats. **Forestry and Woodland Management** The woodland the bats depends on must be maintained in medium to longer term by ensuring that tall trees, especially oak, grow up to replace those currently in place. **Air Pollution: Impact of Atmospheric Nitrogen Deposition** Nitrogen deposition exceeds site-relevant critical loads in the ancient woodland used by Barbastelle bats as a summer maternity roost where female bats given birth and for foraging therefore, there is a risk of harmful effects on the bats[1].	• The distribution of qualifying species within the site[29].		
Portholme SAC	Qualifying features: H6510 Lowland hay meadows (Alopecurus pratensis,	**Undesirable Species** Non-woody and woody vascular plants species may require active management to avert unwanted succession to a different and less	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the	Dependent on seasonal ununddation by flood waters and therefore dependent upon the maintenance of historic conditions without	

[28] *Improvement Programme for England's Natura 2000 Sites (IPENS). Site Improvement Plan Eversden and Wimpole Wood. Available at:* file:///C:/Users/Buck_J/Downloads/SIP150512FINALv1.0%20Eversden%20&%20Wimpole%20Woods.pdf *Accessed 18/09/2019*

[29] *European Site Conservation Objectives for Eversden and Wimpole Woods Special Area of Conservation. Available at:* *file:///C:/Users/Buck_J/Downloads/UK0030331%20EversdenandWimpoleWoods%20SACV2018.pdf* *Accessed 18/09/2019*

	Sanguisorba officinalis) The site is located in Bedford and Cambridge Claylands National Character Area (88) adjacent to the River Great Ouse south of Huntington and north-west of Godmanchester. Portholme Meadow lies over a bed of calcareous Oxford Clay deposited during the Jurassic Period 160 million years ago and can be up 70m thick in places. When the Anglian Glaciation melted, the sand and gravel washed into the river valley so under the meadow is a deep bed of gravel and mixed deposits. In winter and early spring it may become inundated	desirable state. A species may be indicative of another negative trend relating to the sites structure or function. These species will vary depending on the nature of the particular feature, and in some cases these species may be natural/ acceptable components or even dominants. This feature is sensitive to prolonged waterlogging. **Soils, Substrate and Nutrient Recycling** Changes in the soils natural properties may affect the ecological structure, function and processes associated with the qualifying habitat, Lowland hay meadows. Flooding for prolonged periods can cause the soil P index to increase in parts of the meadow which in turn may have a detrimental effect on the plant community. **Water Quality** The Lowland hay meadows experiences the deposition of nutrients particularly phosphate	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[31].	notable changes in levels of pollutants, nutrients or silt	

[31] *European Site Conservation Objectives for Portholme Special Area of Conservation. Available at:* file:///C:/Users/Buck_J/Downloads/UK0030054%20Portholme%20SACV2018.pdf *Accessed 18/09/2019*

	with flood water and the site supports grassland communities of alluvial flood meadow type[30].	and sediment in floodwaters have the potential to impact the site. **Hydrology** Serve prolonged flooding during winter at the site has previously caused a shift away from Lowland hay meadows plant community and the main issued caused is nutrients enrichment. An appropriate hydrological regime is a key step in sustaining the features and conserving objectives for this site. Changes in source, depth, duration, frequency, magnitude and timing of water supply can have significant implications for the assemblage of characteristic plants and animals present. Prolonged flooding can result in an increase in other vegetation types (such as inundation grassland, swamps). There is no control over the water levels but a ditch has been reinstated to remove flood water faster.			

[30] *European Site Conservation Objectives: Supplementary advice on conserving and restoring site features. Available at: file:///C:/Users/Buck_J/Downloads/UK0030054_PortholmeSAC_Formal%20Published%2011%20Jan%2019.pdf Accessed 18/09/2019*

		Adaption and Resilience to Environmental Change Environmental change may include changes in sea levels, precipitation and temperature which are likely to affect the extent, distribution and functioning of a feature within a site. The overall vulnerability of this site to climate change has been assessed as high by Natural England (2015) which considered sensitivity, fragmentation, topography and management of the habitats and supporting habitats. Therefore, this site is likely to require the most adaptation action and a site based assessment should be carried out as a priority. Action required may include reducing habitat fragmentation and minimising damage/degradation through the effects of recreational pressure. Furthermore, creating more habitat to buffer the site or expand the habitat into more varied landscapes whilst addressing specific management and condition issues will increase the sites resilience. **Air Quality** This site is sensitive to changes in air quality and air pollutants			

		may modify the chemical status of its substrate, accelerate or damage plant growth, alter vegetation structure and composition or cause the loss of sensitive species. Critical Loads and Levels are recognized thresholds above which harmful effects on sensitive UK habitats will occur at a significant level. Achieving this target may be subject to the development, effectiveness and availability of abatement technology and measures to tackle diffuse air pollution in realistic timescales.			
Devil's Dyke SAC (on FH boundary, part in FH and part in East Cambridgeshire DC) Devil's Dyke consists of a mosaic of CG3 *Bromus erectus* and CG5 *Bromus erectus – Brachypodium pinnatum* calcareous grasslands. It is the only known UK semi-natural dry grassland site for lizard orchid *Himantoglossum hircinum*.	Annex I habitats: Semi-natural dry grasslands and scrubland facies on calcareous substrates (important orchid sites)	**Current pressures** Inappropriate scrub control **Potential future threats** Air pollution: impact of atmospheric nitrogen deposition. **Natural England: supplementary advice on conserving and restoring site features** In addition to the above, the supplementary advice expands on the European site's vulnerabilities as follows: • A change in the range and geographic distribution across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future	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.	The SAC's qualifying habitat relies on: • Thin, well-drained, lime-rich soils associated with chalk and limestone in low moderate altitudes. • Key structural, influential and/or distinctive species, such as grazers, surface borers, predators or to maintain the structure, function and quality of habitat. • Habitat connectivity to the wider landscape to allow for migration, dispersal and genetic exchange of species typical of this habitat. In particular, for species such as the Lizard orchid, *Himantoglossum*	None.

		environmental changes. • Increases in undesirable species may result in an adverse effect on the habitats structure and function. • Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this habitat. • Air quality - exceeding critical values for air pollutants may result in changes to habitat by modifying chemical substrates, damaging plant growth, changing vegetation composition and loss of species present in these habitats.		*hircinum*. • Active and ongoing conservation management is needed to protect, maintain or restore this habitat.	
Fenland SAC The Fenland SAC is comprised of three fenland Sites of Special Scientific Interest: Woodwalton Fen, Wicken Fen and Chippenham Fen. Each site generally consists of standing water bodies, ditch systems, bogs, marshes and broad-leaved woodland carr.	Annex I habitats: Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*) Annex II species: Spined Loach (*Cobitis taenia*), Great Crested Newt (*Triturus cristatus*)	**Current pressures** Water pollution – nutrient enrichment of Chippenham Fen component, fed from a mixture of groundwater, rainfall and surface runoff. Hydrological changes related to public water supply abstraction. Air pollution: impact of atmospheric nitrogen deposition **Potential future threats** None identified. **Natural England: supplementary advice on conserving and restoring**	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	In general, qualifying habitats of the SAC rely on: • Key structural, influential and/or distinctive species, such as grazers, surface borers, predators or to maintain the structure, function and quality of habitat. • Habitat connectivity to the wider landscape to allow for migration, dispersal and genetic exchange of species typical of this habitat. • Active and ongoing conservation	National Trust undertaking remedial land management work.

		site features In addition to the above, the supplementary advice expands on the European site's vulnerabilities as follows: • A change in the range and geographic distribution across the site will reduce its overall area, the local diversity and variations in its structure and composition, and may undermine its resilience to adapt to future environmental changes. • Increases in undesirable species may result in an adverse effect on the habitats structure and function. • Changes to natural soil properties may therefore affect the ecological structure, function and processes associated with this habitat. • Poor water quality, as a result of agricultural process and inadequate quantities of water can adversely affect the structure and function of this habitat type. • Air quality - exceeding critical values for air pollutants may result in changes to habitat by modifying chemical substrates, damaging plant growth, changing vegetation composition and loss of	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.	management is needed to protect, maintain or restore this habitat. For each habitat, more specific examples have been provided. *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows • Upwellings and springs from the aquifer provide water to the site. • Natural hydrological processes to provide the conditions necessary to sustain this habitat. Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; Calcium-rich fen dominated by great fen sedge (saw sedge) • Upwellings and springs from the aquifer provide water to the site. • Natural hydrological processes to provide the conditions necessary to sustain this habitat. In general, the qualifying species of the SAC rely on: • The sites ecosystem as a whole (see list of habitats below). • Maintenance of populations of species	

		species present in these habitats. • Increased cover of trees and shrubs can result in desiccation of these habitats. • Changes in land use on offsite habitat can result in deterioration of habitat within the SAC. • Changes in sediment may lead to sub-optimal conditions for spined loach. • Inadequate quantities of water can adversely affect the structure and function of this habitat type.		that they feed on (see list of diets below). • Habitat connectivity is important for the viability of these species populations. Spined loach • Habitat preferences – small streams, large rivers and both large and small drainage ditches with patchy cover of submerged (and possibly emergent) macrophytes. • Diet – food particles extracted from fine sediment. • Great Crested Newts Habitat preferences – requires aquatic habitat, such as ponds for breeding in areas such as pastoral and arable farmland, woodland and grassland. • Diet – aquatic invertebrates.	
Ouse Washes SAC, SPA and Ramsar site An extensive area of seasonally flooding wet grassland ('washland') with a diverse and rich ditch fauna and flora located on a major tributary of The Wash.	<u>SAC qualifying species</u> Annex II: Spined loach *Cobitis taenia* <u>SPA qualifying species</u> Article 4.1, Annex	**Current pressures** Inappropriate water levels – interest features are being adversely affected by increased flooding. **Potential future threats** Water pollution.	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	In general, the qualifying species of the SAC, SPA and Ramsar rely on: • The sites ecosystem as a whole (see list of habitats below). • Maintenance of populations of species that they feed on (see list	Long term tidal strategy - regular problems summer flooding- severe siltation of Great Ouse

The washlands support both breeding and wintering waterbirds.	1 species (breeding season): Ruff *Philomachus pugnax;* Spotted Crake *Porzana porzana* Annex I species (over winter): Bewick's Swan *Cygnus columbianus bewickii*; Hen Harrier *Circus cyaneus*; Ruff *Philomachus pugnax*; Whooper Swan *Cygnus cygnus,* Article 4.2 (migratory species – breeding season): Black-tailed Godwit *Limosa limosa limosa*; Gadwall *Anas strepera*; Shoveler *Anas clypeata* Article 4.2 (migratory species – over winter): Black-tailed Godwit *Limosa limosa islandica;* Gadwall *Anas strepera;* Pintail *Anas acuta;* Pochard *Aythya farina;* Shoveler *Anas clypeata;*		its Qualifying Features (SAC), or - the aims of the Wild Birds Directive (SPA) …by maintaining or restoring: • The extent and distribution of the habitats of qualifying species/features • The structure and function of the habitats of the qualifying species/features • The supporting processes on which the habitats of qualifying species/features rely • The populations of qualifying species/features, and, • The distribution of qualifying species/features within the site.	of diets below). • Habitat connectivity is important for the viability of this species population. Spined loach • Habitat preferences – small streams, large rivers and both large and small drainage ditches with patchy cover of submerged (and possibly emergent) macrophytes. • Diet – food particles extracted from fine sediment. In general, the qualifying bird species of the SAC, SPA and Ramsar rely on: • The sites ecosystem as a whole (see list of habitats below). • Maintenance of populations of species that they feed on (see list of diets below). • Off-site habitat, which provide foraging habitat for these species. • Open landscape with unobstructed line of sight within nesting, foraging or roosting habitat. Ruff • Habitat preferences – grassy tundra, lakes, farmland, on migration	River. Smaller watercourses could drain into Great Ouse River and to Ouse Washes SPA/SAC. Large land holdings by RSPB, Cambridgeshire Wildlife Trust and Wetlands and Wildfowl Trust.

	Wigeon *Anas Penelope* Article 4.2 Assemblage qualification: regularly supports at least 20,000 waterfowl <u>Ramsar criteria</u> 1. Extensive area of seasonally-flooding washland 2. Nationally scarce aquatic plants, relict invertebrates, assemblage of nationally rare breeding waterfowl. 5. Bird assemblages of international importance. 6. Water birds for potential future consideration			mudflat. • Diet – invertebrates, especially insects, some plant material Spotted Crake • Habitat preferences – swamps and marsh. • Diet – small aquatic invertebrates, parts of aquatic plants. Bewick's Swan • Habitat preferences – lakes, ponds and rivers, also estuaries on migration. • Diet – plant material in water and flooded pasture. Hen Harrier • Habitat preferences – moor, marsh, steppe and fields. • Diet – mostly, small birds, nestlings and small rodents. Whooper Swan • Habitat preferences – lakes, marshes & rivers. • Diet – aquatic vegetation also grazes on land. Black-tailed Godwit • Habitat preferences – marshy grassland and steppe, on migration	

				mudflats. • Diet – invertebrates, some plant material. Gadwall • Habitat preferences – marshes, lakes, on migration also rivers, estuaries. • Diet – Leaves, shoots. Pintail • Habitat preferences – lakes, rivers and marsh. • Diet – omnivorous, feeds on mud bottom at depths of 10-30cm. Pochard • Habitat preferences – lakes and slow rivers on migration also estuaries. • Diet – mostly plant material, also small animals. Shoveler • Habitat preferences – shallow lakes, marsh, reedbed and wet meadow. • Diet – omnivorous, especially small insects, crustaceans, molluscs and seeds. Wigeon • Habitat preferences – marsh, lakes, open moor,	

				on migration also estuaries. • Diet – mostly leaves, shoots, rhizomes and some seeds.	
Chippenham Fen Ramsar	Criterion 1: Spring-fed calcareous basin mire with a long history of management, which is partly reflected in the diversity of present-day vegetation. Criterion 2: The invertebrate fauna is very rich, partly due to its transitional position between Fenland and Breckland. The species list is very long, including many rare and scarce invertebrates characteristic of ancient fenland sites in Britain. Criterion 3: The site supports diverse vegetation types, rare and scarce plants. The site is the stronghold of Cambridge milk parsley (*Selinum*	Pressures and threats documented in the Fenland SAC Site Improvement Plan relate to the designated features of the SAC (see above) but are also likely to be relevant to the designated Ramsar features, particularly hydrological changes which are cited in the Ramsar Information Sheet.	Not applicable.	In general, the qualifying habitats of the Ramsar rely on: • Key structural, influential and/or distinctive species, such as grazers, surface borers, predators to maintain the structure, function and quality of habitat. • Insect, such as bees and flies for pollination of flowering plants. • Habitat connectivity to the wider landscape to allow for migration, dispersal and genetic exchange of species typical of this habitat. • Management of habitats to protect, maintain and restore it. In general, the qualifying species of the Ramsar rely on: Invertebrates • Diets – flowering plants, organic matter and other invertebrate species for food resources.	Inappropriate scrub control, cutting and mowing in several units contributing to unfavourable no change status.

	carvifolia).				
Wicken Fen Ramsar	Criterion 1: One of the most outstanding remnants of the East Anglian peat fens. The area is one of the few which has not been drained. Traditional management has created a mosaic of habitats from open water to sedge and litter fields. Criterion 2: The site supports one species of British Red Data Book plant, fen violet (*Viola persicifolia*), which survives at only two other sites in Britain. It also contains eight nationally scarce plants and 121 British Red Data Book invertebrates.	Pressures and threats documented in the Fenland Site Improvement Plan relate to the designated features of the SAC (see above) but are also likely to be relevant to the designated Ramsar features, particularly hydrological changes which are cited in the Ramsar Information Sheet.	Not applicable.	In general, the qualifying habitats of the Ramsar rely on: • Key structural, influential and/or distinctive species, such as grazers, surface borers, predators to maintain the structure, function and quality of habitat. • Insect, such as bees and flies for pollination of flowering plants. • Habitat connectivity to the wider landscape to allow for migration, dispersal and genetic exchange of species typical of this habitat. • Management of habitats to protect, maintain and restore it. In general, the qualifying habitats of the Ramsar rely on: Invertebrates • Diets – flowering plants, organic matter and other invertebrate species for food resources.	Issues caused by inappropriate water levels and scrub control in some areas. WLMP in place to address these issues.

Appendix 4

Map of Strategic Roads within Greater Cambridge