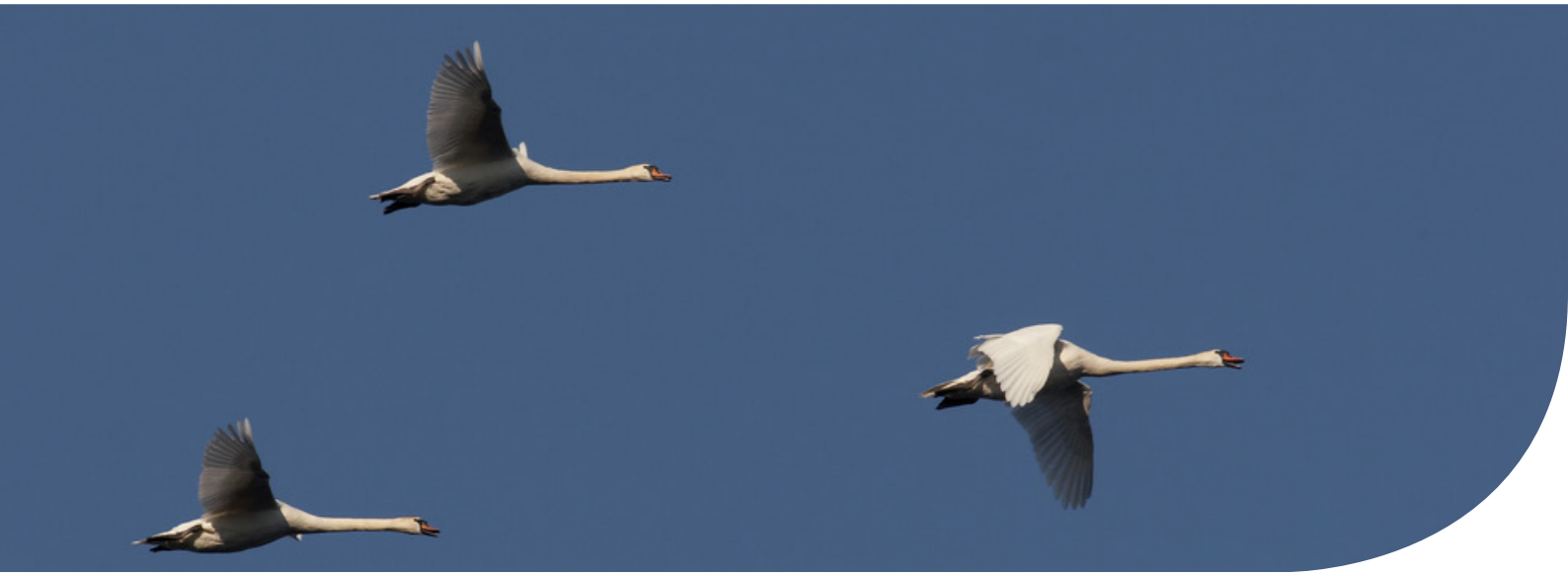
Habitats Regulations Assessment of the Birmingham Development Plan: Pre-Submission Version

October 2013



LEPUS CONSULTING
LANDSCAPE ECOLOGY, PLANNING AND URBAN SUSTAINABILITY

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Habitats Regulations Assessment of the Birmingham Development Plan

HRA Screening of the Pre-Submission Version

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Front Cover Image: Mute swans

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Abbreviations

CIL	Community Infrastructure Levy
DEFRA	Department for Environment, Food, and Rural Affairs
JNCC	Joint Nature Conservation Committee
LNR	Local Nature Reserve
LPA	Local Planning Authority
NPPF	National Planning Policy Framework
NE	Natural England
SAC	Special Area of Conservation
SANG	Suitable Alternative Natural Greenspace
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
SUE	Sustainable Urban Extension
WWTW	Waste Water Treatment Works

Executive Summary

E1 This HRA report has carefully considered the effects that might be associated with development as part of the Pre-Submission Version of the BDP. Having previously screened the BDP options, this report has revisited assessments made during November 2012 and assessed new content in the latest version of the plan.

E2 There are no European sites in the City of Birmingham. Of those that have been identified from a 20km area of search and others that have been included through hydrological pathways that lie beyond this search zone, none are expected to experience adverse effects from proposals in the BDP. Earlier assessment in November 2012 recommended that the issues of air quality, disturbance from recreation, water supply and treatment be explored as part of further HRA work. These issues have been appraised along with several other identified vulnerabilities of European sites.

E3 The following 14 sites were included in this HRA report:

- Cannock Chase SAC;
- Cannock Extension Canal SAC;
- Elan Valley Woodlands SAC;
- Elenydd SAC;
- Elenydd-Mallaen SPA;
- Ensor's Pool SAC;
- Fens Pools SAC;
- Humber Estuary SAC;
- Humber Estuary SPA;
- Humber Estuary Ramsar;
- River Mease SAC;
- Severn Estuary SAC;
- Severn Estuary SPA; and
- Severn Estuary Ramsar.

E4 The Pre-Submission Version of the BDP is not likely to lead to adverse effects on any European sites alone or in-combination with other plans. There is no requirement to prepare an appropriate assessment.

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1 Introduction

1.1 Background

1.1.1 Lepus Consulting is conducting the Habitats Regulations Assessment (HRA) process for the Birmingham Development Plan on behalf of Birmingham City Council. This is a requirement of Regulation 102 of the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations).

1.1.2 Following an initial screening exercise undertaken by Lepus Consulting in November 2012, the BDP Options document was assessed under the Habitats Regulations Assessment process. It looked at a number of European and other international sites, based on their geographic proximity and linkage via physiographic conduits such as atmospheric or riverine pathways to the plan area and its proposals.

1.1.3 The following European sites were identified using a 20km area of search around Birmingham as well as including sites which are potentially connected (e.g. hydrologically) beyond this distance:

- Cannock Chase SAC;
- Cannock Extension Canal SAC;
- Elan Valley Woodlands SAC;
- Elenydd SAC;
- Elenydd-Mallaen SPA;
- Ensor's Pool SAC;
- Fens Pools SAC;
- Humber Estuary SAC;
- Humber Estuary SPA;
- Humber Estuary Ramsar;
- River Mease SAC;
- Severn Estuary SAC;
- Severn Estuary SPA; and
- Severn Estuary Ramsar.

1.1.4 Of the 14 European sites identified, four were discounted from further assessment and were screened out. These sites were: Cannock Extension Canal SAC; Ensor's Pool SAC; Fens Pools SAC; and River Mease SAC.

1.1.5 Potential significant effects were identified and were explored for the remaining ten sites. These included air quality, disturbance and recreation pressures, water resources, water quality and wastewater:

1.1.6 This report refreshes the screening results by revisiting the revised and new content of the latest version of the Birmingham Development Plan, the Pre-Submission Version (dated September, 2013).

1.2 Approach to report preparation

1.2.1 The outputs of this report include information in relation to:

- The HRA process;

- Methodology for HRA;
- Evidence gathering in relation to European sites;
- Understanding vulnerabilities of sites;
- Assessing potential effects of the plan; and
- Conclusions and recommendations.

1.2.2 This report is a screening assessment under the Habitats Regulations to assess any likely significant effects of development proposals in the Birmingham Development Plan.

1.3 The HRA process

1.3.1 The application of HRA to land-use plans is a requirement of the Conservation of Habitats and Species Regulations 2010, the UK's transposition of European Directive 92/43/EEC *on the conservation of natural habitats and of wild fauna and flora* (the Habitats Directive). HRA applies to all Local Development Documents in England and Wales.

1.3.2 The HRA process assesses the potential effects of a land-use plan against the conservation objectives of any European sites designated for their importance to nature conservation. These sites form a system of internationally important sites throughout Europe and are known collectively as the 'Natura 2000 network'.

1.3.3 European sites provide valuable ecological infrastructure for the protection of rare, endangered or vulnerable natural habitats and species of exceptional importance within the EU. These sites consist of Special Areas of Conservation (SAC), designated under the Habitats Directive and Special Protection Areas (SPA), designated under European Directive 2009/147/EC *on the conservation of wild birds* (the Birds Directive). Additionally, Government policy requires that sites designated under the Ramsar Convention (The Convention on Wetlands of International Importance, especially as Waterfowl Habitat) are treated as if they are fully designated European sites for the purpose of considering development proposals that may affect them.

1.3.4 Under Regulation 102 of the Habitats Regulations, the assessment must determine whether or not a plan will adversely affect the integrity of the European sites concerned. The process is characterised by the precautionary principle. The European Commission describes the principle as follows:

1.3.5 "If a preliminary scientific evaluation shows that there are reasonable grounds for concern that a particular activity might lead to damaging effects on the environment, or on human, animal or plant health, which would be inconsistent with protection normally afforded to these within the European Community, the **Precautionary Principle** is triggered."

1.3.6 Decision-makers then have to determine what action/s to take. They should take account of the potential consequences of no action, the uncertainties inherent in scientific evaluation, and should consult interested parties on the possible ways of managing the risk. Measures should be proportionate to the level of risk, and to the desired level of protection. They should be provisional in nature pending the availability of more reliable scientific data.

1.3.7 Action is then undertaken to obtain further information, enabling a more objective assessment of the risk. The measures taken to manage the risk should be maintained so long as scientific information remains inconclusive and the risk is unacceptable.

1.3.8 The hierarchy of intervention is important: where significant effects are likely or uncertain, plan makers must firstly seek to avoid the effect through for example, a change of policy. If this is not possible, mitigation measures should be explored to remove or reduce the significant effect. If neither avoidance, nor subsequently, mitigation is possible, alternatives to the plan should be considered. Such alternatives should explore ways of achieving the plan's objectives that do not adversely affect European sites.

1.3.9 If no suitable alternatives exist, plan-makers must demonstrate under the conditions of Regulation 103 of the Habitats Regulations, that there are Imperative Reasons of Overriding Public Interest (IROPI) to continue with the proposal.

1.4 About the Birmingham Development Plan

1.4.1 The BDP will provide a long term strategy for the City of Birmingham. It will guide decisions on all development and regeneration activity over the period to 2031. The pre-submission version of the BDP sets out final proposals for how and where the homes, jobs, services and infrastructure will be delivered and the type of places and environments that will be created. A delivery strategy and monitoring framework is included in the BDP to provide a clear indication of how the plan will be implemented and the indicators that will be used to measure its success. There is an important emphasis on delivery and the Plan is accompanied by an Infrastructure and Delivery Plan.

1.4.2 All future development will need to be supported by suitable social infrastructure and set within environments that reflect the character and history of the City. Across the City all development must be well-designed, accessible and safe. Schools, health care facilities, shops and other services need to be available in accessible locations along with parks, sports facilities and well-maintained local public open space, forming part of a wider 'green infrastructure network' threading through the City and linking to the open countryside beyond. The canal network will continue to be promoted as a vital asset for the City supporting movement, environmental and biodiversity quality and as the setting for development.

1.4.3 The BDP is divided into four sections:

- Section 2 - describes the key characteristics of the City and the challenges for the future to which the BDP responds.
- Section 3 - sets out the vision, objectives and strategy for how the City will develop over the period to 2031.
- Section 4 - provides detail on how and where the future growth of the City will be delivered.
- Section 5 - contains policies covering a range of topics to guide how future growth and development will be managed.

1.4.4 The BDP includes 58 policies.

Table 1.1: Policies contained in the BDP

Planning for Growth		
Policy PG1	Overall levels of growth	
Policy PG2	Birmingham as an international city	
Policy PG3	Place making	
Spatial Delivery of Growth		
Policy GA1	The City Centre	GA1.1 Role and Function
		GA1.2 Growth and Areas of Transformation
		GA1.3 The Quarters
		GA1.4 Connectivity
Policy GA2	Greater Icknield	
Policy GA3	Aston, Newtown and Lozells	
Policy GA4	Sutton Coldfield Town Centre	
Policy GA5	Sustainable Urban Extension	
Policy GA6	Peddimore	
Policy GA7	Bordesley Park	
Policy GA8	Cole Valley Triangle	
Policy GA9	Selly Oak and South Edgbaston	
Policy GA10	Longbridge	
Thematic Policies		
Environment and climate change		
Policy TP1	Reducing the City's carbon footprint	
Policy TP2	Adapting to climate change	
Policy TP3	Sustainable construction	
Policy TP4	Low and zero carbon energy generation	
Policy TP5	Low carbon economy	
Policy TP6	Managing flood risk	
Policy TP7	Green infrastructure network	
Policy TP8	Biodiversity and geodiversity	
Policy TP9	Open space, playing fields and allotments	
Policy TP10	Green Belt	
Policy TP11	Sports facilities	
Policy TP12	Historic environment	
Policy TP13	Sustainable management of the City's waste	
Policy TP14	New and existing waste facilities	
Policy TP15	Location of waste management facilities	
Economy and network of centres		
Policy TP16	Portfolio of employment land and premises	
Policy TP17	Regional Investment Sites	
Policy TP18	Core employment areas	
Policy TP19	Protection of employment land	
Policy TP20	The network and hierarchy of centres	
Policy TP21	Convenience retail provision	
Policy TP22	Small shops and independent retailing	
Policy TP23	Promoting of diversity of uses within centres	

Policy TP24	Tourism and tourist facilities
Policy TP25	Local employment
Homes and neighbourhoods	
Policy TP26	Sustainable neighbourhoods
Policy TP27	The location of new housing
Policy TP28	The housing trajectory
Policy TP29	The type, size and density of new housing
Policy TP30	Affordable housing
Policy TP31	Housing regeneration
Policy TP32	Student accommodation
Policy TP33	Provision for Gypsies, Travellers and Travelling Showpeople
Policy TP34	The existing housing stock
Policy TP35	Education
Policy TP36	Health
Connectivity	
Policy TP37	A sustainable transport network
Policy TP38	Walking
Policy TP39	Cycling
Policy TP40	Public transport
Policy TP41	Freight
Policy TP42	Low emission vehicles
Policy TP43	Traffic and congestion management
Policy TP44	Accessibility standards for new development
Policy TP45	Digital Communications

1.5 HRA process to date

1.5.1 The HRA process has been iterative and assessed different stages of the plan making process. Previous screening has been conducted at two earlier stages. An HRA screening report[1] was prepared in September 2010 to accompany the draft Core Strategy.

1.5.2 The second round of HRA took place in November 2012 and a report prepared[2] which included recommendations for further HRA assessment of future iterations of the BDP.

[1] UE Associates (2010) Habitats Regulations Assessment for the Birmingham Core Strategy. Draft for client review.
[2] Lepus Consulting (2012) Habitats Regulations Assessment of the Birmingham Development Plan 2031 Options Consultation. HRA Initial Screening Report.

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2 Methodology

2.1 Guidance and best practice

2.1.1 Guidance on HRA has been published in draft form by the Government (DCLG, 2006) and Natural England in conjunction with David Tyldesley Associates (Local Development Plan Documents under the Provisions of the Habitats Regulations, 2009); both draw, in part, on European Union guidance (European Commission, 2001) regarding the methodology for undertaking Appropriate Assessment (AA) of plans.

2.1.2 All guidance recognises that there is no statutory method for undertaking HRA and that the adopted method must be appropriate to its purpose under the Habitats Directive and Regulations; this concept is one of the reasons why HRA is often referred to as appropriate assessment.

2.1.3 Due to a moratorium on the publication of new guidance as issued by the Government, the draft guidance may not be published. As an alternative, Natural England has suggested that the guidance on HRA published by Scottish Natural Heritage[3] (SNH, 2012) can be used to assess land use plans.

2.1.4 For the purposes of this report Habitats Regulations Appraisal and Habitats Regulations Assessment are synonymous.

2.1.5 Para 1.3 of the SNH guidance states that "the procedure referred to in this guidance is that of 'Habitats Regulations Appraisal' (HRA) which encompasses the requirements of Article 6(3) of the Habitats Directive…The procedure is sometimes referred to as an 'appropriate assessment', but this can be confusing because an appropriate assessment is only one particular stage in the process of Habitats Regulations Appraisal. Not all plans undergoing Habitats Regulations Appraisal will reach the stage of appropriate assessment, because some plans would not be likely to have a significant effect on a European site".

2.1.6 The term 'Habitats Regulations Appraisal' is used here to encompass the decision on whether the plan should be subject to appraisal, the 'screening' process for determining whether an 'appropriate assessment' is required, as well as any 'appropriate assessment' that may be required. It is important to remember that an appropriate assessment is only required where the plan-making body determines that the plan is likely to have a significant effect on a European site in Great Britain, or a European Offshore Marine Site, either alone or in combination with other plans or projects, and the plan is not directly connected with or necessary to the management of the site.

2.2 Habitats Regulations Assessment methodology

2.2.1 The HRA process follows the methodology prepared by David Tyldesley Associates for Scottish Natural Heritage (SNH, 2012). A step-by-step methodology is outlined in the guidance (see **Appendix B**) and has been summarised in **Table 2.1**.

[3] Scottish Natural Heritage (2012): Habitats Regulations Appraisal of Plans. Guidance for plan making bodies in Scotland. Doc. Ref 1739. Version 2.0, August 2012. Initially prepared by David Tyldesley and Associates.

2.2.2 A synoptic version of the flow chart is presented in **Table 2.1**. Stage 7 is relevant to this report since previous screening results and recommended mitigation measures are being revisited.

2.3 Dealing with uncertainty

2.3.1 The assessment of effects can be affected by uncertainty in a number of ways, some of these are addressed below.

2.3.2 **Regulatory Uncertainty:** Some plans will include references to proposals that are planned and implemented through other planning and regulatory regimes, for example, trunk road or motorway improvements. These will be included because they have important implications for spatial planning, but they are not proposals of the LPA, nor are they proposals brought forward by the plan itself. Their potential effects will be assessed through other procedures. The LPA may not be able to assess the effects of these proposals. Indeed, it may be inappropriate for them to do so, and would also result in unnecessary duplication.

2.3.3 There is a need to focus the Habitats Regulations Assessment on the proposals directly promoted by the plan, and not all and every proposal for development and change, especially where these are planned and regulated through other statutory procedures which will be subject to a Habitats Regulations Assessment.

2.3.4 **Planning Hierarchy Uncertainty:** The higher the level of a plan in the hierarchy the more general and strategic will be its provisions and therefore the more uncertain its effects will be. The protective regime of the Directive is intended to operate at differing levels. In some circumstances assessment 'down the line' will be more effective in assessing the potential effects of a proposal on a particular site and protecting its integrity. However, three tests should be applied.

2.3.5 It will be appropriate to consider relying on the Habitats Regulations Assessments of lower tier plans, in order for an LPA to ascertain a higher tier plan would not have an adverse effect on the integrity of a European site, only where:

A] The higher tier plan assessment cannot reasonably assess the effects on a European site in a meaningful way; whereas

B] The Habitats Regulations Assessment of the lower tier plan, which will identify more precisely the nature, scale or location of development, and thus its potential effects, will be able to change the proposal if an adverse effect on site integrity cannot be ruled out, because the lower tier plan is free to change the nature and/or scale and/or location of the proposal in order to avoid adverse effects on the integrity of any European site (e.g. it is not constrained by location specific policies in a higher tier plan); and

C] The Habitats Regulations Assessment of the plan or project at the lower tier is required as a matter of law or Government policy.

2.3.6 It may be helpful for the Habitats Regulations Assessment of the higher tier plan to indicate what further assessment may be necessary in the lower tier plan.

2.3.7 **Implementation Uncertainty:** In order to clarify the approach where there is uncertainty because effects depend on how the plan is implemented, and to ensure compliance with the Regulations, it may be appropriate to impose a caveat in relevant policies, or introduce a free-standing policy, which says that any development project that could have an adverse effect on the integrity of a European site will not be in accordance with the plan.

2.3.8 This would help to enable the assessors to reasonably conclude, on the basis of objective information, that even where there are different ways of implementing a plan, and even applying the precautionary principle, no element of the plan can argue that it draws support from the plan, if it could adversely affect the integrity of a European site.

2.4 Likely significant effect

2.4.1 The plan and its component policies are assessed to determine and identify any potential for **'likely significant effect'** upon European sites. The guidance (SNH, 2012) provides the following interpretation.

2.4.2 "A likely effect is one that cannot be ruled out on the basis of objective information. The test is a 'likelihood' of effects rather than a 'certainty' of effects. Although some dictionary definitions define 'likely' as 'probable' or 'well might happen', in the Waddenzee case the European Court of Justice ruled that a project should be subject to appropriate assessment "if it cannot be excluded, on the basis of objective information, that it will have a significant effect on the site, either individually or in combination with other plans and projects". Therefore, 'likely', in this context, should not simply be interpreted as 'probable' or 'more likely than not', but rather whether a significant effect can objectively be ruled out".

Table 2.1: Synoptic version of the flow chart in **Appendix B** identifying screening and appropriate assessment stages within the HRA process

Group		HRA Stage
Determination of Need and Compilation of Evidence Base	Stage 1	Determination of need
	Stage 2	Identification of European sites that should be considered in the appraisal
	Stage 3	Gathering information on European sites
	Stage 4	Discretionary discussions on the method and scope of the appraisal
Screen all aspects of plan (Screening)	Stage 5	Screening the plan
	Stage 6	Applying mitigation measures at screening stage to avoid likely significant effects
	Stage 7	Rescreen the plan and decide on the need for appropriate assessment
Appropriate Assessment	Stage 8	The Appropriate Assessment – site integrity, conservation objectives and the precautionary principle

	Stage 9	Amending the plan until there would be no adverse effects on site integrity
Consultation of Draft	Stage 10	Preparing a draft of HRA
	Stage 11	Consultation
	Stage 12	Proposed modifications
	Stage 13	Modifying and completing HRA

3 European Sites

3.1 About European sites

3.1.1 Each site of European importance has its own intrinsic qualities, besides the habitats or species for which it has been designated, that enables the site to support the ecosystems that it does. An important aspect of this is that the ecological integrity of each site can be vulnerable to change from natural and human induced activities in the surrounding environment. For example, sites can be affected by land use plans in a number of different ways, including the direct land take of new development, the type of use the land will be put to (for example, an extractive or noise emitting use), the pollution a development generates and the resources used (during construction and operation for instance).

3.1.2 An intrinsic quality of any European site is its functionality at the landscape ecology scale. This refers to how the site interacts with the zone of influence of its immediate surroundings, as well as the wider area. This is particularly the case where there is potential for developments resulting from the plan to generate water or air-borne pollutants, use water resources or otherwise affect water levels. Adverse effects may also occur via impacts to mobile species occurring outside of a designated site but which are qualifying features of the site. For example, there may be effects on protected birds that use land outside the designated site for foraging, feeding, roosting or loafing.

3.1.3 During the screening process, as a starting point to explore and identify which European sites might be affected by the BDP, a 20km area of search was applied. The guidance (SNH, 2012) specifies no specific size of search area. The inclusion of a specific search area was to facilitate the use of the following list of criteria for identification of European sites. Other sites beyond this zone were also reviewed on the basis that they are connected physiographically.

Table 3.1: Criteria for identification of European sites (SNH, 2012)

Selection of European Sites	
Criteria	European Sites to check
All plans	Sites within the plan area, including those for the criteria listed below
For plans that could affect the aquatic environment	Sites upstream or downstream of the plan area in the case of a river or estuary
	Peatland and other wetland sites with relevant hydrological links to land within the plan area, irrespective of distance from the plan area
For plans that could affect mobile species	Sites which have significant ecological links with land in the plan area, for example, land in the plan area may be used by migratory birds, which also use a SPA, outside the plan area, at different times of year
For plans that could increase recreational pressure on European sites potentially vulnerable to such pressure	European sites in the plan area
	European sites within a reasonable travel distance of the plan area boundaries that may be affected by local recreational or other visitor pressure within the plan area (the appropriate distance in each case will need to be considered on its merits, in light of any available evidence)

	European sites within a longer travel distance of the plan area, which are major (regional or national) visitor attractions such as European sites which are National Nature Reserves where public visiting is promoted, sites in National or Regional Parks, coastal sites and sites in other major tourist or visitor destinations (the appropriate distance in each case will need to be considered on its merits, in light of any available evidence)
For plans that would increase the amount of development	Sites that are used for, or could be affected by, water abstraction in or close to the plan area
	Sites used for, or which could be affected by, discharge or effluent from waste water treatment works or other waste management streams serving land in the plan area, irrespective of distance from the plan area
	Sites could be affected by transport or other infrastructure (e.g. by noise or visual disturbance)
	Sites that could be affected by increased deposition of air pollutants arising from the proposals, including emissions from significant increases in traffic
For plans that could affect the coast	Sites in the same coastal 'cell', or part of the same coastal ecosystem, or where there are interrelationships with or between different physical coastal processes

3.2 Ecological information

3.2.1 **Table 3.1** presents information about the criteria used for the identification of European sites in the HRA process. **Appendix A** provides conservation objectives for the fourteen European sites identified as being potentially connected to Birmingham. The information is drawn from the Joint Nature Conservancy Council (JNCC) and Natural England (NE).

4 Potential Effects

4.1 Introduction

4.1.1 The November 2012 initial screening process identified the following sites for consideration as part of the assessment:

- Cannock Chase SAC;
- Cannock Extension Canal SAC;
- Elan Valley Woodlands SAC;
- Elenydd SAC;
- Elenydd-Mallaen SPA;
- Ensor's Pool SAC;
- Fens Pools SAC;
- Humber Estuary SAC;
- Humber Estuary SPA;
- Humber Estuary Ramsar;
- River Mease SAC;
- Severn Estuary SAC;
- Severn Estuary SPA; and
- Severn Estuary Ramsar.

4.1.2 The location of these sites is illustrated in **Figure 4.1**. The map also includes other European sites that are not included in this assessment. They are included for reference only. All relevant sites are numbered.

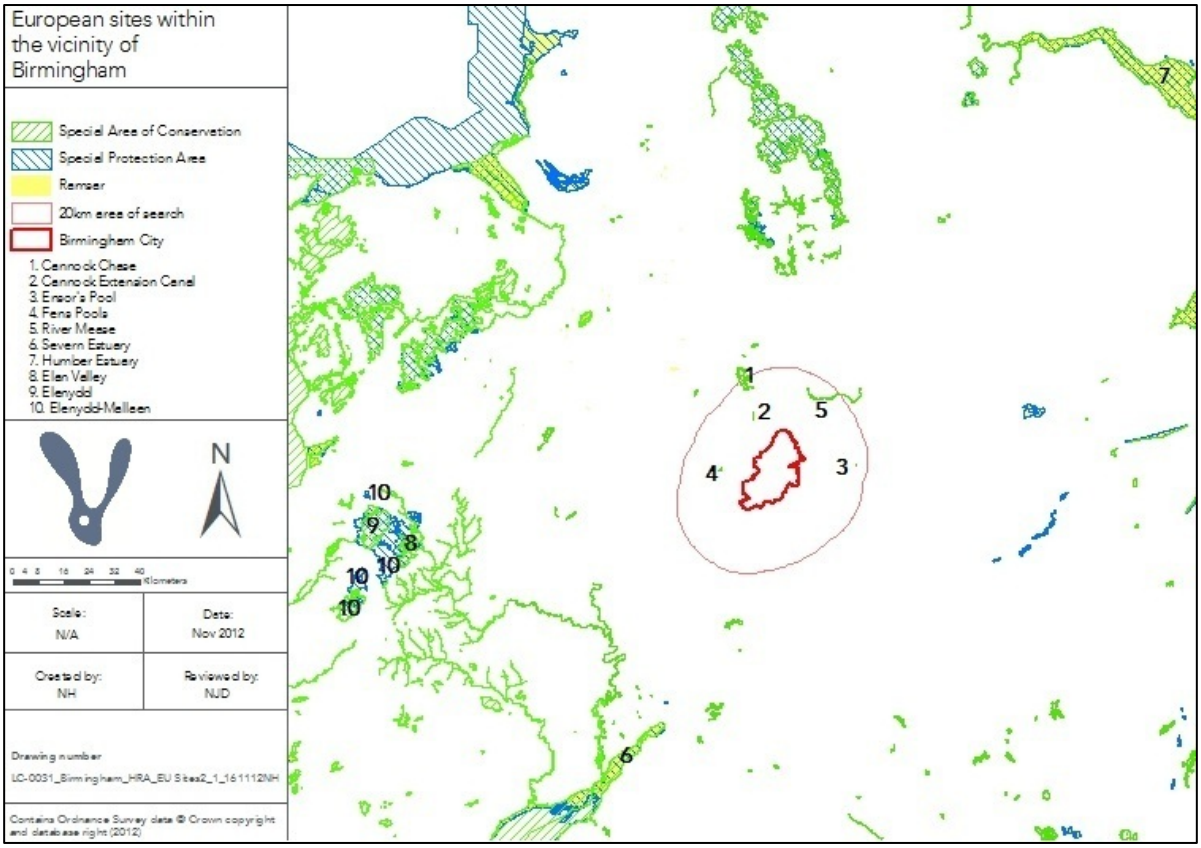

Figure 4.1: Map illustrating location of European sites

Table 4.1: Vulnerabilities of European sites

Name of international site (date indicates when the JNCC standard data form was prepared)	Vulnerability									
	Erosion	Lowering of water levels/Water abstraction/ water quality	Scrub Invasion	Visitor Pressure/ Recreation	Accidental pollution incidents	Management effects including over grazing, burning, over fishing	Large scale man-made interference on-site	Atmospheric pollution including acid rain	Sea level rise and coastal squeeze	Introduction of species
Cannock Chase SAC July 2011	×	Possibly	×	×						
Cannock Extension Canal SAC July 2011				×	×					
Elan Valley SAC July 2011				×		×	×			
Elenydd SAC July 2011			×	×		×	×			
Elenydd-Mallaen SPA	No available data from JNCC.									
Ensor's Pool SAC July 2011					×					×
Fens Pools SAC July 2011					×					×
Humber Estuary SAC July 2011					×		×		×	
Humber Estuary SPA August 2007					×		×		×	

Humber Estuary Ramsar (June 2008)		×	×	×	×	×	×		×	×
River Mease SAC July 2011					×					
Severn Estuary SAC (see Appendix A)		×		×	×		×			×
Severn Estuary SPA (see Appendix A)		×		×			×			×
Severn Estuary Ramsar (see Appendix A)		×		×			×			×

4.1.3 Whilst these sites have previously been screened out, the nature of the BDP has expanded to include content that has previously not been screened. This chapter therefore explores the HRA implications of the Pre-Submission Version of the BDP on these European sites.

4.2 Site vulnerabilities

4.2.1 Site vulnerabilities have been derived from various datasets held by the JNCC. SAC and SPA information is held on Natura 2000 Data Forms; Ramsar data is presented on Ramsar Information Sheets. Known vulnerabilities are summarised in **Table 4.1** and discussed in the following sections.

4.3 Erosion

4.3.1 Erosion is identified for a number of European sites. It is associated with recreational impacts at Cannock Chase SAC where unmanaged visitor access is cited as leading to erosion. In the case of the Severn Estuary, erosion is associated with scraping of the seabed, largely as a result of dredging activities. In terms of the estuary, the tidal range is the second highest in the world and the scouring of the seabed and strong tidal streams result in natural erosion of the habitats.

4.3.2 The heathland habitats for which Cannock Chase SAC has been designated are vulnerable to uncontrolled activities which have been known to include a range of different pastimes. Visitor activities include dog walking, horse riding, mountain biking and off-track activities such as orienteering, all of which can cause disturbance and result in erosion, new track creation and vegetation damage, if not managed positively. The BDP will not affect erosion at either of these European sites.

4.4 Eutrophication and water abstraction

4.4.1 Eutrophication, or nutrient enrichment, is the enrichment of ecosystems by nitrogen or phosphorus. In water it causes algae and higher forms of plant life to grow too fast. This disturbs the balance of organisms present in the water and the quality of the water concerned. On land, it can stimulate the growth of certain plants which then become dominant so that the natural diversity is lost.

4.4.2 Pollution which originates from a single identifiable source such as a building, store or field, or from a particular event or action, for example, overflow or leakage from a manure store is called “point source pollution”. By contrast “diffuse pollution” comes from fields or many sources within a catchment which need to be identified and managed.

4.4.3 Whilst the two processes are different, they lead to similar vulnerabilities in terms of the impacts on a number of the European sites listed. Eutrophication is associated with run-off from agricultural fields and can lead to dominance of particular species whilst overall biodiversity levels drop. Pollution events can cause eutrophication or cause more widespread destructive effects such as affecting the long term ability of a wetland or watercourse to recover to a natural state following impact.

4.4.4 The Plan is not affecting agricultural management or operations. Effects from agricultural run-off are not discussed further in this report.

4.4.5 In terms of effects associated with sewage and wastewater management, these issues have been addressed via the Water Resource management Plans which affect the Birmingham area.

4.4.6 Two water companies currently supply water to Birmingham: Severn Trent Water (STW) and South Staffordshire Water (SSW). Both companies, as required by the Water Act 2003, are responsible for preparing water resource management plans (WRMP) which typically run for 25 years; the plans will be reviewed every year and revised every five years (Environment Agency, 2010). The purpose of WRMPs is to manage the supply and demand of water.

4.4.7 The Severn Trent Water Resources Management Plan (WRMP) covers the entire City and both supplies and treats water. This plan is subject to HRA and will be responsible for ensuring any adverse effects associated with management of water will be addressed before the plan is approved. The latest version is in draft and due for adoption later this year[4]. The latest draft HRA report is available direct from Severn Trent Water (dated May 2013).

4.4.8 The same report addresses abstraction issues; the plan's HRA findings will ensure that no adverse effects will arise or alternatively appropriate mitigation will be prepared. Severn Trent Water's existing licensed abstraction sources have been reviewed through the Environment Agency's Review of Consents process. The report states that where it could not be concluded that abstractions would have no effects on European site integrity, mitigation measures, known as sustainability reductions, were identified to enable reductions in licence volumes so that the risk posed to designated sites is eliminated. Such measures are included in the draft WRMP and it will help to deliver the licence reductions required to protect European designated sites.

4.4.9 Conclusions of the HRA report are as follows:

4.4.10 "The HRA screening assessment of schemes that were included in the Preferred Programme concluded that, with mitigation taken into account, the Preferred Programme is not likely to have a significant effect on the integrity of any European sites.

4.4.11 It is also considered unlikely that there would be any in-combination effects from development proposals, Regional Spatial Strategies or other high-level plans. From a review of information within HRAs and SEAs of neighbouring water companies' WRMPs and Drought Plans, the dWRMP is also considered unlikely to have significant in-combination effects.

4.4.12 It is therefore concluded that Severn Trent Water's dWRMP will have no likely significant effects on European sites and therefore no Appropriate Assessment of the plan is required".

[4] Consultation of the latest Water Resources Management Plan for Severn Trent took place in May 2013.

4.4.13 South Staffs Water have confirmed that water supply for the plan period will be achievable with limited infrastructure changes[5]. The Draft South Staffs Water WRMP (2013) states that "there is no deficit in the supply demand balance throughout the plan period and therefore an SEA is not necessary as options are not being selected". SSW have not prepared an HRA on this basis.

4.4.14 Effects arising in conjunction with abstraction and eutrophication from waste water are not discussed further in this document since they have been subject to Habitats Regulations Assessment elsewhere. The BDP will not lead to adverse effects on sites affected by abstraction, water quality or lowered water levels alone or in combination.

4.5 Scrub invasion and management impacts

4.5.1 Lack of appropriate management practices at Cannock Chase SAC is allowing parts of the site to scrub over. The BDP will not affect this issue. Some land management practices at the three European sites located in Wales are considered potentially damaging to the conservation objectives. The BDP will not affect this issue (see also **section 4.8**).

4.6 Visitor pressure

4.6.1 Increased access and recreational disturbance are associated with new development. Different recreational uses can affect European sites. Since the proximity of the BDP to any European site is some considerable distance and taking into account the fine array of recreational resources on offer in the City at Sutton Park, the BDP is not expected to affect any European sites in terms of recreational pressure.

4.6.2 The nearest part of Cannock Chase SAC (Brindley Heath and Furnace Coppice) is over 16 km away from the closest part of the northern boundary of the City, at Four Oaks in Sutton Coldfield. This European site has been subject to research and investigation by the Cannock Chase SAC Partnership into visitor pressure and likely increase in visitor numbers from new development. Findings from the study identified that 75% of visits originate from a zone of influence 15.13 kilometres from the edge of the SAC boundary.

4.6.3 In terms of HRA of plans in the UK, earlier precedents have adopted a geographic Zone of Influence measured in kilometres within which 75% or more of likely visits are deemed to arise in association with where people live. Any development proposed in this geographic zone is deemed to automatically trigger the need for provision of mitigation measures under the Habitats Directive. By taking a strategic approach to a wider area that may be covered by several local planning authorities, the need for numerous repeat appropriate assessments is reduced for those developments that might otherwise have needed to consider impacts associated with recreation on a case by case basis. Instead, the proposed development automatically contributes to offsetting the impacts predicted by the relevant Visitor Study. In this way adverse effects associated with visitor impacts, either alone or in combination, may be mitigated.

[5] Email correspondence between South Staffs Water and Birmingham City Council (18th September 2012)

4.6.4 Beyond this zone, proposals for larger scale development should discuss the matter of HRA issues with Natural England and screen proposals in the normal way following the Regulations.

4.6.5 The Cannock Chase SAC Partnership research (Footprint Ecology, 2012[6]) suggests that large developments of over 100 houses outside the 15km zone, subject to advice from Natural England may be required to provide information for the purposes of appropriate assessment under the HRA Regulations.

4.6.6 No large scale development is proposed for the north west area of Sutton Coldfield in and around Four Oaks.

4.6.7 The BDP is proposing a sustainable urban extension (SUE) in Birmingham, near Sutton Coldfield. The location of this site is some 4km away from the edge of the 15km zone. Whilst the SUE may itself conduct ecological impact assessments, it is not anticipated, on the basis of the Cannock Chase SAC Partnership findings, that there will be adverse effects arising alone or in combination with the SUE.

4.6.8 Any proposals in Birmingham that wish to explore visitor impacts and recreational activities would begin by considering the nationally important resource of Sutton Park; a feature not explored in detail by the Cannock Chase Research.

Box 1: Recommendations from Footprint Ecology (2012) to offset predicted visitor growth at Cannock Chase SAC

1. With partners, including FC, AONB and Local Authorities, institute a framework for collecting and allocating developer contributions within an area between 400m and 15 km from Cannock Chase SAC but with a higher contribution rate within the 400m-8km zone. Contributions would be collected from all net new residential units falling within Use Class 3 or staff residential accommodation within Use Classes C1 and C2.
2. For development of more than 50 houses there should be a requirement for targeted additional open space associated with the development.
3. New residential development will not be permitted within 400m of the SAC boundary
4. Information for an Appropriate Assessment may be required for large developments of over 100 houses outside the 15km zone, subject to advice from Natural England
5. Four SANGS are provided for new residential development, each of 30-35 ha or more (well away from the SAC and spread around the SAC to the north, south-east, south-west and west).
6. That two of the proposed SANGS are targeted towards local visitors on foot. These should consist of two areas of approximately 30-35 ha each, close to the existing settlements of Brocton and Cannock.
7. Any proposed SANGS must be available for public access in perpetuity
8. Proposed SANGS comply with Natural England SANGS quality guidance
9. Funding should be considered from the developer contribution fund for mitigation on the SAC, educational, promotional and awareness initiatives, improvements to existing open space facilities and provision of new access facilities on currently owned or newly-acquired land. Contributions should be available for measures taken on the SAC, within the Chase and elsewhere within the 15km zone.
10. Carry out a survey of potential use by visitors to the Chase and provide bike parks for youngsters or bespoke adventure courses for adults, either off the AONB or within the Chase but well away from the SAC.

6 Footprint Ecology (2012) Cannock Chase Visitor Impacts Mitigation Report. Footprint Ecology. Unpublished report.

4.7 Accidental pollution incidents

4.7.1 Accidential pollution incidents are unplanned and can serious long term damage to the ecology of European sites and their features. The five sites vulnerable to this effect are Ensor's Pool SAC, Fens Pools SAC and the Severn Estuary sites. Pollution incidents are dealt with by the Environment Agency. A number of legislative influences including European Directives on water quality and bathing water quality have led to improved water quality levels; pollution incidents are also subject to legal administration and have helped reduce the overall incidence of pollution events.

4.7.2 Effects arising in conjunction with accidental pollution events are not discussed further since the BDP is unlikely to introduce or influence pollution inducing activities likely to affect any European site being considered in this report.

4.8 Management effects

4.8.1 Some land use management practices conflict with the nature conservation objectives of European sites when the practice in question is either applied at an intensive scale or at an inappropriate time of year for breeding birds, flowering plants or breeding invertebrates. Under such circumstances the relevant nature conservation body will seek to arrange and implement higher level stewardship agreements or Tyr Gofal agreements to reduce adverse effects. Fires are used for management and can also start accidentally. Again, these can conflict with nature conservation objectives of European sites. The BDP will not affect management at the sites in question that have such vulnerabilities.

4.9 Large man-made interference on site

4.9.1 This is a generic category of influence that can lead to multiple impacts on the Severn Estuary and Humber Estuary. The estuaries are vulnerable to large-scale interference, mainly as a result of human actions. These include land-claim, aggregate extraction, physical developments such as barrage construction and other commercial construction activities, flood defences, industrial pollution, oil spillage and tourism-based activities and disturbance. The BDP is not expected to affect the Severn Estuary or Humber sites in this way.

4.10 Atmospheric pollution

4.10.1 Air quality can be affected by pollution events. Air quality effects impact in two principal ways: via local sources such as being in close proximity to roads and via diffuse pollution in the atmosphere. Power stations and industrial processes contribute to diffuse air pollution. Cars in proximity to sites of importance for nature conservation can cause adverse effects up to 200m away from the road in question[7]. None of the European sites in question are within 200m of the plan area, nor are likely to be significantly affected by traffic growth associated with the BDP.

[7] Highways Agency (2007) Design Manual for Roads and Bridges. Volume 11, Environmental Assessment. Section 3, Part 1, HA 207/07. Annex C: Development of Screening Method

4.10.2 In terms of the BDP, direct air quality impacts are not expected to arise from the plan since the BDP includes measures to promote sustainable transport through policies TP37 "Sustainable Transport" and TP7 "Green Infrastructure Network".

4.10.3 It is difficult to accurately predict diffuse air pollution effects arising from new homes and employment activities that will for example require power from power stations that may or may not contribute to diffuse air pollution. It is easier to record effects at a local scale arising from cars. Diffuse pollution is best addressed by managing the effects at source which is the procedure being followed by Environment Agency and policy makers. There are no proposals in the BDP that are likely to contribute directly to diffuse air quality effects. Of note is the inclusion of BDP policy TP32 "Low and zero carbon energy generation" which pursues cleaner and more sustainable development.

4.10.4 Besides the policy commitments to produce sustainable transport it is recommended that the issue of air quality and potential impacts on nature conservation sites is monitored to measure the effectiveness of the policy.

4.10.5 Effects arising in conjunction with air quality are not discussed further and with the mitigation being presented by the aforementioned policies is not considered to represent a likely significant impact to European sites.

4.11 Sea level rise and coastal squeeze

4.11.1 Sea level rise is associated with climate change effects and is a long term phenomena which requires managing in order to protect built settlements prone to maritime flood events. Sea defences are constructed and are necessary to hold the line of the existing coast. This impacts inter-tidal habitats with a resulting loss of habitat and foraging opportunities for species which exploit this niche such as birds.

4.11.2 Effects arising in conjunction with sea level rise and coastal squeeze are not discussed further in this document since they will not be affected by proposals in the BDP.

4.12 Introduction of species

4.12.1 Non-native species and other species which change the balance of an ecosystem are cited here to acknowledge that three sites are vulnerable to introduction of species (fish and American Signal Crayfish *Pacifastacus leniusculus*) that can affect Great Crested Newt (*Triturus cristatus*) populations. The BDP is not expected to affect these receptor sites in this way.

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5 Conclusions and Recommendations

5.1 Assessment findings

5.1.1 This HRA report has carefully considered the effects that might be associated with development as part of the Pre-Submission Version of the BDP. Having previously screened the BDP options, this report has revisited assessments made during November 2012 and assessed new content in the latest version of the plan.

5.1.2 There are no European sites in the City of Birmingham. Of those that have been identified from a 20km area of search and others that have been included through hydrological pathways that lie beyond this search zone, none are expected to experience adverse effects from proposals in the BDP. Earlier assessment in November 2012 recommended that the issues of air quality, disturbance from recreation, water supply and treatment be explored as part of further HRA work. These issues have been appraised along with several other identified vulnerabilities of European sites.

5.1.3 The Pre-Submission Version of the BDP is not likely to lead to adverse effects on any European sites alone or in-combination with other plans. There is no requirement to prepare an appropriate assessment.

5.2 Limitations

5.2.1 This report has been prepared using the best available data. References are cited in the text where appropriate.

5.2.2 Other limitations concern habitat and species information for the European sites, which was collected more than two years ago, and in some cases longer than that. Lepus Consulting has collected no primary data in the preparation of this report.

5.3 Next steps

5.3.1 This report is subject to comments and review by Natural England as part of the consultation arrangements for the Pre-Submission BDP.

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APPENDIX A

European sites: Conservation Objectives (where available from Natural England). * denotes a priority natural habitat or species

Cannock Chase SAC

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

Qualifying Features:

- Northern Atlantic wet heaths with Erica tetralix; Wet heathland with cross-leaved heath
- European dry heaths

Cannock Extension Canal SAC

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

Qualifying features:

- *Luronium natans* Floating Water-plantain

Elan Valley Woodlands SAC
Elenydd SAC
Elenydd-Mallaen SPA

Conservation objectives are provided in detail for all three Wales sites featured in this HRA in the Core Management Plan prepared by CCW[8] (April, 2008) which incorporates

[8] http://www.ccgc.gov.uk/landscape--wildlife/protecting-our-landscape/special-sites-project/coedwigoedd-to-cors-caron-sac/coetiroedd-cwm-elan-sac.aspx

Elan Valley Woodlands SAC, Elenydd SAC and Elenydd-Mallaen SPA. Conservation objectives have been prepared under the following headings.

Conservation Objective for Feature 1: Blanket bogs

Conservation Objective for Feature 2: European dry heaths

Conservation Objective for Feature 3: Old sessile oak woods with Ilex and Blechnum in the British Isles

Conservation Objective for Feature 4: Tilio-Acerion forests of slopes, screes and ravines

Conservation Objective for Feature 5: Calaminarian grasslands of the Violetalia calaminariae

Conservation Objective for Feature 6: Oligotrophic to mesotrophic standing waters of the Isoeto-Nanojuncetea

Conservation Objective for Feature 7: Floating water-plantain Luronium natans

Conservation Objective for Feature 8: Breeding Red Kite Milvus milvus

Conservation Objective for Feature 9: Breeding Merlin Falco columbaris

Conservation Objective for Feature 10: Breeding Peregrine Falco peregrinus

Ensor's Pool SAC

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

Qualifying features:

- *Austropotamobius pallipes*; White-clawed (or Atlantic stream) crayfish

Fens Pools SAC

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

- The populations of qualifying species;
- The distribution of qualifying species within the site.

Qualifying features:

- *Triturus cristatus*; Great crested newt

Humber Estuary SAC

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

Qualifying Features:

- Mudflats and sand flats not covered by seawater and low tide
- Sandbanks which are slightly covered by sea water all the time
- Coastal lagoons
- *Salicornia* and other annuals colonising mid and sand
- Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- Embryonic shifting dunes
- Shifting dunes along the shoreline with *Ammophilia arenaria* (white dunes)
- Fixed dunes with herbaceous vegetation (grey dunes)
- Dunes with Hippophae rhamniodes
- Petromyson marinus Sea lamprey
- Lampreta fluviatilis River lamprey
- Halichoerus grypus Grey seal

Humber Estuary SPA

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

Qualifying Features:

- Eurasian bittern Botaurus stellaris (breeding) 10.5% GB population
- Marsh harrier Circus aeruginosus (breeding) 6.3% GB population
- Pied avocet Recurvirostra avosetta (breeding) 8.6% GB population
- Little tern Sterna albifrons (breeding) 2.1% GB population
- Eurasian bittern Botaurus stellaris (winter) 4% GB population
- Hen harrier Circus cyaneus (winter) 1.1% of GB population
- Bar-tailed godwit Limosa lapponica (winter) 4.4% GB population
- Golden plover Pluvialis apicaria (winter) 12.3% GB population
- Pied avocet Recurvirostra avosetta (winter) 12.3% GB population
- Ruff Philomachus pugnax (passage) 1.4% GB population
- Dunlin Calidris alpine (winter) 1.7% of population
- Red knot Calidris canutus (winter) 6.3% of population
- Black-tailed godwit Limosa limosa islandica (winter) 32% of population
- Common shelduck Tadorna tadorna (winter) 1.5% of population
- Common redshank Tringa tentanus (winter) 3.6% of population
- Dunlin Calidris alpine (passage) 1.5% of population
- Red knot Calidris canutus (passage) 4.1% of population
- Black-tailed godwit Limosa limosa islandica (passage) 2.6% of population
- Common redshank Tringa tetanus (passage) 5.7% of population
- In the non-breeding season the area regularly supports:
- Waterfowl including:

Anas crecca , Anas penelope , Anas platyrhynchos , Arenaria interpres , Aythya ferina , Aythya marila , Botaurus stellaris , Branta bernicla bernicla , Bucephala clangula , Calidris alba , Calidris alpina alpina , Calidris canutus , Charadrius hiaticula , Haematopus ostralegus , Limosa lapponica , Limosa limosa islandica , Numenius arquata , Numenius phaeopus , Philomachus pugnax , Pluvialis apricaria , Pluvialis squatarola , Recurvirostra avosetta , Tadorna tadorna , Tringa nebularia , Tringa totanus , Vanellus vanellus

Humber Estuary Ramsar

Ramsar site information sheets do not include conservation objectives. Instead they include details about how a particular site meets Ramsar criteria. These have been reproduced here, as has information about noteworthy flora and fauna.

Ramsar criterion 1

The site is a representative example of a near-natural estuary with the following component habitats: dune systems and humid dune slacks, estuarine waters, intertidal mud and sand flats, saltmarshes, and coastal brackish/saline lagoons.

Ramsar criterion 3

The Humber Estuary Ramsar site supports a breeding colony of grey seals *Halichoerus grypus* at Donna Nook. It is the second largest grey seal colony in England and the furthest south regular breeding site on the east coast. The dune slacks at Saltfleetby-Theddlethorpe on the southern extremity of the Ramsar site are the most north-easterly breeding site in Great Britain of the natterjack toad *Bufo calamita*.

Ramsar criterion 5

Assemblages of international importance: 153,934 waterfowl, non-breeding season (5 year peak mean 1996/97-2000/2001)

Ramsar criterion 6

Species/populations occurring at levels of international importance.

- Eurasian golden plover, Pluvialis apricaria altifrons subspecies
- Red knot, Calidris canutus islandica subspecies
- Dunlin, Calidris alpina alpina subspecies
- Black-tailed godwit, Limosa limosa islandica subspecies
- Common redshank, Tringa totanus brittanica subspecies
- Common shelduck, Tadorna tadorna
- European golden plover , Pluvialis apricaria apricaria,
- Common redshank , Tringa totanus totanus,
- Bar-tailed godwit , Limosa lapponica lapponica

Ramsar criterion 8

The Humber Estuary acts as an important migration route for both river lamprey *Lampetra fluviatilis* and sea lamprey *Petromyzon marinus* between coastal waters and their spawning areas.

River Mease SAC

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

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

Qualifying features:

- Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho- Batrachion vegetation; Rivers with floating vegetation often dominated by water-crowfoot
- Austropotamobius pallipes; White-clawed (or Atlantic stream) crayfish
- Cobitis taenia; Spined loach
- Cottus gobio; Bullhead
- Lutra lutra; Otter

Severn Estuary SAC & SPA

Comprehensive details of conservation objectives are available in this document: Natural England & the Countryside Council for Wales' advice given under Regulation 33(2)(a) of the Conservation (Natural Habitats, &c.) Regulations 1994, as amended (June, 2009). Conservation objectives for the Severn Estuary SAC and SPA are provided in the form of eight and seven interest features respectively. In the interests of report brevity these have not been reproduced here. For full detail please see:

http://www.severnestuary.net/asera/docs/Regulation%2033%20Advice.pdf

Severn Estuary Ramsar

Ramsar site information sheets do not include conservation objectives. Instead they include details about how a particular site meets Ramsar criteria. These have been reproduced here, as has information about noteworthy flora and fauna.

Ramsar criterion 1

Due to immense tidal range (second-largest in world), this affects both the physical environment and biological communities.

Habitats Directive Annex I features present on the SAC include:

Sandbanks which are slightly covered by sea water all the time

Estuaries

Mudflats and sandflats not covered by seawater at low tide

Atlantic salt meadows (Glauco-Puccinellietalia maritimae)

Ramsar criterion 3

Due to unusual estuarine communities, reduced diversity and high productivity.

Ramsar criterion 4

This site is important for the run of migratory fish between sea and river via estuary. Species include Salmon *Salmo salar,* sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla*. It is also of particular importance for migratory birds during spring and autumn.

Ramsar criterion 8

The fish of the whole estuarine and river system is one of the most diverse in Britain, with over 110 species recorded. Salmon *Salmo salar*, sea trout *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla* use the Severn Estuary as a key migration route to their spawning grounds in the many tributaries that flow into the estuary. The site is important as a feeding and nursery ground for many fish species particularly allis shad *Alosa alosa* and twaite shad *A. fallax* which feed on mysid shrimps in the salt wedge.

Ramsar criterion 5

Assemblages of international importance: Species with peak counts in winter:

70919 waterfowl (5 year peak mean 1998/99-2002/2003)

Ramsar criterion 6

Species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):

Species with peak counts in winter:

Tundra swan , *Cygnus columbianus bewickii*

Greater white-fronted goose , *Anser albifrons albifrons*

Common shelduck, *Tadorna tadorna*,

Gadwall , *Anas strepera strepera*

Dunlin , *Calidris alpina alpina*

Common redshank , *Tringa totanus totanus*,

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

Species regularly supported during the breeding season:

Lesser black-backed gull , *Larus fuscus graellsii*

Species with peak counts in spring/autumn:

Ringed plover , *Charadrius hiaticula*

Species with peak counts in winter:

Eurasian teal, *Anas crecca*

Northern pintail, *Anas acuta*

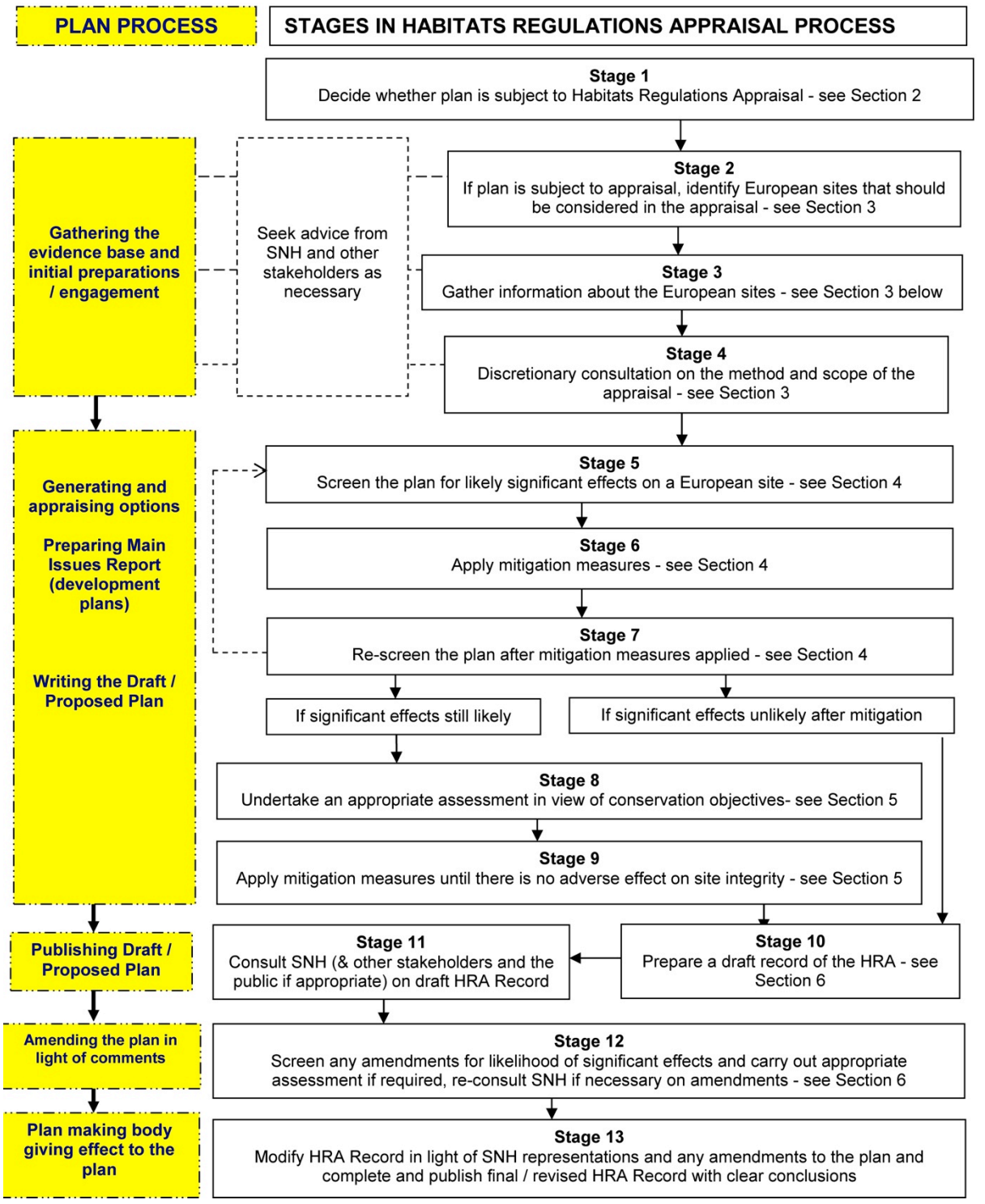
Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.

APPENDIX B

Flow chart of HRA process.

The 13 Key Stages of the Habitats Regulations Appraisal Process (reproduced from SNH, 2012)

FIGURE 2
13 KEY STAGES OF THE HABITATS REGULATIONS APPRAISAL PROCESS FOR PLANS



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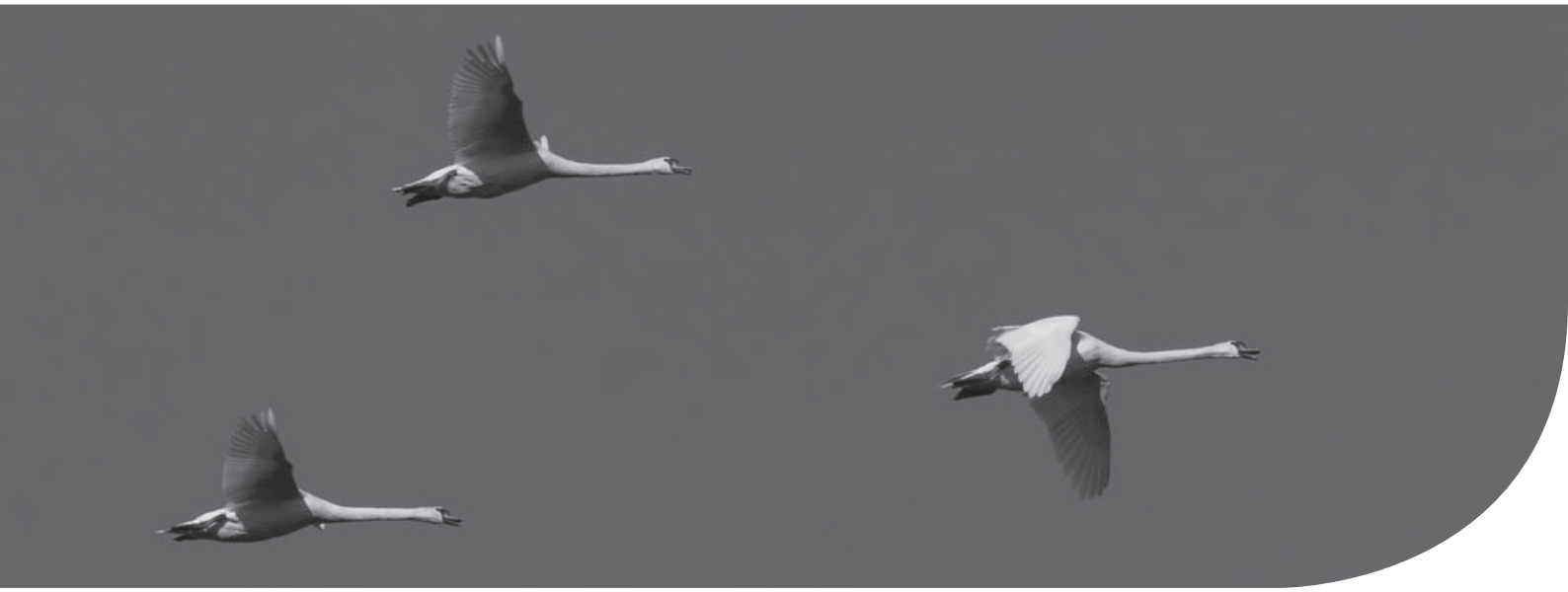

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