Habitats Regulations Assessment of the Birmingham Development Plan - Options Consultation

Initial Screening Report

November 2012

LEPUS CONSULTING
LANDSCAPE ECOLOGY, PLANNING AND URBAN SUSTAINABILITY

Habitats Regulations Assessment of the Birmingham Development Plan 2031 Options Consultation

HRA Initial Screening Report

Client:	Birmingham City Council
Report Title:	Habitats Regulations Assessment of the Birmingham Development Plan 2031 - Options Consultation
Status:	Draft for client comment
Number:	1
Filename:	LC-0031_Birmingham HRA_3_281112ND.docx
Date:	21st November 2012
Author:	NH
Checked:	DKF
Approved:	ND

Contents

List of Figures

List of Tables

Abbreviations

AA	Appropriate Assessment
APIS	Air Pollution Information Systems
BCC	Birmingham City Council
BDP	Birmingham Development Plan
CAMS	Catchment Abstraction Management Strategy
CCW	Countryside Council for Wales
DCLG	Department of Communities and Local Governments
EC	European Commission
EU	European Union
ha	Hectare
HRA	Habitats Regulations Assessment
IROPI	Imperative Reasons of Overwhelming Public Interest
JNCC	Joint Nature Conservation Committee
LNR	Local Nature Reserve
LSE	Likely Significant Effects
NE	Natural England
NNR	National Nature Reserve
NPPF	National Planning Policy Framework
SAC	Special Area of Conservation
SHLAA	Strategic Housing Land Availability Assessment
SNH	Scottish Natural Heritage
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
SSW	South Staffordshire Water
STW	Severn Trent Water
WCS	Water Cycle Study
WRMP	Water Resource Management Plan

Executive Summary

E1 Introduction

E1.1 On behalf of Birmingham City Council, Lepus Consulting is undertaking a Habitats Regulations Assessment (HRA) screening exercise to evaluate the potential effects of options presented in the Birmingham Development Plan 2031 Options Consultation Document. The BDP sets out the statutory planning framework for the city and guides decisions relating to new development and regeneration until 2031. This report presents the findings of the evidence gathering process and Habitats Regulations Assessment in relation to European sites around or connected to Birmingham. This report is intended to help inform the preparation of the Birmingham Development Plan.

E1.2 European sites are legally protected areas of international nature conservation importance. The HRA screening process investigates the likelihood of any significant effects arising in association with proposals being considered as part of the BDP options that might affect the European sites.

E1.3 Initial investigation has screened out four sites, ten are presently being investigated further and will be reported on once the results of liaison with the water companies and Environment Agency is complete. This is due in the early part of 2013.

E2 Scope of the Screening Exercise

E2.1 European sites were identified within a search area of 20km. If sites beyond this area of search are known to be hydrologically connected or connected to the plan area via another factor, then these were included as part of the screening process as well. The following European sites were identified:

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

E3 Findings

E3.1 Of the 14 European sites identified, four have been discounted from further assessment and have been screened out. These sites are:

- Cannock Extension Canal SAC;
- Ensor's Pool SAC;
- Fens Pools SAC; and
- River Mease SAC.

E3.2 These four European sites have been discounted from further assessment for a variety of reasons, including: (i) distance from Birmingham; (ii) the BDP will not impact upon identified vulnerabilities; and (iii) a lack of viable links by which impacts could be transferred.

E3.3 Potential significant effects were identified and have been explored for the remaining ten sites. These have included:

- **Air quality:** Can result in increased nutrient levels leading to eutrophication. Atmospheric deposition can lead to long-term changes in vegetation composition and reduced diversity.
- **Disturbance and recreation pressures:** Can impact sensitive species, particularly ground nesting birds; prevent appropriate management; and exacerbate existing site management issues.
- **Water resources:** Development can increase pressures on water supply. Abstraction of water can adversely affect water sensitive habitats.
- **Water quality and wastewater:** New development requires the delivery of supporting infrastructure. Increased wastewater discharge can result in the subsequent nutrient enrichment of downstream water bodies.

E3.4 The screening results for Cannock Chase SAC indicate that no direct significant effects are likely at this site. There may nevertheless be effects in combination with other plans and programmes. On this basis, an in-combination assessment is recommended as part of the next HRA stage.

E3.5 The screening assessment of the BDP has been unable to conclude at this stage that there will be no adverse effects upon the ecological integrity of Elan Valley SAC, Elenydd SAC, Elenydd-Mallaen SPA, Severn Estuary SAC, SPA and Ramsar and Humber Estuary SAC, SPA and Ramsar.

E4 Next steps

E4.1 The next stages of work will consider in combination effects on (i) air quality, and (ii) disturbance and recreational pressures at Cannock Chase SAC.

E4.2 In terms of water quality and supply, consultation should be undertaken with the Environment Agency and the relevant water authorities to provide comments on the effects of the BDP Options and confirm water cycle study information including:

- Sufficient supply-demand balance for the duration of plan;
- Sufficient capacity of wastewater treatment for projected population increases; and
- Identify the environmental capacity of receiving waters.

This page is intentionally blank for the purposes of double-sided printing.

1. Introduction

1.1 Background

1.1.1 Lepus Consulting is conducting a Habitats Regulations Assessment (HRA) of behalf of Birmingham City Council. The Birmingham Development Plan 2031 (BDP) Options Consultation contains different options to facilitate growth of the city. This report explores whether or not any proposals in the BDP are likely to have effects on European sites of nature conservation importance.

1.2 Structure of this report

1.2.1 This HRA screening report is set as follows:

- Rest of chapter 1: description of the BDP and the options;
- Chapter 2: The HRA methodology, stages of assessment and the effects of uncertainty;
- Chapter 3: The identification of European sites, their important biodiversity features and vulnerabilities;
- Chapter 4: Screening results. This chapter screens out European sites which are unlikely to experience significant effects and identifies any sites which have the potential to experience significant effects as a result of the BDP options;
- Chapter 5: Explores the nature of potential significant effects upon European sites to inform judgements about likely significant effects; and
- Chapter 6: Outlines conclusions and next steps for the HRA process.

1.3 Habitats regulations assessment

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 transposition of European Directive 92/43/EEC on 'the conservation of natural habitats and of wild fauna and flora' (the Habitats Directive). HRA must be applied to all land-use plans in England and Wales. The HRA process aims to assess the potential effects of a land-use plan against the conservation objectives of any site designated for their importance to nature conservation.

1.3.2 European sites provide valuable ecological infrastructure for the protection of rare, endangered or vulnerable natural habitats and species of importance within the European Union (EU). They form a system of internationally important sites throughout Europe. They are known collectively as the 'Natura 2000 network'. European sites include: 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). Government policy requires that sites designated under the Convention of Wetlands of International Importance, especially as Waterfowl Habitat 1971 (The Ramsar Convention) are treated as if they are fully designated European sites for the purpose of considering development proposals that may affect them.

1.3.3 Under Regulation 102 of the Habitats Regulations, the assessment must determine whether or not a plan will adversely affect the integrity of European sites, through likely significant effects. The process is characterised by the Precautionary Principle. The European Commission (EC) describes the principle as:

"If 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."

1.3.4 If likely significant effects are identified, a subsequent stage of the HRA process, known as Appropriate Assessment (AA) is undertaken. This part of the HRA process explores more fully the nature of potential significant effects and whether or not the identified effects can be removed by pursuing an alternative approach within the plan, or secondly if the significance of the effect can be reduced using mitigation.

1.3.5 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 Pubic Interest (IROPI) to continue with the proposal. This is widely perceived as an undesirable position and should be avoided if at all possible.

1.4 Overview of Birmingham

1.4.1 Birmingham lies in the heart of the West Midlands and is situated at the centre of the West Midlands conurbation. This extensive area includes the cities of Birmingham and Wolverhampton and the large towns of Dudley, Halesowen, Solihull, Stourbridge, Sutton Coldfield, Walsall and West Bromwich.

1.4.2 Birmingham is the second largest city in the UK with a population of over one million people (1,073,000). This represents an increase of 9.8% between the 2001 and 2011 census. The city is densely populated at approximately 37.4 people per hectare.

1.4.3 Birmingham covers an area of 26,777ha. More than a fifth of the city represents open space; 16% is designated as green belt. The city has extensive linear features including rivers, watercourses and canals. These form a network that extends throughout the city and the wider area. Birmingham contains a number of areas that are protected for their nature conservation value including two Sites of Special Scientific Interest (SSSIs): Sutton Park and Edgbaston Pool. Sutton Park is also designated as a National Nature Reserve (NNR). There are presently seven Local Nature Reserves (LNRs); Moseley Bog LNR and Plantsbrook LNR are amongst the largest in the city. There are no European sites of nature conservation importance in Birmingham.

1.5 The Birmingham Development Plan

1.5.1 The Birmingham Development Plan 2031 (BDP) will be the key planning document for Birmingham. The plan will set out the statutory planning framework for the city and guide decisions relating to new development and regeneration until 2031. As the key planning document, the BDP will set out how and where homes, jobs, services and infrastructure will be delivered, and the types of places and environments to be created within Birmingham.

1.5.2 The BDP is the latest iteration of the Birmingham Core Strategy 2026. The publication of the National Planning Policy Framework (NPPF) in April 2012 resulted in changes to planning regulations. This led to a change in focus from the Local Development Framework to Local Plans. The Birmingham Core Strategy was renamed as the Birmingham Development Plan.

1.6 The Options

1.6.1 Birmingham's population is projected to grow by up to 150,000 over the plan period (Office of National Statistics revised population projections). This will increase demand for new housing, jobs, infrastructure and services. On the basis of projected population growth, the BDP outlines a requirement of approximately 80,000 new homes.

1.6.2 The Options Consultation 2012 and Birmingham Strategic Housing Land Availability Assessment (SHLAA) 2011 identified that land within the existing urban area is able to accommodate 43,000 new homes. This is deliverable primarily through new neighbourhoods, the redevelopment of brownfield sites, infill, conversions and bringing properties back into use. A further 2,000 – 3,000 could be accommodated through the selective redevelopment of open space. A shortfall of approximately 30,000 homes is expected. This has resulted in the consideration of options of land on the urban edge by reallocating green belt.

1.6.3 Paragraph 80 of the NPPF sets out the five purposes of green belt. They include:

- To check the unrestricted sprawl of large built up areas;
- To prevent neighbouring towns merging into one another;
- To assist in safeguarding the countryside from encroachment;
- To preserve the setting and special character of historic towns; and
- To assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

1.6.4 Birmingham has 4,153ha of green belt, distributed throughout the city, with the vast majority being located to the north and east.

1.6.5 The BDP Options Consultation 2012 outlines the preliminary analysis of the city's green belt undertaken by BCC. The analysis introduced two criteria:

- Sites can accommodate a sustainable urban extension which would include a range of community and other supporting infrastructure such as schools and/or could accommodate an employment site which could provide a minimum 50ha plot size; and
- Sites are not subject to significant environmental and physical constraints.

1.6.6 The process excluded a number of sites on the basis that they did not fulfil the above criteria. Four areas met the preliminary criteria:

- **(A)** Hill Wood, East of Watford Gap;
- **(B)** West of the M6 Toll;
- **(C)** West of the Sutton Coldfield Bypass, Walmley; and
- **(D)** East of the Sutton Coldfield Bypass, Walmley.

1.6.7 The four sites are located on the northern and eastern edge of Sutton Coldfield. The four options have been split into sub-options to assist in the assessment of each area and to reflect the differing characteristics. The four options have been considered by BCC against their contribution to green belt as outlined in the NPPF and against a more detailed range of environmental and other assessment criteria.

Table 1.1: Option areas

Option area	Size (ha)	Proposed minimum dwellings
A1	134	3,700
A2	176	5,000
B1	112	3,200
B2	230	6,300
C1	273	7,900
C2	193	5,500
D1	268	6,100

1.6.8 The green belt options cover a range of scales. These allow for varying levels of new development. **Table 1.1** outlines the relative size of the options and proposed minimum numbers of dwellings. This information will need to be assessed inline with potential site constraints to identify the suitability of each option.

1.7 Previous HRA work

1.7.1 Previous HRA screening (UE Associates, 2010) associated with the Birmingham Core Strategy identified European sites within proximity or potentially connected to the plan area. It highlighted uncertainty relating to likely significant effects at the following sites:

- Recreational pressures and air quality impacts through road traffic at Cannock Chase SAC; and
- Uncertainty over water management issues (demand, supply and treatment of water) at Elan Valley, Humber and Severn sites.

1.7.2 The 2010 screening report suggested that further analysis should be undertaken. To help inform future HRA work the 2010 screening report made two key recommendations: (a) to prepare a water cycle study (WCS) and (b) to prepare a green infrastructure strategy.

1.7.3 A WCS (as defined by the Environment Agency Water Cycle Study Guidance, 2009) would recognise any tensions between growth proposals and environmental requirements and identify potential solutions to addressing them. A WCS would demonstrate that there is (a) adequate supply of water and (b) treatment and discharge of wastewater will not result in likely significant effects upon European sites.

1.7.4 UE Associates prepared a Green Infrastructure Strategy for BCC in 2011. The strategy was prepared to inform the development of the Draft Places for the Future Supplementary Planning Document (2012). The council are presently updating the Strategy and anticipate publication of a new version in 2013.

1.7.5 The full 2010 HRA screening report can be viewed at:

http://www.birmingham.gov.uk/cs/Satellite?c=Page&childpagename=Development-Planning%2FPageLayout&cid=1223346397007&pagename=BCC%2FCommon%2FWrapper%2FWrapper

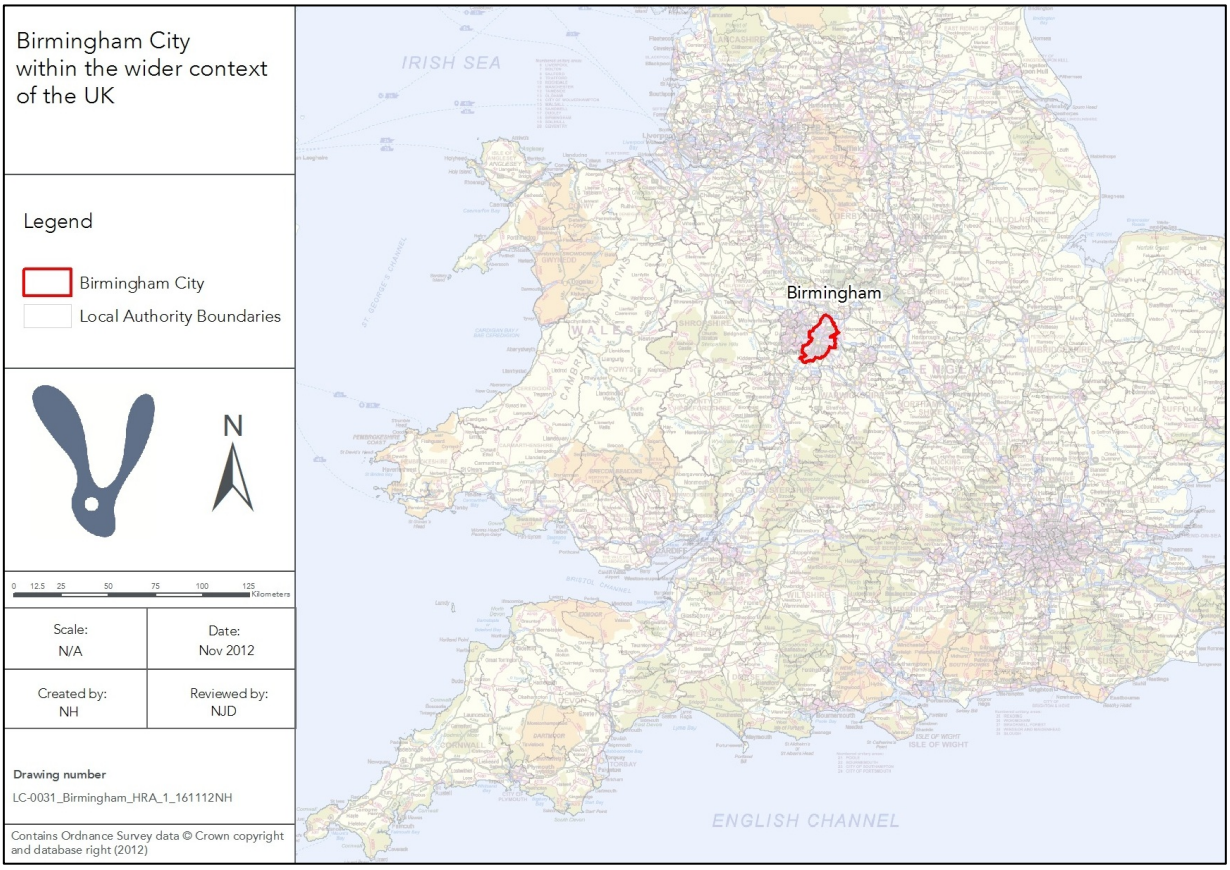

Figure 1.1: Location of Birmingham

This page is intentionally blank for the purposes of double-sided printing.

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 Tyldesely Associates (Local Development Plan Documents under the Provisions of the Habitats Regulations, 2009). Both draw on EU guidance (EC, 2001) for the Appropriate Assessment of plans.

2.1.2 The 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. At the time of writing, whilst their own guidance is being reviewed and updated, Natural England has suggested that the guidance on HRA "Habitats Regulations Appraisal of Plans: Guidance for Plan-Making Bodies in Scotland" (second edition, 2012) be used.

2.2 Habitats regulations methodology

2.2.1 The HRA procedures used in this report follow the methodology prepared by David Tyldesley Associates for SNH. A step-by-step methodology is outlined in the guidance and has been summarised below in **Table 2.1**.

2.2.2 These stages can be split into four broad group. They have been clarified below:

Table 2.1: HRA stages

Group	HRA Stages
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 the 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 (AA)	Stage 8: The AA – site integrity, conservation objectives and the precautionary principle

	Stage 9: Amending the plan until no adverse effects on site integrity
Consultation of with Natural England	Stage 10: Preparing a draft record of the HRA
	Stage 11: Consultation with Natural England
	Stage 12: Proposed modifications
	Stage 13: Modifying and completing the final/ revised HRA record

2.3 Dealing with uncertainty

2.3.1 The assessment can be affected by uncertainty, which can affect the assessment in a number of ways; some of these are addressed in **Table 2.2**.

Table 2.2: *Dealing with uncertainty (Natural England, Draft 2009)*

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 not be included because although they have important implications for spatial planning, 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 result in unnecessary duplication. There is a need to focus the Habitat Regulations Assessment on the proposals directly promoted by the plan, and not all proposals for development and change; especially where these are planned and regulated through other statutory procedures, which will be subject to a Habitat Regulations Assessment.
Planning Hierarchy Uncertainty
The higher the level of a plan in the hierarchy, the more general and strategic its provisions are, 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. It will be appropriate to consider relying on the Habitat Regulations Assessments of lower tier plans, in order for a LPA to ascertain that 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 Habitat 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. This is 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 Habitat Regulations Assessment of the plan or project at the lower tier is required as a matter of law or Government policy. It may be helpful for the Habitat Regulations Assessment of the higher tier plan… to indicate what further assessment may be necessary in the lower tier plan.

Implementation Uncertainty
It may be appropriate to impose a caveat within relevant policies, or introduce a free-standing policy in order to clarify the approach where there is uncertainty. The effects of policy depend on how the plan is implemented, and a caveat or free-standing policy could ensure compliance with the Regulations; which say 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. This would enable the assessors to reasonably conclude that if a plan could adversely affect the integrity of a European site it cannot draw support from the plan. This can be concluded even where there are different ways of implementing a plan, and where the plan applies the precautionary principle.

This page is intentionally blank for the purposes of double-sided printing.

3 European sites

3.1 Introduction

3.1.1 This chapter identifies and describes European sites within proximity to Birmingham. It includes information about location, nature conservation features and known vulnerabilities.

3.2 Scope

3.2.1 Each site of European importance has its own intrinsic qualities, besides the habitats or species for which it has been designated, that enable the site to support its ecosystems. 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 development generates; and the resource uses (during construction and operation for instance).

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

3.2.3 The list of criteria in **Table 3.1** has been used to identify for European sites relevant to this HRA. An indicative 20km search area has been used to identify European sites in geographic proximity to the plan area; other sites beyond this zone have been included if a physiographic link is demonstrable.

3.3 Ecological information

3.3.1 **Appendix A** presents full details of each European site. The information is drawn from the Joint Nature Conservancy Council (JNCC) and Natural England (NE) and Countryside Council for Wales (CCW). Information has been categorised on the following basis:

- **Location:** Local authority area, easting and northing or national grid reference, and area (ha);
- **Coincident Sites:** Other nationally and internationally designated sites which overlap with the site of interest;
- **Broad Habitat Class:** The extent of key habitats covering the site;
- **Qualifying Features:** Each sites qualifying features (that is, the reasons for which the sites were designated);
- **Ecological Description:** Description of the site including features of note;
- **Conservation Objective:** Natural England has prepared conservation objectives for all Natura 2000 sites in England. Progress towards achieving

these objectives can be taken as an indicator of favourable condition at each European site. Ramsar sites do not have agreed conservation objectives, but often overlap with the site boundaries of SPAs. However, it should be noted that Ramsar qualifying features include a range of habitats and non-bird species common to SAC designations, as well as bird species and assemblages and their supporting habitats, which are common to SPAs;

- **Condition, Status and Trends:** The condition of ecological or environmental features of the site, where known. Please note, this often relates to condition assessments for Sites of Special Scientific Interest, which does not necessarily fully reflect the conservation status of a European site; and
- **Key Vulnerabilities and Environmental Conditions:** The distinctive characteristics that make each site potentially vulnerable to a variety of impact inducing activities.

Table 3.1: Criteria for identification of European sites

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 case of 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 an 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	Such European sites in the plan area.
	Such 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).
	Such 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 would 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.

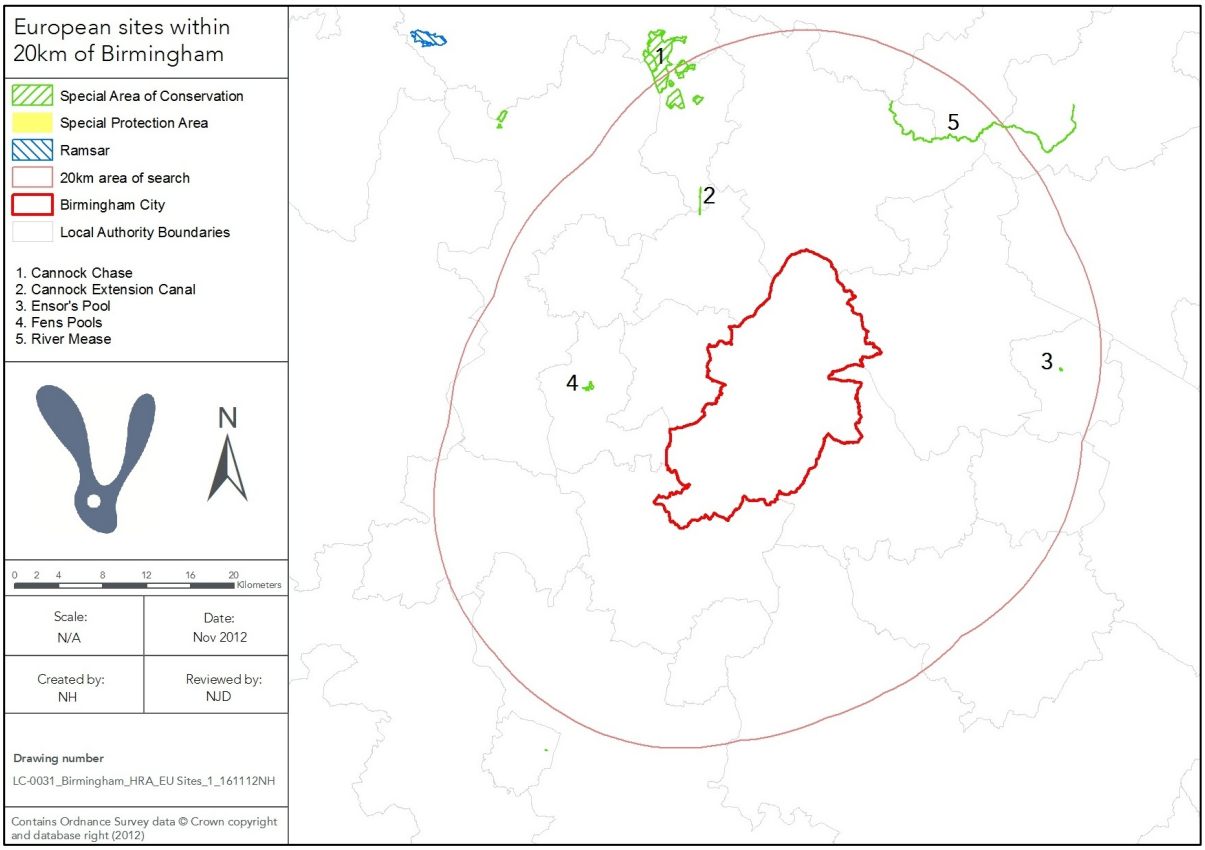

Figure 3.1: Location of European sites within proximity to Birmingham

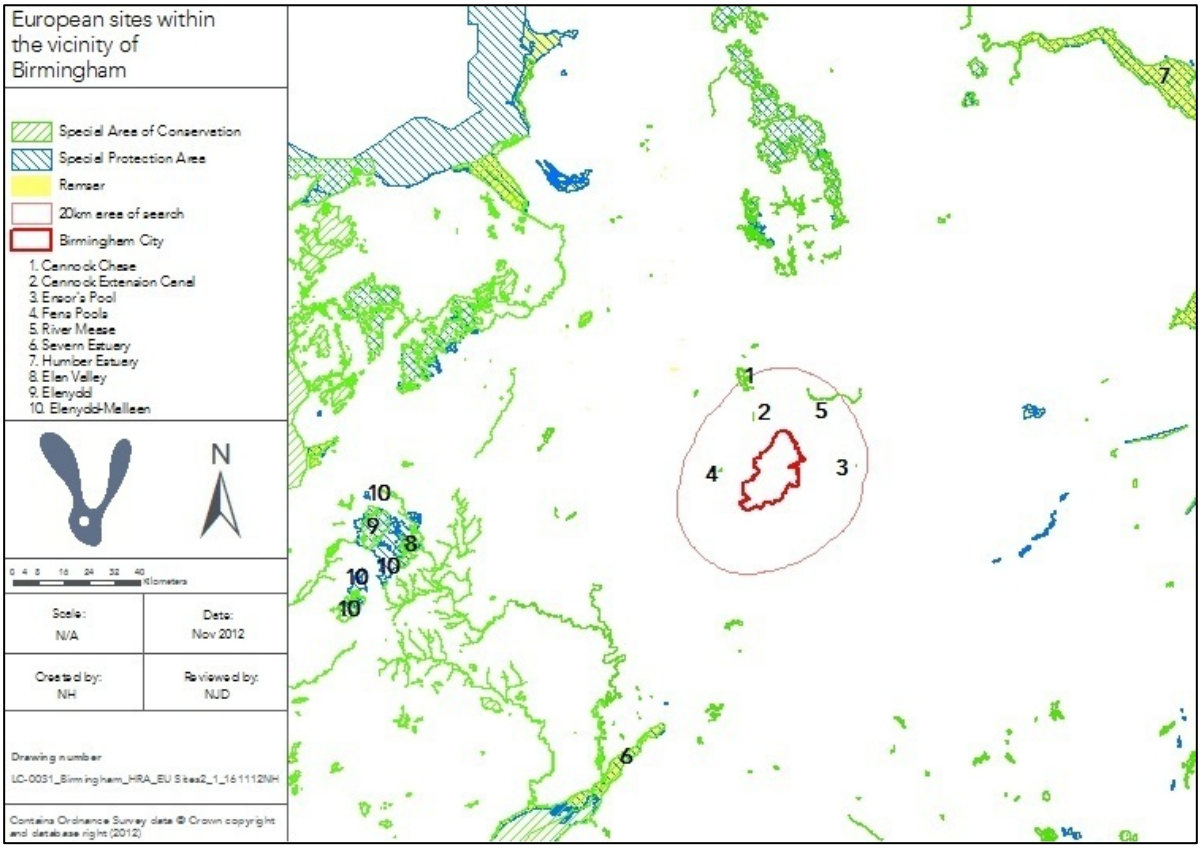

Figure 3.2: Location of European sites with physiographical links to Birmingham

3.3.2 Using the 20km search area and having identified physiographic links as part of a wider zone of influence, 14 European sites were identified. These are presented in Table 3.2.

Table 3.2: European sites within the vicinity of, or connected physiographically to, Birmingham

Site name	Location
Cannock Chase SAC	Within 20km of Birmingham
Cannock Extension Canal SAC	Within 20km of Birmingham
Elan Valley Woodland / Coetiroedd Cwm Elan SAC	Within potential zone of influence
Elenydd SAC	Within potential zone of influence
Ensor's Pool SAC	Within 20km of Birmingham
Fens Pools SAC	Within 20km of Birmingham
Humber Estuary SAC	Within potential zone of influence
River Mease SAC	Within 20km of Birmingham
Severn Estuary SAC	Within potential zone of influence
Elenydd-Mallaen SPA	Within potential zone of influence
Humber Estuary SPA	Within potential zone of influence
Severn Estuary SPA	Within potential zone of influence
Humber Estuary Ramsar	Within potential zone of influence
Severn Estuary Ramsar	Within potential zone of influence

3.4 Site vulnerabilities

3.4.1 Site vulnerabilities have been identified and collated into Table 3.3 to assist in determining likely effects. Original data was sourced from the JNCC, CCW and Natural England.

Table 3.3: Identified vulnerabilities of European sites

Site name	Vulnerabilities
Cannock Chase SAC	• Disturbance and recreational pressures; • Site management; • Previous site activities (mining) can detrimentally effect hydrology; and • Water resources.
Cannock Extension Canal SAC	• Dependent upon use (boat traffic); • Recreational pressures; and • Water quality through surface water runoff.
Elan Valley Woodland / Coetiroedd Cwm Elan SAC	• Livestock and overgrazing; • Appropriate management; • Fire risk; • Anti-social behaviour (motorcycles); • Illegal moss gathering; and • Acid and nutrient deposition;
Elenydd SAC	• Livestock and overgrazing; • Poor management practices; • Uncontrolled fires damaging blanket bog vegetation; • Recreational pressures (from motorcycles); • Acid and nutrient deposition altering vegetation and resulting in water-based eutrophication; and • Fly tipping.
Ensor's Pool SAC	• Pollution; • Uncontrolled access; and • Introduction of non-native crayfish (competitors).
Fens Pools SAC	• Appropriate management; • Water quality; • Disturbance; and • Potential historical land contamination.
Humber Estuary SAC	• Coastal squeeze and changes in physical processes; • Flood defence works; • Dredging; • Construction and existing development; • Operation and maintenance of ports, pipelines and other infrastructure; • Water quality and flow; and • Disturbance and recreational pressures.
River Mease SAC	• Water resources; • Water quality; • Diffuse pollution; and • Excessive sedimentation.
Severn Estuary SAC	• Large-scale anthropogenic interference; • Land-claim; • Aggregate extraction; • Commercial construction activities (Barrage construction);

	• Flood defences; • Industrial pollution; and • Disturbance and recreational pressures.
Elenydd-Mallaen SPA	• Overgrazing; • Excessive burning; • Disturbance and recreational pressures; and • Inappropriate management.
Humber Estuary SPA	• Coastal squeeze and changes in physical processes; • Flood defence works; • Dredging; • Construction and existing development; • Operation and maintenance of ports, pipelines and other infrastructure; • Water quality and flow; and • Disturbance and recreational pressures.
Severn Estuary SPA	• Large-scale anthropogenic interference; • Land-claim; • Aggregate extraction; • Commercial construction activities (Barrage construction); • Flood defences; • Industrial pollution; and • Disturbance and recreational pressures.
Humber Estuary Ramsar	• Disturbance to vegetation through cutting/clearing; • Vegetative succession; • Water resources (domestic/industrial/agricultural); • Overfishing; • Water quality and pollution (domestic and agricultural) • Disturbance and recreational pressures; • Coastal squeeze; and • Flood defences.
Severn Estuary Ramsar	• Dredging; • Erosion; and • Disturbance and recreational pressures.

4 Screening results

4.1 Assessment of green belt options

4.1.1 Each green belt option has been assessed against the identified vulnerabilities of the 14 European sites identified in **Table 3.2**.

4.2 Initial Screening Results

4.2.1 The following European sites have been screened out from further assessment for a variety of reasons:

- Cannock Chase Extension Canal SAC;
- Ensor's Pool SAC;
- Fens Pools SAC; and
- The River Mease SAC.

4.2.2 **Cannock Chase Extension Canal SAC** is an example of an anthropogenic lowland habitat. The SAC supports extensive populations of floating water-plantain (*Luronium natans*). The site is home to diverse aquatic flora and invertebrate species. JNCC data indicates that the SAC is reliant upon boat traffic to depress the growth of emergent species. Vulnerabilities include recreational pressures and surface water runoff. It is unlikely that development of the BDP green belt options will significantly increase recreational pressures or increase surface water runoff at the SAC.

4.2.3 **Ensor's Pool SAC** comprises a small 1ha former brick pit in a larger 3.8ha site. The SAC is important for its very large population (population estimates 50,000) of white-clawed crayfish (*Austropotamobius pallipes*). The site is isolated from surrounding river systems and represents a good example of a refuge site. JNCC data indicates that the SAC is vulnerable to pollution, uncontrolled access and the introduction of non-native species. The site is located on the southern edge of Nuneaton, adjacent to residential properties, a local industrial estate and open agricultural land.

4.2.4 The small size of the site, distance from Birmingham (approx. 20km) and few features of interest, limits its value as a recreational site. The site is isolated from surrounding river systems and is unlikely to be impacted by development in Birmingham.

4.2.5 **Fens Pools SAC** comprises three canal feeder reservoirs and a series of smaller pools. The site shows evidence of past industrial activities and includes a wide range of habitats from open water, swamp, fen and inundation communities to unimproved neutral and acidic grassland and scrub. Great crested newts (*Triturus cristatus*) occur as part of an important amphibian assemblage. The site has a number of identified vulnerabilities including changes in water quality; disturbance pressures; and requires appropriate management to control fish species. There is also an indication of previous historical contamination.

4.2.6 It is unlikely that recreational pressures and disturbance will be exacerbated by the BDP options. This is the result of the sites distance from the green belt options (approximately 20km). The SAC has limited hydrological connections with surrounding canals, watercourses and surface water systems and appears to be primarily fed by rainfall and local-runoff.

4.2.7 **The River Mease SAC** is a watercourse that flows westward through North West Leicestershire. The River Mease is a small tributary of the River Trent and has retained a reasonable degree of channel diversity compared to other similar rivers. The SAC is designated for its populations of spined loach (*Cobitis taenia*) and bullhead (*Cottus gobio*). These species are dependent upon the sandy sediments and extensive beds of aquatic vegetation within the watercourse. The SAC also supports populations of White-clawed crayfish (*Austropotamobius pallipes*) and otter (*Lutra lutra*). Site vulnerabilities include water resources, excessive sedimentation and diffuse pollution.

4.2.8 The BDP green belt options and the SAC are located within the Tame, Anker and Mease river catchment area. The SAC is isolated from connections to Birmingham and flows directly into the River Trent, some 17km north of Birmingham, and downstream of the point as which the River Tame enters the River Trent. Water supplied to Birmingham is understood not to use the River Mease. This issue will be confirmed with Severn Trent Water.

4.3 Screening: Potential Impacts

4.3.1 According to **Table 4.1**, ten remaining sites could be affected by the BDP options:

- Cannock Chase SAC;
- Elan Valley SAC;
- Elenydd SAC;
- Elenydd-Mallaen SPA;
- Severn Estuary SAC;
- Severn Estuary SPA;
- Severn Estuary Ramsar;
- Humber Estuary SAC;
- Humber Estuary SPA; and
- Humber Estuary Ramsar.

4.3.2 The nature of these potential effects is discussed in **Chapter 5**.

Table 4.1: Assessment of green belt options

Green belt options	Potential significant effects			
	Air quality	Disturbance and Recreational Pressures	Water Resources	Water Quality
A1	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER
A2	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER
B1	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER
B2	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER
C1	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER
C2	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER
D1	CC	CC	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER	EV, ED, EM, SESA, HESA, SESP, HESP, SER, HER

European site	Designation	Site code
Cannock Chase	SAC	CC
Elan Valley	SAC	EV
Elenydd	SAC	ED
Severn Estuary	SAC	SESA
Humber Estuary	SAC	HESA
Elenydd-Mallaen	SPA	EM
Severn Estuary	SPA	SESP
Humber Estuary	SPA	HESP
Severn Estuary	Ramsar	SER
Humber Estuary	Ramsar	HER

This page is intentionally blank for the purposes of double-sided printing.

5 Nature of effects

5.1 Introduction to effects

5.1.1 This chapter presents a detailed commentary on the potential effects of the BDP green belt options upon European sites.

5.2 Air quality

5.2.1 Impacts on air quality can be caused by various development activities or associated development outcomes. The primary impact will be through increased car use and commuting. There are a variety of air pollutants that can have an adverse effect upon ecological features. These pollutants include:

- **Nitrous oxides (NO_x):** formed during combustion, the principal source of NO_x is road traffic leading to high concentrations in urban areas. Nitrogen deposition from atmospheric pollution can have serious effects on nitrogen-limited habitats by increasing soil fertility. The most acute effects of NO_x are experienced within 200m of the roadside.
- **Ammonia (NH_x):** a major source of nitrogen deposition resulting from agricultural and industrial processes. Ammonia produced in catalytic converters can also deposit nitrogen on vegetation short distances from roads.
- **Sulphur dioxide (SO_2):** a less prominent pollutant due to tighter regulations over the last 50–60 years. Significant volumes of sulphur dioxide are still emitted by coal-fired power stations (69% of the UK total). Sulphur dioxide can combine with water to produce acid rain. Both wet and dry deposition can lead to serious degradation of soils and watercourses.
- **Low-level ozone (O_3):** this secondary pollutant is produced during a complex chemical reaction between nitrogen dioxide, hydrocarbons and sunlight. Ozone is absorbed through a plant's stomata and can cause cell and leaf damage, reducing growth and yield.
- **Dust:** not normally associated with tarmaced roads. But heavy goods movements can deposit significant amounts of dust within short distances of roadsides. In high concentrations, dust can smother vegetation, preventing light penetration to the chloroplasts and blocking stomata, consequently preventing photosynthesis and evapotranspiration.

5.2.2 Cannock Chase SAC has been identified as potentially vulnerable to air quality impacts including increased nutrient levels through atmospheric deposition. Cannock Chase SAC comprises a remnant area of lowland heathland approximately 20km to the north of Birmingham.

5.2.3 Many heathland species can only survive successfully on acidic soils with low nutrient availability. The addition of nutrients in rain or dust particles increases the nitrogen in the vegetation, litter and upper soil layers, and this builds up over time. The impacts upon the SAC could result in transition from heather to grass dominance, decline in lichens, changes in plant biochemistry, and increased sensitivity to abiotic stress.

5.2.4 The HRA screening report undertaken by UE Associates (2010) identified that the SAC may be vulnerable to exceedances in air pollutants caused by increased traffic along adjacent infrastructure routes. Footprint Ecology undertook work on behalf of five local authorities surrounding or adjacent to the SAC. The report "Evidence Base relating to Cannock Chase SAC and the Appropriate Assessment of Local Authority Core Strategies" (2009) indicates that nitrogen at Cannock Chase SAC exceeds the maximum critical load for designated site features. Increases in nitrogen deposition from new development will only contribute to further adverse effects.

5.2.5 The report identifies that approximately one third of the SAC is within proximity (200m) to road. Additionally, local data was collected from Birches Valley, a site 1.5km from the SAC over a 12-year period. The data displays year-on-year fluctuations of NO_x with a progressive negative trend. This indicates a steady decrease in concentrations of atmospheric nitrogen. Air Pollution Information System (APIS) data was consulted for confirmation. APIS data indicates that the important habitats, for which the site is designated, experience total deposition of nitrogen with exceedance in recommended critical loads.

5.2.6 This downward trend will have positive effects on the SAC's present condition.

5.2.7 Recent research to explore the effect of visitor pressure at the SAC has highlighted that Cannock Chase SAC has a recognisable zone of influence in terms of visitor origins. The report highlights that 75% of visitors to Cannock Chase travel from within 15km of the SAC boundary. Birmingham is entirely outside of this zone

5.2.8 The report does not confirm any figures for the number of people presently driving along any roads in the vicinity of the SAC from Birmingham. It only concludes that 25% of visits come from a distance of greater than 15km. This can include anywhere, in any direction, from no matter how far away. The green belt options are approximately 20-25km from the SAC. With the availability of alternative visitor locations such as Sutton Park, the BDP options may contribute to impacts upon European sites but are unlikely to result in significant effects to air quality alone since the total number of vehicle movements at the SAC resulting from development in the green belt are likely to be insignificant.

5.2.9 In-combination effects on air quality at Cannock Chase SAC should be revisited when screening of the BDP is undertaken in 2013.

5.3 Disturbance and recreational pressures

5.3.1 JNCC data and published information for Cannock Chase indicates a vulnerability to recreational pressures including dog walking, horse riding and mountain biking. These recreational pressures can result in adverse effects upon the integrity of important site features. The main problems are fragmentation of habitat from a multiplicity of paths and tracks; track and path widening with erosion; trampling and compaction; possibly horse riders and cyclists riding beyond bridleways; eutrophication from dog excrement; traffic on adjoining roads; and disturbance from people and dogs.

5.3.2 Disturbance and recreation effects are dependent upon a range of variables. These include site location, seasonal variation, habitat structure and species composition. European sites can be affected in different ways, as can the various species they support.

5.3.3 The Birmingham BDP outlines that the population of Birmingham is set to increase by 150,000 with approximately 80,000 new homes. Cannock Chase SAC represents an important resource within the West Midlands.

5.3.4 The Cannock Chase Visitor Impacts Mitigation Report (2012) indicates that visitors to the SAC come from a wide area. The report shows that 75% of all visitors are from a zone of 15km or less from the edge of the SAC. Birmingham is beyond of this area of influence. The report indicates that the greatest number of visitors originate from the north and south of the SAC and that highest visitor rates originate from the north, east and west. It is likely that some residents of Birmingham visit Cannock Chase SAC; the data has not considered whether Birmingham residents visit recreational sites within closer proximity such as Sutton Park. Further research is needed in this respect. From available information at the time of writing, the BDP options are unlikely to result in significant effects upon site integrity alone.

5.3.5 In-combination effects on recreation at Cannock Chase SAC should be revisited when screening of the BDP is undertaken in 2013.

5.4 Water resources

5.4.1 The BDP outlines new housing for Birmingham through to 2031. The plan states that future housing requirements for Birmingham includes approximately 80,000 new homes. The provision of new housing and associated jobs, services and infrastructure will increase the demand for water. 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, have prepared water resource management plans (WRMP) to cover the next 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.

5.4.2 The SSW WRMP indicates that the water authority has sufficient supply-demand balance and can meet forecast demand. The WRMP states that "The Company has sufficient resources to meet forecast demand plus target headroom for annual average and peak week conditions throughout the plan period. There is no requirement for either supply or demand interventions".

5.4.3 The WRMP for STW indicates that the overall aim of the supply-demand strategy is to "achieve and maintain the level of headroom necessary to ensure we can deliver our target levels of service at least cost to customers, whilst minimizing the impact on the environment". To achieve this, STW propose a range of water sustainability measures aiming to maximize the sustainable use and integration of the network. These include the reduction of leakage; the development of new resources; increases in water efficiency programmes and water recycling for businesses and consumers; acceleration of the installation of water meters; and increases in the scope for water transfer across the region and between water companies.

5.4.4 The STW WRMP identified that the city is within the Birmingham Water Resource Zone. The majority of water is supplied from the Elan Valley Reservoir via the Elan Valley Aqueduct. The Elan Valley represents a concentration of European sites including Elan Valley SAC, Elenydd SAC and Elenydd-Mallaen SPA. The Catchment Abstraction Management Strategy (CAMS) for the River Wye indicates that these sites may be affected by water availability.

5.4.5 Water from the Elan Valley Aqueduct is supplemented through abstraction from the River Severn at Trimpley and through the development of the Birmingham Groundwater Scheme. STW has the capability to transport water around the network or from adjoining water companies should it be required. Water transfer around the STW network and from adjacent water authorities could result in impacts upon water vulnerable European sites at the Elan Valley, Severn and Humber Estuaries.

5.5 Water quality

5.5.1 The development of new homes requires the delivery of new infrastructure. This includes the provision of connections to the foul water and surface water drainage networks. Discharges of effluent are strictly determined, monitored and regulated by the Environment Agency. It is within the EA's remit to ensure that effluent discharge does not adversely affect the integrity of European sites. The acceptable level of discharge determined by the EA is directly related to the sensitivity of the receiving waters and whether or not it has been designated as such under environmental protection legislation.

5.5.2 Wastewater from Birmingham is treated via the STW network, at the Minworth Sewage Treatment Works in Sutton Coldfield. Minworth is one of the largest treatment works in the UK. The treated effluent is discharged into the River Tame. The Tame forms an important tributary of the River Trent, which in turn flows into the Humber Estuary. The Humber Estuary has three important European sites (SAC, SPA and Ramsar). The Humber Estuary sites have identified vulnerabilities relating to water quality through effluent discharge and pollution.

5.6 Findings

5.6.1 The findings of this assessment indicate that the BDP options could result in potential adverse effects upon the integrity of European sites but that the extent of effects and details about whether or not any effect is significant is unknown at this stage.

5.6.2 In-combination air quality and recreation effects at Cannock Chase need to be revisited during the next round of screening to be prepared when the next iteration of the BDP is next published (due 2013).

5.6.3 Water issues, including abstraction of water and discharges of effluent affecting water quality, potentially affect nine European sites. Before the next round of screening is prepared, consultation should be undertaken with the Environment Agency and the relevant water authorities to confirm:

- Sufficient supply-demand balance for the duration of plan;
- Sufficient capacity of wastewater treatment for projected population increases; and
- Identify the environmental capacity of receiving waters.

6 Conclusions

6.1 Introduction

6.1.1 This document sets out the screening assessment findings in relation to HRA for the Birmingham Development Plan Options Consultation 2012.

6.2 Findings

6.2.1 Of the 14 European sites identified through this assessment, four were screened out during the initial screening phase. These European sites have been discounted from further assessment for a variety of reasons, including distance from Birmingham and lack of viable links by which impacts could be transferred. Screened out sites were as follows:

- Cannock Chase Extension Canal SAC;
- Ensor's Pool SAC;
- Fens Pools SAC; and
- The River Mease SAC.

6.2.2 Ten European sites were unable to be discounted, and were brought forward for further assessment. These sites were:

- Cannock Chase SAC;
- Elan Valley SAC;
- Elenydd SAC;
- Elenydd-Mallaen SPA;
- Severn Estuary SAC;
- Severn Estuary SPA;
- Severn Estuary Ramsar;
- Humber Estuary SAC;
- Humber Estuary SPA; and
- Humber Estuary Ramsar.

6.2.3 Potential significant effects require further exploration before screening of the BDP takes place. This can be done with the planning policy team as the content of the BDP is refined. It is too early at this stage in the plan making process to confirm these effects.

6.3 Next steps

6.3.1 The next stages of work will consider in combination effects on (i) air quality, and (ii) disturbance and recreational pressures at Cannock Chase SAC.

6.3.2 In terms of water quality and supply, consultation should be undertaken with the Environment Agency and the relevant water authorities to provide comments on the effects of the BDP Options and confirm water cycle study information including:

- Sufficient supply-demand balance for the duration of plan;

- Sufficient capacity of wastewater treatment for projected population increases; and
- Identify the environmental capacity of receiving waters.

This page is intentionally blank for the purposes of double-sided printing.

References

Birmingham City Council (2010) The Birmingham Core Strategy 2026 Consultation Draft. Available at: http://www.birmingham.gov.uk/cs/Satellite?c=Page&childpagename=SystemAdmin%2FCFPageLayout&cid=1223092558835&packedargs=website%3D4&pagename=BCC%2FCommon%2FWrapper%2FCFWrapper&rendermode=live

Birmingham City Council (2012) The Birmingham Development Plan 2031 Options Consultation. Available at: http://www.birmingham.gov.uk/corestrategy

Birmingham City Council (2012) Aston, Newtown and Lozells Area Action Plan. Available at: http://www.birmingham.gov.uk/astonaap

Department for Communities and Local Government (DCLG 2006) Planning for the Protection of European Sites: Appropriate Assessment. Consultation Draft

Department for Communities and Local Government (DCLG 2012) National Planning Policy Framework (NPPF). Available at: http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf

Department for the Environment, Food and Rural Affairs (DEFRA 2008) Future Water – The Government's water strategy for England

Department for Transport (DfT, 2005) Interim Advice Note 61/05: Guidance for Undertaking Environmental Assessment of Air Quality for Sensitive Ecosystems in Internationally Designated Nature Conservation Sites and SSSIs (Supplement to DMRB 11.3.1)

Dore CJ et al (2003) UK Emissions of Air Pollutants 1970 – 2003. UK National Atmospheric Emissions Inventory

Environment Agency (2007) The Staffordshire Trent Valley Catchment Abstraction Management Strategy. Available at: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/gemi0507bmgj-e-e.pdf

Environment Agency (2008) The Wye Catchment Abstraction Management Strategy. Available at: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/gewa1207bnjw-e-e.pdf

Environment Agency (2008) Tame, Anker and Mease Catchment Abstraction Strategy. Available at: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/gemi0308bnpr-e-e.pdf

Environment Agency (2009) River Basin Management Plan, Humber River Basin District. Available at: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/gene0910bsqr-e-e.pdf

Environment Agency (2009) River Basin Management Plan, Severn River Basin District. Available at: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/gemi0910bssk-e-e.pdf

Environment Agency (2009) Water Cycle Studies Guidance. Available at: http://cdn.environment-agency.gov.uk/geho0109bpff-e-e.pdf

Environment Agency (2010) Interim SE Wales Licensing Policy. Available at: http://www.environment-agency.gov.uk/static/documents/Leisure/Interim_SE_Wales_Licensing_Policy_April_2011_interim.pdf

Environment Agency (2010) Managing water abstraction. Available at: http://a0768b4a8a31e106d8b0-50dc802554eb38a24458b98ff72d550b.r19.cf3.rackcdn.com/geho0310bsbh-e-e.pdf

European Commission (2001) Assessment of plans and projects significantly affecting Natura 2000 Sites: Methodological Guidance on the Provisions of Article 6(3) and 6(4) of the Habitats Directive

European Union (1979) Directive 79/409/EEC on the conservation of wild birds (the Bird Directive)

European Union (1992) Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive)

HM Government (2003) The Air Quality Limit Values Regulations 2003. Available at: http://www.legislation.gov.uk/uksi/2003/2121/contents/made

Laxen and Wilson (2002) A New Approach to Deriving NO_2 from NO_x for Air Quality Assessments of Roads.

Liley, D., Underhill-Day, J.C., White, J. & Sharp, J. (2009) Evidence Base Relating to Cannock Chase SAC and the Appropriate Assessment of Local Authority Core Strategies. Unpublished Report, Footprint Ecology. Available at: http://www.lichfielddc.gov.uk/site/scripts/download_info.php?downloadID=1157&fileID=3219

Natural England (2009) Local Development Plan Documents under the Provisions of the Habitats Regulations. Prepared by David Tyldesley & Associates

Scottish Natural Heritage (2010) Habitats Regulations Appraisal of Plans: Guidance for Plan-Making Bodies in Scotland. Prepared by David Tyldesley & Associates

Severn Trent Water (2010) Water Resource Management Plan – Final Version. Available at: http://www.stwater.co.uk/upload/pdf/Final_WRMP_2010.pdf

South Staffs Water (2009) Final Water Resources Management Plan. Available at: http://www.south-staffs-

water.co.uk/publications/community_environment/FinalWaterResourcesPlan_Section1.pdf

UE Associates (2010) Habitats Regulations Assessment for the Birmingham Core Strategy – Screening Statement. Available at: http://www.birmingham.gov.uk/cs/Satellite?c=Page&childpagename=Development-Planning%2FPageLayout&cid=1223346397007&pagename=BCC%2FCommon%2FWrapper%2FWrapper

Underhill-Day, J & Liley, D (2012) Cannock Chase Visitor Impacts Mitigation Report. Footprint Ecology

United Nations Educational, Scientific and Cultural Organisation (UNESCO) (1971) Convention on Wetlands of International Importance especially as Waterfowl Habitat. (Ramsar (Iran), 2 February 1971, UN Treaty Series No. 14583)

This page is intentionally blank for the purposes of double-sided printing

Appendix A: European sites

Cannock Chase Special Area of Conservation

Site characteristics			
Location / NGR / Area	Staffordshire	SJ982188	1235.93ha
Coincident sites	Cannock Chase SSSI		
Broad habitat classes	• 0.5% - Inland water bodies (standing water, running water); • 76.3% - Heath, scrub, maquis and garrigue. Phygrana; • 12.0% - Coniferous woodland; • 10.5% - Non-forest areas cultivated with woody plants (including orchards, groves, vineyards, dehesas; and • 0.7% - Other land (including towns, villages, roads, waste places, mines, industrial sites).		
Ecological description	The area of lowland heathland at Cannock Chase is the most extensive in the Midlands, although there have been losses due to fragmentation and scrub/woodland encroachment. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and those of southern counties. Dry heathland communities belong to NVC types H8 *Calluna vulgaris – Ulex gallii* and H9 *Calluna vulgaris – Deschampsia flexuosa* heaths. Within the heathland, species of northern latitudes occur, such as cowberry *Vaccinium vitis-idaea* and crowberry *Empetrum nigrum*. Cannock Chase has the main British population of the hybrid bilberry *Vaccinium intermedium*, a plant of restricted occurrence. There are important populations of butterflies and beetles, as well as European nightjar *Caprimulgus europaeus* and five species of bats.		
Qualifying features	European dry heaths	Annex I habitat (Primary reason for designation)	
	Northern Atlantic wet heaths with *Erica tetralix*	Annex I habitat (not primary reason for designation)	
Conservation objectives	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.
Condition status and trends	The Water Framework Objective status is unavailable
	Cannock Chase SSSI There are 35 component SSSI units. Currently 5.50% is in favourable condition, 92.65% is unfavourable recovering and 1.85% in unfavourable no change.
Key environmental conditions supporting site integrity	• Recreational pressures; • Site management; • Water abstraction; and • Effects of previous site activities (mining).

Cannock Chase Extension Canal Special Area of Conservation

Site characteristics			
Location / NGR / Area	Staffordshire; Walsall	SK020058	5.47
Coincident sites	Cannock Extension Canal SSSI		
Broad habitat classes	• 75% - Inland water bodies (standing water, running water); • 10% - Humid grassland and mesophile grassland; • 4.9% - Broad-leaved deciduous woodland; and • 10.1% - Other land (including towns, villages, roads, waste places, mines, industrial sites).		
Ecological description	Cannock Extension Canal in central England is an example of anthropogenic, lowland habitat supporting floating water-plantain *Luronium natans* at the eastern limit of the plant's natural distribution in England. A very large population of the species occurs in the Canal, which has a diverse aquatic flora and rich dragonfly fauna, indicative of good water quality. The low volume of boat traffic on this terminal branch of the Wyrley and Essington Canal has allowed open-water plants, including floating water-plantain, to flourish, while depressing the growth of emergents.		
Qualifying features	Floating Water-plantain *Luronium natans* (an example of an anthropogenic lowland habitat supporting this species at the eastern limit of this plant's English range.	Annex II species	
Conservation objectives	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.
Condition status and trends	The Water Framework Objective status is unfavourable
	Cannock Extension Canal SSSI (5.15ha) There are 2 component SSSI units. Currently 40.50%% is in favourable condition and 59.50% is unfavourable recovering.
Key environmental conditions supporting site integrity	• Dependent upon anthropogenic activities (boat traffic); • Recreational activities; and • Surface water runoff on water quality.

Elan Valley Woodlands / Coetiroedd Cwm Elan Special Area of Conservation

Site characteristics			
Location / NGR / Area	Powys	SN923638	439.53ha
Coincident sites	Elenydd – Mallaen SPA		
Broad habitat classes	• 23.4% - Heath, scrub, maquis and garrigue. Phygrana; • 6% - Dry grassland and steppes; • 68.8% - Broad-leaved deciduous woodland; and • 1.9% Inland rocks, screes, sands, permanent snow and ice.		
Ecological description	Elan Valley Woodlands is one of several sites representing old sessile oak wood in central Wales. The site is extensive, and comprises a series of woodland blocks with varying topography and underlying geology, and a wide range of structural types from dense closed canopy to open wood pasture with ancient trees, which support a rich invertebrate fauna. Sessile oak *Quercus petraea* predominates, with a typical upland acidic flora and rich lower plant assemblages including bryophytes such as *Bazzania trilobata, Plagiochila spinulosa* and *Saccogyna viticulosa*, and the lichens *Arthonia vinosa, Catillera sphaeroides* and *Thelotrema lepadinum*. The woods are also notable for their bird-life. They are all Special Protection Areas, and support breeding red kites *Milvus milvus*.		
Qualifying features	Old sessile oak woods with *Illex* and *Blechnum*	Annex I habitat (Primary reason for designation)	
	European dry heaths	Annex I habitat (not primary reason for designation)	
	Tilio-Acerion forests of slopes, screes and ravines	Annex I habitat (not primary reason for designation)	
Conservation objectives	**Old sessile oak woods with *Illex* and *Blechnum*:** • Old sessile oak woodlands remain a significant and conspicuous feature of the upland valley sides within the plan area. Those in the Elan and Claerwen valleys and Rhayader area, the Dinas and Gwenffrwd area of the upper Tywi valley and the Cothi valley to the north of Mynydd Mallaen are particularly well developed and extensive; • The boundary between the woodland and adjacent upland habitat is often a flexible one where trees regenerate on to open ground. At many locations oak woodland forms patches in 'ffridd' areas where there is less grazing pressure on the upland fringe;		

	• The oak woodland has of a variety of different structures and its character varies from place to place, ranging from long standing closed canopy areas to largely open wood pasture; • The dominant trees are sessile oaks, but in places birch is more conspicuous. Rowans and other trees occur as a minor component while at the foot of slopes where the oak woodland grades into wet woodland, there are some alders and willows. Non-native trees such as beech and sycamore will be present only in small numbers are generally scarce; • Under-storey shrubs are generally quite sparse, but scattered groups of hazel or holly will be found in some woods; • Ground cover varies widely. Parts will be bracken covered, others grassy, others again have a wider range of flowering plants and ferns and are often carpeted with bluebells in spring. On thin soils in shaded moist situations there are luxuriant carpets of mosses and liverworts, with or without under-shrubs like heather and bilberry; • The larger trees support a variety of lichens on their trunks and branches; • In each woodland block, trees in most age classes are present and veteran trees are prominent in some areas, particularly where there is wood pasture; • In all areas except wood pasture, there is evidence of actual regeneration in the form of seedlings and saplings or potential for regeneration, while in some wood pasture areas the planting and protecting of young trees, especially oak, may be appropriate; • Dead wood is well distributed and sometimes abundant, both lying on the woodland floor and occurring as standing dead trees or branches of trees; • The majority of the oak woodland has a closed canopy, but there are some clearings and much larger areas that are effectively wood pasture. These conditions should be sympathetic to the important populations of mosses and liverworts on the one hand and lichens on the other; • The oak woods support a characteristic assemblage of birds, such as wood warbler, pied flycatcher and redstart; • The pattern and distribution of grazed and un-grazed woods may change over time as different conservation needs arise; and • All factors affecting the achievement of these conditions are under control.
	European dry heaths: • The extent, quality and diversity of heath vegetation within the constituent sites is maintained and, where possible, degraded heath is restored to good condition; • The main heathland areas have a varied age structure with a mosaic of young heath, mature heath and degenerate heath; • Sunny slopes in certain areas support vegetation that includes bell heather and western gorse and steep north and east

	facing slopes have a rich variety of mosses and liverworts beneath the dwarf shrub canopy, including bog mosses in some areas; • Populations of uncommon plants, such as lesser twayblade, are stable or increasing; • The larger heathland areas provide suitable habitat for breeding birds, including red grouse and merlin; and • All factors affecting the achievement of these conditions are under control.
	Tilio-Acerion forests of slopes, screes and ravines: • Ash is prominent on some of the less acidic rock outcrops within the oak woodlands in the Elan and Claerwen valleys and Rhayader areas. Particularly well-developed stands of ash woodland can be found within the Coetiroedd Cwm Elan SAC at Cerrig Gwalch and at several locations within the Carn Gaffallt SSSI; • At Cerrig Gwalch, the rocks, ledges and damper soils in areas supporting ash woodland have plants that are typical of more fertile conditions, including dog's mercury, great woodrush, common dog-violet, meadowsweet, water avens, devil's-bit scabious, raspberry, lily-of-the-valley, stone bramble, slender St John's-wort, primrose, common valerian, ferns, wood sage, wild angelica, orpine, rock stonecrop, the locally rare lichen Peltigera leucoplebia, and a thriving population of mountain melick; • Some dead wood is present and this provides an important habitat for the woodland flora and fauna; • Generally, plants indicating disturbance and nutrient enrichment, such as large patches of nettles and cleavers, are not common and there are no extensive areas of bare ground within the woodland; • Non-native trees and shrubs, such as sycamore and conifers, are absent; and • All factors affecting the achievement of these conditions are under control.
Condition status and trends	The Water Framework Objective status is unavailable
	Old sessile oak woods with *Illex* and *Blechnum*: • Status within the Coetiroedd Cwm Elan SAC: Un-favourable. A condition assessment in 2004, in three site units where oak woodland is a key habitat, indicated that these units may be in favourable, maintained condition. However, in-appropriate grazing is still a problem in some units and this factor that is not yet under control.
	European dry heaths: • Status within the Coetiroedd Cwm Elan SAC: Favourable A condition assessment in 2004, in one site unit where dry heath is a key habitat, measured more than 1% cover of invasive rhododendron but other attributes measured fell within acceptable limits and the rhododendron has since been removed. Air pollution is not thought to be a significant problem

	in the sheltered woodland fringe areas.
	Tilio-Acerion forests of slopes, screes and ravines: • Status within the Coetiroedd Cwm Elan SAC & Cerrig Gwalch SSSI: Favourable. The key areas of ash woodland at Cerrig Gwalch are located on cliffs that are inaccessible to livestock and the habitat here is thought to be in favourable, maintained condition. The small patch of ash woodland within the SAC at Cnwch wood is believed to be in un-favourable, recovering condition.
Key environmental conditions supporting site integrity	• Livestock and grazing; • Some features dependent upon appropriate management; • Invasive species; • Fire risk from bracken litter; • Recreational pressures (illegal motorcycle use); • Moss gathering; and • Airborne acid and nutrient deposition.

Elenydd SAC

Site characteristics			
Location / NGR / Area	Caredigion; Powys	SN824704	8609.42ha
Coincident sites	Elenydd - Mallaen SPA		
Broad habitat classes	• 0.7% - Inland water bodies (standing water, running water); • 58% - Bogs, marshes, water fringed vegetation and fens; • 6.2% - Heath, scrub, maquis and garrigue. Phygrana; • 16.1% - Dry grassland and steppes; • 18.2% - Humid grassland, mesophile grassland; • 0.5% - Inland rocks, screes, sands, permanent snow and ice; and • 0.3% - Other land (including towns, villages, roads, waste places, mines and industrial sites).		
Ecological description	Elenydd comprises the largest tract of blanket mire within the central Wales uplands. Considerable areas of the habitat display signs of modification, with impoverished vegetation dominated by grasses and with reduced amounts of dwarf shrubs and widespread bog-mosses *Sphagnum spp*. Areas of good quality mire are typically fragmented by species-poor vegetation dominated by purple moor-grass *Molinia caerulea*. However, there are extensive stands of M18 *Erica tetralix – Sphagnum papillosum* mire that contain locally abundant bog- rosemary *Andromeda polifolia*, as well as areas of mire in which heather *Calluna vulgaris* and hare's-tail cottongrass *Eriophorum vaginatum* are dominant. Areas of hummock and hollow surface patterning are found locally. Heavy metals have been extracted from the Ystwyth Valley for over 1000 years. At Cwm Ystwyth this activity has left extensive areas of rock outcrop, scree, spoil-heaps and abandoned shafts, adits and buildings variously affected by heavy metals available for colonisation by heavy metal-tolerant plant species. Lichens and bryophytes are a notable component of the developing flora and include a number of scarce species such as *Vezdaea cobria, Lecanora handelii, Gyalidea subscutellaris* and *Ditrichum plumbicola*. The remote Elenydd lakes are amongst the best upland oligotrophic lakes in Wales and have been relatively untouched by abstraction and water-level modification. Their populations of floating water-plantain *Luronium natans* show a highly natural submerged distribution, in association with a wide range of associated species, and are an apparently ancient refuge site secure from the intensification which has afflicted lowland populations.		
Qualifying features	Blanket bogs	Annex I habitat (Primary reason for designation)	
	Calaminarian grasslands of the *Violetalia calaminariae*	Annex I habitat (Primary reason for designation)	

	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*	Annex I habitat (Not primary reason for designation)
	European dry heaths	Annex I habitat (Not primary reason for designation)
	Floating water-plantain	Annex II species (primary reason for designation)
Conservation objectives	**Blanket bogs:** • The extent, quality and diversity of blanket bog vegetation within the constituent sites is maintained and, where possible, degraded bog is restored to good condition; • Populations of uncommon bog plants, such as tall bog-sedge, slender sedge, magellanic bog-moss and round-fruited collar-moss, are stable or increasing; • The bogs continue to provide suitable habitat for breeding birds, including golden plover, dunlin and red grouse, and invertebrates, such as large heath butterfly; • Peat profiles containing important pollen records are maintained; and • All factors affecting the achievement of these conditions are under control.	
	Calaminarian grasslands of the *Violetalia calaminariae:* • The habitat covers at least its current measured area; • Lichens dominate large blocks of metal rich spoil from mine workings, tips, walls and other built structures; • Lichens, mosses, ferns and a few higher plants such as sea campion are present on rock outcrops in cliffs, open cuts and about the entrances to shafts and adits. On open, usually level ground, plant communities are found represented by the moss genus Weissia and a range of crustose metallophyte lichens. The moss Ditrichum plumbicola and sea campion occur in the most base-rich areas, usually associated with scattered lime mortar from adjacent buildings; • Heath, shrub, trees or other woody species are scarce or absent; • Light grazing prevents the growth of tall herbs, scrub and woodland. Grazing levels are carefully managed to avoid undesirable levels of ground disturbance; • Areas of disturbed bare ground occupy less than 10% of potential areas that could be occupied by this habitat. • There is less than 1% cover of non-native plants; • There is no newly dumped material; • The habitat is spreading gradually across this extensive site wherever suitable conditions exist; and • All factors affecting the achievement of these conditions are under control.	

	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea:* • The plan area contains several upland lakes with mildly acidic, nutrient-poor (oligotrophic) water and fairly stoney beds. Water plants found here include shoreweed, water lobelia, alternate water- milfoil, quillwort, spring quillwort, bulbous rush, floating bur-reed, broad-leaved pondweed, intermediate water-starwort and water moss; • Fully developed oligotrophic lake vegetation is present in each of the lakes, including all of the component species typical of the SAC feature, as represented in the Elenydd SAC; • For each of the lakes where it occurs, the extent and species composition of the oligotrophic lake vegetation is stable or increasing in range and/or diversity; • The rare stonewort Nitella gracillis, scarce six-stamened waterwort and awlwort are found in Llyn Gynon. Six-stamened waterwort is also found growing in shallow water on the stony bed of Dolymynach Reservoir; • Populations of these water plants are all stable or increasing and the water quality of the lakes remains suitable for their survival in the long term; • Plants indicating unfavourable condition for this feature e.g. filamentous algae associated with eutrophication and invasive non-native species will absent or maintained or restored below an acceptable threshold level; • With the exception of Dolymynach Reservoir, near-natural hydrological and geomorphological processes and forms will be operating in the lakes e.g. water levels, water depth, stability of bed substrate, with no artificial regulation of water levels or altered sediment regimes; • Low nutrient and shade levels are maintained; and • All factors affecting the achievement of these conditions are under control.
	European dry heaths: • The extent, quality and diversity of heath vegetation within the constituent sites is maintained and, where possible, degraded heath is restored to good condition; • The main heathland areas have a varied age structure with a mosaic of young heath, mature heath and degenerate heath; • Sunny slopes in certain areas support vegetation that includes bell heather and western gorse and steep north and east facing slopes have a rich variety of mosses and liverworts beneath the dwarf shrub canopy, including bog mosses in some areas; • Populations of uncommon plants, such as lesser twayblade, are stable or increasing;

	• The larger heathland areas provide suitable habitat for breeding birds, including red grouse and merlin; and • All factors affecting the achievement of these conditions are under control.
	Floating water-plantain: • The floating water-plantain populations are viable throughout their current distribution in the plan area (maintaining themselves on a long-term basis), namely in Llyn Cerrigllwydion Uchaf, Llyn Cerrigllwydion Isaf, Gwynllyn and Llyn Gynon; • Each floating water-plantain population will be able to complete sexual and/or vegetative reproduction successfully; • Potential for genetic exchange between floating water-plantain populations, in and/or outside the plan area, will be evident in the long-term; • Near-natural hydrological and geomorphological processes and forms will be operating in the 4 lakes e.g. water levels, water depth, stability of bed substrate, with no artificial regulation of water levels or altered sediment regimes; • Low nutrient and shade levels will be maintained, with no species present indicative of unfavourable conditions e.g. filamentous algae; • The dispersal of floating water plantain will be unhindered; • There will be no non-native invasive species present; and • All factors affecting the achievement of the above conditions are under control.
Condition status and trends	The Water Framework Objective status is unavailable
	Blanket bogs: • Status within the Elenydd SAC: Un-favourable. Based on condition assessment in 2002 in two site units where blanket bog is a key habitat, which concluded that feature condition was unfavourable, declining, due to an insufficient cover of positive indicator plants; and a continuing failure to meet targets for the deposition of atmospheric pollutants within the local area, which is likely to be having a detrimental effect on the bog vegetation.
	Calaminarian grasslands of the *Violetalia calaminariae:* • Status within the Elenydd SAC: Un-favourable. Based on condition assessment in 2005 of the Cwmystwyth mine area, which indicated that the feature was in un-favourable, declining condition, due to recreational disturbance and lack of remedial management.
	Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea:*

	• Status within the Elenydd SAC: Un-favourable. Based on surveys carried out in 2003 & 2004 and analysis water samples taken between 2003 and 2005 at Llyn Gynon and Llyn Cerrigllwyidion Isaf, feature condition was reported as unfavourable, unclassified. This is because the acid neutralising capacity (ANC) at Llyn Cerrigllwydion Isaf was well under the lower limit, although other biological and water chemistry attributes appeared to be within limits. As general atmospheric pollution exceeds critical levels and is still not under control, conservation status cannot be considered favourable until the ANC value at Llyn Cerrigllwydion Isaf is at least greater than zero.
	European dry heaths: • Status within the Elenydd SAC: Un-favourable. Based on an subjective assessment in 2004 of one site unit where dry heath is a key habitat, which indicated that there was insufficient dwarf shrub cover; and a continuing failure to meet targets for the deposition of atmospheric pollutants, which is likely to be having a detrimental effect on the dry heath vegetation.
	Floating water-plantain: • Status within the Elenydd SAC: Un-favourable. Surveys of water plants carried out in 2003 & 2004 and analysis water samples taken between 2003 and 2005 at Llyn Gynon and Llyn Cerrigllwyidion Isaf, recorded floating water-plantain in both lakes but the acid neutralising capacity (ANC) at Llyn Cerrigllwydion Isaf was well under the lower limit, although other water chemistry attributes appeared to be within limits. The low ANC value at this lake may be partly due to the higher proportion of peat bog within its catchment, compared to the other two lakes where floating water-plantain occurs, and there is no evidence that the species has declined here since previous surveys. However, as general atmospheric pollution still exceeds critical levels the population in this lake must be considered as vulnerable and conservation status cannot be considered favourable until the problem has been addressed or the species is shown not to be at risk.
Key environmental conditions supporting site integrity	• Inappropriate management (livestock, overgrazing, fires, vehicle use); • Recreational pressures (illegal motorcycle use); • Acidification and nitrate deposition via rainfall; • Eutrophication; and • Disturbance from removal of metal rich spoil and fly tipping.

Elenydd-Mallaen Special Protection Area

Site characteristics			
Location / NGR / Area	Dyfed; Powys; Carmarthenshire; Ceredigion		30,0022.14ha
Coincident sites	Elenydd - Mallaen SPA		
Broad habitat classes	• 0.4% - Inland water bodies (standing water, running water); • 18.1% - Bogs, marshes, water fringed vegetation and fens; • 17.0% - Heath, scrub, maquis and garrigue. Phygrana; • 17.6% - Dry grassland and steppes; • 42.0% - Humid grassland and mesophile grassland; • 0.3% - Improved grassland; • 2.4% - Broad-leaved deciduous woodland; • 1.7% - Coniferous woodland; and • 0.5% - Inland rocks, screes, sands, permanent snow and ice.		
Ecological description	Elenydd-Mallaen is located in the uplands of central Wales. This extensive site includes heath and blanket mire-dominated uplands (rising to about 460 m), and is intersected by valleys containing woodlands and grasslands. It is one of the most important areas of hill land for nature conservation in Wales. Crags are frequent throughout the site. The site is especially important for a number of breeding raptors, some of which are resident throughout the year. The diversity and quality of upland habitats provide an abundance of suitable feeding and nesting sites.		
Qualifying features	Merlin *Falco columbarius*, 0.5% of the GB breeding population	Article 4.1 qualification	
	Red Kite *Milvus milvus*, 9.3% of the GB breeding population	Article 4.1 qualification	
	Peregrine *Falco peregrinus*, 0.5% of GB breeding population	Article 4.1 qualification	
Conservation objectives	Merlin *Falco columbarius:* • The SPA area continues to support at least 7 pairs of breeding merlins, or 0.5% of the British population; • Traditional nest sites within the SPA continue to be used;		

	• The extent of suitable semi-natural feeding habitat within the SPA is maintained; and • All factors affecting the achievement of these conditions are under control.
	Red Kite *Milvus milvus:* • The SPA area continues to support at least 15 pairs of breeding red kites, or 0.5% of the British population; • Traditional nest sites within the SPA continue to be used; • The extent of suitable semi-natural feeding habitat within the SPA is maintained; • Availability of carrion within the SPA is maintained; • Roosting sites within the SPA are maintained; and • All factors affecting the achievement of these conditions are under control.
	Peregrine *Falco peregrinus:* • The SPA area continues to support at least 15 pairs of breeding peregrines, or 0.5% of the British population; • Traditional nest sites within the SPA continue to be used; • The extent of suitable semi-natural feeding habitat within the SPA is maintained; and • All factors affecting the achievement of these conditions are under control.
Condition status and trends	The Water Framework Objective status is unavailable
	Merlin *Falco columbarius:* • Status within the Elenydd – Mallaen SPA: Favourable. A survey of the Elenydd - Mallaen area in 2003 located 11 probable breeding pairs, indicating that feature condition was favourable, maintained. The extent of potential feeding habitat within the sites is believed to be sufficient to support the breeding population in the long term.
	Red Kite *Milvus milvus:* • Status within the Elenydd – Mallaen SPA: Favourable. Based information received from the Kite Conservation Trust (2007). The extent of potential feeding habitat within the sites and carrion availability are believed to be sufficient to support the breeding population in the long term.
	Peregrine *Falco peregrinus:* • Status within the Elenydd – Mallaen SPA: Favourable. The results of the national survey in 2002 indicated that the

	condition of the feature in the SPA area was favourable, maintained. The extent of potential feeding habitat within the sites is believed to be sufficient to support the breeding population in the long term.
Key environmental conditions supporting site integrity	• Inappropriate management (overgrazing and burning); and • Disturbance and recreational pressures;

Ensor's Pool Special Area of Conservation

Site characteristics			
Location / NGR / Area	Warwickshire	SP348903	3.8ha
Coincident sites	Ensor's Pool SSSI		
Broad habitat classes	• 70% - Inland water bodies (standing water, running water); and • 30% - Humid and mesophile grassland.		
Ecological description	This lowland site in central England represents white-clawed crayfish *Austropotamobius pallipes* in standing water. This 1 ha marl pit holds a very large population, estimated at 50,000. Although crayfish plague outbreaks have occurred in the Midlands, this waterbody is isolated from river systems and is a good example of a 'refuge' site in an important part of the species' former range.		
Qualifying features	White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*	Annex II species	
Conservation objectives	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.		
Condition status and trends	The Water Framework Objective status is favourable.		

	Ensor's Pool SSSI (3.8ha) There is one component SSSI unit. 100% of the area is favourable.
Key environmental conditions supporting site integrity	• Pollution; and • Introduction of non-native crayfish.

Fens Pool Special Area of Conservation

Site characteristics			
Location / NGR / Area	Dudley	SO920888	20.4ha
Coincident sites	Fens Pool SSSI		
Broad habitat classes	• 2% - Inland water bodies (standing water, running water); • 5% - Bogs, marshes, water fringed vegetation and fens; • 20% - Heath, scrub, maquis and garrigue		
Ecological description	This site comprises three canal feeder reservoirs and a series of smaller pools. They overlie Etruria marls and coal measures of the Carboniferous period. The site shows evidence of past industrial activities and includes a wide range of habitats from open water, swamp, fen and inundation communities to unimproved neutral and acidic grassland and scrub. Great crested newts Triturus cristatus occur as part of an important amphibian assemblage.		
Qualifying features	Great crested newt *Triturus cristatus*	Annex II species	
Conservation objectives	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.		
Condition status and trends	The Water Framework Objective status is favourable.		

	Ensor's Pool SSSI (38.1ha) There are six component SSSI units. 100% of the area is favourable.
Key environmental conditions supporting site integrity	• Appropriate management (control of fish); • Water quality; • Protection of surrounding terrestrial habitat; and • Potential future issues from historical contamination.

Humber Estuary Special Area of Conservation

Site characteristics			
Location / NGR / Area	City of Kinston upon Hull,; East Riding of Yorkshire; Lincolnshire	SE838110	36657.15
Coincident sites	Humber Estuary SPA; Humber Estuary Ramsar; Humber Estuary SSSI; North Killingholme Haven Pits SSSI; Saltfleetby-Thedlethorpe Dunes SSSI; The Lagoons SSSI		
Broad habitat classes	• 94.89% - Tidal rivers, estuaries, mud flats, sand flats, lagoons (including saltwork basins) • 4.38% - Salt marshes, salt pastures, salt steppes; • 0.38% - Coastal sand dunes, sand beaches and machair; and • 0.35% - Bogs, marshes, water fringed vegetation and fens.		
Ecological description	The Humber is the second-largest coastal plain estuary in the UK, and the largest coastal plain estuary on the east coast of Britain. It is a muddy, macro-tidal estuary, fed by the Rivers Ouse, Trent and Hull, Ancholme and Graveney. Suspended sediment concentrations are high, and are derived from a variety of sources, including marine sediments and eroding boulder clay along the Holderness coast. This is the northernmost of the English east coast estuaries whose structure and function is intimately linked with soft eroding shorelines. Habitats within the Humber Estuary include 1330 Atlantic salt meadows and a range of sand dune types in the outer estuary, together with subtidal sandbanks (H1110 Sandbanks which are slightly covered by sea water all the time), extensive intertidal mudflats (H1140 Mudflats and sandflats not covered by seawater at low tide), glasswort beds (H1310 *Salicornia* and other annuals colonising mud and sand), and 1150 coastal lagoons. As salinity declines upstream, reedbeds and brackish saltmarsh communities fringe the estuary. These are best-represented at the confluence of the Rivers Ouse and Trent at Blacktoft Sands. Upstream from the Humber Bridge, the navigation channel undergoes major shifts from north to south banks, for reasons that have yet to be fully explained. This section of the estuary is also noteworthy for extensive mud and sand bars, which in places form semi-permanent islands. Significant fish species include 1099 river lamprey *Lampetra fluviatilis* and 1095 sea lamprey *Petromyzon marinus* which breed in the River Derwent, a tributary of the River Ouse.		
Qualifying features	Estuaries		Annex I habitat (primary reason for designation)
	Mudflats and sand flats not covered by seawater and low tide		Annex I habitat (primary reason for designation)
	Sandbanks which are slightly covered by sea water all the time		Annex I habitat (not primary reason for designation)
	Coastal lagoons		Annex I habitat (not primary reason for designation)
	Salicornia and other annuals colonising mid and sand		Annex I habitat (not primary reason for designation)

	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Annex I habitat (not primary reason for designation)
	Embryonic shifting dunes	Annex I habitat (not primary reason for designation)
	Shifting dunes along the shoreline with *Ammophilia arenaria* (white dunes)	Annex I habitat (not primary reason for designation)
	Fixed dunes with herbaceous vegetation (grey dunes)	Annex I habitat (not primary reason for designation)
	Dunes with *Hippophae rhamniodes*	Annex I habitat (primary reason for designation)
	Sea lamprey *Petromyson marinus*	Annex II species (not primary reason for site)
	River lamprey *Lampreta fluviatilis*	Annex II species (not primary reason for site)
	Grey seal *Halichoerus grypus*	Annex II species (not primary reason for site)
Conservation objectives	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.	
Condition status and trends	The Water Framework Objective status is favourable.	
	Humber Estuary SSSI (37,000.59ha) There are 189 component SSSI units. 7.63% of the area is favourable, 91.13% is unfavourable recovering, 0.21% is unfavourable no change and 1.03% is unfavourable declining.	
	North Killingholme Haven Pits SSSI (21.62ha) There are 2 component SSSI units. 100% is unfavourable no change.	
	Saltfleetby-Thelethorpe Dunes SSSI (971.85ha) There are 2 component SSSI units. 78.78% is favourable and 21.22% is unfavourable recovering.	

	The Lagoons SSSI (70.18ha) There is 1 component SSSI unit. 100% is unfavourable recovering.
Key environmental conditions supporting site integrity	• Coastal squeeze and climate change; • Flood defence works; • Dredging; • Construction; • Operation of ports, pipelines and other infrastructure; • Changes in water quality and flows; and • Disturbance and recreational pressures.

Humber Estuary Special Protection Area

Site characteristics			
Location / NGR / Area	City of Kinston upon Hull,; East Riding of Yorkshire; Lincolnshire	SE838110	37,630.24ha
Coincident sites	Humber Estuary SAC; Humber Estuary Ramsar; Humber Estuary SSSI; North Killingholme Haven Pits SSSI; Saltfleetby-Thedlethorpe Dunes SSSI; The Lagoons SSSI		
Broad habitat classes	• 93.60% - Tidal rivers, estuaries, mud flats, sand flats, lagoons (including saltwork basins) • 4.60% - Salt marshes, salt pastures, salt steppes; • 0.80% - Coastal sand dunes, sand beaches and machair; • 0.30% - Bogs, marshes, water fringed vegetation and fens; and • 0.6% - Inland water bodies (standing water, running water).		
Ecological description	Humber Estuary SPA is located on the east coast of England, and comprises extensive wetland and coastal habitats within the Humber Estuary. The estuary drains a catchment of some 24,240 square kilometres and provides the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (7.2 m) and approximately one-third of the estuary is exposed as mud- or sand-flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing saltmarsh backed by grazing marsh in the middle and outer estuary. On the north Lincolnshire coast, the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The estuary supports important numbers of waterbirds (especially geese, ducks and waders) during the migration periods and in winter. It also supports important breeding populations of terns and raptors in summer.		
Qualifying features	Eurasian bittern *Botaurus stellaris* (breeding) 10.5% GB population	Article 4.1 qualification	
	Marsh harrier *Circus aeruginosus* (breeding) 6.3% GB population	Article 4.1 qualification	
	Pied avocet *Recurvirostra avosetta* (breeding) 8.6% GB population	Article 4.1 qualification	
	Little tern *Sterna albifrons* (breeding) 2.1% GB population	Article 4.1 qualification	
	Eurasian bittern *Botaurus stellaris* (winter) 4% GB population	Article 4.1 qualification	
	Hen harrier *Circus cyaneus* (winter) 1.1% of GB population	Article 4.1 qualification	
	Bar-tailed godwit *Limosa lapponica* (winter) 4.4% GB population	Article 4.1 qualification	
	Golden plover *Pluvialis apicaria* (winter) 12.3% GB population	Article 4.1 qualification	
	Pied avocet *Recurvirostra avosetta* (winter) 12.3% GB population	Article 4.1 qualification	
	Ruff *Philomachus pugnax* (passage) 1.4% GB population	Article 4.1 qualification	
	Dunlin *Calidris alpine* (winter) 1.7% of population	Article 4.2 qualification	

	Red knot *Calidris canutus* (winter) 6.3% of population	Article 4.2 qualification
	Black-tailed godwit *Limosa limosa islandica* (winter) 32% of population	Article 4.2 qualification
	Common shelduck *Tadorna tadorna* (winter) 1.5% of population	Article 4.2 qualification
	Common redshank *Tringa tentanus* (winter) 3.6% of population	Article 4.2 qualification
	Dunlin *Calidris alpine* (passage) 1.5% of population	Article 4.2 qualification
	Red knot *Calidris canutus* (passage) 4.1% of population	Article 4.2 qualification
	Black-tailed godwit *Limosa limosa islandica* (passage) 2.6% of population	Article 4.2 qualification
	Common redshank *Tringa tetanus* (passage) 5.7% of population	Article 4.2 qualification
	In the non-breeding season the area regularly supports: 153934 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*	Article 4.2 qualification
Conservation objectives	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.	

Condition status and trends	The Water Framework Objective status is favourable.
	Humber Estuary SSSI (37,000.59ha) There are 189 component SSSI units. 7.63% of the area is favourable, 91.13% is unfavourable recovering, 0.21% is unfavourable no change and 1.03% is unfavourable declining.
	North Killingholme Haven Pits SSSI (21.62ha) There are 2 component SSSI units. 100% is unfavourable no change.
	Saltfleetby-Thelethorpe Dunes SSSI (971.85ha) There are 2 component SSSI units. 78.78% is favourable and 21.22% is unfavourable recovering.
	The Lagoons SSSI (70.18ha) There is 1 component SSSI unit. 100% is unfavourable recovering.
Key environmental conditions supporting site integrity	• Coastal squeeze and climate change; • Flood defence works; • Dredging; • Construction; • Operation of ports, pipelines and other infrastructure; • Changes in water quality and flows; and • Disturbance and recreational pressures.

Humber Estuary Ramsar

Site characteristics			
Location / NGR / Area	City of Kinston upon Hull,; East Riding of Yorkshire; Lincolnshire	SE838110	37987.80ha
Coincident sites	Humber Estuary SPA; Humber Estuary SAC; Humber Estuary SSSI; North Killingholme Haven Pits SSSI; Saltfleetby-Thedlethorpe Dunes SSSI; The Lagoons SSSI		
Broad habitat classes	• 66.80% - Estuarine waters; • 26.4% - Tidal flats; • 4.7% - Salt marshes; • 0.8% - Sand/shingle shores (incuding dune systems); • 0.5% - Gravel/brick/clay pits; • 0.3% - Saline/brackish lakes (permanent); • 0.1% - Other; • 0.01% Canals and drainage channels; and • 0.01% - Freshwater springs.		
Ecological description	The Humber Estuary is the largest macro-tidal estuary on the British North Sea coast. It drains a catchment of some 24,240 square kilometres and is the site of the largest single input of freshwater from Britain into the North Sea. It has the second-highest tidal range in Britain (max 7.4 m) and approximately one-third of the estuary is exposed as mud or sand flats at low tide. The inner estuary supports extensive areas of reedbed with areas of mature and developing saltmarsh backed in places by limited areas of grazing marsh in the middle and outer estuary. On the north Lincolnshire coast the saltmarsh is backed by low sand dunes with marshy slacks and brackish pools. The Estuary regularly supports internationally important numbers of waterfowl in winter and nationally important breeding populations in summer.		
Qualifying features	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 1	
	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	Ramsar criterion 3	

	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*.	
	Assemblages of international importance: 153,934 waterfowl, non-breeding season	Ramsar criterion 5
	Species/populations occurring at levels of international importance: • Eurasian golden plover, *Pluvialis apricaria altifrons* subspecies; • Red knot, *Calidris canutus islandica*; • Dunlin, *Calidris alpine;* • Black-tailed godwit, *Limosa limosa islandica*; • Common redshank, *Tringa tetanus*; • Common shelduck, *Tadorna tadorna; and* • Bar-tailed godwit, *Limosa lapponica.*	Ramsar criterion 6
	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.	Ramsar criterion 8
Conservation objectives	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.	
Condition status and trends	The Water Framework Objective status is favourable.	

	Humber Estuary SSSI (37,000.59ha) There are 189 component SSSI units. 7.63% of the area is favourable, 91.13% is unfavourable recovering, 0.21% is unfavourable no change and 1.03% is unfavourable declining.
	North Killingholme Haven Pits SSSI (21.62ha) There are 2 component SSSI units. 100% is unfavourable no change.
	Saltfleetby-Thelethorpe Dunes SSSI (971.85ha) There are 2 component SSSI units. 78.78% is favourable and 21.22% is unfavourable recovering.
	The Lagoons SSSI (70.18ha) There is 1 component SSSI unit. 100% is unfavourable recovering.
Key environmental conditions supporting site integrity	• Disturbance to vegetation through clearing/cutting; • Vegetative succession; • Water diversion of irrigation/domestic/industrial use; • Pollution (domestic and agricultural) • Disturbance and recreational pressures; and • Coastal squeeze.

River Mease Special Area of Conservation

Site characteristics			
Location / NGR / Area	Derbyshire; Leicestershire; Staffordshire	SK260114	21.86ha
Coincident sites	River Mease SSSI		
Broad habitat classes	• 100% - Inland water bodies (standing water, running water).		
Ecological description	The River Mease is a small tributary of the River Trent and has retained a reasonable degree of channel diversity compared to other similar rivers. It has extensive beds of submerged plants and relatively sandy sediments along much of its length.		
Qualifying features	Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation	Annex I habitat (not primary reason for designation)	
	Spined loach, *Cobitis taenia*	Annex II species (primary reason for designation)	
	Bullhead, *Cottus gobio*	Annex II species (primary reason for designation)	
	White clawed (or Atlantic stream) crayfish, *Austropotamobius pallipes*	Annex II species (not primary reason for designation)	
	Otter, *Lutra lutra*	Annex II species (not primary reason for designation)	
Conservation objectives	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.
Condition status and trends	The Water Framework Objective status is unfavourable.
	River Mease SSSI (22.87ha) There are 4 component SSSI units. 100% is unfavourable no change.
Key environmental conditions supporting site integrity	• Water quality and quantity; • Diffuse pollution; and • Excessive sedimentation.

Severn Estuary Special Area of Conservation

Site characteristics			
Location / NGR / Area	Vale of Glamorgan; Newport; City of Bristol; Monmouthshire; Gloucestershire; Somerset; South Gloucestershire	ST321748	73,715.4ha
Coincident sites	Mendip Limestone Grasslands SAC; River Usk SAC; River Wye SAC; Severn Estuary SPA; Severn Estuary Ramsar; Aust Cliff SSSI; Berrow Dunes SSSI; Blue Anchor to Lilstock Coast SSSI; Brean Down SSSI; Bridgewater Bay SSSI; Middle Hope SSSI; Portishead Pier to Black Nore SSSI; Purton Passage SSSI; Severn Estuary SSSI; Spring Cove Cliffs SSSI; Steep Holm SSSI; Uphill Cliff SSSI; Upper Severn Estuary SSSI		
Broad habitat classes	• 99% - Tidal rivers, estuaries, mud flats, sand flats and lagoons (including saltwork basins); and • 1% - Salt marshes, salt pastures and salt steppes.		
Ecological description	The Severn Estuary is located between Wales and England in south-west Britain. It is a large estuary with extensive intertidal mud-flats and sand-flats, rocky platforms and islands. Saltmarsh fringes the coast backed by grazing marsh with freshwater ditches and occasional brackish ditches. The seabed is rock and gravel with sub-tidal sandbanks. The estuary's classic funnel shape, unique in the UK, is a factor causing the Severn to have the second- highest tidal range in the world (after the Bay of Fundy in Canada). This tidal regime results in plant and animal communities typical of the extreme physical conditions of liquid mud and tide- swept sand and rock.		
Qualifying features	Estuaries	Annex I habitat (primary reason for designation)	
	Mudflats and sandflats not covered b seawater at low tide	Annex I habitat (primary reason for designation)	
	Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	Annex I habitat (primary reason for designation)	
	Sandbanks which are slightly covered by sea water all the time	Annex I habitat (not primary reason for designation)	
	Reefs	Annex I habitat (not primary reason for designation)	
	Sea lamprey, *Petromyzon marinus*	Annex II species (primary reason for designation)	
	River lamprey, *Lampetra fluviatilis*	Annex II species (primary reason for designation)	
	Twaite shad, *Alosa fallax*	Annex II species (primary reason for designation)	
Conservation objectives	Natural England have yet to publish conservation objectives for this site.		
Condition status and trends	The Water Framework Objective status is favourable.		

	Aust Cliff SSSI (6.23 ha) There are 2 component SSSI units. 100% is in favourable condition.
	Berrow Dunes SSSI (199.9 ha) There are 3 component SSSI units. 100% is unfavourable recovering.
	Blue Anchor to Lilstock Coast SSSI (675.1 ha) There are 8 component SSSI units. 100% is in favourable condition.
	Brean Down SSSI (66.19 ha) There are 3 component SSSI units. 100% is in favourable condition.
	Bridgwater Bay SSSI (6237.46 ha) There are 30 component SSSI units. 89.21% is in favourable condition, 10.49% is unfavourable recovering and 0.29% is unfavourable no change.
	Middle Hope SSSI (84.38 ha) There are 6 component SSSI units. 80.40% is in favourable condition and 19.60% is unfavourable recovering.
	Portishead Pier to Black Nore SSSI (64.73 ha) There are 5 component SSSI units. 100% is in favourable condition.
	Purton Passage SSSI (4.09 ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Severn Estuary SSSI (10,001.16 ha) There are 82 component SSSI units. 94.83% is in favourable condition, 0.36% is unfavourable recovering, 2.65% is unfavourable no change and 2.16% is unfavourable declining.
	Spring Cove Cliffs SSSI (1,99ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Steep Holm SSSI (25.39ha) There is 1 component SSSI unit. 100% is in favourable condition.

	Uphill Cliff SSSI (19.54 ha) There are 3 component SSSI units. 100% is in favourable condition.
	Upper Severn Estuary SSSI (1460.45 ha) There are 11 component SSSI units. 96.69% is in favourable condition, 3.31% is unfavourable no change.
Key environmental conditions supporting site integrity	• Land-claim; • Aggregate extraction; • Dredging; • Flood defences; • Pollution; • Eutrophication; and • Disturbance and recreational pressures.

Severn Estuary Special Protection Area

Site characteristics			
Location / NGR / Area	Avon; Gloucestershire; Gwent; Somerset, South Glamorgan	ST321748	24,662.98ha
Coincident sites	Mendip Limestone Grasslands SAC; River Usk SAC; River Wye SAC; Severn Estuary SPA; Severn Estuary Ramsar; Aust Cliff SSSI; Berrow Dunes SSSI; Blue Anchor to Lilstock Coast SSSI; Brean Down SSSI; Bridgewater Bay SSSI; Middle Hope SSSI; Portishead Pier to Black Nore SSSI; Purton Passage SSSI; Severn Estuary SSSI; Spring Cove Cliffs SSSI; Steep Holm SSSI; Uphill Cliff SSSI; Upper Severn Estuary SSSI		
Broad habitat classes	• 89.0% - Tidal river, estuaries, mud flats, sand flats, lagoons (including saltwork basins); • 6.0% - Salt marshes, salt pastures and salt steppes; • 4.0% - Coastal sand dunes, sand beaches and machair; and • 1.0% - Improved grassland.		
Ecological description	The Severn Estuary is located between Wales and England in south-west Britain. It is a large estuary with extensive intertidal mud-flats and sand-flats, rocky platforms and islands. Saltmarsh fringes the coast backed by grazing marsh with freshwater ditches and occasional brackish ditches. The seabed is rock and gravel with sub-tidal sandbanks. The estuary's classic funnel shape, unique in the UK, is a factor causing the Severn to have the second- highest tidal range in the world (after the Bay of Fundy in Canada). This tidal regime results in plant and animal communities typical of the extreme physical conditions of liquid mud and tide- swept sand and rock. The species-poor invertebrate community includes high densities of ragworms, lugworms and other invertebrates forming an important food source for passage and wintering waders. A further consequence of the large tidal range is an extensive intertidal zone, one of the largest in the UK. The site is of importance during the spring and autumn migration periods for waders moving up the west coast of Britain, as well as in winter for large numbers of waterbirds, especially swans, ducks and waders.		
Qualifying features	Berwicks Swan, *Cygnus columbianus bewickii* (winter) 3.9% GB population	Article 4.1	
	Gadwall, *Anas strepera* 0.9% of population	Article 4.2	
	Greater white-footed goose, *Anser albifrons albifrons* 0.4% of population	Article 4.2	
	Dunlin, *Calidris alpina alpina* 3.3% of population	Article 4.2	
	Redshank, *Tadorna tadorna* 1.1% of population	Article 4.2	

	Shelduck, *Tringa tetanus* 1.3% of population	Article 4.2
	Over winter the area regularly supports 84317 waterfowl (5 year peak mean 01/04/1998) including: *Cygnus columbianus bewickii, Anser albifrons albifrons , Tadorna tadorna , Anas strepera , Calidris alpina alpina , Tringa totanus .*	Article 4.2
Conservation objectives	• Natural England have yet to publish conservation objectives for this site.	
Condition status and trends	The Water Framework Objective status is favourable.	
	Aust Cliff SSSI (6.23 ha) There are 2 component SSSI units. 100% is in favourable condition.	
	Berrow Dunes SSSI (199.9 ha) There are 3 component SSSI units. 100% is unfavourable recovering.	
	Blue Anchor to Lilstock Coast SSSI (675.1 ha) There are 8 component SSSI units. 100% is in favourable condition.	
	Brean Down SSSI (66.19 ha) There are 3 component SSSI units. 100% is in favourable condition.	
	Bridgwater Bay SSSI (6237.46 ha) There are 30 component SSSI units. 89.21% is in favourable condition, 10.49% is unfavourable recovering and 0.29% is unfavourable no change.	
	Middle Hope SSSI (84.38 ha) There are 6 component SSSI units. 80.40% is in favourable condition and 19.60% is unfavourable recovering.	
	Portishead Pier to Black Nore SSSI (64.73 ha) There are 5 component SSSI units. 100% is in favourable condition.	
	Purton Passage SSSI (4.09 ha) There is 1 component SSSI unit. 100% is in favourable condition.	

	Severn Estuary SSSI (10,001.16 ha) There are 82 component SSSI units. 94.83% is in favourable condition, 0.36% is unfavourable recovering, 2.65% is unfavourable no change and 2.16% is unfavourable declining.
	Spring Cove Cliffs SSSI (1,99ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Steep Holm SSSI (25.39ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Uphill Cliff SSSI (19.54 ha) There are 3 component SSSI units. 100% is in favourable condition.
	Upper Severn Estuary SSSI (1460.45 ha) There are 11 component SSSI units. 96.69% is in favourable condition, 3.31% is unfavourable no change.
Key environmental conditions supporting site integrity	• Land-claim; • Aggregate extraction; • Dredging; • Flood defences; • Pollution; • Eutrophication; and • Disturbance and recreational pressures.

Severn Estuary Ramsar

Site characteristics			
Location / NGR / Area	Avon; Gloucestershire; Gwent; Somerset, South Glamorgan	ST321748	24,662.98ha
Coincident sites	Mendip Limestone Grasslands SAC; River Usk SAC; River Wye SAC; Severn Estuary SPA; Severn Estuary Ramsar; Aust Cliff SSSI; Berrow Dunes SSSI; Blue Anchor to Lilstock Coast SSSI; Brean Down SSSI; Bridgewater Bay SSSI; Middle Hope SSSI; Portishead Pier to Black Nore SSSI; Purton Passage SSSI; Severn Estuary SSSI; Spring Cove Cliffs SSSI; Steep Holm SSSI; Uphill Cliff SSSI; Upper Severn Estuary SSSI		
Broad habitat classes	• 89.0% - Tidal river, estuaries, mud flats, sand flats, lagoons (including saltwork basins); • 6.0% - Salt marshes, salt pastures and salt steppes; • 4.0% - Coastal sand dunes, sand beaches and machair; and • 1.0% - Improved grassland.		
Ecological description	The Severn Estuary is a large estuary with extensive intertidal mudflats and sandflats, rocky platforms and islands. Saltmarsh fringes the coast backed by grazing marsh with freshwater ditches and occasional brackish ditches. The seabed is rock and gravel with subtidal sandbanks. The estuary's classic funnel shape, unique in the UK, is a factor causing the Severn to have the second-highest tidal range in the world. This tidal regime results in plant and animal communities typical of the extreme physical conditions of liquid mud and tideswept sand and rock. A further consequence of the large tidal range is an extensive intertidal zone, one of the largest in the UK. The large tidal range leads to strong tidal streams and high turbidity, producing communities characteristic of the extreme physical conditions of liquid mud and tide-swept sand and rock. Broad intertidal flats with areas of unstable sand and muddy flats support high densities of invertebrates. Intertidal rock platforms support a wide variety of invertebrate species. There are large areas of subtidal sand, rock and gravel with a variety of aquatic estuarine communities including *Sabellaria alveolata* reef. Areas of saltmarsh fringe the estuary, mostly grazed with a range of vegetation communities. There are gradual and stepped transitions between bare mudflat to upper marsh and grassland. Main vegetation types are: upper saltmarsh with *Festuca rubra* and *Juncus gerardii*; middle marsh dominated by *Puccinellia maritima* with *Glaux maritima* and *Triglochin maritima*; dense monocultures of *Spartina anglica* at the edge of the mudflats-brackish pools and depressions with *Phragmites australis* and *Bolboschoenus maritimus*.		
Qualifying features	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 pSAC include: • H1110 Sandbanks which are slightly covered by sea water all the	Ramsar criterion 1	

	time H1130 Estuaries • H1140 Mudflats and sandflats not covered by seawater at low tide H1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)	
	Due to unusual estuarine communities, reduced diversity and high productivity.	Ramsar criterion 3
	This site is important for the run of migratory fish between sea and river via estuary. Species include Salmon (*Salmo salar*), sea trout (*Salmo trutta*), sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), allis shad (*Alosa alosa*), twaite shad (*Alosa fallax*), and eel (*Anguilla Anguilla*). It is also of particular importance for migratory birds during spring and autumn.	Ramsar criterion 4
	Assemblages of international importance: Species with peak counts in winter: • 70919 waterfowl	Ramsar criterion 5
	Species/populations occurring at levels of international importance. Qualifying Species/populations (as identified at designation): • Tundra sawn, *Cygnus columbianus bewickii* (winter) 2.8% GB population; • Greater white-footed goose, *Anser albifrons albifrons* (winter) 35.8% GB population; • Gadwall, *Anas strepera strepera* (winter) 1.4% GB population; • Dunlin, *Calidris alpina alpina* (winter) 1.8% GB population; and • Common redshank, *Tringa tetanus tetanus* (winter) 1% GB population. Species regularly supported during the breeding season: • Lesser black-backed gull, *Larus fuscus graellsii* (breeding) 2.8% of the population; • Ringed plover, *Charadrius hiaticula* (breeding) 1% of the population; • Eurasian teal, *Anas crecca* (breeding) 1.1% of the population;	Ramsar criterion 6

	and • Northern pintail, *Anas acuta* (breeding) 1.2% of the population.	
	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 (*Salmo trutta*), sea lamprey (*Petromyzon marinus*), river lamprey (*Lampetra fluviatilis*), allis shad (*Alosa alosa*), twaite shad (*Alosa 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 (*Alosa fallax*) that feed on mysid shrimps in the salt wedge.	Ramsar criterion 8
Conservation objectives	• Natural England have yet to publish conservation objectives for this site.	
Condition status and trends	The Water Framework Objective status is favourable.	
	Aust Cliff SSSI (6.23 ha) There are 2 component SSSI units. 100% is in favourable condition.	
	Berrow Dunes SSSI (199.9 ha) There are 3 component SSSI units. 100% is unfavourable recovering.	
	Blue Anchor to Lilstock Coast SSSI (675.1 ha) There are 8 component SSSI units. 100% is in favourable condition.	
	Brean Down SSSI (66.19 ha) There are 3 component SSSI units. 100% is in favourable condition.	
	Bridgwater Bay SSSI (6237.46 ha) There are 30 component SSSI units. 89.21% is in favourable condition, 10.49% is unfavourable recovering and 0.29% is unfavourable no change.	
	Middle Hope SSSI (84.38 ha)	

	There are 6 component SSSI units. 80.40% is in favourable condition and 19.60% is unfavourable recovering.
	Portishead Pier to Black Nore SSSI (64.73 ha) There are 5 component SSSI units. 100% is in favourable condition.
	Purton Passage SSSI (4.09 ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Severn Estuary SSSI (10,001.16 ha) There are 82 component SSSI units. 94.83% is in favourable condition, 0.36% is unfavourable recovering, 2.65% is unfavourable no change and 2.16% is unfavourable declining.
	Spring Cove Cliffs SSSI (1,99ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Steep Holm SSSI (25.39ha) There is 1 component SSSI unit. 100% is in favourable condition.
	Uphill Cliff SSSI (19.54 ha) There are 3 component SSSI units. 100% is in favourable condition.
	Upper Severn Estuary SSSI (1460.45 ha) There are 11 component SSSI units. 96.69% is in favourable condition, 3.31% is unfavourable no change.
Key environmental conditions supporting site integrity	• Dredging; • Erosion; and • Disturbance and recreational pressures.

Lepus Consulting Ltd 206 Eagle Tower Montpellier Drive Cheltenham GL50 1TA
Tel: 01242 525222 www.lepusconsulting.com enquiries@lepusconsulting.com