www.landuse.co.uk

HRA Scoping Report for the Herefordshire Minerals and Waste Local Plan

Final Report
Prepared by LUC
August 2017

Project Title: HRA Scoping Report for the Herefordshire Minerals and Waste Local Plan

Client: Herefordshire Council

Version	Date	Version Details	Prepared by	Checked by	Approved by
V 1.0	31/05/17	Draft for client comment	Sarah Smith Katherine Sydney	Melissa Mc Ginley	Nick James
V 2.0	07/08/17	Final Report	Sarah Smith Katherine Sydney	Melissa Mc Ginley	Nick James

www.landuse.co.uk

HRA Scoping Report for the Herefordshire Minerals and Waste Local Plan

Final Report
Prepared by LUC
August 2017

Planning & EIA
Design
Landscape Planning
Landscape Management
Ecology
Mapping & Visualisation

LUC LONDON
43 Chalton Street
London NW1 1JD
T 020 7383 5784
F 020 7383 4798
london@landuse.co.uk

Offices also in:
Bristol
Glasgow
Edinburgh
Lancaster
Manchester

FS 566056
EMS 566057

Land Use Consultants Ltd
Registered in England
Registered number: 2549296
Registered Office:
43 Chalton Street
London NW1 1JD
LUC uses 100% recycled paper

Contents

Tables

Figures

1 Introduction

Background and introduction

1.1 The Herefordshire Local Plan Core Strategy 2011-2031 was adopted in October 2015 and forms part of the Local Plan for Herefordshire. The Core Strategy does not allocate land directly but proposes broad strategic directions for growth in sustainable locations. The Core Strategy together with the Minerals and Waste Local Plan, the Hereford Area Plan Development Plan Document (DPD), the Travellers' Sites DPD, the Rural Area Site Allocations DPD, and Neighbourhood Development Plans prepared by Town or Parish Councils, will form the statutory Development Plan for Herefordshire[1].

1.2 Herefordshire Council is currently in the early stages of preparing a new Minerals and Waste Local Plan (Issues and Options stage). Once adopted, the Herefordshire Minerals and Waste Local Plan will replace the saved minerals and waste policies contained in the Herefordshire Unitary Development Plan. It will provide a clear vision, objectives and spatial strategy for minerals and waste up to 2031, consistent with that set out in the adopted Core Strategy, ensuring that it provides sufficient opportunities to meet the identified needs of the area for waste management and a steady and adequate supply of all economically significant minerals in the Plan area. The Minerals and Waste Local Plan will also present the core principles for minerals and waste development, location specific policies in relation to where minerals and waste development should be developed, and development management style policies addressing specific issues that each development proposal should address.

1.3 This Habitats Regulation Assessment (HRA) Scoping Report has been prepared by LUC on behalf of Herefordshire Council and relates to the Herefordshire Minerals and Waste Local Plan Issues and Options Report (April 2017). This Scoping Report represents the first stage in the HRA process and as the emerging Plan develops, the HRA work will be updated.

The requirement to undertake Habitats Regulations Assessment of Development Plans

1.4 The requirement to undertake HRA of development plans was confirmed by the amendments to the Habitats Regulations published for England and Wales in July 2007 and updated in 2010[2] and again in 2012[3]. Therefore, when preparing the Minerals & Waste Local Plan, Herefordshire Council is required by law to carry out a Habitats Regulations Assessment, although consultants can undertake the HRA on its behalf.

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

- SPAs are classified under the European Council Directive 'on the conservation of wild birds' (79/409/EEC; 'Birds Directive') for the protection of wild birds and their habitats (including particularly rare and vulnerable species listed in Annex 1 of the Birds Directive, and migratory species).

[1] In addition, a separate Bromyard DPD may be prepared, however it is also possible that the parish of Bromyard and Winslow may be covered within the Rural Area Site Allocations DPD.

[2] The Conservation (Natural Habitats, &c.) (Amendment) Regulations 2007. HMSO Statutory Instrument 2007 No. 1843. From 1 April 2010, these were consolidated and replaced by the Conservation of Habitats and Species Regulations 2010 (SI No. 2010/490). Note that no substantive changes to existing policies or procedures have been made in the new version.

[3] The Conservation of Habitats and Species (Amendment) Regulations 2012. Statutory Instrument 2012 No. 1927.

- SACs are designated under the Habitats Directive and target particular habitats (Annex 1) and/or species (Annex II) identified as being of European importance.

1.6 Potential SPAs (pSPAs)[4], candidate SACs (cSACs)[5], Sites of Community Importance (SCIs)[6] and Ramsar sites should also be included in the assessment. Ramsar sites support internationally important wetland habitats and are listed under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (Ramsar Convention, 1971).

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

1.8 The overall purpose of the HRA is to conclude whether or not a proposal or policy, or whole development plan, would adversely affect the integrity of the European site in question either alone or in combination with other plans and projects. This is judged in terms of the implications of the plan for a site's 'qualifying features' (i.e. those Annex I habitats, Annex II species, and Annex I bird populations for which it has been designated). Significantly, HRA is based on the precautionary principle meaning that where uncertainty or doubt remains, an adverse impact should be assumed.

Stages of the Habitats Regulations Assessment

1.9 **Table 1.1** below summarises the stages involved in carrying out a full HRA, based on various guidance documents[8,9].

Table 1.1 Stages in HRA

Stage	Task	Outcome
Stage 1: Screening (the 'Significance Test')	Description of the plan. Identification of potential effects on European sites. Assessing the effects on European sites (taking into account potential mitigation provided by other policies in the plan).	Where effects are unlikely, prepare a 'finding of no significant effect report'. Where effects judged likely, or lack of information to prove otherwise, proceed to Stage 2.
Stage 2: Appropriate Assessment (the 'Integrity Test')	Gather information (plan and European sites). Impact prediction. Evaluation of impacts in view of conservation objectives. Where impacts considered to affect qualifying features, identify alternative options. Assess alternative options. If no alternatives exist, define and evaluate mitigation measures where necessary.	Appropriate Assessment report describing the plan, European site baseline conditions, the adverse effects of the plan on the European site, how these effects will be avoided through, firstly, avoidance, and secondly, mitigation including the mechanisms and timescale for these mitigation measures. If effects remain after all alternatives and mitigation measures have been considered proceed to Stage 3.
Stage 3: Assessment where no alternatives exist and adverse impacts remain taking into account mitigation	Identify and demonstrate 'imperative reasons of overriding public interest' (IROPI). Demonstrate no alternatives exist. Identify potential compensatory measures.	This stage should be avoided if at all possible. The test of IROPI and the requirements for compensation are extremely onerous.

[4] Potential SPAs are sites that have been approved by Government and are currently in the process of being classified as SPAs.
[5] Candidate SACs are sites that have been submitted to the European Commission, but not yet formally adopted.
[6] SCIs are sites that have been adopted by the European Commission but not yet formally designated as SACs by the Government.
[7] The term 'Natura 2000 sites' can also be used interchangeably with 'European sites' in the context of HRA, although the latter term is used throughout this report.
[8] *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission Environment DG, November 2001
[9] *Habitats Regulations Assessment Handbook,* DTA Publications [online subscription]

1.10 In assessing the effects of the Minerals & Waste Local Plan in accordance with Regulation 102 of the Conservation of Habitats and Species Regulations 2012, there are potentially two tests to be applied by the competent authority: a 'Significance Test', followed if necessary by an Appropriate Assessment which will inform the 'Integrity Test'. The relevant sequence of questions is as follows:

- **Step 1**: Under Reg. 102(1)(b), consider whether the plan is directly connected with or necessary to the management of the sites. If not –
- **Step 2**: Under Reg. 102(1)(a), consider whether the plan is likely to have a significant effect on the site, either alone or in combination with other plans or projects (the 'Significance Test'). *[These two steps are undertaken as part of Stage 1: Screening shown in Table 1.1 above.]* If Yes –
- **Step 3**: Under Reg. 102(1), make an Appropriate Assessment of the implications for the site in view of its current conservation objectives (the 'Integrity Test'). In so doing, it is mandatory under Reg. 102(2) to consult Natural England, and optional under Reg. 102(3) to take the opinion of the general public. [*This step is undertaken during Stage 2: Appropriate Assessment shown in Table 1.1 above.]*
- **Step 4**: In accordance with Reg.102(4), but subject to Reg.103, give effect to the land use plan only after having ascertained that the plan will not adversely affect the integrity of the European site.

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

1.12 The HRA should be undertaken by the 'competent authority' - in this case Herefordshire Council, and LUC has been commissioned to do this on their behalf. The HRA also requires close working with Natural England as the statutory nature conservation body[10] in order to obtain the necessary information and agree the process, outcomes and any mitigation measures. The Environment Agency, while not a statutory consultee for HRA, is also in a strong position to provide advice and information throughout the process as it is required to undertake HRA for its existing licences and future licensing of activities.

HRA work carried out previously

1.13 No HRA work has been carried out to date on the emerging Minerals & Waste Local Plan; however the adopted Herefordshire Local Plan Core Strategy was subject to HRA throughout its development. This will be drawn on to inform the HRA of the Minerals & Waste Local Plan, as the European sites and their sensitivity to specific impacts are relevant to both assessments, but the Minerals & Waste Local Plan will include detailed policies and site allocations that are not covered within the Core Strategy or its HRA.

Structure of this report

1.14 This chapter (**Chapter 1**) has described the background to the preparation of the Minerals & Waste Local Plan and the requirement to undertake HRA. The remainder of the report is structured as follows:

[10] Regulation 5 of *The Conservation of Habitats and Species Regulations 2010*. HMSO Statutory Instrument 2010 No. 490.

- **Chapter 2** describes the European sites in and around Herefordshire that could be affected by the Minerals & Waste Local Plan and summarises the key issues that will need to be considered during the HRA, drawing from the HRA work carried out previously.
- **Chapter 3** describes the approach that will be taken to the HRA of the emerging Minerals & Waste Local Plan including the specific tasks that will be undertaken and the assumptions that will underpin the HRA judgements made.
- **Chapter 4** describes the next steps that will be carried out in the HRA of the Minerals & Waste Local Plan.

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

- **Appendix 1** sets out detailed information about the European sites that will be the focus of the HRA.
- **Appendix 2** presents an initial review of other plans and projects that could have significant effects on European sites in combination with the Minerals & Waste Local Plan.

2 European Sites and key issues to be considered by the HRA

2.1 This chapter identifies the European sites to be included in the HRA for the Minerals & Waste Local Plan and describes the key issues for the HRA.

Identification of European sites which may be affected by the Minerals & Waste Local Plan

Sites within 15km of Herefordshire

2.2 The starting point for identification of European sites which may be affected by the Minerals & Waste Local Plan was to identify all those sites that lie within Herefordshire and those within 15km of the local authority area. The distance of 15km was considered appropriate to ensure that all designated sites outside the county boundary that could be affected by development within Herefordshire were identified and included in the assessment. Where sites lie partially within 15km of the boundary, potential effects on the whole of those sites has been considered. This approach is consistent with that carried out for the HRA of the Herefordshire Local Plan Core Strategy. **Table 2.1** and **Figure 2.1** provide details on the European sites that are within the local authority boundary or within 15km of Herefordshire.

Table 2.1 European sites within the Herefordshire boundary (+15km)

Special Areas of Conservation (SACs)	Special Protection Areas (SPAs)	Ramsar Sites
Sites inside Herefordshire boundary		
Downton Gorge River Clun River Wye Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy*		
Sites within 15km of the Herefordshire boundary		
Sugar Loaf Woodlands Wye Valley and Forest of Dean Bat Sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena* Severn Estuary/ MÃ´r Hafren* River Usk/ Afon Wysg* Cwm Clydach Woodlands / Coedydd Cwm Clydach* Rhos Goch Coed y Cerrig Lyppard Grange Ponds Usk Bat Sites/ Safleoedd Ystlumod Wysg* Llangorse Lake/ Llyn Syfaddan*	Walmore Common Severn Estuary	Walmore Common Severn Estuary

*Hereafter referred to by their English names

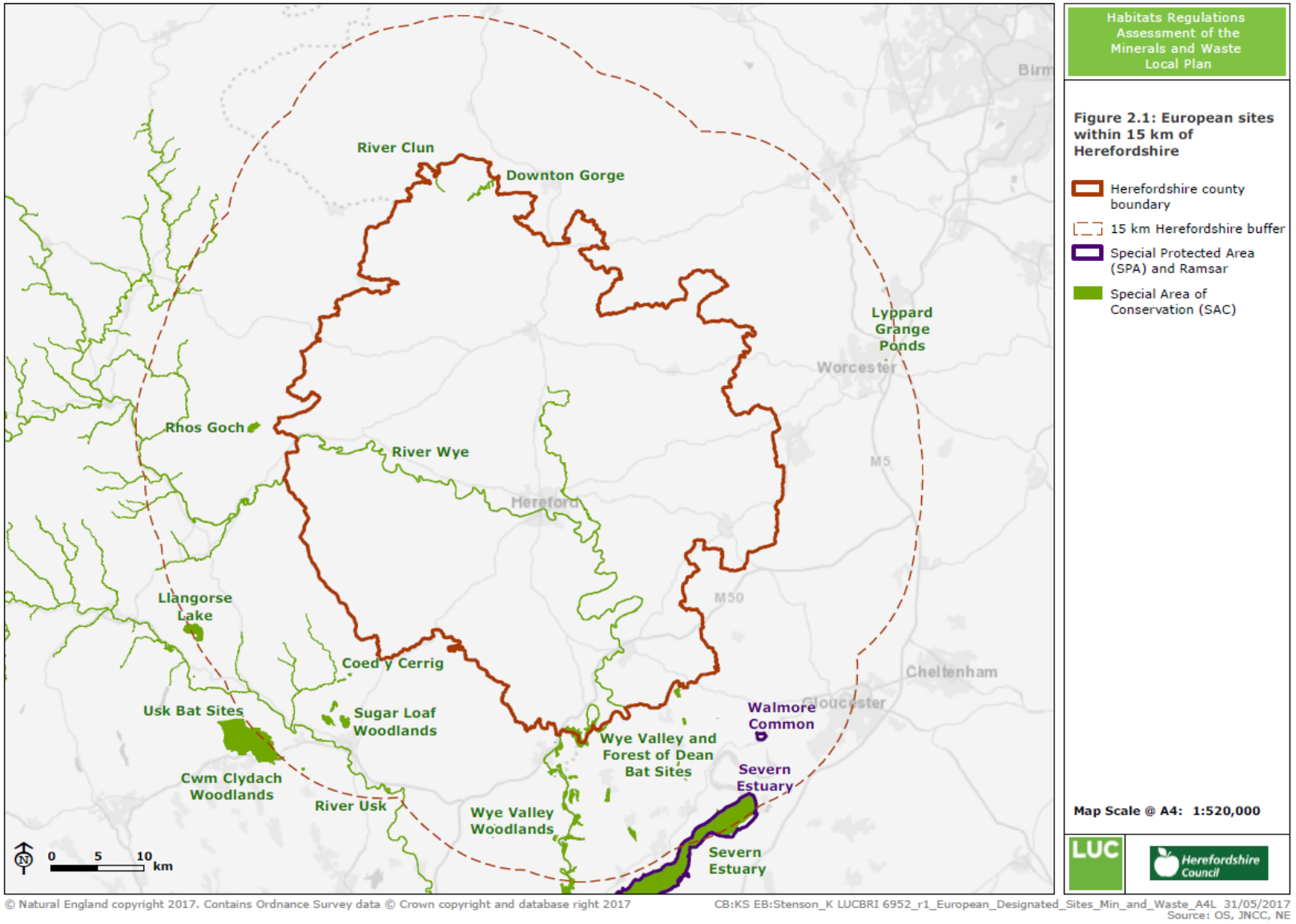

Figure 2.1 European sites within 15km of Herefordshire

Functionally linked sites

2.3 More distant European sites (beyond 15km) that may be functionally linked to Herefordshire have been explored. The only relevant pathway to other European sites identified was that of hydrological links. No additional European sites were identified as being connected to Herefordshire via waterbodies i.e. rivers and streams. Potential pathways affecting water quality or quantity are discussed further in **Chapter 3**.

Locations and attributes of the European sites

2.4 The locations of the European sites are shown in **Figure 2.1**. The designated features and conservation objectives of the European sites, together with current pressures on and potential threats to these are described in **Appendix 1**. This information was drawn from the Standard Data Forms for SACs and SPAs and the Information Sheets for Ramsar Wetlands published on the JNCC website[11] as well as Natural England's Site Improvement Plans[12] and the most recent conservation objectives published on the Natural England website[13]. An understanding of the designated features of each European site and the factors contributing to its integrity will inform the assessment of the potential effects of the Minerals & Waste Local Plan on each European site and the likely significance of those effects.

Herefordshire Local Plan Core Strategy HRA findings and key issues for the HRA of the Minerals & Waste Local Plan

2.5 The HRA of the Herefordshire Local Plan Core Strategy concluded that the Local Plan's policies would not lead to likely significant effects either alone or in combination on European sites within 15km of Herefordshire, with the exception of the River Wye SAC.

2.6 The HRA Screening identified that there is not sufficient existing permitted headroom in the sewerage treatment works serving Leominster and parts of rural Herefordshire to continue to treat water from all of the new housing provided for in the Core Strategy without affecting water quality in the River Wye SAC. However, it was determined that other policies within the Core Strategy and an emerging Nutrient Management Plan would provide sufficient mitigation that there would be no adverse effect on the integrity of the River Wye SAC.

2.7 The Core Strategy HRA also identified the potential for policies enabling the construction of the Hereford Bypass to have an adverse effect on the River Wye SAC due to habitat loss or disturbance, or effects on water quality. The Appropriate Assessment considered that, while sufficient safeguards exist within the Core Strategy policies, the HRA of the Hereford Area Action Plan should further screen potential impacts, once additional design details are available.

2.8 Neither of these impacts are directly relevant to the HRA of the Minerals & Waste Local Plan as the Minerals & Waste Local Plan will not cause the type of development identified as having these impacts (residential development / road building). However, they both highlight the sensitivity of the River Wye SAC to development. The sensitivity of the River Wye SAC to minerals or waste development, either alone or in combination with other plans (including the Core Strategy) will be assessed within the HRA.

[11] www.jncc.defra.gov.uk
[12] http://publications.naturalengland.org.uk/category/5458594975711232
[13] http://publications.naturalengland.org.uk/category/6490068894089216

3 Approach to the HRA

3.1 This chapter describes the approach that will be taken to the HRA of the Minerals & Waste Local Plan throughout their development. Information is provided about how the previous HRA work undertaken for the adopted Herefordshire Local Plan Core Strategy (described in **Chapter 2**) will be drawn upon, where relevant, as well as the assumptions that will be applied during the assessment. Consideration is also given to the sources of evidence that will inform the HRA.

Screening methodology

3.2 As required under Regulation 102 of the Conservation of Habitats and Species Regulations 2010[14] an assessment of the 'likely significant effects' of the Minerals & Waste Local Plan will be undertaken. The methodology that will be used for the Screening of the Minerals & Waste Local Plan is broadly the same as that used previously for the HRA Screening of the Herefordshire Local Plan Core Strategy.

3.3 HRA Screening for the Minerals & Waste Local Plan will be undertaken at such time that Herefordshire prepares a document for public consultation identifying the type, scale and location of development.

3.4 An initial assessment will be undertaken to identify which components of the Minerals & Waste Local Plan have the potential to have likely significant effects on European sites, using the criteria set out in **Table 3.1**.

Table 3.1 Screening criteria to be applied during the HRA[15]

Effects on European Sites
Screened out
A. General statement of policy / general aspiration
B. Policy listing general criteria for testing the acceptability /sustainability of proposals
C. Proposal referred to but not proposed by the plan
D. Environmental protection / site safeguarding policy
E. Policies or proposals which steer change in such a way as to protect European sites from adverse effects
F. Policy that cannot lead to development or other change
G. Policy or proposal that could not have any conceivable effect on a site
H. Policy or proposal the (actual or theoretical) effects of which cannot undermine the conservation objectives (either alone or in combination with other aspects of this or other plans or projects)
Screened in
I. Policy or proposal with a likely significant effect on a site alone
Screening conclusion made after checking for likely significant effects in combination
J. Policy or proposal with an effect on a site but not likely to be significant alone – screen in or out after in combination test

3.5 The HRA Screening exercise will involve considering the potential for each Minerals & Waste Local Plan component to have a likely significant effect on any European site.

3.6 The outcomes of the Screening assessment will be presented in the form of a matrix, setting out:

[14] SI No. 2010/490

[15] Based on list of screening categories provided by The Habitats Regulations Assessment Handbook, DTA Publications, available from http://www.dtapublications.co.uk/

- The Minerals & Waste Local Plan component being assessed (i.e. the policy or site allocation);
- The potential for likely significant effects, prior to consideration of existing mitigation, and the nature of the potential effects identified (e.g. habitat loss, changes in water levels etc.);
- Any existing policies or measures which could provide mitigation, for example other policies within the Minerals & Waste Local Plan;
- The screening conclusion, including the reasons for coming to the judgement of whether or not there are to be likely significant effects (with reference to the screening criteria set out in **Table 3.1**); and
- The European sites that could be affected by those components of the Minerals & Waste Local Plan where likely significant effects cannot be ruled out.

3.7 A 'traffic light' approach will be used to record the likely impacts of the policies and site allocations on European sites and their qualifying habitats and species, using the colour categories shown below.

Red	There are likely to be significant effects (Appropriate Assessment required).
Amber	There may be significant effects, but this is currently uncertain (Appropriate Assessment required).
Green	There are unlikely to be significant effects (Appropriate Assessment not required).

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

Potential impacts of the Herefordshire Minerals & Waste Local Plan on European sites

3.9 **Table 3.2** and **Table 3.3** summarise the potential impacts that the development of waste management facilities and mineral developments may have on European sites, and which may therefore occur through implementation of the Herefordshire Minerals & Waste Local Plan.

Table 3.2 Potential impacts and activities adversely affecting European sites from mineral development

Material	Examples of activities responsible for impacts	Broad categories and examples of potential impacts on European sites
All materials	Site operations will normally include: • Exploration – drilling test boreholes and other exploratory excavations. • Development of ancillary infrastructure (e.g. access roads). • Site preparation and clearing of vegetation. • Soil stripping and overburden removal. • Mineral extraction. • Disposal of waste rock. • Processing of minerals. • Transportation of minerals from site to market and import of cleanfill during restoration. • Transportation of minerals by road (HGVs) or rail. • Site restoration (either during and/or after workings) and after-care.	**Land take & habitat loss/fragmentation** • From continued extraction of aggregates and the development of ancillary infrastructure. Any land take within a European Site is likely to have an adverse impact upon site integrity. It is likely to impact on species populations and species movements. • The impact may also relate to non-designated habitat features. For example, any fragmentation or loss of habitat associated with a SAC woodland, or equally any significant areas of woodland or hedgerows in the vicinity of the SAC may have an adverse effect on bats through the loss of foraging or commuting habitat. Similarly, removal of a habitat adjacent to or within vicinity of an SAC or SPA habitat may have a negative impact on the designated site through a reduction in buffering or changes to local hydrology. • Restoring quarries to biodiversity can be positive for nature conservation. • Partial and full restoration of extraction sites has the potential to improve European Sites through increasing the robustness of sites. This could be either through enhancing buffers or improving the connectivity of sites.
		Disturbance • Noise and light pollution from extraction, ancillary facilities, transportation and some types of restoration may impact upon fauna such as bats and birds.
		Introduced/invasive species • Restoration and mitigation could potentially lead to the introduction or increased abundance of potential invasive species which could comprise an adverse impact on integrity of European sites.
		Water pollution • Contamination of habitats may occur from a number of sources. • Impacts may include reductions in prey species with subsequent impacts on the food chain, bioaccumulation of toxins in the food chain or eutrophication. • Contaminants can be transported large distances with surface or ground water. Impacts may depend on the strength of the pathway between the source and the site. • Wetland habitats are particularly vulnerable to pollution from surface or ground water sources.
		Hydrology • Decreased (for example as a result of extraction) or increased water quantity (for example due to impeded water flow or restoration) ground or surface water levels may

Material	Examples of activities responsible for impacts	Broad categories and examples of potential impacts on European sites
		impact upon designated habitats. • This could impact on the integrity of the site by causing alterations in the species composition or reducing the extent of target habitats. • Reduced water levels in water courses and water bodies could have direct impacts on wetland habitats and designated wildfowl populations. • Reduced volumes of water would increase the concentration of contaminants. • Any significant or long term changes in ground water levels may also affect woodland sites, either having a direct effect on species (canopy, basal flora or epiphytes) or indirectly by increasing stress and vulnerability to other factors.
		Dust • Dust from extraction and on site operations may have an impact on habitats and species. • Potential for affecting the growth of plants. • Dust could also get into water sources.
		Air pollution • From onsite operations and transportation may result in reduced condition and integrity of European Sites. • The impacts of nitrogen and nitrogen oxides deposition on vegetation growth are of particular concern. • Other pollutants including sulphur dioxide, ozone and particulates. • Air pollution has been linked to ill health amongst trees, particularly over mature specimens, and also a failure to regenerate, either from coppice, pollard or seed. • Air pollution may also cause changes in species assemblages, for example in lichens.
Sand and gravel	• Extracted by hydraulic elevators following the stripping of soil. • Crushed, screened and washed. • Disposal of silt. • Transport is often by road because of the small amounts being transported and the fact that the material is relatively low value, bulk materials, for which transport costs make up a large	• Higher land-take from extraction and development of ancillary infrastructure (than crushed rock). • Likely to impact on species populations and species movements. • Noise levels relatively low (compared to hard rock quarries). • Silt disposal capacity is important – water impacts. • Soil stripping in summer can cause dust problems. • Road transport impacts.

Material	Examples of activities responsible for impacts	Broad categories and examples of potential impacts on European sites
	proportion of the market price.	
Crushed rock	• Extracted and crushed to produce aggregate. • Screened into sizes.	• Noise, vibration and dust impacts during mining and crushing of aggregate. • Quarries are often located in areas of landscape value. • Pollution of water courses especially if the direction of water flow is modified. • Road transport impacts.
Building stone	• Cutting and shaping of material. • Application of a surface finish or texture.	• Noise, vibration and dust impacts during mining. • Disposal of waste material. • Quarries are often located in areas of landscape value. • Road transport impacts.
Hydrocarbon	• Drilling of wellbore. • Water and sand is mixed with additives and pumped at high pressure down the wellbore. • Fracturing solution is pumped into the shale formation, creating fissures and opening existing fissure in the rock. This process creates passageways through which the natural gas, previously trapped in the shale rock, can now flow.	• Seismic activity (from energy extraction and fluid injection processes), noise, dust, transport movements and emissions. • Potential release of methane from pipeline leaks. • Habitat fragmentation and disturbance. • Disruption and pollution (e.g. from fracturing chemicals) of surface water and groundwater systems and flows, and abstraction of water necessary for the hydraulic fracturing of shale gas. • Potential contamination of soil environment. • Road transport impacts.

Table 3.3 Potential impacts from the development of waste facilities on European Sites

Waste Facility	Description	Examples of potential impacts on European sites
Waste transfer station	A facility where waste is taken for onward transfer for recycling, treatment/recovery or disposal	• Air emissions primarily associated with haulage. • Low potential for dust and fugitive emissions. • Potential risk to waste resources would depend on the nature of the waste. • Noise, vibration, light pollution, odour, human presence, litter, vermin.
Household Waste Recycling Centre/ Civic Amenity Site	A facility where the public can bring waste for recycling and/or disposal. Includes oversize, awkward, Hazardous and WEEE wastes.	• Air emissions are mainly associated with emission from vehicles (haulage). Limited potential for release of dust, fugitive emissions and bio-aerosols. • Limited potential for impact on water resources due to nature of operations and materials. Residual liquids and organic leachate from green waste can potentially pose

Waste Facility	Description	Examples of potential impacts on European sites
		risk to water resources. • Noise, light, human presence, litter, bird disturbance (where close to a SPA).
Materials Recovery Facility/ Materials Recycling Facility	A facility that separates and recovers materials from recyclable wastes prior to being reprocessed for the manufacture into new recycled products.	• Air emissions primarily associated with public vehicles or haulage lorries. Limited potential for dust, fugitive emissions or bio-aerosols. • Residual liquids (e.g. from bottles and cans) can potentially pose a pollution risk to water resources. • Noise, vibration, light pollution, human presence, litter, vermin.
Mechanical Biological Treatment (MBT)	A processing facility that combines mechanical sorting of mixed wastes with a biological treatment such as composting or anaerobic digestion. Once recyclable materials have been removed, non-recyclable waste is treated to produce a material which can be sent to landfill or used as a 'refuse-derived fuel'	• Potential habitat loss or degradation. • Potential bio-aerosols emissions from organic materials. Potential dust impacts. Air emissions associated with haulage. • Potential leachate pollution. • Noise, vibration, light pollution, odour, human presence, litter, vermin.
Refuse Derived Fuel (energy from waste)	Refuse-derived fuel is a fuel produced from various types of wastes such as Municipal Solid wastes, industrial wastes or commercial wastes. The waste is shredded, dried and baled and then burned to produce electricity.	• Emission concerns, particulates and potentially dioxins.
Modern Thermal Treatment, Energy from waste/ incineration and Advanced Thermal Treatment (ATT) including Pyrolysis and Gasification	Waste management processes involving medium and high temperatures to recover energy from the waste. ATT includes pyrolysis and gasification based processes.	• Air emissions include carbon dioxide, acid gases, eavby metals, particulates and dioxins/ dibenzofurans. • Limited potential for dust and ash release (mainly through accidental spillage and fugitive emissions). • Air emissions associated with emission from vehicles (haulage). • Thermal technologies use minimal amounts of water and discharge minor amounts to sewers. • Noise, light, human presence, litter, bird disturbance (where close to an SPA).
Anaerobic Digestion (energy from Waste)	The decomposition of shredded organic waste (food or green wastes) in an enclosed container. Bacteria break down the material in the absence of oxygen, leaving a residue and liquor that can be used as a soil improver/ fertiliser and a biogas that can be burnt to produce heat and electricity.	• Emissions to air – odour (during collection, transport and pre-treatment). • Waste water produced during dewatering of solid digestate can contain high concentrations of metals, dissolved nitrogen and organic material. • Noise, light, human presence, litter, bird disturbance (where close to a SPA).

Waste Facility	Description	Examples of potential impacts on European sites
Open Windrow Composting	Green waste is shredded and left in the open to mature. It is turned regularly. The compost can be used on land (only on contaminated land, not on agricultural) subject to appropriate controls.	• Potential for bio aerosol effects within 250m of operations. • Open windrow is usually undertaken in the open air on a concrete base. Potential for dust from heaps, processing and haulage. • Leachate and run-off from compost heaps has a high content of organic substances. • Noise, light, human presence, litter, bird disturbance (where close to an SPA).
In Vessel Composting	The aerobic decomposition of shredded and mixed organic waste within an enclosed container	
Landfill **+Hazardous waste** **+Non-hazardous waste** **+Inert waste**	Disposal mainly below ground level. Although landfill is being discouraged it will still be required to dispose of residues of other waste operations. Requires an existing void.	• Potential habitat loss or degradation. • Methane and carbon monoxide emissions. • Leachate, salts, heavy metals, biodegradable and persistent organics. • Accumulation of hazardous substances in soil. • Topography alteration, visual intrusion. • Soil occupancy, prevention of other land uses. • Attraction of vermin. Gulls and corvids (crow family) attracted to the landfill prey upon protected species, particularly the eggs and young of nesting birds. • Contamination, accumulation of toxic substances. • Potential exposure to hazardous substances. • Impact on surface water runoff, flood risk.

Screening assumptions

3.10 The Screening stage of the HRA for the Minerals & Waste Local Plan will take the approach of screening each policy or site allocation individually, which is consistent with current guidance. For many of the types of impacts, screening for likely significant effects will be determined on a proximity basis, using GIS data to determine the proximity of potential development locations to the European sites that are the subject of the assessments. However, there are many uncertainties associated with using set distances as there are very few standards available as a guide to how far impacts will travel. Therefore, during the Screening stage of the HRA for the Minerals & Waste Local Plan, a number of assumptions will be applied to inform the assessment of likely significant effects, as set out below.

Physical damage/loss of habitat onsite

3.1 Any development resulting from the Minerals & Waste Local Plan would be located within Herefordshire County, therefore only those European sites within the Herefordshire boundary could be affected through direct physical loss of habitat. The sites within the county boundary are:

- Downton Gorge SAC;
- River Clun SAC;
- River Wye SAC; and,
- Wye Valley Woodlands SAC.

3.2 While it is unlikely that the Minerals & Waste Local Plan will include policies or site allocations that permit development within these SACs, at this stage potential impacts remain screened in until further details are available.

Physical damage/loss of habitat/disturbance offsite

3.3 Damage or loss of off-site habitat (i.e. land outside European sites that is functionally linked as it may be used by the qualifying species of a site) is more likely to be an issue for highly mobile species, particularly birds and bats.

3.4 In line with the assumptions that were used in the HRA of the Herefordshire Local Plan Core Strategy, a 10km buffer will be used to establish the likely zone of influence of development and associated noise, vibration and light pollution on European sites in which bats are a qualifying feature, as they may travel up to 10km to forage or roost. Within this identified zone, more detailed information about the locations of foraging/roosting sites and patterns of movement will be used in order to come to a judgement about the likely significance of effects of the Minerals & Waste Local Plan policies on particular sites. For example, the Herefordshire Bat Study[16] provides useful data, mapping the locations of roosting sites. European sites further than 10km from the county border have therefore been screened out of further assessment.

3.5 Otters, which are a qualifying feature of the River Wye SAC, can have a range of up to 18km[17] and utilise watercourses throughout the Wye catchment[18], including those outside the SAC itself. Minerals or waste development within 18km of the River Wye SAC could therefore affect offsite habitats associated with the SAC, if otters are present.

3.6 Birds have varying ranges depending on the species and would therefore need to be considered on a site by site basis.

3.7 The following European sites support mobile species and have the potential to be functionally linked to offsite habitats within Herefordshire:

- Wye Valley Woodlands SAC (bats);
- Wye Valley and Forest of Dean Bat Sites SAC (bats);

[16] *Greater and Lesser Horseshoe Bats in South Herefordshire 2010: A Study to Inform Herefordshire Council's Local Development Framework.* Herefordshire Biological Records Centre, June 2010.
[17] http://www.devonmammalgroup.org/devons-mammals/otter/
[18] *5th Otter Survey of England, 2010*

- Usk Bat Sites SAC (bats). Note that only the portion of the SAC that is also designated as Foxwood SSSI is within 10k of the county boundary;
- River Wye SAC (otters);
- Severn Estuary SPA and Ramsar (birds). Note that the majority of the site's qualifying species are water birds, therefore it is wetland habitats that are most likely to be functionally connected to the SPA/Ramsar; however the SPA does also support lapwing, which utilises farmland; and,
- Walmore Common SPA and Ramsar (birds). Note that the qualifying species are two species of swan, and therefore only habitats used by swans could be functionally linked to the SPA/Ramsar.

Non-physical disturbance (noise, vibration and light)

3.8 Noise impacts, e.g. during excavation works, are most likely to disturb bird and mammal species and are thus a key consideration with respect to European sites where these are among the qualifying features.

3.9 Vibration effects may result where development takes place in close proximity to European sites which include bats, otters and fish species as qualifying features.

3.10 Artificial lighting at night (e.g. from street lamps, flood lighting and security lights) is most likely to affect bat populations and other nocturnal animals, and therefore have an adverse effect on the integrity of European sites where bats or nocturnal animals are a qualifying feature.

3.11 A large proportion of the European sites within Herefordshire are therefore not vulnerable to these effects as their qualifying features are plants, woodland etc.

3.12 It has been assumed that non-physical disturbance and urban edge effects are most likely to be significant within a distance of 500m from the European site. There is also evidence of 300m being used as a distance up to which certain bird species can be disturbed by the effects of noise[19]; however, it has been assumed (on a precautionary basis) that the effects of noise, vibration and light pollution are most likely to cause an adverse effect if development takes place within 500m of a European site with qualifying features sensitive to these disturbances, or known off-site breeding, foraging or roosting areas.

3.13 Of the European sites within the county or within 500m of its boundary, only the following sites are therefore likely to require further consideration regarding noise, vibration or lighting:

- Wye Valley and Forest of Dean Bat Sites SAC (bats);
- Wye Valley Woodlands SAC (bats); and
- River Wye SAC (otters).

Recreation and urban impacts

3.14 Recreation activities and general human presence can have an adverse impact on the integrity of a European site as a result of physical disturbance, e.g. through erosion and trampling. However, it is assumed that proposals in the Minerals & Waste Local Plan will not result in an increase in recreational use of European sites (this is more likely to be an issue where residential development is proposed, for example). Therefore, this type of effect has been screened out of this HRA.

Air pollution

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

[19] *British Wildlife Magazine.* Volume 09, Number 1,October 2007

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

3.17 Based on the Highways Agency Design Manual for Road and Bridges[20] (DMRB) Volume 11, Section 3, Part 1 (which was produced to provide advice regarding the design, assessment and operation of trunk roads (including motorways)), it is assumed that air pollution from roads is unlikely to be significant beyond 200m from the road itself. Where increases in traffic volumes are forecast, this 200m buffer needs to be applied to the relevant roads in order to make a judgement about the likely geographical extent of air pollution impacts.

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

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

3.19 The key criterion in relation to minerals or waste development is therefore changes to HDV flows.

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

3.21 The A40 runs through the southeast of the county, which provides links to Monmouth, Newport and the M50. There are also a number of larger A roads that radiate out from Hereford, including the A49, A465, A4103 and A438. The proposed Hereford Bypass (proposed within the Core Strategy) will provide an alternative route for the A49 trunk road around Hereford and will link with the A465 and A49 via a new Southern Link Road. There are a number of smaller A roads in Herefordshire, primarily in the north of the county.

3.22 European sites that are within 200m of major roads (motorways or 'A' roads) and may be sensitive to changes in air quality are:

- Wye Valley Woodland SAC (woodland habitats); and
- River Wye SAC (water habitats); and
- River Clun SAC (species dependent on water habitat).

3.23 Note that the Site Improvement Plan for the River Clun SAC does not identify air pollution as a threat or pressure, but does identify high nitrogen levels in the river as a pressure. Agriculture is identified as the main source of this, but vehicle emissions could potentially contribute.

3.24 Areas of the Wye Valley and Forest of Dean Bat Sites SAC lie within 200m of the A466, which provides a route from the A49, south of Hereford, directly south to Chepstow and the Severn Estuary and provides a link to the M48. However, the Site Improvement Plans for this site does not recognise air pollution as a main pressure or threat and bat species are not particularly sensitive to air pollution. This, in addition to the low likelihood that this road will be a main route for the transport of minerals or waste in Herefordshire, has led to the conclusion that air pollution impacts do not need to be considered further in relation to the Wye Valley and Forest of Dean Bat Sites SAC.

[20] https://www.gov.uk/guidance/standards-for-highways-online-resources

Water quantity and quality

3.25 Minerals extraction can affect water flows and quality through processes such as dredging, dewatering and excavation below the water table. Impacts on water quantity and quality are most likely to affect European sites that are hydrologically connected to the potential mineral sites, either via surface or groundwater pathways. Consideration will be given to the likelihood of hydrological connectivity between any potential site allocations and the European sites within 15km of the county boundary. Where there is connectivity, the potential for significant effects to arise through changes in water flows or quality will be considered for each site.

3.26 European sites likely to be affected by changes to water quantity or quality are those with qualifying features that are wetland habitats or are species dependent on wetland habitats, or habitats sensitive to changes to the water table, as identified in the Site Improvement Plans.

3.27 The following sites have the potential to be affected by changes to water quantity or quality, where they are found to have above or below ground connectivity to minerals or waste sites:

- River Wye SAC (water habitats);
- River Clun SAC (species dependent on water habitat);
- Severn Estuary SAC / SPA / Ramsar (water habitats and species dependent on them);
- River Usk SAC (water habitats and species dependent on them);
- Rhos Goch SAC (wetland habitats);
- Coed y Cerrig SAC (wetland habitats);
- Usk Bat Sites SAC (wetland habitats);
- Langorse Lake SAC (water habitat); and
- Walmore Common SPA (species dependent on water habitat).

3.28 Lyppard Grange Ponds SAC supports great crested newts that are dependent on water habitat, but it lies within an urban area c.13km from the Herefordshire border and is very unlikely to be hydrologically connected to mineral sites within the county.

3.29 It should be noted that any water abstraction and discharges arising from mineral extraction would be regulated through the Environmental Permit regime administered by the Environment Agency, which also takes into account environmental impacts including likely significant effects on European sites.

Sites scoped out of further assessment

3.30 The above screening assumptions have not identified any pathways between the Minerals & Waste Local Plan and the following sites:

- Sugar Loaf Woodlands SAC;
- Cwm Clydach Woodlands SAC; and
- Lyppard Grange Ponds SAC.

3.31 As such, these sites can be scoped out of further HRA for the Minerals & Waste Local Plan.

Interpretation of 'likely significant effect'

3.32 Relevant case law helps to interpret when effects should be considered as a likely significant effect, when carrying out HRA of a land use plan.

3.33 In the Waddenzee case[21], the European Court of Justice ruled on the interpretation of Article 6(3) of the Habitats Directive (translated into Reg. 102 in the Habitats Regulations), including that:

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

[21] *ECJ Case C-127/02 "Waddenzee"* Jan 2004.

- An effect should be considered 'significant', *"if it undermines the conservation objectives"* (para 48); and
- Where a plan or project has an effect on a site "*but is not likely to undermine its conservation objectives, it cannot be considered likely to have a significant effect on the site concerned"* (para 47).

3.34 An opinion delivered to the Court of Justice of the European Union[22] commented that:

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

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

In-combination effects

3.36 Regulation 102 of the Amended Habitats Regulations 2010 requires an Appropriate Assessment where "a land use plan is likely to have a significant effect on a European site (either alone or in combination with other plans or projects) and is not directly connected with or necessary to the management of the site". Therefore, as well as considering the likely effects of the Minerals & Waste Local Plan alone on European sites, it will also be necessary to consider whether there may be significant effects from the Minerals & Waste Local Plan in combination with other plans or projects.

3.37 This exercise will be carried out as part of the Screening stage of the HRA for the Minerals & Waste Local Plan. The potential for in-combination effects will only be considered for those Plan components identified as unlikely to have a significant effect alone, but which could act in combination with other plans and projects to produce a significant effect. This approach accords with recent guidance on HRA[23].

3.38 The first stage in identifying potential 'in-combination' effects involves identifying which other plans and projects in addition to the Minerals & Waste Local Plan may affect the European sites that will be the focus of the HRA.

3.39 There are a large number of potentially relevant plans; therefore the initial review has focussed on planned spatial growth within Herefordshire, including in the Herefordshire Local Plan Core Strategy and its Development Plan Documents, and planned spatial growth in authorities adjacent to Herefordshire. The findings of any associated HRA work for those plans have been reviewed where available.

3.40 Based on a review of the National Infrastructure Planning website[24], no significant scale projects that could result in in-combination effects with the Minerals & Waste Local Plan have been identified.

3.41 Should any other plans or projects be identified throughout the HRA process that could lead to in-combination effects on European sites with the Minerals & Waste Local Plan, they will be included in the review.

3.42 **Appendix 2** presents the initial review of other plans and projects, outlining the components of each plan or project that could have an impact on nearby European sites and considering the findings of the accompanying HRA work (where available). This information will be updated as the HRA work for the Minerals & Waste Local Plan progresses. The following authorities' plans and HRA work have been included:

- Other Herefordshire Council documents;

[22] *Advocate General's Opinion to CJEU in Case C-258/11 Sweetman and others v An Bord Pleanala* 22nd Nov 2012.
[23] DTA: The Habitats Regulations Assessment Handbook: http://www.dtapublications.co.uk/handbook/browse
[24] National Infrastructure Planning website http://infrastructure.planningportal.gov.uk/

- Forest of Dean District Council;
- Powys County Council;
- Malvern Hills District Council (South Worcestershire Development Plan);
- Shropshire Council;
- Monmouthshire County Council; and
- Brecon Beacons National Park Authority.

Mitigation

3.43 Some of the potential effects that may be identified during the HRA work for the Minerals & Waste Local Plan may be able to be mitigated through the implementation of other policies in the Plan itself or Herefordshire Local Plan Core Strategy policies, for example any policies relating to the provision of improved sustainable transport links (e.g. rail) which could help to mitigate potential increases in air pollution associated with increased vehicle traffic, or policies with the specific purpose of protecting and enhancing the environment, including biodiversity. Such potential mitigation will be taken into consideration during the screening stage of the HRA for the Minerals & Waste Local Plan and will influence the screening conclusions as appropriate.

Appropriate Assessment

3.44 It is possible that the Appropriate Assessment stage of the HRA will be required in relation to the Minerals & Waste Local Plan.

3.45 The Appropriate Assessment stage of the HRA focuses on those impacts judged likely at the screening stage to have a significant effect, and seeks to conclude whether they would result in an adverse effect on the on the integrity of the qualifying features of a European site(s), or where insufficient certainty regarding this remains. The integrity of a site depends on the site being able to sustain its 'qualifying features' across the whole of the site and ensure their continued viability.

3.46 An Appropriate Assessment matrix will be prepared for each of these European sites where significant effects from the Minerals & Waste Local Plan could not be ruled out. The matrix will set out each European site's qualifying features and conservation objectives, standards and factors which are needed to maintain the site's integrity, existing trends and pressures at the site including the use of areas of off-site functional land (where data are available), as well as the conservation objectives, and the site vulnerabilities identified during the screening stage.

3.47 For each European site and likely significant effect identified, distinctions will be made between direct and indirect effects, short or long term effects, construction, operational or decommissioning effects, isolated, interactive or cumulative effects and permanent, intermittent or temporary effects. The impacts will vary, depending on the habitat or species in question for each site.

3.48 As stated in HRA Guidance[25], assessing the effects on the site(s) integrity involves considering whether the predicted impacts of the Minerals & Waste Local Plan policies (either alone or in combination) have the potential to:

- Cause delays to achieving the conservation objectives of the site;
- Interrupt progress towards achieving the conservation objectives of the site;
- Disrupt those factors that help to maintain favourable condition of the site;
- Interfere with the balance, distribution and density of key species that are the indicators of favourable condition of the site;
- Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem;

[25] *Assessment of plans and projects significantly affecting Natura 2000 sites. Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC.* European Commission Environment DG, November 2001.

- Change the dynamics of relationships that define the structure or function of the site (e.g. relationships between soil and water, or animals and plants);
- Interfere with anticipated natural changes to the site;
- Reduce the extent of key habitats or the population of key species;
- Reduce the diversity of the site;
- Result in disturbance that could affect the population, density or balance between key species;
- Result in fragmentation; and
- Result in the loss of key features

3.49 The latest available data sources will be drawn on to inform the Appropriate Assessment as relevant. The results of this analysis should enable a conclusion to be reached regarding whether the integrity of any European site would be affected. If this were the case, an assessment of alternative solutions and mitigation would need to be undertaken. This would consider the extent to which such effects can be avoided through the examination of alternatives. In the context of the Minerals & Waste Local Plan, such alternatives may include the clarification of policies to remove areas of uncertainty leading to predicted impacts or to include conditions or restrictions relating to their implementation, the modification of policies to include alternative solutions or locations for particular developments or the omission of policies where no alternatives exist.

4 Consultation and next steps

4.1 This Scoping Report has introduced the HRA process that will be undertaken in relation to the emerging Herefordshire Minerals & Waste Local Plan, and has presented and updated information that was gathered during the previous HRA work.

Consultation

4.2 The Scoping Report is being sent to Natural England for consultation. In particular, the following are sought from Natural England:

- Comments on the adequacy of the proposed approach to identify likely significant effects from the Minerals & Waste Local Plan, justifying any proposed changes and suggesting appropriate data sources to implement these;
- Copies of or links to relevant sources of data to inform HRA judgements; and
- Details of any plans or significant projects additional to those in **Appendix 2** that should be considered for their potential to have effects in combination with those of the Minerals & Waste Local Plan.

Next steps

4.3 Once Herefordshire Council has produced the first iteration of the Minerals & Waste Local Plan, this will be subject to HRA in line with the methodology described in Chapter 3 of this report.

4.4 The HRA report produced will be updated as required throughout the preparation of the Herefordshire Minerals & Waste Local Plan and published alongside the consultation version of the Plan. Additional consultation may be undertaken with Natural England as the statutory consultation body for HRA.

Appendix 1

Attributes of European Sites

Introduction

This appendix contains information about the European sites scoped into the HRA (see Chapter 2 above). Information about each site's area, the site descriptions, qualifying features and pressures and threats are drawn from Natural England's Site Improvement Plans (SIPs)[26] and the Natura 2000 Standard Data Forms or Ramsar Information Sheets available from the JNCC website[27]. Site conservation objectives are drawn from Natural England's website and from the Management Plans provided in the Standard Data Forms, and are only available for SACs and SPAs.[28]

Downton Gorge SAC

Site area: 68.88 ha

Overview of site and its location

Downton Gorge was formed by the River Teme cutting through a ridge of limestones, siltstones and sandstones. With its rocky cliffs and steep dingles the Gorge supports an area of ancient semi-natural woodland of varying types including *Tilio-Acerion* forest. The Large Leaved Lime is an example of a nationally rare tree which is prevalent on the site.

Qualifying Features

9180 *Tilio-Acerion* forests of slopes, screes and ravines

Pressures and threats

Deer

Deer are having an adverse impact on woodland vegetation and are affecting the vertical woodland structure by selectively browsing on herbs, shrubs and young trees. Without improvements in their management (enhanced cull at the local and landscape level and selective fencing), the deer population will impose long-term changes on the composition of the site's woodland. The undisturbed and secluded nature of the site appears to make it attractive as a local refuge for deer in the area.

Game Management: pheasant rearing

A large number of pheasants are reared and released each year on land immediately surrounding the Gorge. Many of these remain within the site all year round and there is evidence that they are causing some damage to the ground flora. There are also some issues relating to the shoot such as the cutting of vegetation to allow beating and unsympathetic woodland track management.

Forestry and woodland management

Most woodland management on the site is carried out as part of NNR management and therefore generally this is done sympathetically within the SAC itself. There are however a few relatively small scale issues such as the removal of deadwood and issues with cutting vegetation, as well as less sympathetic woodland management immediately adjacent to the site.

Disease

Phytophthora disease affects some riparian alders present in the site and can lead to the death of trees. Ash-die back disease, Chalara, whilst not known to be present at this time, has the potential to affect the health and abundance of the ash component of the site's woodlands. Monitoring for the presence and extent of these diseases is required. In addition planning should be undertaken to consider how to mitigate for and adapt to this increasing threat.

[26] Site Improvement Plans: East of England, Natural England, http://publications.naturalengland.org.uk/category/4873023563759616
[27] JNCC Data Forms http://jncc.defra.gov.uk/default.aspx?page=4
[28] European Site Conservation Objectives, Natural England, http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/conservationobjectives.aspx

Invasive species

Several invasive species, including Himalayan balsam, Japanese knotweed and rhododendron are present and these need to be contained and reduced. Himalyan balsam is present along the riverside and long-term effective control of it requires catchment-wide approach.

Habitat fragmentation

The site is a small isolated remnant of the once much larger Bringewood Chase, of which there are very few other remaining parts, however in remnant areas adjoining the SAC many of the oak trees were felled in the mid twentieth century and re-planted with conifers. These conifers influence the SAC through shade, microclimate, hydrology etc. Many of these plantations are reaching maturity. Although the existing plantations influence the site, were they to be clear felled it would have an even more drastic influence on the SAC through changing the above parameters and potentially increasing the isolation of the site from other mature woodlands. The isolation of the site increases the vulnerability of the site to the extinction of species through disease or climate change. The threat would be partly addressed by a continuous cover woodland plan, which looks to convert the existing conifers to sympathetic broadleaf woodland. The new tree cover would be supportive of the wildlife interests of the SAC, notably the woodland flora, the lichens and mosses of deciduous trees and the birds of western valley deciduous woodlands.

Air Pollution: impact of atmospheric nitrogen deposition

Nitrogen deposition exceeds site relevant critical loads.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

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

River Clun SAC

Site area: 14.64 ha

Overview of site and its location

The River Clun SAC is important for its population of Freshwater Mussel (FWPM) *Margaritifera margaritifera* which has a very high water quality requirement. It is the southern-most of only three SAC sites designated for Freshwater Mussel in England.

Qualifying Features

1029 Freshwater pearl mussel *Margaritifera margaritifera*

Pressures and threats

Siltation

Siltation is a major issue affecting the health of Freshwater Mussel, both by acting directly on the adult mussels but also by preventing juvenile recruitment. Excessive delivery of fine sediment, from the catchment or artificially enhanced bank erosion, may lead to a range of problems relating to surface

siltation, the compaction or concretion of river beds and to the in-filling of substrate interstices. This affects oxygen supply and exchange between the river water and the substrate as well as the ability of juvenile and adult mussels to burrow. Infiltration by fine sediments is one of the main causes of decline in juvenile recruitment for mussel populations. Fine sediments also subsequently provide a medium for macrophyte growth and further silt trapping, which makes the river bed habitat unsuitable for mussels. It should be noted that host salmonids also require clean gravels for spawning and are particularly sensitive to siltation of gravel beds.

The River Clun Restoration Plan and Nutrient Management Plan highlight the issues around increased sediment loads and siltation affecting the remaining freshwater mussels. The scientific and local stakeholder consensus is that agriculture is responsible for the majority of sediment loads in the River Clun.

Water Pollution

Water quality is important for all life stages of Freshwater Mussel. Juvenile mussels, after they drop off the host fish and live within the river gravels, are most vulnerable to pollution events.

Phosphorus, together with nitrogen, is important in enhancing productivity and elevated levels from point and diffuse sources are an important factor in eutrophication. As with siltation, nutrient enrichment can have serious and ongoing impacts on juvenile and adult mussels. Increased inputs of dissolved nutrients tend to lead to filamentous algal and macrophyte growth. The respiration of artificially large growths of benthic or floating algae may generate large diurnal sags in dissolved oxygen and poor substrate conditions (increased siltation) for fish and invertebrate species. Macrophytes can also smother the mussel habitat even further, and trap more sediment, exacerbating the problem in the long term.

The River Clun Nutrient Management Plan identified agriculture as a significant contributor of P, N (also sediment). Agriculture (livestock and arable) are shown to contribute 61% of P and 92% of N. In addition Sewage treatment plants contribute 35% of P, at current levels. As there is pressure for more development, this will only increase unless it is tackled.

Low breeding success/poor recruitment

The stressed and aging population of Freshwater Mussel is very vulnerable to one off events (floods, drought, pollution). Surveys since 1995 show there has been no juvenile recruitment and there has been an overall loss of 60% of mussels between 1995 and 2013. Most of the remaining mussels are in very poor condition and although they are long lived, the remaining population may only survive for another 20 years without major intervention. This is an aging population which is very stressed, the remaining mussels have been found covered in silt and algae and sitting on the surface of the gravel rather than buried amongst it. The numbers of mussels may reach a point where there is insufficient genetic diversity to maintain a healthy population. Studies have shown that translocation of mussels from river to river is relatively unsuccessful with mortalities of over 50% in the first three years. There may be physiological accommodation or genetic adaptation to particular rivers. Therefore it is crucial to maintain the existing population in situ.

Disease

Tree death is compounding other problems such as siltation and nutrient enrichment. Alder phytophthora is killing numerous trees in the Clun catchment. Dead trees are leading to less stable banksides and contributing directly to bankside erosion/increased siltation. Occasional trees are falling into river and pulling out whole bank side. As well as adding silt to the river, over time this will effectively widen the river, causing slower and shallower water which will compound the other issues of siltation and pollution. Tree shade also helps to keep the river cool, cold water holds more oxygen and shade can help prevent the growth of plants and algae.

Physical modification

The Freshwater mussel has a commensal relationship with migratory salmonids (salmon and trout), as the glochidia (larval stage) attach themselves to the gills of the fish before dropping off to bury themselves in clean gravels. Weirs and dams (not all of which are in the SAC itself, some are downstream in River Teme SSSI) affect the movement of migratory salmonids on which the mussels depend. Although salmonids are arriving in the headwaters they are likely to be less healthy than if progress upstream was unimpeded.

Invasive species

Himalayan balsam in the main problem species in the catchment at the moment. Work has begun to map and tackle the spread of this species. As Himalayan balsam dies back in winter, it often leaves bare banks during the winter season making them more vulnerable to erosion. This will add to the siltation problems faced by the Freshwater mussel although this has not actually been quantified. It is important to tackle this in conjunction with other issues in the catchment to prevent it undoing work that is happening elsewhere.

Change in land management

Current and future changes in land management in the catchment, particularly intensification of farming practices are a concern. There is a general trend of arable farming replacing grazed grasslands. Changes in land use are a feature across the catchment. Arable, including potato growing has increased in the last decade, including on the steeper slopes higher up in the catchment. The soil types are vulnerable to erosion. Increased sediment loads are evident in the river and have impacted on the riverbed habitat affecting the Freshwater mussel population (siltation).

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

River Wye/ Afon Gwy SAC

Site area: 2147.64 ha

Overview of site and its location

The River Wye SAC covers 250km of relatively natural and unmodified main river with a near-natural fluvio-geomorphological regime. The upland reaches, from the source in Powys, has a bryophyte dominated vegetation which progresses into extensive water crowfoot *Ranunculus* beds in the lowland reaches in England.

The lower 23km is transitional habitat to the confluence with the Severn Estuary. The river supports a number of internationally important migratory fish, including Atlantic Salmon, Lamprey and Shad species. Otters are widespread.

Qualifying Features

3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion vegetation*

7140 Transition mires and quaking bogs

1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

1095 Sea lamprey *Petromyzon marinus*

1096 Brook lamprey *Lampetra planeri*

1099 River lamprey *Lampetra fluviatilis*

1103 Twaite shad *Alosa fallax*

1106 Atlantic salmon *Salmo salar*

1163 Bullhead *Cottus gobio*

1355 Otter *Lutra lutra*

1102 Allis shad *Alosa alosa*

Pressures and threats

Water Pollution

Water quality is important for all SAC species and habitats, e.g. high water quality is vital to the breeding success of Salmon. Point sources of concern are relatively localised e.g. mining waste, raised metals concentrations and phosphates. Sedimentation and diffuse pollution are key issues in the catchment including upland acidification (affecting river pH values). Implementation of a Diffuse Water Pollution Plan and Nutrient Management Plan is necessary. Pesticides have been a concern historically e.g. pyrethroids, cypermethrin and metaldahydes. Current and future changes in cropping patterns across the catchment could cumulatively impact on the water quality, predominantly through diffuse pollution e.g. planting maize to feed biodigesters, siting of potato fields, irrigation needs, levels of poultry manure. The promotion of sustainable farming practice throughout the catchment is required to help address this.

Physical modification

This is a relatively near natural river system and needs to be maintained as such. Small scale development has occurred throughout the river and is impacting on hydromorphology and character. Ongoing work to the riverbank eases public access but causes localised erosion issues. A series of weirs on the Lugg affect the natural hydromoprhology. River Restoration Plans have been prepared for the Wye and Lugg and these need to be implemented. Gravel input from the upper catchment is reduced due to the Elan Reservoirs, and low bankside tree cover may minimise the input of large woody debris necessary within a healthy river system.

Invasive species

Himalayan Balsam, Japanese Knotweed, Giant Hogweed and hybrids are present throughout the catchment and these require control. In addition a management strategy is required for Signal crayfish which are also present within the catchment and SAC. To prevent other invasive species, for example, killer/demon shrimps reaching the catchment, a biosecurity strategy is required.

Hydrological changes

Urban drainage and new development can affect the hydrology. Poor siting of infrastructure causes excessive (and silt laden) run-off. e.g. new windfarm or forestry track. Woody debris in the river system is of benefit to fish but is limited by lack of tree cover. Bankside grazing generally limits tree cover which, with other factors such as climate change, could lead to an associated water temperature increase over time. Cattle and sheep have free access to the river, throughout the year, in many places so extensification of grazing stock would be beneficial. The planting of tree belts and strategic use of appropriate fencing on vulnerable land will help improve runoff.

Forestry and woodland management

Gauging appropriate management levels is difficult but there is a need to balance management and risks with fisheries management, navigation and flood risk management. Tree cover is highly variable across the catchment. Clearfell/management of upland conifer plantations can lead to sediment and nitrate release which is a concern. A floodplain forest LIFE partnership bid to improve management of Upper Wye (Wales) is being developed. In addition the Lower Wye (England) would benefit from further tree planting.

Fisheries: Freshwater

The management of banks and vegetation by river users is not always compatible with the SAC features e.g. digging steps and mowing banks. In channel management of gravels may impact the river habitat. Angling is managed via bylaws e.g. compulsory catch and release of salmon year round on the Wye and Shad fishing is not permitted. The potential to license those that hire boats may help highlight environmental considerations.

Fisheries: Fish stocking

Fish stocking is continuing at present. Fish hatcheries are being phased out by National Resources Wales (NRW).

Water abstraction

Water flow does not follow the near natural pattern because of the effects of Elan reservoirs and the releases made from the dams. Work is underway (UWAG) to assess and agree a revised set of reservoir release rules that will require changes to the operating agreement. More natural flushing and migration flows are proposed. There is a potential impact on hydro-morphology and ecology due to regular higher than natural flows. There is a need to integrate environmental requirements with the need for public water supply and agriculture. Necessary changes will be made to both river regulation and abstraction licences to ensure that the best use of water resources is made to balance these needs. In the River Lugg catchment, licences are already being varied to ensure low flows are protected. Winter storage reservoirs for agriculture are encouraged and the Environment Agency is awaiting Defra guidance on the regulation of trickle irrigation.

Public Access/Disturbance

The high usage of the river by canoeists and anglers has the potential to cause disturbance to SAC species and habitats as well as the supporting or dependant flora and fauna. Examples range from the cutting of water crowfoot *Ranunculus* beds for navigation, dogs disturbing otters and the disturbance of gravel bars and beds by canoeists.

Air Pollution: impact of atmospheric nitrogen deposition

Nitrogen deposition exceeds site relevant critical loads with respect to the SAC's transition mire habitat located in Wales.

Inappropriate scrub control

Increased scrub and woodland is affecting the structure and compostion of the transitional mire and quaking bog at Colwyn Brook Marshes. This appears to indicate drying out due to a change in hydrological processes/wetland structure function and/or vegetation succession due to a change in grazing pressure.

Undergrazing

Undergrazing is affecting the structure and composition of the transitional mire and quaking bog feature at Colwyn Brook Marshes and may be contributing to further scrub encroachment and vegetation succession.

Transportation and service corridors

Produce a site management statement which ensures that the SAC features are taken into account when undertaking works on Network Rail's assets.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

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

Wye Valley Woodlands/ Coetiroedd Dyffryn Gwy SAC

Site area: 913.33 ha

Overview of site and its location

The woodlands of the lower Wye Valley form one of the most important areas for woodland conservation in Britain (comparable with the Caledonian pinewoods, the oceanic oakwoods of Western Britain, the New Forest and the mixed coppices of East Anglia).

Semi-natural woodland is extensive and virtually continuous along the Wye gorge and overlie a variety of geological strata and soils. Most woods are a rich mixture of stand-types, which are believed to be similar in composition to the original natural woods of the valley, with some of them rare and very localised eg the Lime-Sessile Oak stands on limestone, Beech stands on both acid and alkaline soils in which Lime (*Tilia spp*), Elm (*Ulmus spp*), Oak (*Quercus spp*) and other species share dominance. *Tilio-Acerion* (Lime and Ash) and *Taxus* (Yew) woodlands types are also features of the site.

In addition many rare and local plant species are present, including some of the rarest native tree species, e.g. Large-leaved lime (*Tilia platyphyllos*), Whitebeams (*Sorbus spp*) and trees close to the edge of their European range, eg Hornbeam (*Carpinus betulus*) and Beech (*Fagus sylvatica*). Furthermore, these woods sit in a matrix of unimproved grassland and other semi-natural habitats which support a number of other notable plant species. The Wye Valley Woodlands also provide an important foraging resource for the local population of lesser horseshoe bats which are known to hibernate in various disused mines and structures throughout the woodlands.

Qualifying Features

1303 Lesser horseshoe bat *Rhinolophus hipposideros*

9130 *Asperulo-Fagetum* beech forests

9180 *Tilio-Acerion* forests of slopes, screes and ravines * Priority feature

91J0 *Taxus baccata* woods of the British Isles * Priority feature

Pressures and threats

Deer

There is an increasing population of deer within the gorge woodlands and also within the wider area of the Forest of Dean. Due to the excessive levels of browsing on a range of woodland plants, the natural regeneration of many species is being affected adversely. The formation of the Deer Initiative in an attempt to cull deer and to reduce numbers has proved ineffective to date. There are a small number of fenced enclosures in some woodland which demonstrate the dramatic effect on the vegetation when deer are excluded.

Forestry and woodland management

The woodlands along the gorge have been managed as coppice for centuries to support the local mining and quarrying industries. This form of management has been abandoned to any great extent and many stands are reverting to closed canopy high forest. It is possible that the rich species mix was, in part, a result of this form of management preventing any one species from dominating. In addition, some areas were probably also managed as a form of wood-pasture. Open space and associated species also need to be considered. Woodland management practices undertaken as part of Forest Design Plans and woodland management plans need to better reflect the requirements needed to sustain the SAC features, namely the rich diversity of stand-types and species including bats. In particular, much traditional coppicing has been abandoned with a gradual change to high forest and loss of open space.

Invasive species

A variety of invasive species are present including Himilayan balsam, Perwinkle, Japanese knotweed and Cherry laurel. In some places regeneration from planted conifers occurs. Mature Sycamore trees may require control in some instances.

Habitat connectivity

The SAC (and its component woodland SSSIs) are a mere selection of the semi-natural woodlands in the area on both sides of the Wye gorge and on the Dean plateau. The addition of other areas of semi-natural woodland or restoration of PAWS (plantations on ancient woodland sites) to the SSSI series would allow linkages to be made to assist migration of species especially in the light of climate change and allow improved ecosystem functioning. Additional information is required on the extent and distribution of woodland types and associated vegetation communities in the area.

Species decline

The SAC's *Tilio-Acerion* forest feature includes a number of locally uncommon plants and several uncommon *Sorbus* species. Data on these plant species from the time of initial designation are now considered insufficient, especially with regard to their distribution and location. It is considered that habitat loss, due to inappropriate management, has resulted in declines or losses of some of these species. Survey is needed to identify and to locate these species in order to inform management. With regard to the *Sorbus* species, there has been extensive revision of existing species with many new species having been identified recently, indicating that this area is an important site for *Sorbus* diversity and evolution.

Air Pollution: impact of atmospheric nitrogen deposition

Nitrogen deposition exceeds site relevant critical loads.

Disease

Tree diseases such as ash dieback and sudden oak death, in particular, pose a serious threat to the species structure of the Wye Valley woodlands.

Public Access/Disturbance

Visitor use can result in erosion and damage to ground flora, recreation activities such as climbing can damage delicate cliff face communities and in particular the cliff face *Sorbus* species. Lesser horseshoe bats sometime breed in underground sites. Bats are particularly vulnerable to disturbance whilst breeding; they have only a single young every year, and so disturbing a maternity colony can have a significant adverse impact on the area's bat population. They are also vulnerable during hibernation, as frequent disturbance from torpor leads to a reduced chance of surviving the winter. Most of the entrances have grills to deter access. If these become damaged, unauthorised access by cavers can occur. By ensuring grills are in place and efficiently repaired when damaged and by educating caving groups this problem can be minimised.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

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

Sugar Loaf Woodlands SAC

Site area: 173.09 ha

Overview of site and its location

This is an internationally important area of Western Sessile Oak woodland, at the extreme south-eastern limits of its occurrence in Britain. Large areas of Oak woodland are now rare in Wales. The woodland also supports a smaller area of Beech plantation woodland, smaller areas of heathland, Bracken, scrub and grassland along with a colony of Red Wood Ants, a species more commonly found in southern and eastern Britain.

Qualifying Features

91A0 Old sessile oak woods with Ilex and Blechnum in the British Isles

Pressures and threats

Invasive non-native species

Medium ranked threat both inside and outside the site.

Grazing

High ranked threat inside the site.

Forest planting on open ground

Low ranked threat inside the site.

Air pollution, air-borne pollutants

High ranked threat both inside and outside the site.

Problematic native species

Medium ranked threat both inside and outside the site.

Forestry activities not referred to above

(Forest planting on open ground, Forest and Plantation management & use, Forest exploitation without replanting or natural regrowth, Use of biocides, hormones and chemicals (forestry), Grazing in forests/ woodland)

Low ranked threat inside the site.

Forest and Plantation management & use

Medium ranked threat inside the site.

Conservation objectives

Below is the vision for the site, taken from the Core Management Plan for the site, which summarises the conservation objectives for the site. For more information, please refer to Part 4 'Conservation Objectives' of the Core Management Plan[29].

Around 70% of the site is covered by woodland (including temporary canopy gaps and glades), with mature sessile and hybrid oaks being dominant in the canopy. The oak woodland has trees of all age classes with a scattering of standing and fallen deadwood. Regeneration of oak trees is sufficient to maintain the woodland cover in the long term. Young ash and rowan trees may also be present in places but young beech trees are rare.

The shrub layer (where present) and ground flora consist of locally native plants that are typical of oak woodland, such as hazel, holly, common bent, wavy hair-grass, creeping soft-grass, wood sorrel, heath bedstraw and bracken. A generally grassy woodland ground flora is found in some areas, including bracken where the canopy is open or leaf litter and scattered woodland flowers where the ground is more shaded. In other areas bilberry and moss carpets are prominent. The southwest facing slopes of St

[29] https://www.naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf

Mary's Vale are important for red wood ants and here the canopy is broken providing sun warmed 'hotspots' on the woodland floor where the ants build their nests. Elsewhere in St Mary's Vale, a dense tree canopy protects the well-developed carpets of mosses and liverworts on the woodland floor, which require dense shade to retain moisture.

Wye Valley and Forest of Dean Bat Sites / Safleoedd Ystlumod Dyffryn Gwy a Fforest y Ddena SAC

Site area: 144.82 ha

Overview of site and its location

This complex of sites on the border between England and Wales contains, at the time of listing, by far the greatest concentration of Lesser horseshoe bat in the UK, totalling about 26% of the national population. It features an exceptional breeding population. In addition, it supports a significant population of Greater horseshoe bat in the northern part of its range. The site contains the main maternity roost and hibernacula for this species in this area.

Qualifying Features

1303 Lesser horseshoe bat *Rhinolophus hipposideros*

1304 Greater horseshoe bat *Rhinolophus ferrumequinum*

Pressures and threats

Physical modification

The SAC comprises of a series of 13 hibernation and maternity roost sites ranging from caves, buildings, churches, a disused railway tunnel, and mines. Roosting bats have precise microclimate requirements and are sensitive to small changes in conditions such as temperature and humidity. The microclimate of roosts in buildings, bridges and caves can be adversely affected by structural deterioration, repair and renovation or other factors. As many of the maternity roost sites are in inhabited privately owned buildings they are vulnerable to disturbance. It is important that there is appropriate advice, support and monitoring provided at roost sites.

Public Access/Disturbance

Greater horseshoe bats and lesser horseshoe bats are vulnerable to disturbance during hibernation, as frequent disturbance from torpor leads to a reduced chance of surviving the winter. They are also vulnerable to disturbance whilst breeding; they have only a single young every year, and so disturbing a maternity colony can have a significant adverse impact on the area's bat population. Most of the entrances to underground hibernacula and maternity roosts have grills to deter access. If these become damaged, unauthorised access by cavers and others can occur.

Habitat connectivity

Feeding areas around the SAC's maternity roosts are especially important for the bats, as they provide food during the spring and summer months for pregnant and lactating females as well as for the young on their early foraging flights. Neither breeding females nor young can fly as far as non-breeding adults, which range over a wide area, so a good feeding area within a radius of about 4km around the maternity roosts is critical for the long-term survival of the site's population. Juvenile Greater horseshoe bats forage on dung beetles extensively, so factors affecting quality of dung such as cattle numbers and use of pesticides can also impact on populations. Unimproved pasture and woodland are important habitats for sustaining dung beetle, chafer and large moth populations. Linear landscape features such as hedgerows are also important. A landscape of permanent pasture and ancient woodland, linked with an abundance of tall bushy hedges, is the ideal habitat as it provides both their insect food and the linear features used as flight paths. The effective conservation of the Greater horseshoe bat depends on the sensitive management of the farmed and forested landscape around maternity roosts and other sites used by the bats. Cumulatively, changes in agricultural management including: abandonment of grazing land; use of particular pesticides; hedgerow removal; conversion of pasture to arable; and inappropriate forest management can impact both bat species.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of qualifying species, and
- The distribution of qualifying species within the site.

Severn Estuary/ Môr Hafren SAC

Site area: 73714.11 ha

Overview of site and its location

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 subtidal seabed is rock and gravel with subtidal sandbanks. The site also supports reefs of the tube forming worm *Sabellaria alveolata*.

The estuary's classic funnel shape, unique in the UK, is a factor causing the Severn to have one of the highest tidal ranges in the world. A consequence of the large tidal range is an extensive intertidal zone, one of the largest in the UK. The 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 intertidal invertebrate community includes high densities of ragworms, lugworms and other invertebrates forming an important food source for passage and wintering waders and fish. The fish fauna is very diverse with more than 110 species identified. The site is of particular importance for migratory fish.

Qualifying Features

1130 Estuaries

1140 Mudflats and sandflats not covered by seawater at low tide

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

1110 Sandbanks which are slightly covered by sea water all the time

1170 Reefs

1095 Sea lamprey *Petromyzon marinus*

1099 River lamprey *Lampetra fluviatilis*

1103 Twaite shad *Alosa fallax*

Pressures and threats

Public Access/Disturbance

There are a wide range of recreational activities within the site (walking, dog walking, horse riding, biking, beach activities, angling, wildfowling, other shooting (e.g. clay pigeon)) that may cause damage to habitats where pressure is high.

Physical modification

Modification to water courses and barriers to Annex II migratory fish (and those included in the fish assemblage) in the tributary rivers* are preventing completion of the life cycle and potentially altering the hydrodynamics of the site. This includes existing structures and operations (bridges, power station

lagoons, jetties, dredging, flood alleviation) influencing the flow of water, sediments and therefore migration.

**Actions for tributary rivers which are designated as SACs will be detailed in Site Improvement Plans (England/cross-border) or Prioritised Improvement Plans (Wales).*

Impacts of development

More rigorous assessment of cumulative, in-combination and offsite impacts (drainage, disturbance, runoff, impacts on managed realignment etc.) on habitats and species may be required, given the range of planned development within and adjacent to the Estuary (including residential, transport, energy and other industrial developments).

Coastal squeeze

As sea levels rise, man-made defences are constraining the natural roll back of estuarine habitats, causing squeeze and loss of habitat and having impacts on species dependent upon those habitats (e.g. feeding, nursery and shelter areas for fish).

Change in land management

Changes in management and use of grassland and saltmarsh habitat within and bordering the estuary. Changes in ownership and other land practices can result in changes in management and use of land (e.g. changes in grazing practice) which affects species composition, habitat availability, and quality of saltmarsh habitats and use of land for other activities that may cause damage or disturbance.

Changes in species distributions

There is a risk of significant changes in estuarine populations in parts of the Estuary resulting from climate change and other man-made and natural modifications to on- and offsite environments. In many cases the causes of the changes to species distribution are unknown.

Water Pollution

There is uncertainty over water quality in the Estuary due to diffuse (including agricultural) or direct pollution (e.g. industrial, sewage treatment works, thermal, radioactive). There is a requirement for better understanding of water and sediment quality issues. The Severn River Basin Management Plan identifies that 17 % of the estuarine water bodies in the river basin district currently achieve good ecological status while the others are at moderate status.

Macrophytobenthos (benthic macro algae) have been identified in localised hotspots and may be having adverse impacts on the invertebrate communities there. The extent of issues like this, the presence and mobilisation of a range of contaminants and reasons behind the moderate statuses need to be understood. This includes analysis of current data and consideration of potential issues with contaminants in sediment.

Air Pollution: impact of atmospheric nitrogen deposition

Activities around the Estuary include fertiliser application, potentially dairy and poultry production, road traffic, industry (including power stations), and shipping which are all sources of nitrogen pollution. Nitrogen deposition exceeds site relevant critical loads, with potential impacts on vegetation structure and diversity.

Marine consents and permits: minerals and waste

The cumulative impacts of aggregate extraction, maintenance dredging and disposal can have adverse impacts on features. While most activity is regulated under marine licences, cumulative effects are not always fully considered.

Fisheries: Recreational marine and estuarine

ACTION FOR ENGLISH PART OF SITE ONLY: Further information is required on the levels and location of activity and potential impact of recreational bait digging and recreational fishing/angling. There are unknown impacts in the vicinity of potentially sensitive roosting and feeding areas, and on intertidal reef habitats.

This issue will be reviewed in consultation with the Devon & Severn IFCA in the future.

Fisheries: Commercial marine and estuarine

ACTIONS FOR ENGLISH PART OF SITE ONLY: Dredges (inc. hydraulic), benthic trawls and seines are categorised as 'red' for the reef features (specifically the subfeature *Sabellaria spp*. reef) as part of Defra's revised approach to commercial fisheries management in European Marine Sites (EMS). A bye-law is now in place to address this and is being implemented by Devon & Severn IFCA (D&S IFCA).

Commercial fishing activities categorised as 'amber or green' under Defra's revised approach to commercial fisheries in EMSs require assessment and (where appropriate) management. This assessment will be undertaken by D&SIFCA. For activities categorised as 'green', these assessments should take account of any in combination effects of amber activities, and/or appropriate plans or projects, in the site.

Invasive species

There are recent reports of marine invasive non-native species (the Australian barnacle *Austrominius modestus,* Mitten crab *Eriocheir sinensis,* and the Pacific Oyster *Crassostrea gigas*) in the Estuary (or the Bristol Channel). These could have an impact on native species and habitats but the abundance and impact in the Severn Estuary of these species is unclear.

Marine litter

The marine environment is a sink for man-made litter which often originates from rivers. Impacts are not fully understood.

Marine pollution incidents

Marine pollution incidents and responses to such incidents have the potential for significant negative impacts on the site and its features. Emergency planning and implementation (ensuring an estuary-wide plan is in place, with all necessary partners signed up) are key to avoiding/reducing such impacts.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:

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

River Usk/ Afon Wysg SAC

Site area: 967.97 ha

Overview of site and its location

The River Usk SAC rises in the Black Mountain range in the west of the Brecon Beacons National Park and flows east and then south, to enter the Severn Estuary at Newport. The overall form of the catchment is long and narrow, with short, generally steep tributaries flowing north from the Black Mountain, Fforest Fawr and Brecon Beacons, and south from Mynydd Epynt and the Black Mountains. The underlying geology consists predominantly of Devonian Old Red Sandstone with a moderate base status, resulting in waters that are generally well buffered against acidity. This geology also produces a generally low to moderate nutrient status, and a moderate base-flow index, intermediate between base-flow dominated rivers and more flashy rivers on less permeable geology. The run-off characteristics and nutrient status are significantly modified by land use in the catchment, which is predominantly pastoral with some woodland and commercial forestry in the headwaters and arable in the lower catchment. The Usk catchment is entirely within Wales.

The ecological structure and functions of the site are dependent on hydrological and geomorphological processes (often referred to as hydromorphological processes), as well as the quality of riparian habitats and connectivity of habitats. Animals that move around and sometimes leave the site, such as migratory fish and otters, may also be affected by factors operating outside the site.

Qualifying Features

1096 Brook lamprey *Lampetra planeri*

1099 River lamprey *Lampetra fluviatilis*

1103 Twaite shad *Alosa fallax*

1106 Atlantic salmon *Salmo salar*

1163 Bullhead *Cottus gobio*

1355 Otter *Lutra lutra*

3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* veg 1095 Sea lamprey *Petromyzon marinus*

Pressures and threats

Invasive non-native species

Medium ranked threat both inside and outside the site.

Forestry activities not referred to above

Low ranked threat both inside and outside the site.

Other ecosystem modifications (other than Fire and fire suppression and Human induced changes in hydraulic conditions)

Medium ranked threat inside the site.

Forest and Plantation management & use

Medium ranked threat both inside and outside the site.

Soil pollution and solid waste (excluding discharges)

Low ranked threat outside the site.

Pollution to surface waters (limnic & terrestrial, marine & brackish)

High ranked threat both inside and outside the site.

Grazing

High ranked threat inside the site.

Human induced changes in hydraulic conditions

High ranked threat inside the site.

Conservation objectives

Below is the vision for the site, taken from the Core Management Plan for the site, which summarises the conservation objectives for the site. For more information, please refer to Part 4 'Conservation Objectives' of the Core Management Plan[30].

Our vision for the River Usk SAC is to maintain, or where necessary restore the river to high ecological status, including its largely unmodified and undisturbed physical character, so that all of its special features are able to sustain themselves in the longterm as part of a naturally functioning ecosystem. Allowing the natural processes of erosion and deposition to operate without undue interference and maintaining or restoring connectivity maintains the physical river habitat, which forms the foundation for this ecosystem. The quality and quantity of water, including natural flow variability, and the quality of adjacent habitats, are maintained or restored to a level necessary to maintain the features in favourable condition for the foreseeable future. In places such as urban environments where natural processes are likely to cause significant damage to the public interest, artificial control measures are likely to be required.

The aquatic plant communities that characterise parts of the river are not only attractive but also give a good indication of the overall quality of the environment. They contain the variety and abundance of species expected for this type of river, in conditions of suitably clean water and bed substrate combined with a relatively stable flow regime. Locally, there are patches of white-flowered water-crowfoots. In the more shaded reaches, aquatic plants may be scarce, consisting mainly of mosses and liverworts.

The special fish species found in the river, both residents such as the bullhead and brook lamprey, and migratory species such as the Atlantic salmon, sea lamprey and shad, which swim up river to spawn and go through their juvenile stages in the river, are present in numbers that reflect a healthy and sustainable population supported by well-distributed good quality habitat. The migratory fish are able to complete their migrations and life cycles largely unhindered by artificial barriers such as weirs, pollution, or depleted flows.

The abundance of prey and widespread availability of undisturbed resting and breeding sites, allows a large otter population to thrive. They are found along the entire length of the river and its main tributaries.

The presence of the River Usk SAC and its special wildlife enhances the economic and social values of the area, by providing a high quality environment for ecotourism, outdoor activities and peaceful enjoyment by local people and visitors. The river catchment's functions of controlling flooding and supplying clean water are recognised and promoted through appropriate land management. The river is a focus for education to promote increased understanding of its biodiversity and the essential life support functions of its ecosystems.

Cwm Clydach Woodlands / Coedydd Cwm Clydach SAC

Site area: 28.08 ha

Overview of site and its location

The site is situated on the southern side of the River Clydach valley, approximately 2km east, north east of Brynmawr. The underlying geology varies across the site, consisting of sedimentary rocks that range from Old Red Sandstone through Carboniferous Limestone into shales and sandstones of the Millstone Grit and Coal Measures. Soils mainly consist of typical brown earths and humo-ferric podsols. Altitude ranges from 170m by the River Clydach to 350m in Cwm Llammarch.

Cwm Clydach is of special interest for its stands of broadleaved woodland dominated by beech, intergrading with more open habitats, which together support a number of rare and scarce vascular plants including whitebeams *Sorbus* spp. and soft-leaved sedge *Carex montana*. There are important

[30] https://www.naturalresources.wales/media/674063/Sugar_Loaf_Woodlands_core_management_plan_Mar_2008%20_A_.pdf

woodland and grassland fungi assemblages with rare species such as *Squamanita paradoxa*. The site also includes two localities of national geological importance

Qualifying Features

9130 *Asperulo-Fagetum* beech forests

9120 Atlantic acidophilous beech forests with Ilex and sometimes also Taxus in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)

Pressures and threats

Hunting and collection of wild animals (terrestrial), including damage caused by game (excessive density), and taking/removal of terrestrial animals (including collection of insects, reptiles, amphibians, birds of prey, etc., trapping, poisoning, poaching, predator control, accidental capture (e.g. due to fishing gear), etc.)

Low ranked threat inside the site.

Invasive non-native species

Low ranked threat both inside and outside the site.

Conservation objectives

Below is the vision for the site, taken from the Core Management Plan for the site, which summarises the conservation objectives for the site. For more information, please refer to Part 4 'Conservation Objectives' of the Core Management Plan[31].

Around two thirds of the site is covered by predominantly beech woodland (including temporary canopy gaps and glades), with mature sessile and hybrid oaks common in the canopy in the west of the site. The beech woodland has trees of all age classes with a scattering of standing and fallen deadwood. Regeneration of trees is sufficient to maintain the woodland cover in the long term. Whitebeam and yew trees are locally prominent. Ash and birch trees may also be present, but rarely dominate the canopy.

The shrub layer and ground flora can be quite sparse in the beech woodland, but where present consist of locally native plants such as hazel and hawthorn, bramble, dog's mercury, enchanter's-nightshade, lords-and-ladies, woodruff, male fern, sanicle, wood melick, ivy, false brome, violets, herb robert, wood avens, and tufted hair-grass. On more acidic soils where oak is prominent, the ground flora is often more heathy with bilberry and wavy hair-grass and in places mosses such as greater fork moss and swan's-neck thyme-moss are abundant. Scarcer plants, such as soft-leaved sedge and bird's-nest orchid are locally frequent and, more rarely, yellow bird's-nest orchid and oak fern can be found.

Rare whitebeam trees grow on steeper slopes and on limestone outcrops within and outside the woodland and on old railway cuttings. Their populations are stable or increasing.

A wide range of fungi is present, with rose spindles, rosy pinkgill, olive earthtongue and waxcaps in the grassland habitats, which includes the unsurfaced parts of the disused railway trackbed, and giant club, powdercap strangler and coral fungi in the woodland.

The important geological rock exposures need to be kept in a condition, which will enable researchers to re-examine the evidence available to previous workers and use them as a teaching resource.

[31] https://naturalresources.wales/media/675017/cwm-clydach-sac-plan-english.pdf

Rhos Goch SAC

Site area: 67.39 ha

Overview of site and its location

The central core of the site comprises Rhos Goch National Nature Reserve (NNR), a peat bog that has developed in a small glacial lake basin to the north of Hay-on-Wye in Powys. The site also includes surrounding wet meadows and patches of woodland forming part of the "lagg zone" of the bog. The site is the source of two streams, the Cwm-illa Brook (which flows north-east towards the River Arrow) and the Bach Howey (which flows south-west towards the River Wye).

Qualifying Features

6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)

7110 Active raised bogs * Priority feature

7140 Transition mires and quaking bogs

91D0 Bog woodland * Priority feature

91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) * Priority feature

Pressures and threats

Grazing

Medium ranked threat inside the site.

Air pollution, air-borne pollutants

Low ranked threat both inside and outside the site.

Human induced changes in hydraulic conditions

Medium ranked threat inside the site.

Problematic native species

High ranked threat both inside and outside the site.

Conservation objectives

Below is the vision for the site, taken from the Core Management Plan for the site, which summarises the conservation objectives for the site. For more information, please refer to Part 4 'Conservation Objectives' of the Core Management Plan[32].

Around 95% of the site is wetland, comprising a mosaic of different habitats. The central core of Rhos Goch common, comprising around 20% of the site, consists of fairly open raised bog with a series of pools and hummocks. The drier hummocks support heather, hare's-tail cottongrass, cross-leaved heath and purple moor-grass, while the pools are dominated by common cottongrass and bog-mosses. Purple moorgrass is not overwhelmingly dominant on the raised bog. The scattered birch trees and willow scrub do not form a closed canopy. Most of the core bog area is surrounded by a band of wet woodland. This occupies around 30% of the site in total. About a third of this is "bog woodland" that receives acidic water draining from the raised bog. The canopy here consists of downy birch and rusty willow over a ground layer that is generally dominated by mixtures of purple moor-grass and common reed over carpets of bog-mosses. Other plants found here include marsh cinquefoil, water horsetail, lady fern, bilberry and velvet bent grass. Royal fern is locally abundant in these areas.

Most of the remaining woodland is "fen-carr", occupying the "lagg zone" of the raised mire, which receives drainage water from the surrounding fields and some from the raised bog. This woodland is still largely dominated by downy birch and rusty willow but they are joined by frequent alder, with occasional oak, ash and aspen on the slightly drier ground. There are also a few shrubs such as hawthorn and

[32] https://www.naturalresources.wales/media/673319/Rhos_Goch_SAC_Plan_2007%20_A_.pdf

guelder-rose. The ground flora here consists of a variety of wetland plants, including common reed, greater tussock-sedge, purple moor-grass, meadowsweet, hemp-agrimony, bittersweet, soft rush, opposite-leaved golden-saxifrage and marsh marigold. The canopy in the woodland areas is fairly even but there are occasional gaps where trees have died. Standing and fallen dead wood is plentiful. Plants indicating high nutrient levels, such as common nettle, bramble, cleavers and creeping buttercup, are generally absent from the bog woodland. They may be prominent in places within the fen carr but they are never overwhelmingly dominant.

On the south-west side, the raised bog grades into a broad zone of basin bog and swamp vegetation that contains patches of rusty willow scrub. There are other small patches of this vegetation in the wettest parts of the surrounding pasture areas. Together they cover around 10% of the site. The open areas closest to the raised bog have vegetation that is characteristic of more acidic conditions, with plants such as sedges, common cottongrass, marsh cinquefoil, soft rush, water horsetail and marsh pennywort over carpets of bog-mosses. As the ground water becomes less acidic the bog-mosses are gradually replaced by others, such as bog groove-moss and spearmosses, with a greater range of other plants that are typical of "transition mires", including bogbean, water mint, bog pondweed, marsh marigold, lesser spearwort, common marsh-bedstraw and forget-me-nots. The areas furthest from the raised bog support additional plants that are found in more nutrient-rich swamps, including common spike-rush, bulrush, lesser pond-sedge, greater tussock-sedge, gipsywort and the locally rare greater spearwort. The taller swamp plants form a dense canopy during the summer months but the water beneath supports floating plants such as floating club-rush, ivy-leaved duckweed and a thriving population of the bladderwort, which obtains nutrients from tiny insects trapped within its submerged bladders.

The edge of the swamp-zone is seasonally waterlogged, supporting tall rushes or a sward of smaller grasses, such as creeping bent and Yorkshire-fog with a scattering of swamp plants including lesser spearwort, water mint, marsh marigold and bladder sedge. Disturbed areas here support floating sweet-grass, bulbous foxtail, the uncommon whorl-grass and a population of the nationally scarce pillwort. Temporary pools and water seepages running out from the swamp zone are the favoured habitat of the scarce blue-tailed damselflies, which can be seen on the wing during the summer months.

There are large patches of rusty willow scrub in the swamp zone but they occupy less than 5% of the site in total and the willow and birch trees are not encroaching into the open bog and swamp areas. Plants indicating high nutrient levels and disturbance, such as floating sweet-grass and creeping buttercup, may be prominent at the edges of the common but these plants are uncommon in the central wetland areas. There are poached areas with sparse vegetation, where grazing animals roam, but these cover less than 5% of the swamp zone in total.

Marshy grassland borders the swamp zone at the southern end of the common and there are more extensive areas of this habitat in the fields that lie below the spring line in the meadows around the edges of the site. This habitat covers around a quarter of the site in total. It is largely dominated by mixtures of rushes and purple moor-grass, with a good range of typical plants, such as common marsh-bedstraw, greater bird'sfoot-trefoil, tormentil, sneezewort, wild angelica, meadowsweet, lesser spearwort, carnation sedge, heath spotted-orchid, water mint, common sorrel, cuckooflower, marsh willowherb, marsh pennywort, common sedge and marsh ragwort. Around 30% of this marshy grassland also has plants that are typical of species-rich fen-meadow, including devil's-bit scabious, meadow thistle, fen bedstraw, marsh valerian, flea sedge, quaking grass, cross-leaved heath, tawny sedge and marsh orchids.

There several springs within the meadows, which supply mineral-rich water to a series of boggy flushes. Here there are small sedges and "brown" mosses, with plants such as common butterwort, common cottongrass, few-flowered spike-rush, bulbous rush, marsh arrowgrass, quaking grass, marsh lousewort and bog pimpernel. In places the spring water is more acidic and there are flushes dominated by sharpflowered rush, over bog-mosses. The drier ground within the meadows at the northeastern end of the site supports some grassland dominated by common bent, crested dog's-tail, sweet vernal-grass and fescue with a good variety of flowering plants including common bird's-foot-trefoil, common knapweed, red clover, glaucous sedge, tormentil, devil's-bit scabious and betony. There are also some patches of damper grassland dominated by creeping bent at the northern end of the site.

Purple moor-grass and rushes are not completely dominant anywhere within the marshy grassland and there is no significant accumulation of dead vegetation from year to year. Plants indicating disturbance and nutrient enrichment, such as Yorkshire fog, floating sweet-grass, rough-meadow grass, marsh

thistle, creeping buttercup and cleavers are not prominent in these areas. The marshy grassland is generally free from invading scrub.

The site supports a wide range of specialised wetland insects, including rare and scarce flies, beetles and bugs. Generally, for each wetland plant or insect of particular interest, the population is stable, or increasing and is sustainable in the long term, the range is not contracting, sufficient habitat exists to support the species and the factors that may affect the species or its habitat are under control.

Rhos Goch also supports a good range of wetland breeding birds including snipe, sedge warbler, grasshopper warbler, reed bunting, lapwing and water rail.

Coed y Cerrig SAC

Site area: 8.99 ha

Overview of site and its location

The site includes a large area of species-rich fen meadow, in association with some rush pasture. There is also an important area of alluvial ash and alder woodland, with transitions to drier woodland dominated by ash and oak.

Qualifying Features

91E0 Alluvial forests with Alnus glutinosa and Fraxinus excelsior (*Alno-Padion*, *Alnion incanae*, *Salicion albae*) * Priority feature

Pressures and threats

Forest and Plantation management & use

Medium ranked threat inside the site.

Interspecific floral relations

Medium ranked threat both inside and outside the site.

Conservation objectives

Below is the vision for the site, taken from the Core Management Plan for the site, which summarises the conservation objectives for the site. For more information, please refer to Part 4 'Conservation Objectives' of the Core Management Plan[33].

Around a third of the site is covered by wet alder and willow woodland. The understorey includes locally native shrubs typical of this habitat and the ground flora consists of a variety of typical wetland plants, such as lesser pond-sedge, common marsh-bedstraw, meadowsweet, yellow pimpernel, opposite-leaved golden-saxifrage, marsh-marigold, hemlock water-dropwort, water mint, lady fern and rushes. A stable or increasing population of marsh fern is also present. Canopy shading from trees and shrubs should be low in the vicinity of at least one of the colonies, to improve the potential for the fern to grow spore-producing fronds. This wet woodland grades into areas of permanent open swamp dominated by lesser pond-sedge or other typical wetland plants, where the hydrological conditions are suitable. Adjacent areas of marshy grassland and spring-fed mire are intimately linked to the wet woodland and swamp. The wet woodland has a variable canopy structure, based on a small-scale patchwork, with alder of different ages and some standing as well as fallen dead wood. Ash does not make up more than 25% of the canopy. Plants associated with nutrient enrichment, such as stinging nettle and cleavers, are not dominant over large areas and invasive alien plants like Japanese knotweed and Indian balsam are absent.

The drier ground supports woodland, which is mainly composed of ash, oak and beech, although the latter species occupies no more than about 5% of the site. In the past, elm was an important component of the woodland, but Dutch elm disease killed many of these trees. It is possible, and desirable, that elm

33 https://www.naturalresources.wales/media/671319/Coed%20y%20Cerrig%20%20SAC%20%20Management%20Plan%20_English_.pdf

could again feature prominently in the canopy. There is an understorey here that includes abundant hazel, some wych elm and evidence of natural regeneration of trees and shrubs. The ground flora in these areas includes a wide range of typical woodland plants, such as dog's mercury, herb-robert, hart's-tongue, tufted hair-grass, bluebell, enchanter's-nightshade, honeysuckle, wood sorrel, creeping soft-grass and ferns and locally uncommon plants, including nettle-leaved bellflower. The dry woodland is developing a diverse structure with mature and ancient trees, natural regeneration, canopy gaps and areas of fruiting hazel. Hazel nuts are an important food source for the dormouse population. The canopy and understorey structure have many branches overlapping with each other and with tree trunks to allow easy movement by dormice around the wood. Invasive tree species such as sycamore and patches of young beech are rare or absent. Dead wood, including fallen and standing trees are found throughout the drier woodland. A system of wide paths on south-facing slopes are kept open to maintain the population of nettle-leaved bellflower and other light demanding plants, such as violets and brambles, which provide food for a variety of species including silver-washed fritillary butterfly and dormice.

Lyppard Grange Ponds SAC

Site area: 1.09 ha

Overview of site and its location

Located in an urban area of Worcester City, Lyppard Grange Ponds is an SAC notified for its breeding population of Great Crested Newts. There are two ponds on the site, some scrub and some rough grassland.

Qualifying Features

1166 Great crested newt *Triturus cristatus*

Pressures and threats

Changes in species distribution

The newt population is very low and has been for several years. The exact cause is unknown, but there may be many contributing factors including lack of egg laying substrate, domestic cat numbers, cumulative effect of additional development etc. Work has been undertaken to improve the terrestrial and aquatic habitat as part of an HLS agreement. Continued monitoring is required to see results of the current measures.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of the habitats of qualifying species
- The structure and function of the habitats of qualifying species
- The supporting processes on which the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Usk Bat Sites/ Safleoedd Ystlumod Wysg SAC

Site area: 1684.71 ha

Overview of site and its location

The site encompasses a series of lesser horseshoe bat roosts, upland habitats, woodlands and cave systems located around the valley of the River Usk near to Abergavenny.

Mynydd Llangatwg is an area of open moorland and bog, with an impressive limestone escarpment along the northeastern edge, and is one of the largest exposures of upland limestone crag in south Wales. The Craig y Cilau National Nature Reserve (NNR) covers a large proportion of this escarpment area, including most of the unquarried scarp, with areas of limestone grassland, scree and quarry spoil, woodland and scrub. A small raised bog (Waun Ddu) bordered by two small streams has developed below the escarpment. An extensive system of caves lies beneath Mynydd Llangatwg and the plateau is peppered with sinkholes.

The main reason for the presence of the NNR is to help control and manage access to the cave system to protect the bat roosts and the underground geology and also the surface habitats, which support an outstanding assemblage of plants. Species include large and small-leaved lime, several species of whitebeam (including least whitebeam (*Sorbus minima*) which is unique to this area of Brecknock), limestone fern, endemic hawkweeds and alpine enchanter's-nightshade.

The chasmophytic vegetation encompasses the various crevices, nooks and crannies on the cliffs, boulders and partially vegetated unstable slopes of the limestone escarpment. It supports a typical range of ferns, bryophytes and calcareous lichens; these include ferns such as maidenhair spleenwort, mosses like *Tortella tortuosa*, and liverworts like *Scapania aspera*. This site is known to support a number of notable lichen species and provides some of the best examples in the area of calcicolous lichen communities, which include the jelly lichen *Collema cristatum* and examples of lichen communities like the *Leproplacetum chrysodetae* and *Aspicilion calcarea*.

Patches of Tileo-Acerion forest are also scattered along the length of the cliffs on Mynydd Llangatwg and intermixed with beechwood in the Clydach gorge. These areas also support a number of rare whitebeams (*Sorbus* spp.).

Qualifying Features

4030 European dry heaths

7120 Degraded raised bogs still capable of natural regeneration

7130 Blanket bogs (* if active bog) * Priority feature

8210 Calcareous rocky slopes with chasmophytic vegetation

8310 Caves not open to the public

9180 *Tilio-Acerion* forests of slopes, screes and ravines * Priority feature

1303 Lesser horseshoe bat *Rhinolophus hipposideros*

Pressures and threats

Other urbanisation, industrial and similar activities (other than Urbanised areas, human habitation, Industrial or commercial areas, Discharges, Structures, buildings in the landscape)

Medium ranked threat inside the site.

Human induced changes in hydraulic conditions

Medium ranked threat both inside and outside the site.

Air pollution, air-borne pollutants

High ranked threat both inside and outside the site.

Invasive non-native species

Medium ranked threat both inside and outside the site.

Interspecific floral relations

Medium ranked threat both inside and outside the site.

Grazing

High ranked threat inside the site.

Problematic native species

Low ranked threat both inside and outside the site.

Conservation objectives

Below is the vision for the site, taken from the Core Management Plan for the site, which summarises the conservation objectives for the site. For more information, please refer to Part 4 'Conservation Objectives' of the Core Management Plan[34].

Mynydd Llangatwg SSSI

The cave system provides a winter hibernation site for large numbers of lesser horseshoe bats and other bat species, including Brandt's, whiskered, Daubenton's, Natterer's, brown longeared and, occasionally, greater horseshoe bats. Numbers of roosting bats, particularly lesser horseshoes, are stable or increasing in the system as a whole.

The special underground features are accessible to allow study of the cave system and its many structures of interest, with both scientific and recreational use and cave exploration managed to safeguard the important sediments and cave features, and to prevent harmful disturbance of hibernating bats and other cave life.

There are large funnel-shaped depressions (shake-holes) on the moorland plateau, caused by the collapse of caverns in the limestone below and some of these form swallow-holes allowing surface water to descend underground to feed into the cave system. Some of these are naturally blocked and form peaty pools and bog-filled hollows. Cave-related surface features are protected from physical disturbance or infilling. In places there are crags, pavements and large boulder fields of the acidic quartz-sandstones.

A mixture of blanket bog, wet heath and dry heath habitats cover most of the upland plateau. Most of the bog and heathland is dominated by small shrubs like heather, bilberry, crossleaved heath and crowberry, which flower freely. Wetter areas have a carpet of bog-mosses, where bog rosemary, a plant more typical of northern Britain, is found. Round-fruited collarmoss is locally abundant on cattle and sheep dung, which decays slowly in the damp acidic, peaty conditions. In early summer the white 'cotton tufts' of hare's-tail cottongrass are prominent in boggy areas, although it is never overwhelmingly dominant. The red and golden yellow hues of common cottongrass and deer-grass leaves mark out areas of bog and wet heath in the autumn. The raised bog at Waun Ddu exhibits a well-marked peat dome and is actively growing and covered with an abundance of peat-forming bog mosses.

There may be a scattering of taller rushes and purple moor-grass in the bog and wet heath areas, but their growth is not so thick as to smother other plants.

The heathland areas have a varied age structure with a mosaic of young heath, mature heath and degenerate heath. Grasses may be present between the dwarf-shrub bushes or on open areas, but they do not make up more than a quarter of the sward in these areas.

The bog, heathland and the associated rock and grassland areas form a valuable habitat mixture for nesting and feeding by upland birds including waders, red grouse and skylarks.

The shaggy tops of the moorland, developed on the acid quartz-sandstone, contrast sharply with the short-grazed, sweet grasslands of sheep's-fescue and bent grasses around the limestone cliffs, where small sedges, the pink of flowers of thyme and variety of colourful grassland fungi are common. Plants indicating disturbance and nutrient enrichment, such as thistles, perennial ryegrass, white clover and creeping buttercup, and those indicating of under-grazing, such as coarse grasses, and tree and shrub seedlings and saplings, are not prominent in the grassland sward. Hawthorn and bramble scrub occurs in

[34] https://www.naturalresources.wales/media/674281/Usk%20Bat%20Sites%20Management%20Plan%20Feb%2008.pdf

places and it provides valuable habitat for birds and insects but it is not encroaching onto the more open grassland.

The cliffs and rock screes also support patches of open woodland and scrub. Ash is the main canopy tree but there is also small-leaved lime, with some scattered beech and large-leaved lime, with hawthorn and hazel scrub common in places. Several types of rare whitebeam trees thrive on the cliffs. The ungrazed cliffs also provide a refuge for rare hawkweeds. Regeneration of young trees is sporadic as much of the area is common grazing land. As well as living trees with holes, hollows and rotten branches, there are also dead and dying trees providing the essential balance between decay and new growth and creating vital habitat for other wildlife like birds, insects and fungi.

The flora on the cliffs, screes and woodland floor sometimes appears sparse, consisting of mainly grasses, ferns, mosses and liverworts, but it includes uncommon plants like mountain melick, alpine enchanter's-nightshade, angular Solomon's-seal and rare hawkweeds. The scarce limestone fern grows abundantly through some of the limestone screes. Sparsely vegetated soil around the cliffs also supports a number of interesting plants that are adapted to summer drought conditions, including the scarce Hutchinsia. The limestone rocks themselves also have a well-developed lichen and moss flora, including many scarce and rare species. Vigorous plants, such as nettles, bramble and ivy, are nowhere dominant within the woodland and the rock faces, crevices and scattered boulders are free from disturbance.

Wooded habitat is readily accessible to foraging bats, particularly the more flight-line dependant lesser horseshoe, with roost sites being connected to scrub and woodland via strong interconnecting linear habitat features such as hedges and wooded streams.

For each habitat or species of particular interest, the area or population is stable, or increasing and its quality is maintained. The factors that may affect these habitats and species are all under control.

Siambre Ddu SSSI

The cave is maintained in a near natural state, which benefits both wildlife and geological interests.

The peak winter count in Siambre Ddu cave is 50 or more lesser horseshoe bats and, when combined with concurrent counts at other caves in the vicinity, this indicates a stable or rising population trend.

Scientific, recreational use and cave exploration are managed to safeguard the important cave features and to prevent harmful disturbance of hibernating bats and other cave life.

Scattered scrub provides bat feeding habitat within the site and also a connection, or flightline along which the bats can navigate, between the roost and foraging habitat outside the SSSI.

Buckland Coach House & Ice House SSSI

The coach house is home to a breeding population of at least 400 adult lesser horseshoe bats. The Ice house provides a winter hibernation site, with 300 or more lesser horseshoes using it in most years, although many of these bats may relocate to other associated winter roosts during particularly cold weather. The Ice house also continues to serve as a day time roost and a night time roost by smaller numbers of bats at other times of the year. Numbers of roosting bats should be stable or increasing in both buildings.

Both the coach house and Ice house are maintained in a suitable condition for use by the bats. They are in good repair and the roosting spaces are undisturbed. The correct temperatures and humidity are maintained in both roosting areas. The bats have unhindered access to both structures, with uninterrupted scrubby or wooded flight corridors between the roost entrances and away to foraging areas at Buckland Plantation and elsewhere. All other factors (see issues below) that affect the species are under control.

Foxwood SSSI

The fissures/cavities within the site provide undisturbed day and night-time roosts throughout the year for the lesser horseshoe population. The peak winter count is around 140 or more and indicates a stable or rising population trend. The surrounding woodland is continuous and composed of mixed species native to the site and provides good undisturbed foraging opportunities with flight routes out to other roosts and foraging areas.

Llangorse Lake/ Llyn Syfaddan SAC

Site area: 215.44 ha

Overview of site and its location

Llangorse Lake is a large shallow lake with a mean depth 2-3 metres lying in a natural depression of the Old Red Sandstone drift formed during the last glacial period. It is the largest natural lowland water in south Wales. It is one of the few natural eutrophic lakes in Britain and is of European importance in this context.

The combination of the mineral-rich geology and size and shape of the lake encourages the growth of a wide range of aquatic and marginal plants, including several that are rare in this part of Wales. The site also demonstrates a gradation from open water, with submerged and floating plant beds, through marginal swamp and fen vegetation, marshy grassland to drier unimproved grassland, with patches of willow scrub and wet woodland. The lake also has a diverse plankton community and supports a wide variety of invertebrates, including rare and scarce species.

Qualifying Features

3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition* - type vegetation

Pressures and threats

Air pollution, air-borne pollutants

Medium ranked threat both inside and outside the site.

Outdoor sports and leisure activities, recreational activities

Medium ranked threat both inside and outside the site.

Human induced changes in hydraulic conditions

High ranked threat inside the site.

Grazing

Low ranked threat inside the site.

Pollution to groundwater (point sources and diffuse sources)

High ranked threat both inside and outside the site.

Pollution to surface waters (limnic & terrestrial, marine & brackish)

High ranked threat both inside and outside the site.

Fertilisation

Medium ranked threat both inside and outside the site.

Fishing and harvesting aquatic resources

High ranked threat inside the site.

Conservation objectives

Conservation Objective for Feature 1: 3150 Natural Eutrophic Lakes with Magnopotamion or Hydrochariton – type vegetation

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There is no loss of lake area, as defined in 2006 aerial photographs for summer levels.
- The aquatic plant community is typical of this lake type in terms of composition and structure, including species such as water-starworts, stoneworts, duckweeds, broad-leaved and fineleaved pondweeds, water lilies, amphibious bistort, water-crowfoots, rigid hornwort, spiked water-milfoil, mare's-tail and horned pondweed.

- Plants indicating very high nutrient levels and excessive silt loads are not dominant and invasive non-native water plants do not threaten to out-compete the native flora.
- The nutrient, pH and dissolved oxygen levels are typical for a lake of this type and there is no excessive growth of cyanobacteria or green algae.
- There is a natural hydrological regime.
- The natural shoreline is maintained.
- The natural and characteristic substrate is maintained.
- The natural sediment load maintained.
- All factors affecting the achievement of these conditions are under control.

Walmore Common SPA

Site area: 52.85 ha

Overview of site and its location

Walmore Common SPA is a low-lying basin in the Severn Vale adjacent to the River Severn, which is subject to extensive winter flooding and high, artificially maintained water levels in summer.

The site supports a range of unimproved and improved wet grasslands overlying a large area of peat and is of botanical and ornithological importance. There is also a large network of ditches that has an important hydrological function as well as supporting a diverse community of flora and fauna.

A large part of the catchment is used as a feeding and roosting site for nationally and internationally important numbers of Bewick's Swan (for which the site has been designated a SPA) and for regionally important numbers of other wintering waterfowl.

Qualifying Features

A037 (NB) Bewick's Swan *Cygnus columbianus bewickii*

Pressures and threats

Hydrological changes

The swans will only visit the SPA if it is under flood conditions. The operating protocol for the tilting weir installed in 2011 needs to have regards for creating flood conditions in the winter months when required.

Changes in species distributions

It is thought, by the British Trust for Ornithology (BTO), that declining numbers are due to broad scale re-distribution of this species rather than to specific site problems. As numbers over-wintering on the nearby Severn Estuary SPA have remained stable, it is important to continue to protect all known sites for this species (only some of which are designated).

Change in land management

Maintenance of suitable habitat is essential for the Bewick's Swan. Changes in management on neighbouring land may also have an adverse impact.

Offsite habitat availability/management

It is necessary to include all regular feeding and roosting areas within a designated site in order to protect the resource for this species from adverse management or developments.

Public Access/Disturbance

Any disturbance to these birds while feeding or roosting is likely to have an adverse effect on the ability of this species to over-winter here.

Energy production

The potential for developments such as wind turbines and solar panels to affect Bewick's Swans needs to be better understood and any sensitive areas identified. A turbine was to be located on the swans' descending flight path onto the SPA, and could have led to a possible risk of collision for flying swans in poor visibility. In addition there is common consensus that the swans use the River Severn for navigation between Slimbridge and Walmore however concerns have been expressed regarding the possibility of the solar panels causing confusion when they are flying between the two sites.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Walmore Common Ramsar Site

Site area: 52.85 ha

Overview of site and its location

Walmore Common occupies a low-lying area in the Severn Vale, which is subject to winter flooding. The site is a wetland overlying peat providing a variety of habitats including improved neutral grassland, unimproved marshy grassland and open water ditches. The common is part of a series of sites within the Severn Vale which, in winter, form an important refuge and feeding area for wildfowl. The highest bird numbers are seen during the harshest winters, when Walmore Common provides an essential feeding and roosting area.

Qualifying Features

Tundra swan, *Cygnus columbianus bewickii*, NW Europe

Pressures and threats

No factors have been reported (past, present or potential) that are adversely affecting the site's ecological character, including changes in land (including water) use and development projects.

Conservation objectives

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Please refer to Walmore Common SPA conservation objectives.

Severn Estuary SPA

Site area: 24700.91 ha

Overview of site and its location

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 subtidal sandbanks.

The estuary's classic funnel shape, unique in the UK, is a factor causing the Severn to have one of the highest tidal ranges in the world. A consequence of the large tidal range is an extensive intertidal zone, one of the largest in the UK. The 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.

The site is of importance during the spring and autumn migration periods for waders, as well as in winter for large numbers of waterbirds, especially swans, ducks and waders.

Qualifying Features

Over winter:

Bewick's Swan *Cygnus columbianus bewickii*

Curlew *Numenius arquata*

Dunlin *Calidris alpina alpina*

Pintail *Anas acuta*

Redshank *Tringa totanus*

Shelduck *Tadorna tadorna*

On passage:

Ringed Plover *Charadrius hiaticula*

Assemblage:

This area qualified under Article 4.2 of the Directive by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 93,986 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Gadwall *Anas strepera*, Shelduck *Tadorna tadorna*, Pintail *Anas acuta*, Dunlin *Calidris alpina alpina*, Curlew *Numenius arquata*, Redshank *Tringa totanus*, Bewick's Swan *Cygnus columbianus bewickii*, Wigeon *Anas penelope*, Lapwing *Vanellus vanellus*, Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Shoveler *Anas clypeata*, Pochard *Aythya ferina*, Tufted Duck *Aythya fuligula*, Grey Plover *Pluvialis squatarola*, White-fronted Goose *Anser albifrons albifrons*, Whimbrel *Numenius phaeopus*.

Pressures and threats

Public Access/Disturbance

Public access and recreation (including third party activities) may have an impact on bird species sensitive to disturbance, causing displacement from feeding, roosting and moulting areas, and if severe could affect long term survival and population numbers and distributions within the Estuary.

Impacts of development

Strategic planning issue. More rigorous assessment of cumulative, in-combination and offsite impacts (drainage, disturbance, runoff, impacts on managed realignment etc) on sensitive bird species and other habitats and species may be required, given the range of planned development within and adjacent to the Estuary (including residential, transport, energy and other industrial developments).

Coastal squeeze

As sea levels rise, man-made defences are constraining the natural roll back of estuarine habitats, causing squeeze and loss of habitat and having impacts on species dependent upon those habitats (i.e. feeding and roosting for birds).

Change in land management

Changes in management and use of grassland and saltmarsh habitat within and bordering the estuary. Changes in ownership and other land practices can result in changes in management and use of land (e.g. changes in grazing practice) which affects species composition, habitat availability, and quality of saltmarsh habitats and use of land for other activities that may cause damage or disturbance.

Changes in species distributions

There is a risk of significant changes in estuarine populations (including declines in some SPA bird populations) in parts of the Estuary resulting from climate change and other man-made and natural modifications to on- and offsite environments. In many cases the causes of the changes to species distribution are unknown.

Water Pollution

There is uncertainty over water quality in the Estuary due to diffuse (including agricultural) or direct pollution (e.g. industrial, sewage treatment works, thermal, radioactive). There is a requirement for better understanding of water and sediment quality issues. The Severn River Basin Management Plan identifies that 17 % of the estuarine water bodies in the river basin district currently achieve good ecological status while the others are at moderate status.

Macrophytobenthos (benthic macro algae) have been identified in localised hotspots and may be having adverse impacts on the invertebrate communities there. The extent of issues like this, the presence and mobilisation of a range of contaminants and reasons behind the moderate statuses need to be understood. This includes analysis of current data and consideration of potential issues with contaminants in sediment.

Air Pollution: impact of atmospheric nitrogen deposition

Activities around the Estuary include fertiliser application, potentially dairy and poultry production, road traffic, industry (including power stations), and shipping which are all sources of nitrogen pollution. Nitrogen deposition exceeds site relevant critical loads, with potential impacts on vegetation structure and diversity, which could affect the waterbird assemblage.

Fisheries: Recreational marine and estuarine

ACTION FOR ENGLISH PART OF SITE ONLY: Further information is required on the levels and location of activity and potential impact of recreational bait digging and recreational fishing/angling. There are unknown impacts in the vicinity of potentially sensitive roosting and feeding areas.

This issue will be reviewed in consultation with the Devon & Severn IFCA in the future.

Fisheries: Commercial marine and estuarine

ACTIONS FOR ENGLISH PART OF SITE ONLY: Dredges (inc. hydraulic), benthic trawls and seines are categorised as 'red' for the reef features (specifically the subfeature *Sabellaria spp*. reef) as part of Defra's revised approach to commercial fisheries management in European Marine Sites (EMS). A bye-law is now in place to address this and is being implemented by Devon & Severn IFCA (D&S IFCA).

Commercial fishing activities categorised as 'amber or green' under Defra's revised approach to commercial fisheries in EMSs require assessment and (where appropriate) management. This assessment will be undertaken by D&SIFCA. For activities categorised as 'green', these assessments should take account of any in combination effects of amber activities, and/or appropriate plans or projects, in the site.

Marine litter

The marine environment is a sink for man-made litter which often originates from rivers. Impacts are not fully understood.

Marine pollution incidents

Marine pollution incidents and responses to such incidents have the potential for significant negative impacts on the site and its features. Emergency planning and implementation (ensuring an estuary-wide plan is in place, with all necessary partners signed up) are key to avoiding/reducing such impacts.

Conservation objectives

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features

- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Severn Estuary Ramsar Site

Site area: 24662.98 ha

Overview of site and its location

The estuary's classic funnel shape, unique in Britain, is a factor causing the Severn to have the second-largest tidal range in the world (after the Bay of Fundy, 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 the extensive intertidal zone, one of the largest in the UK, comprising mudflats, sand banks, shingle, and rocky platforms.

Glassworts and annual sea-blite colonise the open mud, with beds of all three species of eelgrass *Zostera* occurring on more sheltered mud and sandbanks. Large expanses of common cord-grass also occur on the outer marshes. Heavily grazed saltmarsh fringes the estuary with a range of saltmarsh types present. The middle marsh sward is dominated by common saltmarsh-grass with typical associated species. In the upper marsh, red fescue and saltmarsh rush become more prominent.

Qualifying Features

Ramsar criterion 1:

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

H1110 Sandbanks which are slightly covered by sea water all the time

H1130 Estuaries

H1140 Mudflats and sandflats not covered by seawater at low tide

H1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Ramsar criterion 2:

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 *S. trutta*, sea lamprey *Petromyzon marinus*, river lamprey *Lampetra fluviatilis*, allis shad *Alosa alosa*, twaite shad *A. fallax*, and eel *Anguilla anguilla*. It is also of particular importance for migratory birds during spring and autumn.

Ramsar criterion 8:

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

Ramsar criterion 5:

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

Ramsar criterion 6:

Tundra swan, *Cygnus columbianus bewickii*, NW Europe

Greater white-fronted goose, *Anser albifrons albifrons*, NW Europe

Common shelduck, *Tadorna tadorna*, NW Europe

Gadwall, *Anas strepera strepera*, NW Europe

Dunlin, *Calidris alpina alpina*, W Siberia/W Europe

Common redshank *Tringa totanus totanus*,

Pressures and threats

Dredging

On-site, off-site and a major issue.

Erosion

On-site and a major issue.

Recreational/tourism disturbance (unspecified)

On-site and off-site.

Conservation objectives

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Please refer to Severn Estuary SAC and SPA.

Appendix 2

Review of other plans and projects for potential in-combination effects

Other plans within Herefordshire

Herefordshire Travellers' Sites Development Plan Document: Preferred Options version (2016)

This DPD is being prepared in line with Policy H4 of the Herefordshire Local Plan Core Strategy.

The DPD plans for the needs identified through the Gypsy and Traveller Accommodation Assessment (2015). The DPD identifies sites that could provide for 21 residential pitches, two potential sites for transit pitches and no potential sites for travelling showperson pitches. The proposed sites and provisions to meet the five year shortfall within the DPD are:

1 Land adjacent to Broadmeadow Yard, Ross-on-Wye: five transit pitches;

2 Land at the A49 roundabout, Leominster: ten transit pitches;

3 Land adjacent to Whitfield Coppice, Trumpet: seven residential pitches;

4 Extension to Orchard Caravan Park, Watery Lane, Lower Bullingham: two additional residential pitches;

5 Land to the south east of Sutton St Nicholas: five residential pitches;

6 Extension to Pembridge Site: four additional residential pitches;

7 Extension to Openfields Caravan Site, Bromyard: two additional residential pitches; and

8 Romany Way, Grafton: one additional residential pitch.

HRA findings: The HRA concluded that the DPD Preferred Options would not result in likely significant effects of any European sites, due to the distance of proposed allocations from the European sites and the small scale of the allocations.

Neighbouring Local Plans

Forest of Dean Core Strategy: Adopted Version (2012)

Forest of Dean District lies to the south east of Herefordshire.

Housing: The Core Strategy sets out housing allocations for the settlements within the Forest of Dean up to 2026 as follows:

- Cinderford and Ruspidge Urban Area – around 1,050 new homes
- Lydney – around 1,900 new homes
- Coleford (includes Milkwall, Coalway, Mile End, Berry Hill) – around 650 new homes
- Newent - around 350 new homes
- Tutshill and Sedbury – around 111 new homes
- Bream – around 100 new homes
- Drybrook – around 100 new homes
- Mitcheldean – around 101 new homes
- Newnham – around 65 new homes
- Whitecroft-Pillowell-Yorkley – around 45 new homes
- Lydbrook-Joys Green – around 82 new homes
- Other villages and rural – around 608 new homes

Priority will be given to development on previously developed land and on sites identified for housing in the development plan. No new greenfield sites will be released unless it can be proven that land is not available from other sources and is needed to meet the plan's requirements.

Employment: The Core Strategy sets out employment land allocations for the settlements within the

Forest of Dean as follows:

- Cinderford – around 26ha
- Lydney – around 30ha
- Coleford – around 6.8ha
- Newent – around 5ha
- Villages – intensification, redevelopment and diversification will be supported on sites that are well linked to settlements and services.

HRA Findings: HRA for the adopted Core Strategy was undertaken and is reported in Appendix 10 of the SA Report for the Adopted Core Strategy (February 2012). **The HRA screening concluded that the Core Strategy will not result in any significant negative impacts on identified sites**, although there will be a need for HRA Screening, with the possibility of an Appropriate Assessment requirements, at later stages of the planning processes, when development proposals are more detailed. The HRA considered the potential for in-combination effects to arise from the Forest of Dean Core Strategy along with other plans and strategies, and there were three plans where the potential impacts were uncertain (West of England Joint Waste Strategy, Shoreline Management Plan and a New Nuclear power station at Oldbury). In these cases it was concluded that there was insufficient detail at this stage to assess, with any degree of accuracy, the potential impacts and that proposals will need to assess their in-combination effects with the Core Strategy at their appropriate decision making stages.

Forest of Dean Allocations Plan: Submission Draft (August 2015)

The Allocations Plan adds more detail to the adopted Core Strategy by providing detail of how and where policies in the Core Strategy will be implemented, detailing allocations for development and protective designations and detailing revised defined settlement boundaries. This plan is in conformity with the Core Strategy. The Council is currently considering modifications to the plan following the examining Inspector's interim report, which was published in June 2016.

HRA findings: For the most part the HRA concluded that the Core Strategy provided sufficient safeguards to ensure no likely significant effects on European sites. Where uncertainty remained, the HRA recommended mitigation measures which would help to ensure no likely adverse impacts on integrity of the site when implemented. Recommendations of the HRA were incorporated into the Submission Draft of the Allocations Plan and the Inspector's Interim Report states that she considers the HRA sound ("*I find no lack of soundness in the AP's approach to biodiversity*").

South Worcestershire Development Plan: Adopted version (2016)

Malvern Hills District lies to the east of Herefordshire. The Development Plan DPD has been prepared jointly with the two other South Worcestershire authorities, Worcester City and Wychavon (neither of which adjoin Herefordshire).

Housing: The Development Plan DPD makes provision for 28,400 dwellings (net) during the plan period, to be distributed as follows:

- Malvern Hills (excluding the Wider Worcester Area) – 5,650
- Wychavon (excluding the Wider Worcester Area) – 10,600
- Wider Worcester Area – 12,150

Employment: The Core Strategy makes provision for about 280ha of employment land during the plan period, to be distributed as follows:

- Malvern Hills (excluding the Wider Worcester Area) – 40ha
- Wychavon (excluding the Wider Worcester Area) – 120ha
- Wider Worcester Area – 120ha

HRA Findings: The HRA (Appropriate Assessment) Report for the South Worcestershire Development Plan Pre-Submission Consultation (November 2012) set out the findings of both the screening and Appropriate Assessment stages of the HRA. The AA found that the mitigation provided by Pre-

Submission policies and current regulatory processes (EA Review of Consents) would ensure that the potential impacts of proposed development on the water environment would be minimised. **It was concluded that the SWDP will not have adverse in combination effects on the integrity of the identified European sites**. Following the first stage of Examination hearings, an HRA Addendum was produced in September 2014 to assess proposed main modifications to the Plan, in particular, the increased housing requirement. The HRA Addendum concluded that the additional site allocations are not in locations likely to affect recreational activity at sensitive sites, and that safeguards identified in relation to the previous version of the plan still remained valid. **Therefore, the HRA Addendum concluded that the proposed main modifications did not significantly affect the findings of the 2012 HRA Report.**

Shropshire Core Strategy: Adopted Version (2011)

Shropshire lies to the north of Herefordshire.

Housing: The Core Strategy sets out how housing development within the county will be phased as follows:

- 2006-2011 - 1,190 dwellings per annum
- 2011-2016 - 1,390 dwellings per annum
- 2016-2021 - 1,390 dwellings per annum
- 2021-2026 - 1,530 dwellings per annum

Overall, around 27,500 new homes will be delivered up to 2026, and they will be distributed as follows:

- Central Shropshire - 8,250–8,800 dwellings.
- North West Shropshire - 5,775–6,325 dwellings.
- North East Shropshire - 5,500–6,050 dwellings.
- South Shropshire - 3,575–4,125 dwellings.
- East Shropshire - 3,025–3,575 dwellings together with additional housing provision of up to 1,000 dwellings, if required, for returning military personnel.

Employment: The Core Strategy states that up to 290 hectares of employment land will be provided in Shropshire up to 2026, to be distributed as follows.

- Central Shropshire - 95-105 hectares employment land, of which 85 – 95 hectares will be in Shrewsbury.
- North West Shropshire - 55-65ha.
- North East Shropshire - 50-60ha.
- South Shropshire - 35-45ha.
- East Shropshire - 30-40ha.

HRA Findings: The February 2010 Stage 2 Habitats Regulations Assessment Report for the Shropshire Core Strategy **found that the Core Strategy was not likely to have a significant effect on any of the European sites in the county, provided that adequate HRA work is carried out in relation to the Site Allocations and Management of Development DPD**. A number of the Core Strategy policies propose development which has the potential to affect European sites; however the precise location will be determined through the Site Allocations DPD, therefore it was considered to be more appropriate to carry out the full Appropriate Assessment in relation to this development through the HRA of the Site Allocations DPD.

Now that the Core Strategy has been adopted, the Site Allocations and Management of Development (SAMDev) Plan is being progressed and a Stage 3 Habitats Regulations Assessment Report (January 2013) has now been produced in relation to the Draft Consultation Document. That HRA Report has concluded that while six of the SAMDev Draft Development Management Policies could be screened out of the HRA process and do not require further consideration in lower tier plans, 10 of the SAMDev Draft Development Management Policies have been identified as Code C (meaning that they are elements of

the plan/options that could or would be likely to have a significant effect alone and will require the plan to be subject to an Appropriate Assessment before the plan may be adopted). However, all 10 policies meet the three criteria for the HRA decision to be passed down to lower tier document. **The HRA of the Site Allocation and Management of Development Local Plan Document known as SAMDev Draft Development Management Policies therefore showed no likely significant effects on any European Sites** provided that HRA decisions for 10 of the draft policies are passed down to the next tier of the plan-making process or in some cases to planning application stage.

Monmouthshire Local Development Plan: Adopted version (February 2014)

Monmouthshire lies to the south west of Herefordshire.

Housing: The LDP sets out the spatial approach that is being taken to housing provision in Monmouthshire, with the main focus for new housing development being within or adjoining the Main Towns of Abergavenny, Chepstow and Monmouth. A smaller amount of new housing development is provided in the Severnside sub-region, particularly at Magor/Undy and Caldicot/Portskewett. A small amount of new housing development is also directed to the Rural Secondary Settlements of Usk, Raglan and Penperlleni. Provision will be made to meet a need for around 4,500 residential units in the plan period 2011-2021, to be distributed as follows:

- Abergavenny – 566 new homes
- Chepstow – 675 new homes
- Monmouth – 825 new homes
- Caldicot – 210 new homes
- Portskewett – 325 new homes
- Magor/Undy – 631 new homes
- Caerwent – 152 new homes
- Rogiet – 53 new homes
- Sudbrook – 244 new homes
- Usk – 53 new homes
- Raglan – 75 new homes
- Penperlleni – 122 new homes
- Llanfoist – 245 new homes

Seven strategic housing sites are identified at Abergavenny (Deri Road, Mardy), Caldicot/Portskewett (Crick Road, Portskewett), Chepstow (Land at Fairfield Mabey, Chepstow), Monmouth (Land at Wonastow Road, Monmouth), Magor/Undy (Rockfield Farm, Undy and Land at Vinegar Hill, Undy) and Sudbrook (Former Paper Mill, Sudbrook).

Employment: The Draft Deposit LDP makes provision for employment land including:

- 37ha at Magor suitable for employment development of regional or sub regional significance.
- Around 5-6ha at each of the Main Towns of Abergavenny (Llanfoist), Chepstow and Monmouth.

HRA Findings: The October 2012 HRA Report for the LDP describes the screening and Appropriate Assessment work that was undertaken. The screening assessment concluded that the Deposit LDP (including site allocations) would not have likely significant effects alone on European sites, if the recommended policy safeguards are incorporated into the Plan. These changes were incorporated into the LDP, and the SA and HRA Changes Log recognised this and reached a final conclusion of no likely significant effects on European sites.

The screening work identified four main areas of impact arising that may have the potential for significant in combination effects on the integrity of the identified European sites: water resources, water quality, disturbance (including habitat loss and fragmentation) and air quality. These issues were taken forward into the AA and considered in further detail. The AA assessed that there is uncertainty with regard to the potential adverse impacts of the LDP acting in combination with surrounding plans and

projects. To address this uncertainty the AA proposed a number of mitigation measures, including recommendations to strengthen the mitigation provided by certain LDP policies. **The AA concluded that the LDP will not have adverse effects on the integrity of European sites as the recommended mitigation measures have been incorporated into the Plan**.

The AA conclusions were revisited in the **February 2014 HRA Addendum**, which took into account the changes made in the final version of the LDP. It did not change the conclusions of the 2012 HRA Report and **concluded that the LDP will still not have adverse effects on the integrity of European sites**.

Powys Local Development Plan 2011-2026: Deposit Draft (June 2015)

The Powys LDP is currently being Examined. A number of further focused changes have been consulted on and subject to HRA screening. As the Examination process is ongoing, the potential for in-combination effects with the Powys LDP may change as further changes are made to the LDP.

Powys lies to the west of Herefordshire.

Housing: The Preferred Strategy sets out a preferred option for housing growth which would see the development of 7,700 new homes over the Plan period, to be phased as follows:

- 2011-2016 – 1,925 new homes
- 2016-2021 – 2,849 new homes
- 2021-2026 – 2,926 new homes

Employment: The preferred option for employment land provision is for the provision of 42ha of land over the Plan period, which equates to 2.8ha per annum.

The preferred spatial option for the distribution of new development in Powys is a settlement hierarchy based on levels of service provision and size of settlement (population) subject to environmental and infrastructure capacity. Higher levels of growth should be directed to those settlements along a central growth corridor in accordance with the Settlement Hierarchy.

HRA Findings: The Draft HRA Report for the Pre-Deposit Proposals (March 2012) took a precautionary approach and highlighted the potential for Powys' LDP to adversely affect the integrity of 28 European Sites, either alone or in-combination with other plans or projects. However, due to the early stage of the Plan, these effects were uncertain in all cases. The screening process also highlighted the potential for in-combination effects with other plans, including from Herefordshire's Core Strategy in relation to pollution from adjacent road drains/houses/chemicals, development (engineering/contamination) and recreation and leisure. In order to ensure that Powys' LDP does not have a significant negative effect, detailed policies need to be developed to mitigate the 'in-combination' effect of development on the identified sites. **The HRA of the Deposit Draft plan concluded that the LDP would not have likely significant effects on any European sites**. However, the HRA noted the requirement for project-level HRA for some of the allocations and for non-allocated development, supported by general policies in the plan, in certain locations. This is also noted in the Deposit version of the LDP.

Brecon Beacons Local Development Plan: Adopted version (December 2013)

The Brecon Beacons National Park lies to the west of Herefordshire.

Housing: The LDP has identified a supply of land to provide an estimated 2,045 dwellings over the LDP period. Land is allocated for 960 dwellings with 96 to be provided at Brecon, 102 at the key settlements (Crickhowell, Hay-on-Wye and Talgarth), 234 at the Level 3 settlements (Bwlch, Gilwern, Libanus, Llanbedr, Llanigon, Llanspyddid and Pennorth). A further 70 will be provided at a site near Glangrwyney.

Employment: The identified requirement for employment land within the Brecon Beacons National Park over the LDP period is 1.5ha. This requirement is to be met through the development of employment and mixed use allocations for B Class purposes. A number of employment site allocations are made at Brecon and Talgarth as well as two existing brownfield sites.

HRA Findings: The Sustainability Appraisal Report for the LDP (November 2013) includes a section

describing the work that has been undertaken on the Habitats Regulations Assessment throughout the preparation of the LDP and states that the screening exercise concluded that there would be no likely significant effects on European sites. **Therefore, in-combination effects with the Herefordshire Core Strategy are not considered likely.**