Shropshire Council

Local Plan Review 2016 - 2036

Issues and Strategic Options

Habitats Regulations Assessment

Initial Screening Report

January 2017

Contents

Appendices

1. Introduction

Introduction

1.1. It is a legal requirement for Local Authorities to prepare a Habitats Regulations Assessment (HRA) for plans and projects which have potential to impact on habitats of European importance.

1.2. This Initial Screening Report is the first phase of the HRA of the Shropshire Council Local Plan Review (LPR) 2016-2036. It should be noted that the LPR is at an early stage of preparation. The Issues and Strategic Options document is being published for public consultation between 23rd January and 20th March 2017. It sets out options for the level and general distribution of housing growth and for economic growth, but does not provide sufficient details on location and policy wording to clearly identify impacts on European Sites. This more specific information is likely to be available later in the plan making process and will form the basis for subsequent HRA reports.

1.3. The purpose of this Initial Screening Report is to identify which international sites could possibly be affected by the proposals in the LPR, the potential pathways by which the sites may be affected and, where possible, to give an idea of any potential avoidance or mitigation measures to be considered when choosing the locations of allocated sites and drafting the wording of any policies.

What are Habitats Regulations Assessments?

1.4. Habitats Regulations Assessment (HRA) plays an important role in protecting the conservation objectives of the Natura 2000 network of sites. These sites, often referred to as 'European Sites', include Special Areas of Conservation (SACs), Special Protection Areas (SPAs) and Candidate SACs (cSACs). Following UK government policy, potential SPAs (pSPAs), possible SACs (pSACs) and proposed and listed Wetlands of International Importance (Ramsar Sites) designated under the Ramsar Convention are also treated as though covered by the HRA Regulations. The term 'international sites' includes all the above designations and is used throughout this report.

1.5. Under the Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations), the purpose of a HRA is to ensure that the proposals of any plan or project, or the cumulative effect of a number of plans or projects, will not adversely affect the integrity of any international site.

1.6. The 'integrity' of the site is defined in ODPM Circular 06/2005: (Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System) as "the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat,

complex of habitats and/or levels of populations of species for which it was classified".

1.7. European guidance (EU 2001) describes a four stage process to HRA and is summarised below

Four stage process to HRA

Stage 1: Screening
The process to identify the likely impacts of a policy or proposal upon a Natura 2000 site, either alone or in combination with other plans and projects, and consider whether the impacts are likely to be **significant** or uncertainty exists. Straightforward counter-acting measures can be recommended for incorporation into policy wordings and then sites re-screened.
Stage 2: Appropriate assessment
Consideration of impacts on the **integrity** of the Natura 2000 sites, either alone or in combination with other plans and projects, with regard to the site's structure and function and its conservation objectives. Where there are adverse impacts, an assessment of mitigation options is carried out to determine adverse effect on the integrity of the site. If these mitigation options cannot avoid adverse effects then proceed to stage 3.
Stage 3: Assessment of alternative solutions
Examining alternative ways of achieving the objectives of the policy or proposal to establish whether there are solutions that would avoid or have a lesser effect on Natura 2000 sites.
Stage 4: **Assessment where no alternative solutions remain and where adverse impacts remain**:
This is the assessment where no alternative solution exists and where adverse impacts remain. The process to assess whether the development is necessary for imperative reasons of overriding public interest (IROPI) and, if so, the potential compensatory measures needed to maintain the overall coherence of the site or integrity of the European site network

Background to the Shropshire Local Plan Review 2016-2036 and the HRA Initial Screening report

1.8. Shropshire's Core Strategy Development Plan Document 2006-2016 was adopted on 24th February 2011 and the SAMDev Plan 2006-2026 was adopted on 7th December 2015. Together these documents comporise the Local Plan. It is now proposed to carry out a partial review of the Local Plan.

1.9. The Shropshire LPR will focus on key areas of change, including options for the level and distribution of new housing and strategies for employment growth during the period to 2036, together with any amended policies and new site allocations which are needed to demonstrate that these requirements can be delivered.

1.10. In addition to the these strategic options and the matters identified in the SAMDev Examination Report, at a later stage the partial review process will also consider a range of issues including: the role of Shrewsbury and its University; new retail and leisure needs; town centre designations; the need for affordable housing; provision for gypsies and travellers; the redevelopment of strategic sites; and provision to maintain sand and gravel production. Many of the existing policies in the Core Strategy and SAMDev Plan do not need amending and will be carried forward as part of the new plan.

1.11. The product of the review will be a new Local Plan document which merges the Core Strategy and SAMDev Plans and contains both strategic policies and more applied policies which primarily inform planning decisions, together with existing (unimplemented) sites and new site allocations.

1.12. This HRA Initial Screening Report relates to the Shropshire Local Plan Review Issues and Strategic Options consultation document published on 23rd January 2017. Shropshire Council invites feedback on choices for:

- Housing requirement
- Strategic distribution of future growth
- Strategies for employment growth

Additionally, although no specific options are presented, comments are requested on proposals for rural policy.

1.13. The Local Plan Review (LPR) is not directly connected with or necessary to the management of an international site (Habitats Regulations 48(1)(b) or 85B(1)(b)).

2. Methodology

Purpose of the HRA Initial Screening Report

2.1. The purpose of the Initial Screening Report is to:

a) identify which international sites could possibly be affected by the proposals in the LPR,
b) identify the potential pathways by which the sites may be affected,
c) Identify all aspects of the LPR Issues and Strategic Options which would have no effect on an international site, so that that they can be eliminated from further consideration in respect of this and other plans;
d) identify all aspects of the LPR Issues and Strategic Options which would not be likely to have a significant effect on an international site (i.e. would have some effect, but minor residual), either alone or in combination with other aspects of the same plan or other plans or projects, which therefore do not require 'appropriate assessment';
e) identify those aspects of the LPR Issues and Strategic Options where it is not possible to rule out the risk of significant effects on an international site, either alone or in combination with other plans or projects. Where this is due to a lack of sufficient detail at the Issues and Options stage, consideration will be deferred to the next tier of the LPR where policy wording and specific site allocations will be known, and
f) where possible, make recommendations on areas of further research required to inform the next stages of the HRA, signposting sites which will be particularly sensitive to development and give an idea of any potential avoidance or mitigation measures to be considered when choosing the locations of allocated sites and drafting the wording of any policies.

Identification of international sites requiring consideration

2.2. This HRA Initial Screening Report should be read in conjunction with the Shropshire Core Strategy Development Plan Document: Habitats Regulations Assessment, Screening Report (March 2009), the Core Strategy Development Plan Document: Habitats Regulations Assessment, Stage 2 Report (February 2010 and the Shropshire Site Allocation and Management of Development Plan Habitats Regulations Assessment (July 2014). These HRA Reports identified international sites in and around Shropshire (together with their designated features and conservation objectives), which could potentially be impacted by proposed plans or projects in the County. This information has been updated for the purposes of the current screening exercise within Appendix 2.

2.3. Following the precautionary principle, the first step in the screening process was to identify all international sites in Shropshire and within 15km of the county boundary. This figure was chosen as a starting point as the largest buffer identified in the literature for negative effects was 12km (recreational effects on Cannock Chase). Additional sites were added to the screening by

considering possible longer distance pathways e.g. river SACs downstream of Shropshire, and through consultation with Natural England and Natural Resources Wales.

2.4. Map 1 in Appendix 1 shows Shropshire with a 15km buffer and the spread of international sites across the area being considered. Maps of each international site follow in Appendix 1.

2.5. The international sites considered in this interim screening report are listed below. Those sites within Shropshire are shown in bold:

1. Berwyn SPA
2. Berwyn and South Clwyd Mountain SAC
3. **Brown Moss SAC**
4. Cannock Chase SAC
5. Downton Gorge SAC
6. Elenydd SAC
7. **Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC**
8. Fens Pools SAC
9. Granllyn SAC
10. Johnstown newt sites SAC
11. Mottey Meadows SAC
12. **Midland Meres & Mosses Ramsar Phase 1**
13. **Midland Meres & Mosses Ramsar Phase 2**
14. Montgomery Canal SAC
15. Rhos Goch SAC
16. **River Clun SAC**
17. River Dee & Bala Lake SAC
18. River Severn SPA/SAC/Ramsar
19. River Wye SAC
20. Tanat & Vrynwy Bat Sites SAC
21. **The Stiperstones & the Hollies SAC**
22. **West Midlands Mosses SAC (Clarepool Moss)**

Collation of information on the above international sites

2.6. Details of the international sites, their reasons for designation, conservation objectives and vulnerabilities are provided in the tables in Appendix 2.The SSSI's within the Midland Meres and Mosses Ramsar Phases 1 and 2 which are included in this assessment are also listed and described in Appendix 2. Conservation Objectives for the individual elements of the two Ramsar Sites are not available and Natural England has advised that Favourable Condition Tables for SSSI units may be used in their place.

2.7. Data on the international sites, including qualifying features were taken from the following sources:

- Natural England web site (www.publications.naturalengland.org.uk) including conservation objectives, site citations and SIPs;

- Joint Nature Conservation Committee website (www.jncc.gov.uk);
- Verbal and written evidence from officers in Natural England and the Environment Agency;
- A wide range of published and un-published reports on individual reports as indicated in section 7 References;
- Favourable Condition Tables for SSSI units provided by Natural England.
- HRA of Phase Two Revision of the West Midlands RSS – Screening note prepared for Government Office for the West Midlands by Treweek Environmental Consultants;
- Background information on Ramsar designation and specific site descriptions from www.ramsar.wetlands.org/

Identifying possible mechanisms for significant effects (effect pathways)

2.8. Any sites allocated in the SAMDev Plan, which have not been developed, will be carried forward into the Local Plan Review. These sites, possible effect pathways and any required mitigation measures, have already been considered in the SAMDev Plan HRA (Ref No. 22, section 2.3). As a precautionary measure, these sites will be re-screened against any new information on international sites, if this has become available since the adoption of the SAMDev Plan, and against any relevant policy wording changes proposed by the LPR. In general, it is likely that these sites and their mitigation measures will be carried over as before. At this stage it is not possible to look at the scale of effects on individual international sites since the LPR Issues and Strategic Options document does not give sufficient details about the additional growth options and their specific locations. This more specific information is likely to be available later in the plan making process and will form the basis for subsequent HRA reports.

2.9. It is, however, possible to consider some broad mechanisms by which the issues and strategic options proposed for the LPR might affect international sites. These broad mechanisms may apply during construction or through long-term after-use of the development and include, but are not limited to those listed in Table 1 below.

Table 1: General effect pathways

General Effect pathway	Sub-categories
Air pollution	From increased traffic long term.
	Increased NOx gasses and nitrogen deposition.
	Increased sulphur dioxide.
	Increased acid deposition.
Hydrological impacts	Changes to groundwater quality and quantity.
	Changes to surface water quality and quantity.
	Overloading of waste water infrastructure.
	Pollution during flooding events.
	Increased run-off from hard surfaces.
	Increased silt from development, during and post construction, stirring up of sediment by boats, or other leisure activities.
Recreational impacts	Trampling and erosion of international site.
	Disturbance by people, dogs and other pets.
	Swimming by people and dogs.
	Increased hunting pressure from domestic animals.
	Eutrophication through dog faeces.
	Fishing and boat use.
	Damage from bikes and other vehicles.
	Interference with grazing and other management designed to maintain the features of the international sites.
	'Induced development' – development in some form required on international sites to counteract damage from visitors.
Biosecurity	Introduction or spreading of invasive species e.g. through vehicle movement or by boats, people or dogs, or introduction of fish.
Light pollution	Effects of lighting on wildlife.

2.10. More details of these effect pathways and the international sites that may be affected by them can be found in Appendix 3.

3. Screening

Screening of issues and options in the Local Plan Review Issues and Strategic Options document

3.1. The LPR does not intend to revisit all policies in both the Core Strategy and the SAMDev Plan. Many will be transferred directly to the new Local Plan. Core Strategy and SAMDev policies have already been subjected to the HRA process (Ref. Nos. 16 and 22), but as a precautionary approach, all policies in the final Local Plan whether modified, new or unaltered, will be re-screened.

3.2. The three strategic options and the sub-options/issues in the LPR Issues and Strategic Options public consultation document have been screened for possible likely significant effects on international sites. A broad-brush and precautionary approach has been taken due to the lack of information on location of site allocations and wording of planning policies. Where possible, recommendations for particular areas of investigation for the next iterations of the HRA are provided. The results of this initial screening are tabulated below.

Table 2: Initial screening of Issues and Strategic Options

Strategic Option	Issue or option	Likely significant effects on International Sites?	Justification of finding	Recommendations
Housing requirement	Options 1 - 3	Possible depending on size and location.	Increased population/workforce may put a strain on infrastructure and resources such as water supply, waste water disposal and air quality, which could then adversely affect international sites.	Ability of the infrastructure and available resources to support the increase in resident and working population should be investigated e.g. an updated water cycle study, recreational impact study for international sites open to the public. Policy wording would be needed to ensure development will only start if sufficient resources and infrastructure are in place.
Strategic distribution of future growth	Spatial Options A - C	Possible depending on size and location.	Depending on size and location of development effect pathways to international sites may include water, air, recreation, biosecurity or light pollution.	**Shrewsbury**: Closest international sites are Hencott Pool Ramsar Site to the north of Shrewsbury and Bomere, Shomere and Betton Pools Ramsar Site and Berrington Pool Ramsar Site to the south. As wetlands these sites are particularly sensitive to changes in water quality and quantity and atmospheric pollution. **Market Towns and Key Service Centres:** All development within the Clun Catchment which generates waste water or airborne nutrients, river sediment or other pollution which may reach the River Clun SAC will require avoidance/mitigation measures in line with the River Clun Nutrient Management Plan 2014 (see SAMDev Plan HRA, Ref No 22) Protection will be required in policy wording and individual project-level HRAs are likely to be required. Water quality and abstraction, together with

Strategic Option	Issue or option	Likely significant effects on International Sites?	Justification of finding	Recommendations
				recreational impacts will be key issues, particularly for development in the Ellesmere and Whitchurch areas due to impacts on Cole Mere Ramsar site, Brown Moss Ramsar site and Fenns, Whixall, Betisfield, Cadney and Wem Mosses SAC and Ramsar site. Recreational impacts on the Stiperstones and The Hollies SAC would have to be considered for allocations in the Church Stretton and Minsterley/Pontesbury areas. Additional information can be found in the SAMDev Plan HRA (Ref. no. 22) **Rural Area**: Large-scale development in the rural area is less likely. Many developments in the rural area may not be able to connect to mains sewage treatment works and will require package treatment plants. Wetland or riverine international sites would be particularly sensitive to increased nutrient loads from such systems. All development in the Clun catchment would be sensitive (see above). Criteria-based policies covering development in the rural area would need to provide adequate avoidance/mitigation measures to protect international sites. **All areas**:Location of allocation sites and wording of policies must avoid/mitigate against any likely significant adverse effects on international sites, either alone or in-combination.

Strategic Option	Issue or option	Likely significant effects on International Sites?	Justification of finding	Recommendations
Strategies for employment growth	Options 1 -3	Possible depending on size and location.	Depending on size, type and location of development effect pathways to international sites may include water, air, recreation, biosecurity or light pollution.	Where additional employment land is to be considered, avoidance/mitigation measures may be required through careful location of the site allocations and appropriate wording in policies, to prevent any likely significant adverse effects on international sites. Potential for effect pathways may be dependent on the specific employment use, (rather than broad category) which may require a project level HRA.
	Range and choice of remaining allocations	Possible depending on size and location.	Changing use from employment to residential sites may produce effect pathways including via water, air, recreation, biosecurity or light pollution.	Existing allocated sites have already been considered in The SAMDev Plan HRA. Should these areas be considered for alternative uses including residential, potential impacts on international sites should be assessed, e.g recreational pressure on Brown Moss Ramsar Site, Cole Mere Ramsar site, Fenn's and Whixall SAC and Ramsar Site, Stiperstones and The Hollies SAC etc. both alone and in-combination with other site allocations.
	Protecting existing employment areas.	Possible depending on project-level development type.	Existing employment sites have previously been screened for adverse effects.	Policy wording relates to sites already screened for adverse effects in previous plans. However, sites are allocated for broad employment categories. Should a development generate an unpredicted type of pollution or other effect pathway, then a project level HRA may be required. This eventuality would need to be covered in appropriate policy wording.

Strategic Option	Issue or option	Likely significant effects on International Sites?	Justification of finding	Recommendations
Delivering development in rural settlements	Rural policy	Possible depending on size and location.	Depending on size and location of development effect pathways to international sites may include water, air, recreation, biosecurity or light pollution.	The SAMDev Plan HRA (Ref. No 22) identified a number of Community Hubs and Clusters where likely significant effects of development were avoided/mitigated through specific policy wording. These, or other avoidance/mitigation measures would need to be brought forward to the Local Plan Review. Any new Hubs and Clusters proposed in the LPR should be screened through the HRA process during plan preparation.

3.3. Of the 22 international sites which have been identified, 2 sites have been screened out at this stage, as it is considered that the Local Plan is unlikely, either directly or in-combination with other plans and proposals, to have a significant effect on their Conservation Objectives. These sites are Mottey Meadows SAC and Fens Pools SAC and justification is provided below. The remaining 20 sites will all be carried forward to the full HRA of the Local Plan Review, which will contain the details of policy wording, level of growth proposed and site allocations.

a) Mottey Meadows SAC

The site description for Mottey Meadows SAC is set out in Appendix 2 and the site is shown on Map 11 in Appendix 1. Mottey Meadows SAC is a 43.87ha lowland meadow site in Staffordshire, England. Maintenance of the site is dependant on traditional management, hay cutting followed by grazing, and the site is owned and managed by Natural England. The site is vulnerable to nutrient run off from surrounding farm land and this issue is being addressed through the site management plan. The site is also dependant on high ground and surface water levels, since the habitat depends on a high water table in autumn and winter.

It is considered unlikely that the Shropshire Local Plan Review will have any additional, adverse or in combination effect on Mottey Meadows SAC since plans in Shropshire will not alter site management nor change the management of farm land surrounding the site. The site also has access restrictions which should remove potential for recreational impacts. Shropshire plans are also considered unlikely to have any effect on the ground or surface water levels on the site since the vast majority of Shropshire falls within the River Severn Catchment while Mottey Meadows SAC does not fall within the catchment of the River Severn.

b) Fens Pools SAC

The site description for Fens Pools SAC is set out in Appendix 2, and the site location is shown in Map 8 in Appendix 1. Fens Pools SAC is a 20.4ha mosaic of habitats including open water, inundation communities and grasslands in the Metropolitan Borough of Dudley, West Midlands. The site is located in an already developed, urban area 10km away from Shropshire and separated by a number of areas of development. The site was primarily designated for Great Crested Newt as part of an important amphibian assemblage and is vulnerable to fish introductions, human disturbance and alterations in water quality.

It is considered unlikely that the Local Plan Review could have a significant effect on Fens Pools SAC either alone or in combination. Plans in Shropshire will have no effect on human disturbance on this site which is already surrounded by development and easily accessed. The LPR is unlikely to have any effect on fish introductions.

Water quality is unlikely to be influenced by the LPR since the site is already surrounded by residential development and road networks.

3.4. Since it is considered that proposals likely to come forward through the LPR are unlikely to have a significant adverse or in combination effect on Fens Pools SAC or on Mottey Meadows SAC, these sites will be screened out at this stage and not carried forward to the full Habitats Regulations Assessment of the Local Plan Review.

Summary of the results of initial HRA screening

3.5. Taking a precautionary approach, all issues and options within the Local Plan Review Issues and Strategic Options public consultation document could potentially have a significant effect on one or more international site, depending on the size of growth and the size and location of site allocations.

3.6. Two of the 22 international sites identified for consideration (Mottey Meadows SAC and Fens Pools SAC) have been screened out, the remaining 20 sites will be carried forward for consideration in the full Habitats Regulations Assessment of the Local Plan Review.

4. In-Combination effects

4.1. The Habitats Directive requires Local Authorities to assess 'in-combination' effects alongside direct effects. 'In-combination' effects occur when otherwise non-significant proposals combine and cumulatively lead to a significant effect. This interaction can occur from proposals within the LPR or between the LPR and other plans or projects. The absence of detailed policies and site allocations at this stage of the LPR means that in-combination effects have not been considered in the Initial Screening Report. However, this exercise will be carried out as the LPR progresses and more specific information becomes available.

4.2. At later stages, once potential site allocations and policies have been screened for adverse effects individually, those with insignificant effects will be screened again in combination with each other.

4.3. The LPR will also be screened against other Shropshire plans (e.g Shropshire Local Transport and Economic Development Plans) and the plans of all surrounding local authorities for adverse in-combination effects. Statutory Agencies including Natural England, National Resources Wales and the Environment Agency will also be consulted. Any significant in-combination effects must be avoided or sufficiently mitigated in the final Local Plan Review document.

5. Conclusions

5.1. A total of 22 international sites have been identified for consideration in the HRA Initial Screening Report. Two international sites (Mottey Meadows SAC and Fens Pools SAC) have been screened out at this stage, as it is considered that the LPR will not have an effect on their designated features or Conservation Objectives. The remaining 20 sites will be considered for the HRA of subsequent LPR documents.

5.2. All the housing requirement, strategic distribution of growth and economic growth options in the LPR Issues and Strategic Options consultation document have been considered in the HRA Initial Screening Report and recommendations made. None of these issues and options can be screened out at this stage in the LPR development due to lack of detailed information.

5.3. Key points for consideration in the next stages of LPR preparation are:

- Determining if sufficient existing infrastructure and resources are available to support the increase in resident and working populations e.g. an updated water cycle study and recreational impact study for key international sites open to the public are likely to be needed. Dependant on the outcome of these studies, policies may be needed to ensure development will only start if sufficient resources and infrastructure are in place.
- The location of residential and employment allocation sites and the wording of policies must avoid any likely significant adverse effects on international sites, either alone or in-combination.
- If a change of use is proposed for existing allocated employment sites then these must be re-screened for potential adverse effects on international sites.
- The SAMDev Plan HRA identified a number of Community Hubs and Clusters for which likely significant effects of development were avoided through specific policy wording. If these settlements continue to be identified as suitable for development in the LPR, these avoidance or mitigation measures must be carried forward. Any new Hubs or Clusters proposed by the LPR will also need to be screened through the HRA process.

5.4. The LPR is at an early stage of preparation and no decisions have yet been made about the housing requirement, distribution of housing or approach to the economy and employment. As such, it is not possible to identify even broad locations for development.

5.5. Similarly it is not known at this stage which Core Strategy and SAMDev policies are to be transferred over to the new Local Plan, which will be modified and if there are going to be new policies.

5.6. Taking this into account, a precautionary approach has been adopted. It is felt that 20 international sites could potentially be directly or indirectly affected by the Shropshire Local Plan Review. Subequent LPR

documents will set out the housing requirement, propose more detailed policies and establish potential locations for housing and employment land.

5.7. The Habitats Regulations Assessment process will be carried out in parallel with the preparation of future Local Plan Review documents. This parallel preparation process will ensure that the results of the HRA will be fully considered in decisions on the Local Plan. It will also ensure Shropshire Council meets its duty with regard to the aims of the Habitats Directive.

6. Public consultation

6.1. Shropshire Council Local Plan Review (LPR) 2016-2036 Issues and Strategic Options document is being published for public consultation for 6 weeks between 23rd January and 20th March 2017. This HRA Initial Screening Report will be published at the same time as a supporting document and comments on the HRA are welcomed. Responses and additional information will be analysed and where appropriate fed into the future stages of the Local Plan Review Habitats Regulations Assessment.

6.2. Comments should be sent to planning.policy@shropshire.gov.uk

6.3. Please ensure that the subject line in any email includes the phrase 'HRA'. It is also helpful if comments refer to the relevant paragraph, section or table number in the HRA Interim Screening Report.

7. References and abbreviations

The following documents have informed this report:

References

1. Article 6(3) and (4) of the European Communities (1992) Council Directive 92/43/EEC on the conservation of natural habitats and wild fauna and flora (*the Habitats Directive*)
2. Atkins for Environment Agency and Natural England (October 2014) River Clun SAC Nutrient Management Plan- FINAL
3. David Tyldesley and Associates for Countryside Council for Wales. (2012) Draft Guidance for Plan Making Authorities in Wales, The Appraisal of Plans Under the Habitats Regulations for Countryside Council for Wales CCW Bangor
4. Department for Communities and Local Government (2012) *The National Planning Policy Framework*
5. European Commission (2001) *Assessment of plans and projects significantly affecting Natura 2000 sites*
6. Montgomery Canal Partnership (2005) *Montgomery Canal: A Conservation Management Strategy*
7. ODPM Circular 06/2005: (Biodiversity and Geological Conservation – Statutory Obligations and their impact within the Planning System)
8. Scottish Natural Heritage (January 2015) *Habitats Regulations Appraisal of Plans*
9. Shropshire Council Local Development Framework *Adopted Core Strategy* March 2011
10. Shropshire Council *Development within the River Clun Catchment* Interim Guidance Note 12, 2013
11. Shropshire Council (2010) *Outline Water Cycle Study Final Report*
12. Shropshire Council (2014*) Water Cycle Evidence for Shropshire Local Plan*
13. The Conservation of Habitats and Species Regulations 2010 (the "Habitats Regulations") (SI No. 2010/490).
14. White, J, Liley, D. & Underhill-Day, J. (2009). Cannock Chase Visitor Impact Mitigation Strategy. Footprint Ecology.

Previous Shropshire HRA documents

15. Core Strategy Development Plan Document: Habitats Regulation Assessment, Screening Report (March 2009)
16. Core Strategy Development Plan Document: Habitats Regulation Assessment, Stage 2 Report (February 2010)
17. *Draft* Mineral Allocations for the plan period 2012-2026 HRA Stage 3 Report (Specific Sites) June 2011
18. *Draft* Stage 3 Habitats Regulation Assessment Reports of potential allocations was prepared in October 2011 for the Site Allocations and Management of Development DPD
19. SAMDev Draft Development Management Policies HRA January 2013
20. SamDEv Pre-Submission Draft Habitats Regulation Assessment (draft March 2014)

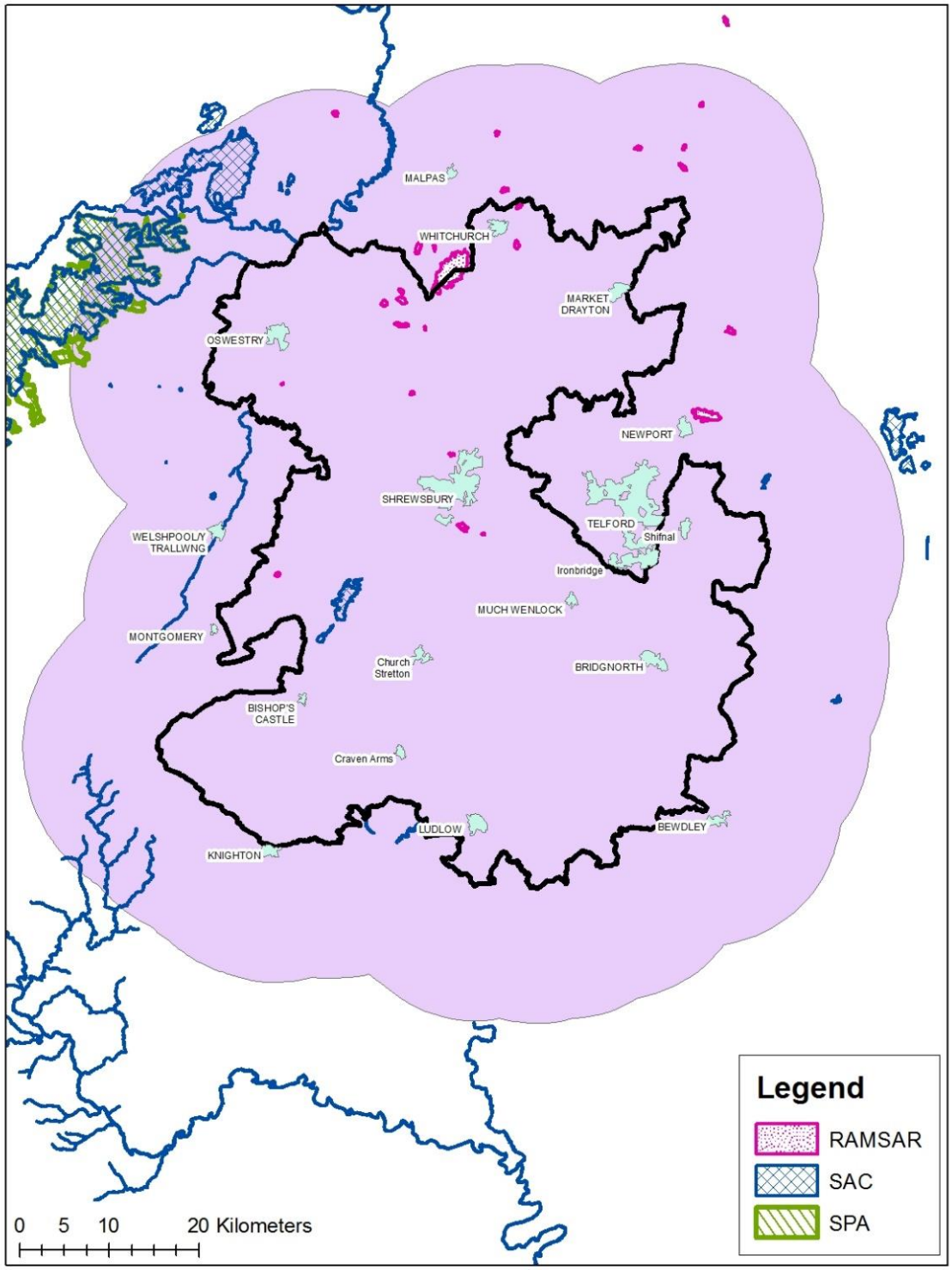
21. Habitats Regulations Assessment of Mineral Allocations for the plan period 2012 – 2026 Report (draft March 2014)
22. Shropshire Council SAMDev Habitats Regulation Assessment (July 2014)

Abbreviations and definitions

EA - Environment Agency
HRA - Habitats Regulations Assessment
International site – one of the following designated sites: Special Area of Conservation (SAC), candidate SAC (cSAC), possible SAC (pSAC), Special Protection Area (SPA), potential SPA (pSPA), proposed and listed Wetlands of International Importance (Ramsar Sites).
IRZ - Natural England Impact Risk Zone
LPR - Local Plan Review
Natura 2000 Site – the Europe wide network of SPA's and SAC's
Ramsar site – a site listed as a wetland of international importance under the provision of the Ramsar Convention. A Ramsar site is not a 'European site' as a matter of law but is given the same protection as SPA's and SAC's.
SAC - Special Area of Conservation designated under the EC Habitats Directive.
SAMDev - Site Allocations & Management of Development Plan
SPA - Special Protection Area classified in accordance with Article 4 of the EC Birds Directive (1979)
SPD - Supplementary Planning Document

Appendix 1: Maps of international sites considered in this report

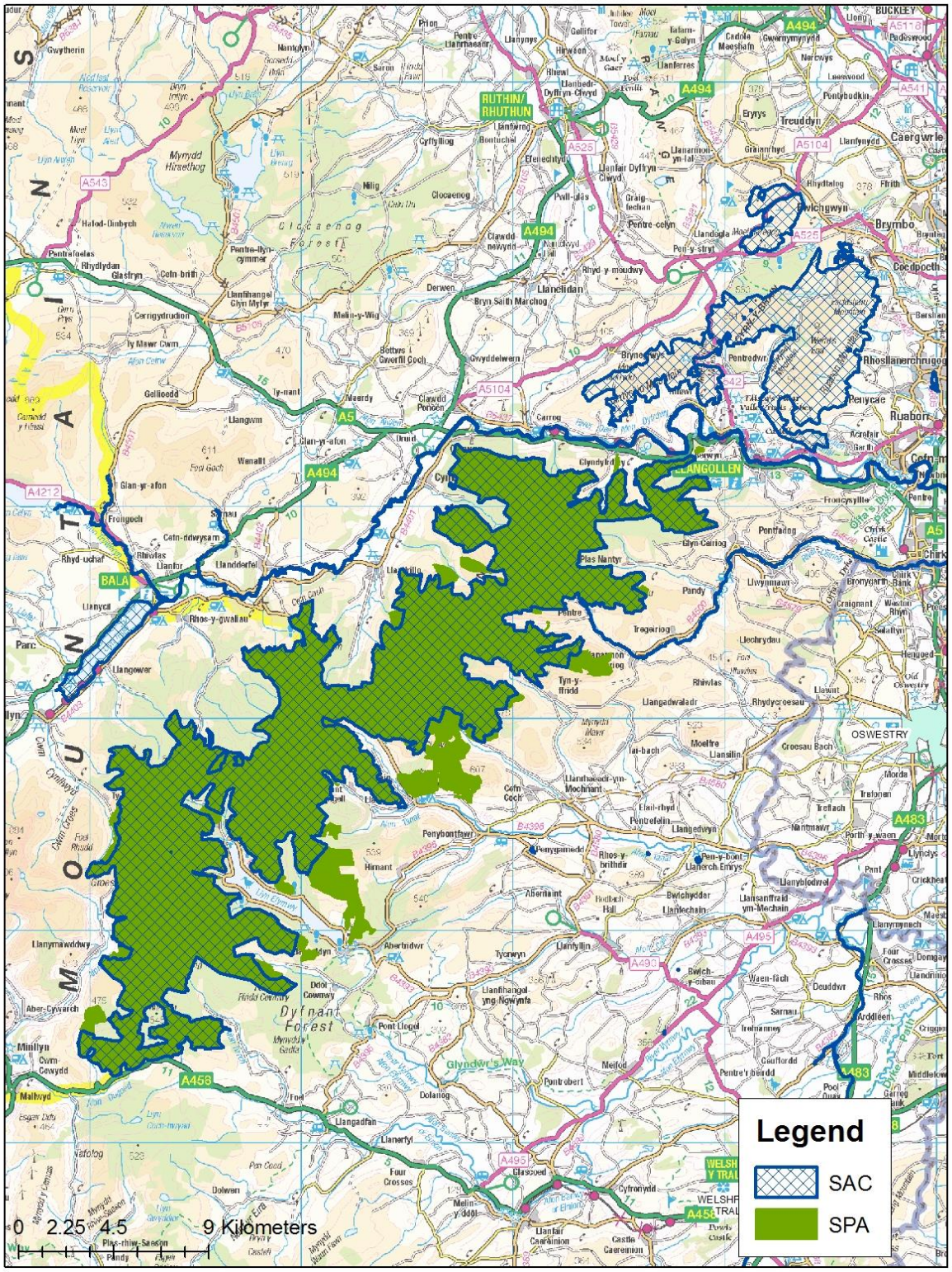
Map 1 International sites and 15km buffer around Shropshire County boundary



Internationally Designated Sites within 15km of Shropshire

Shropshire Council

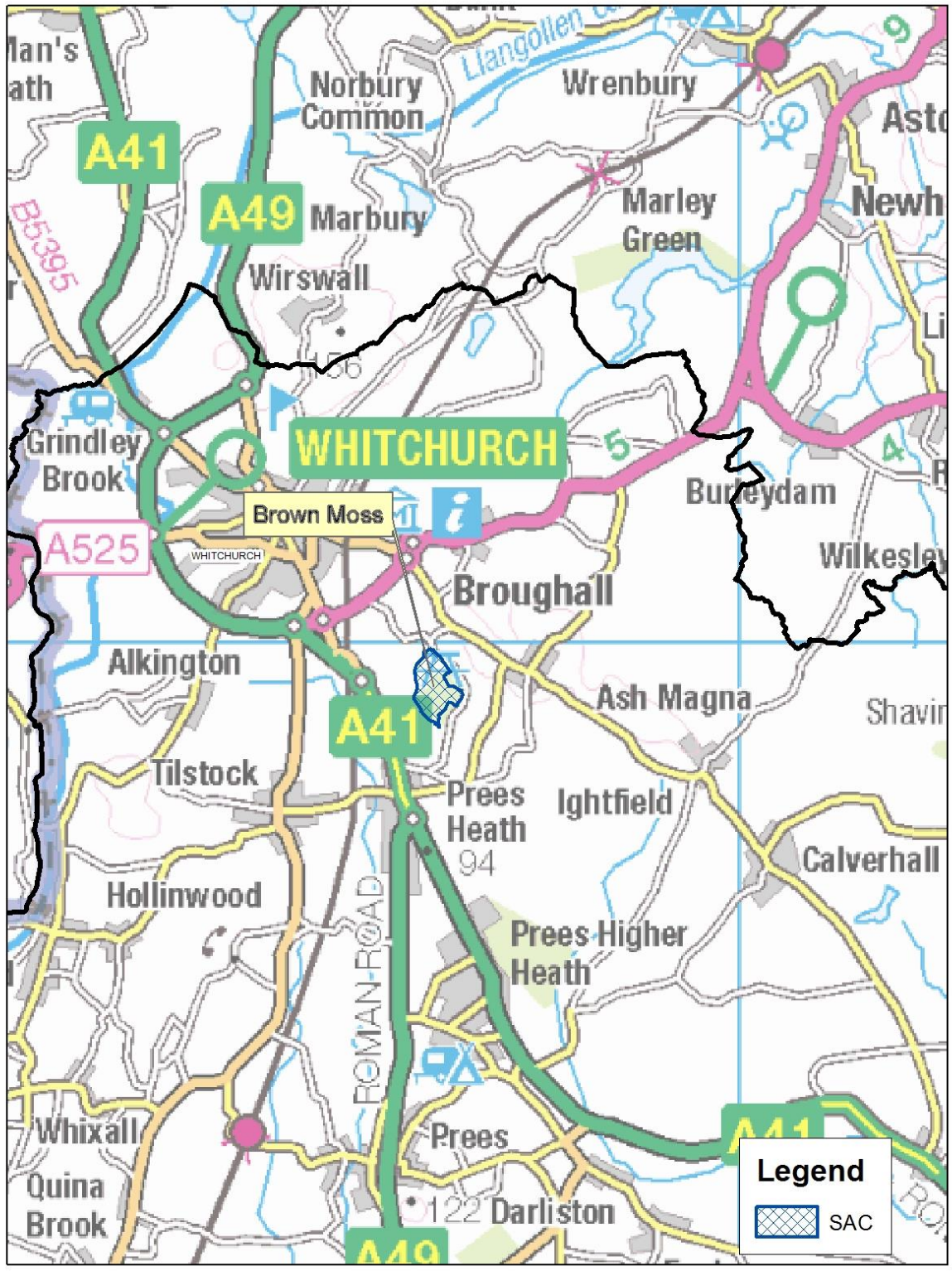
Map 2 Berwyn SPA and Berwyn and South Clwyd Mountain SAC



Berwyn SPA and Berwyn and South Clwyd Mountains SAC

Shropshire Council

Map 3 Brown Moss SAC

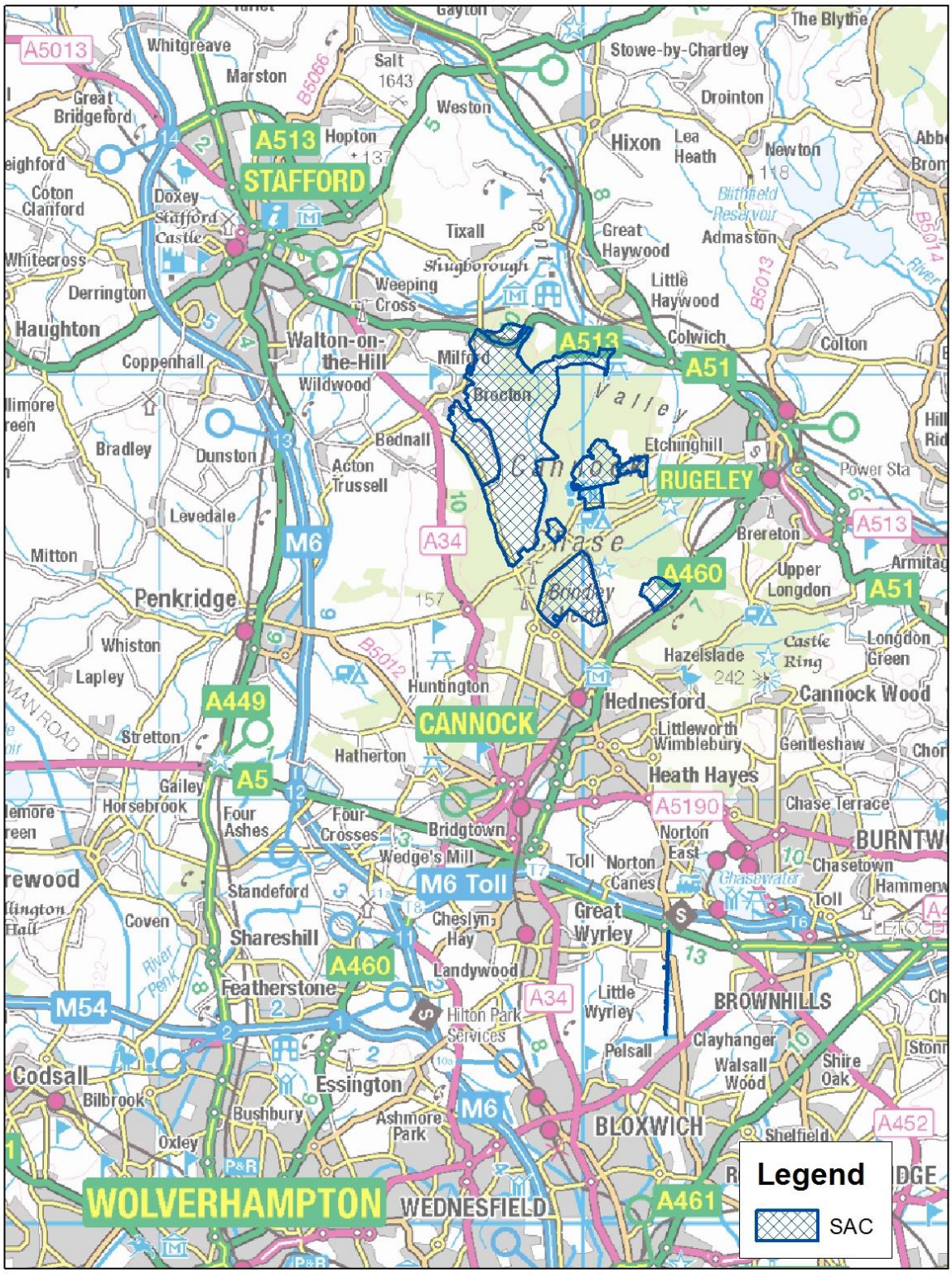


Brown Moss SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 4 Cannock Chase SAC

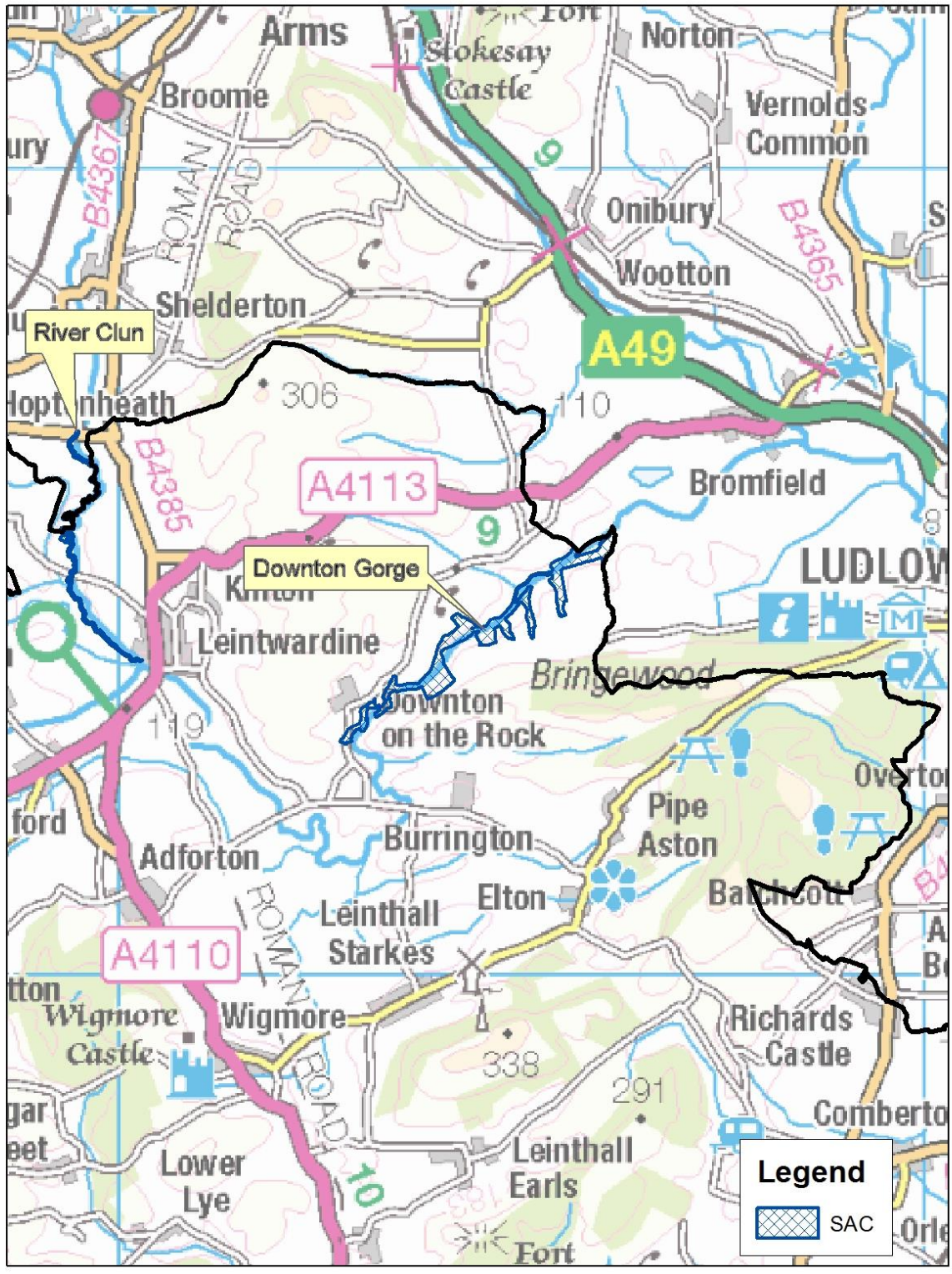


Cannock Chase SAC

Shropshire Council

0 1.25 2.5 5 Kilometers

Map 5 Downton Gorge SAC

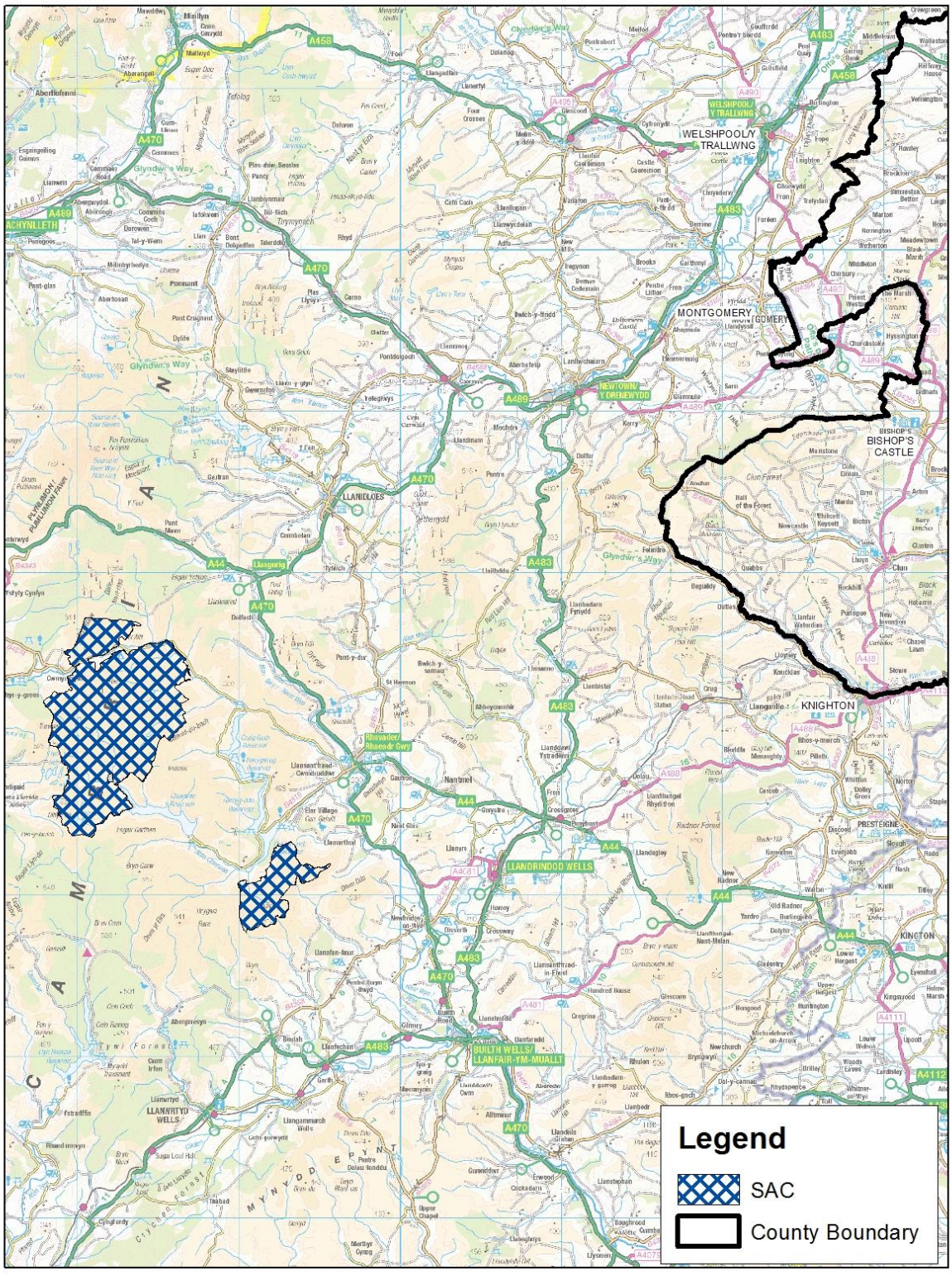


Downton Gorge SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 6 Elenydd SAC

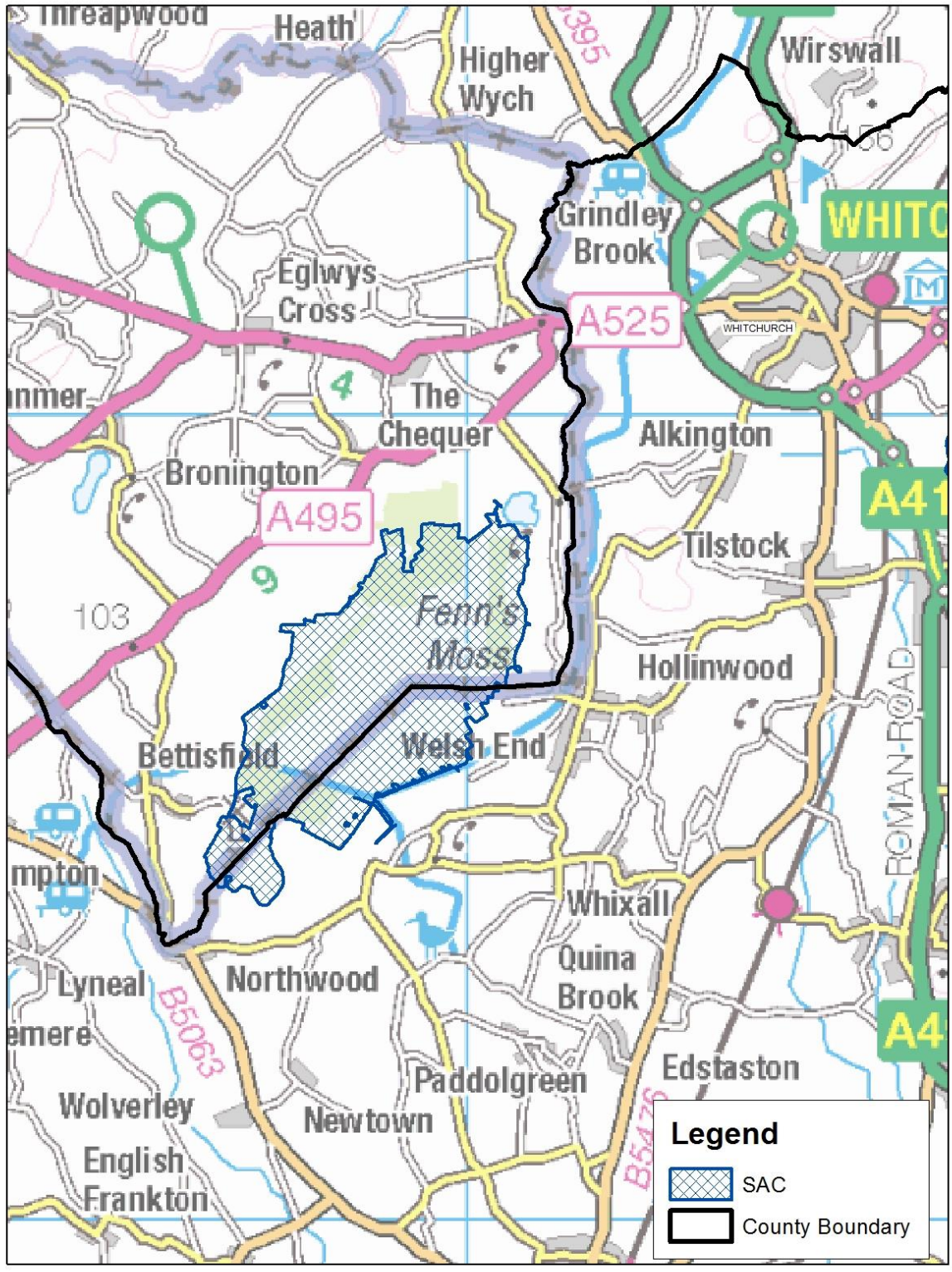


Elenydd SAC

Shropshire Council

0 3.25 6.5 13 Kilometers

Map 7 Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC



Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses SAC

Shropshire Council

0 0.5 1 2 Kilometers

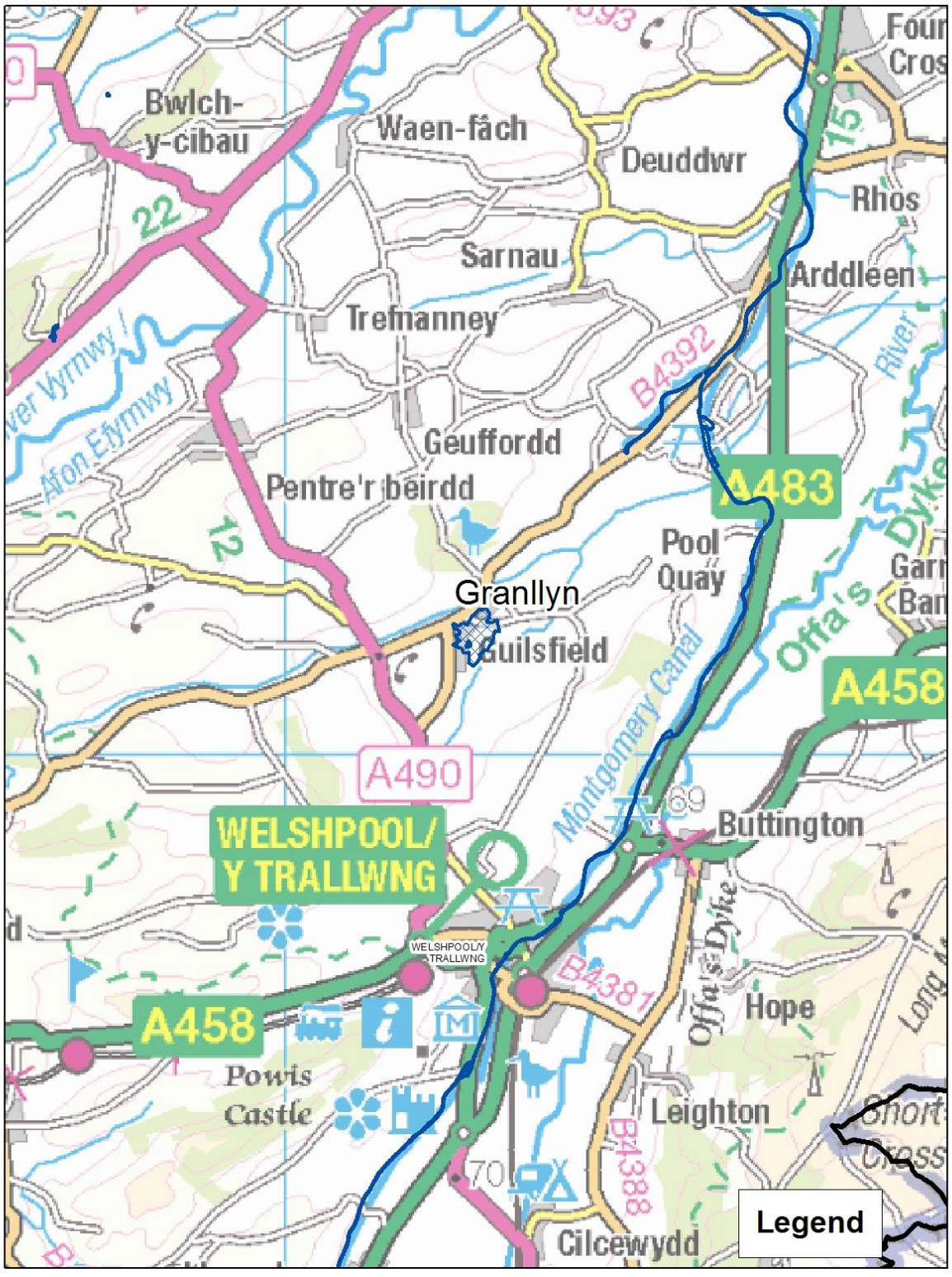
Map 8 Fens Pool SAC

Fens Pools SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 9 Granllyn SAC

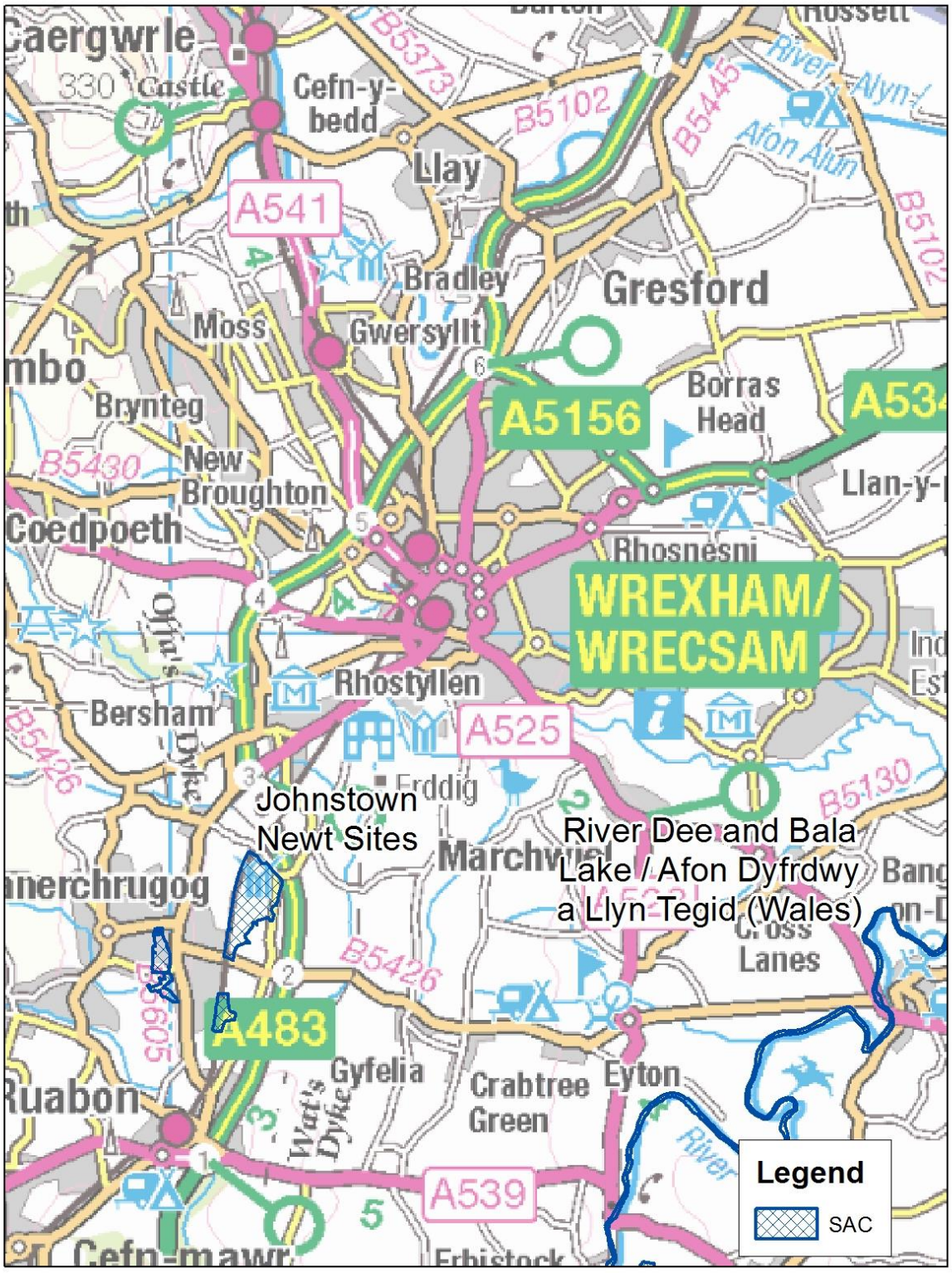


Granllyn SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 10 Johnstown Newt Sites SAC

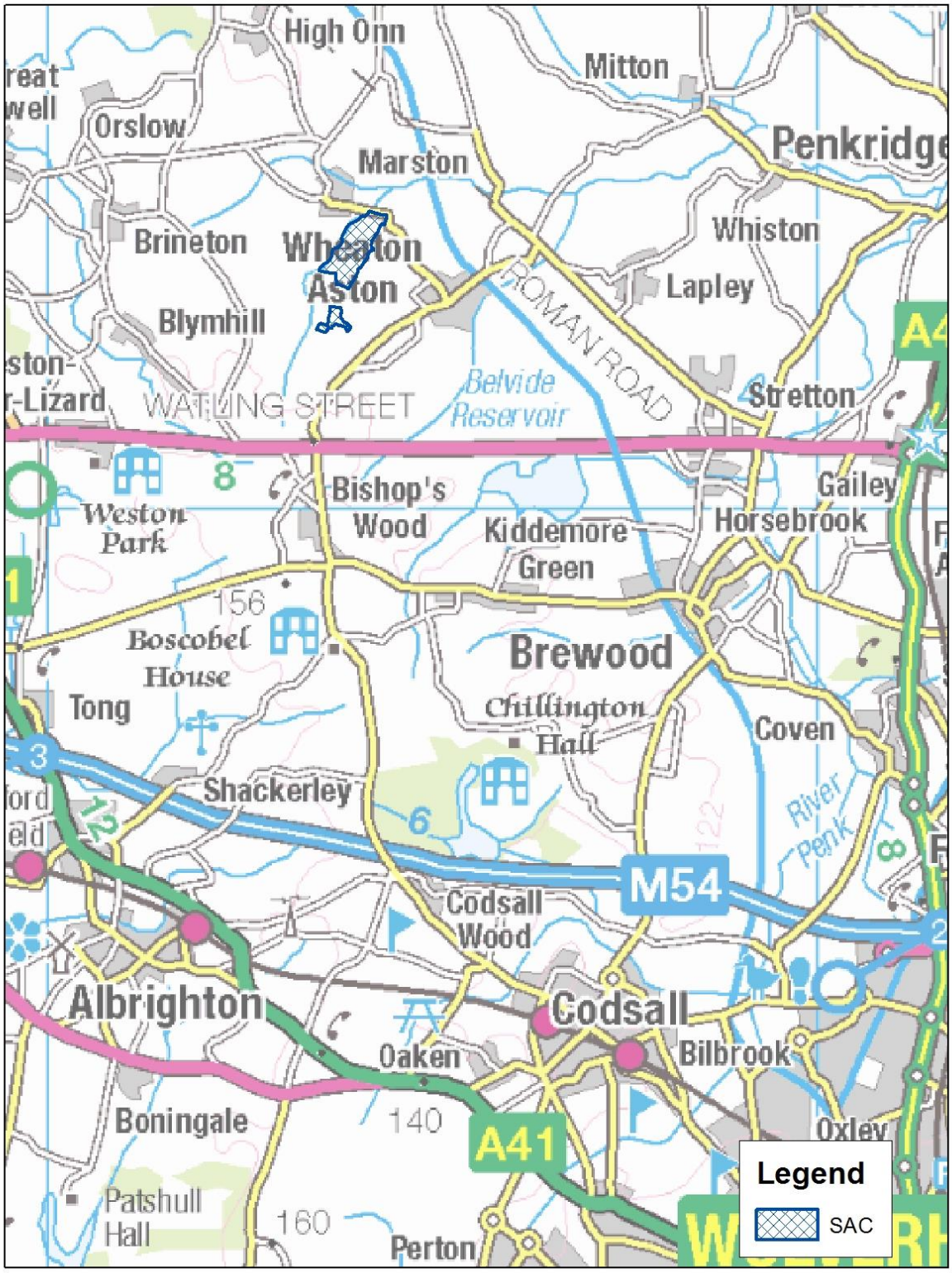


Johnstown Newt Sites SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 11 Mottey Meadows SAC

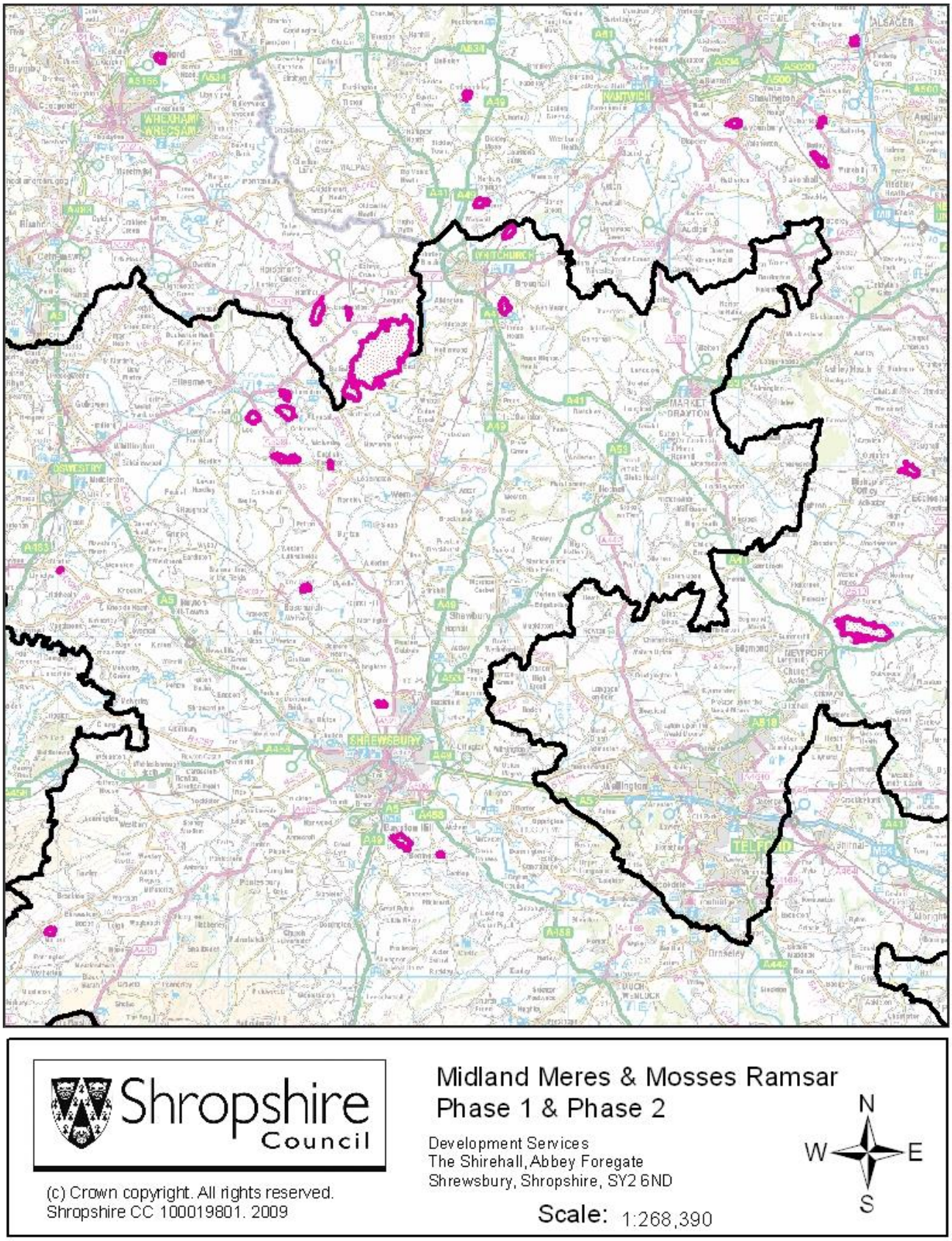


Mottey Meadows SAC

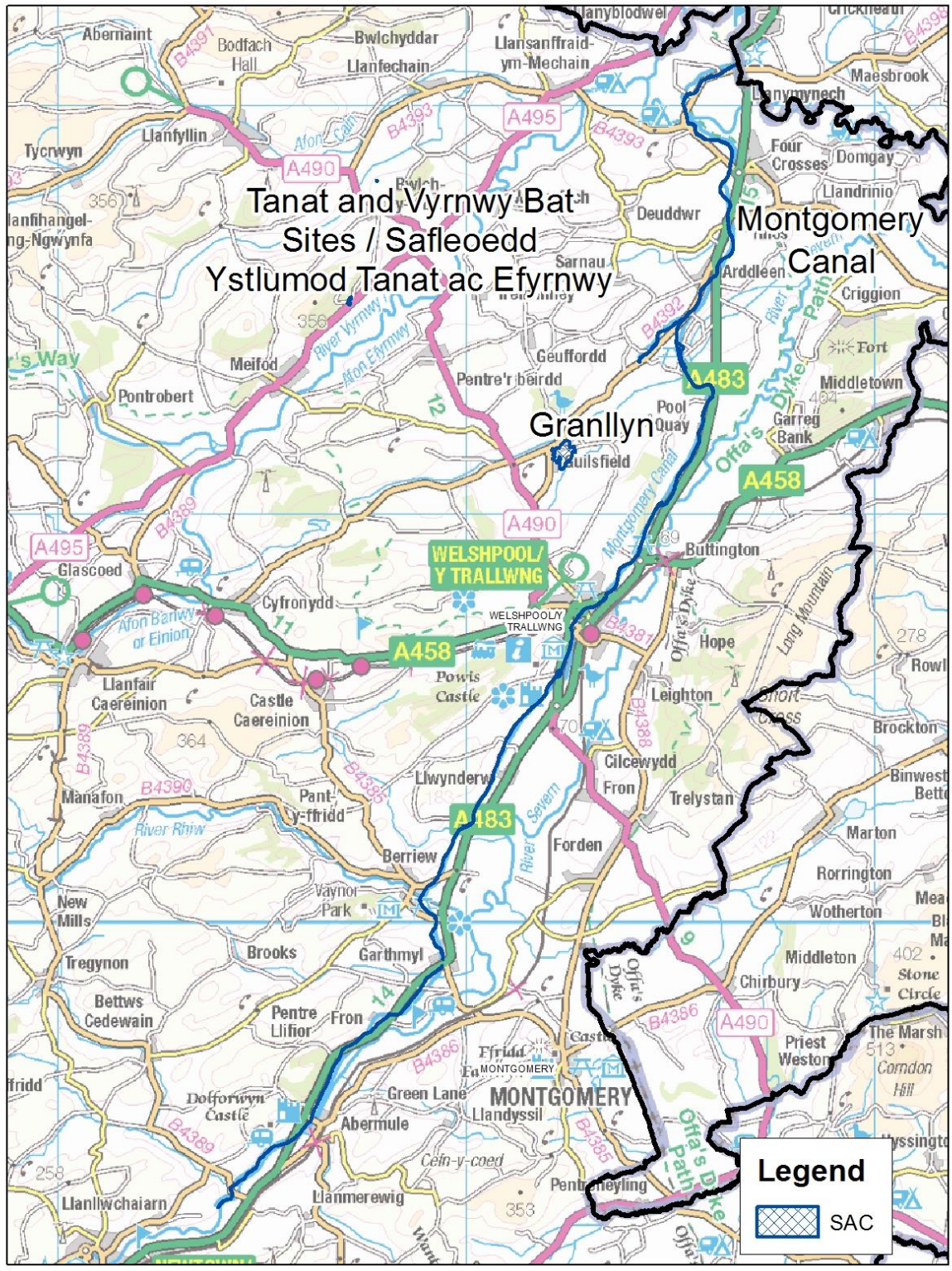
Shropshire Council

0 0.5 1 2 Kilometers

Map 12 Midland Meres and Mosses Ramsar Phases 1 and 2



Map 13 Montgomery Canal SAC and Tanat and Vyrnwy Bat Sites SAC

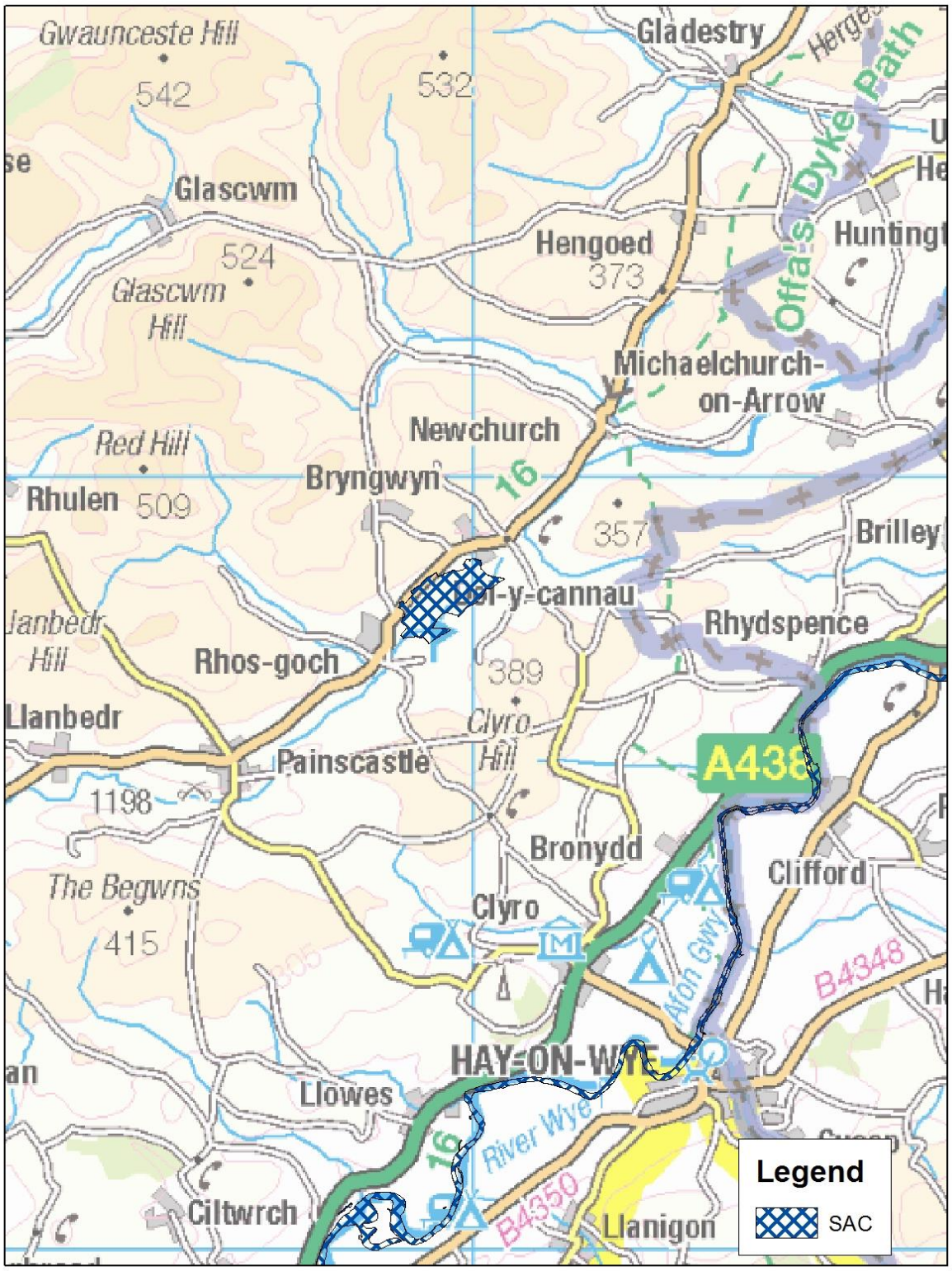


Montgomery Canal SAC

Shropshire Council

0 1.25 2.5 5 Kilometers

Map 14 Rhos Goch SAC

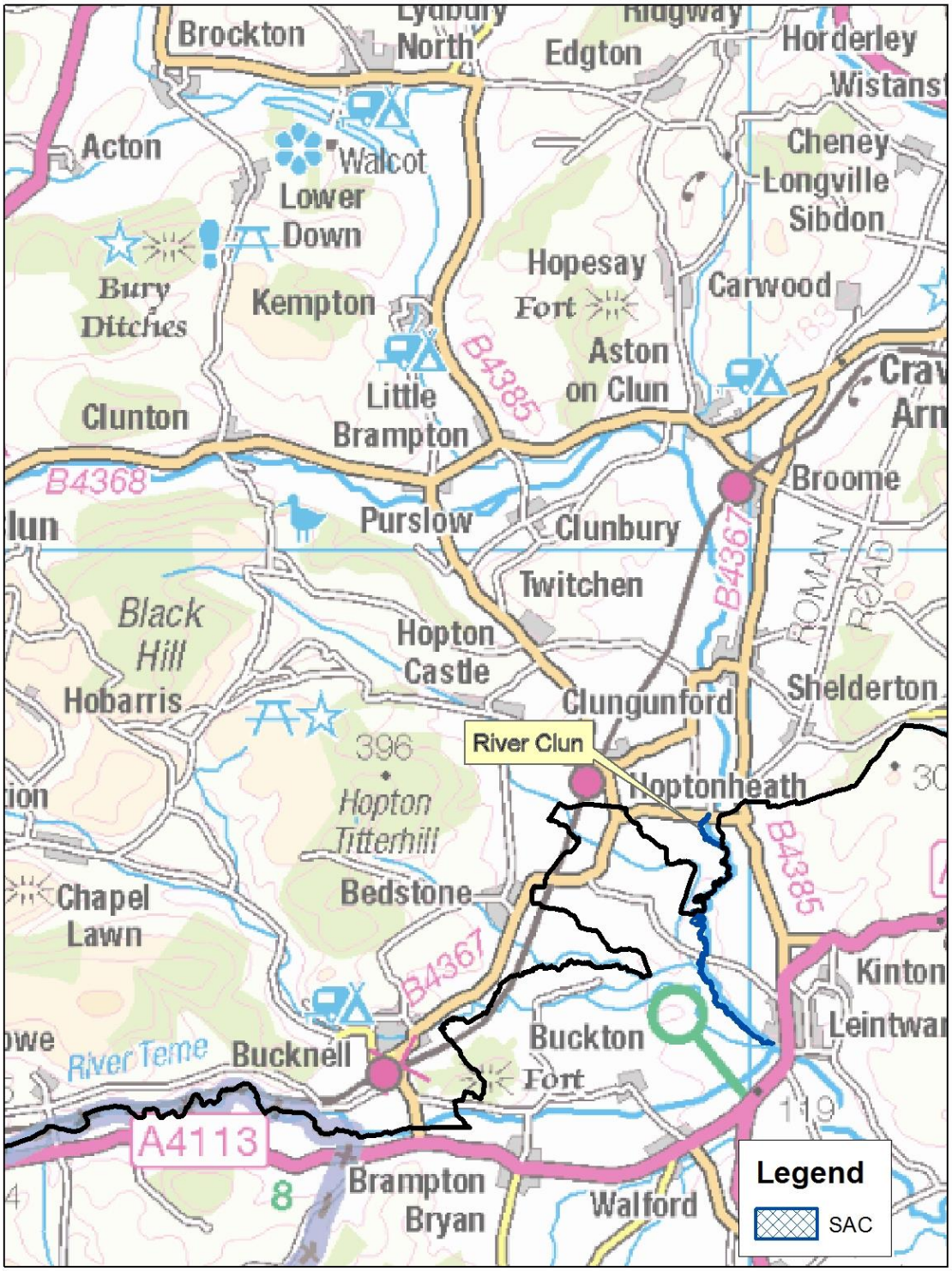


Rhos Goch SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 15 River Clun SAC

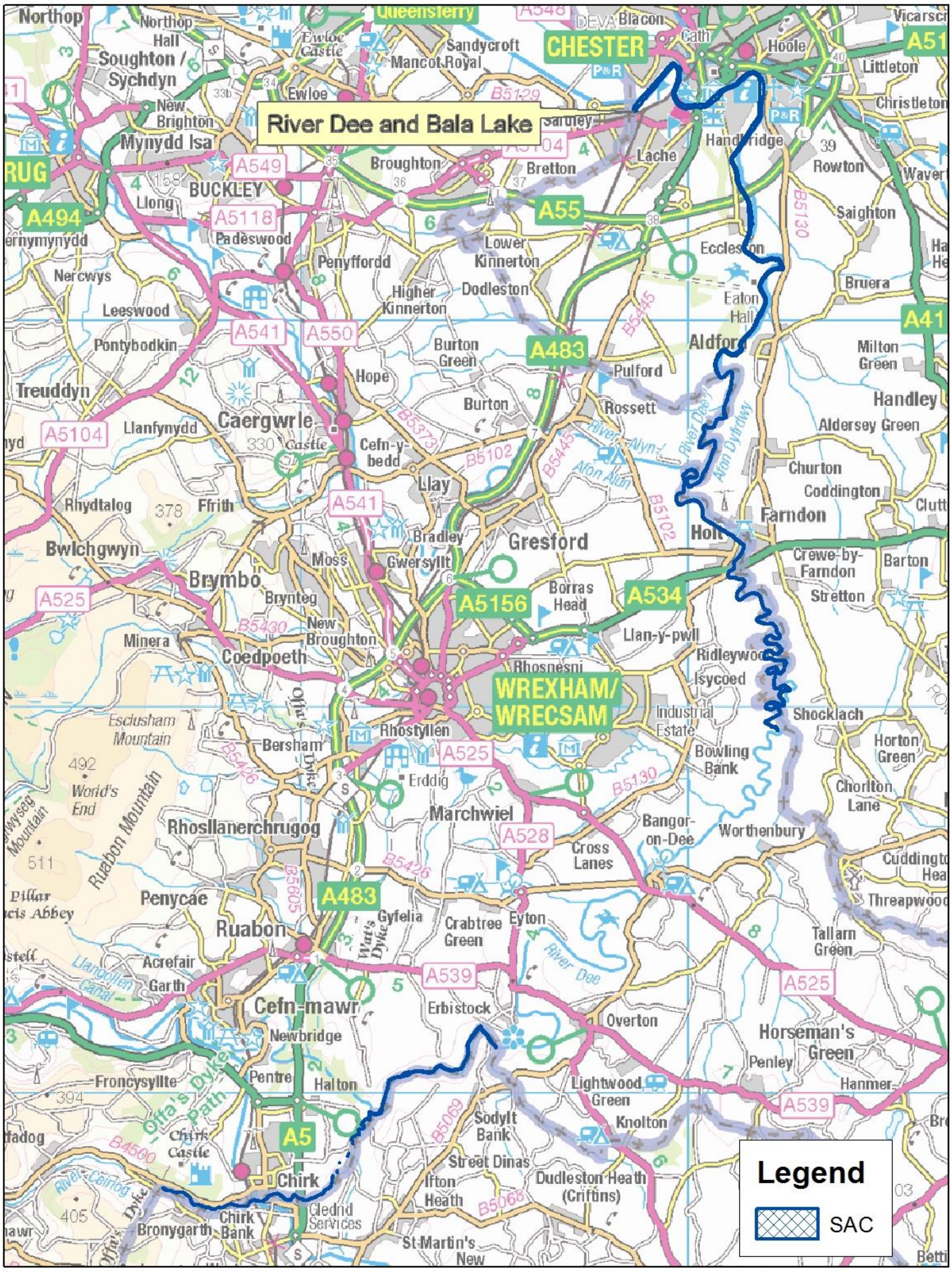


River Clun SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 16 River Dee and Bala Lake SAC



River Dee & Bala Lake SAC

Shropshire Council

0 1.25 2.5 5 Kilometers

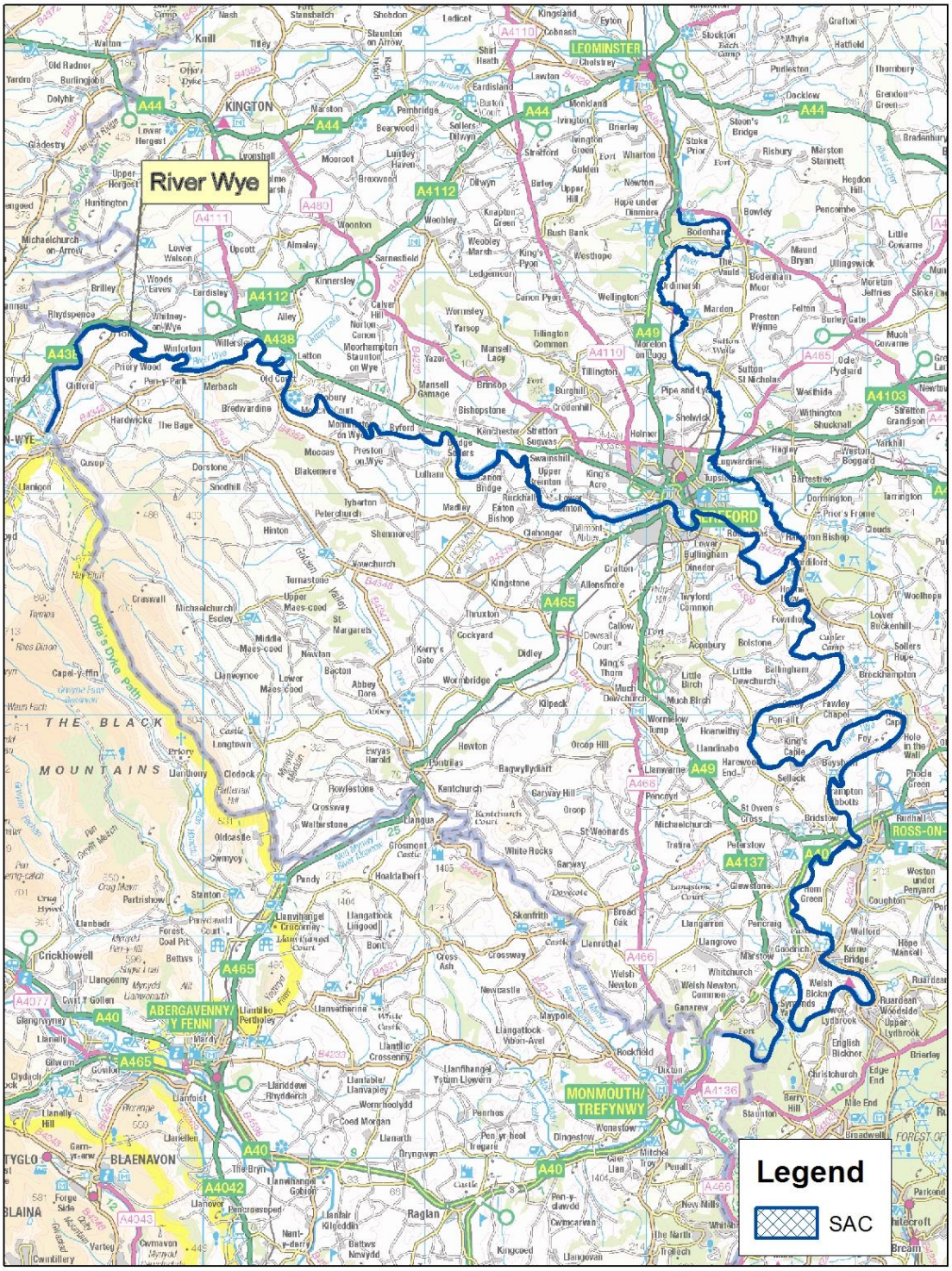
Map 17 River Severn SPA and Ramsar Site

Severn Estaury SPA, SAC & RAMSAR (& River Wye SAC)

Shropshire Council

0 4.25 8.5 17 Kilometers

Map 18 River Wye SAC

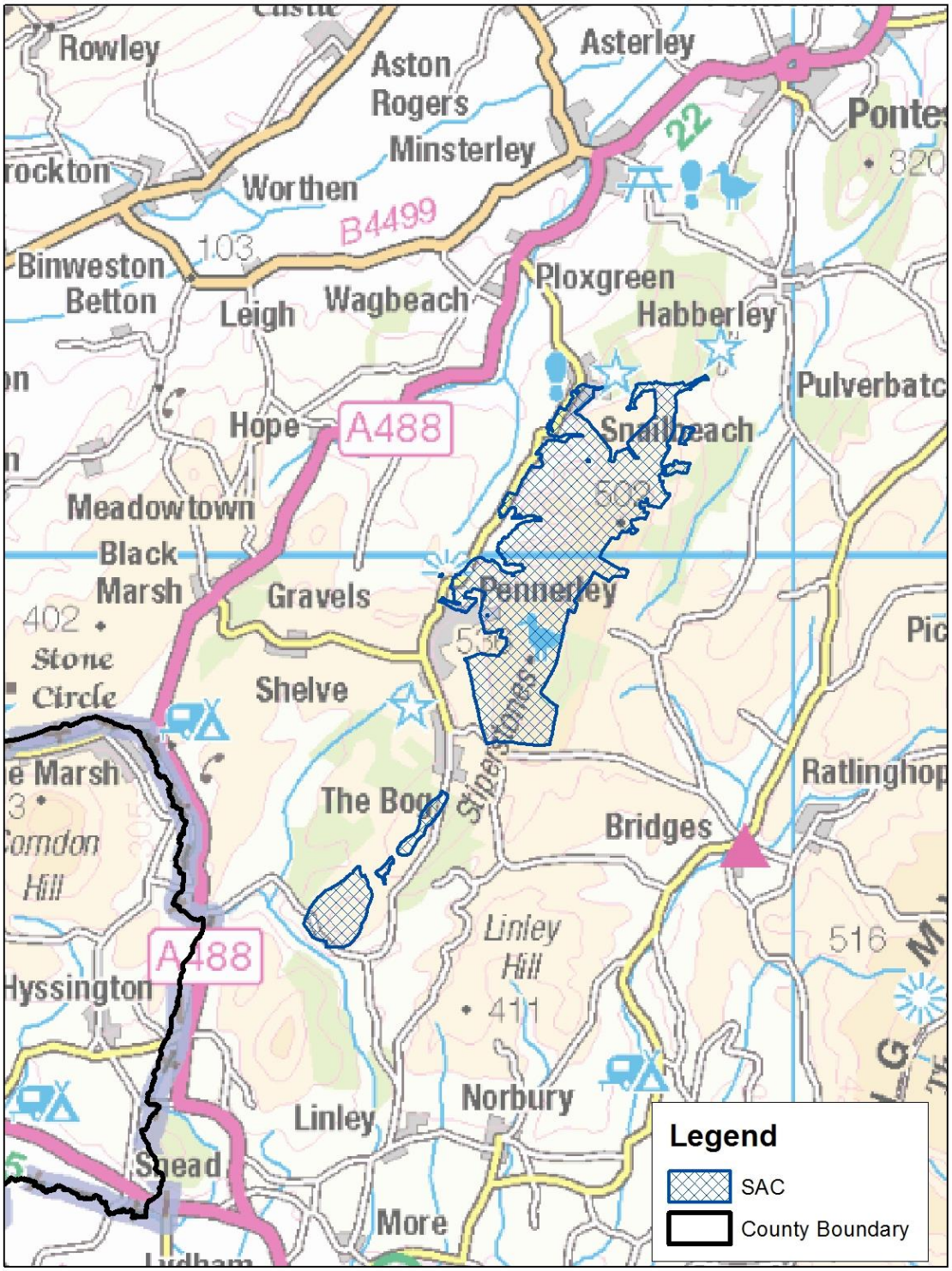


River Wye SAC

Shropshire Council

0 2.25 4.5 9 Kilometers

Map 19 The Stiperstones & the Hollies SAC

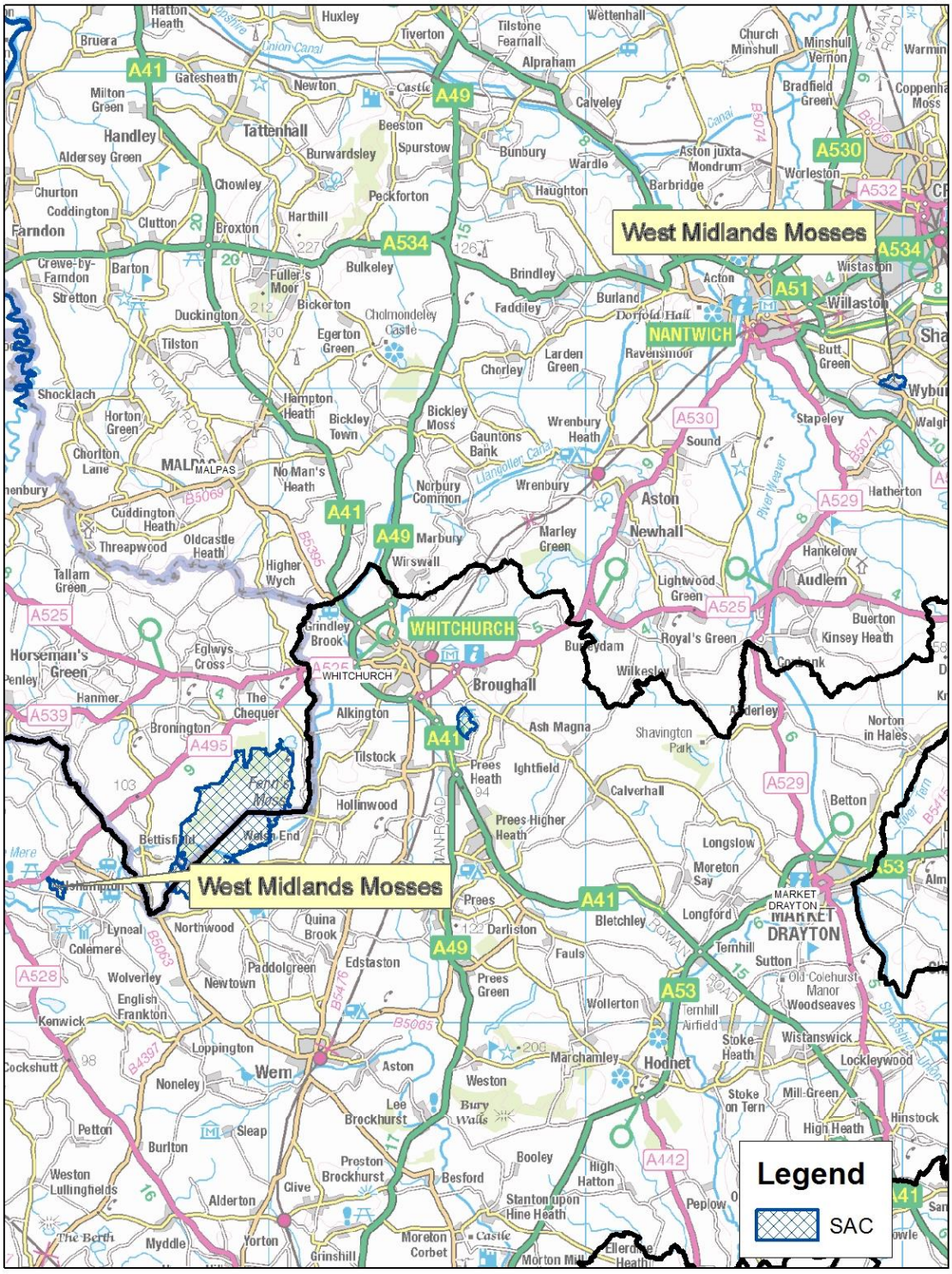


The Stiperstones & The Hollies SAC

Shropshire Council

0 0.5 1 2 Kilometers

Map 20 West Midlands Mosses SAC (Clarepool Moss



West Midlands Mosses SAC

Shropshire Council

0 1.5 3 6 Kilometers

Appendix 2 Description of international sites

The following tables provide detailed information on international sites considered in this report including: site name, location, conservation objectives (where known), site vulnerabilities and reasons for designation.

Information has been sourced from the Joint Nature Conservation Committee (JNCC) website, Natural England (NE) and Natural Resources Wales websites and through direct enquiries.

Table 1: Berwyn SPA

Site Name: Berwyn SPA, SH 917280, Gwynedd / Powys / Wrexham / Denbighshire, Wales
Site Description: Berwyn is an extensive area of acidic North Wales upland, reaching an altitude of 827 m, straddling the Glyndwr, Montgomery and Meirionnydd districts of Clwyd, Powys and Gwynedd respectively. It comprises blanket mire and heather-dominated heath, with some acidic grassland and Bracken *Pteridium aquilinum* dominated areas. It is one of the largest and most important upland massifs of this type in Wales. It supports large and diverse assemblages of breeding upland birds, including raptors such as Hen Harrier *Circus cyaneus*, Merlin *Falco columbarius* and Peregrine *Falco peregrinus*.
Conservation Objectives for SAC: **Hen Harrier** The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. The size of the population must be being maintained at eleven breeding pairs or increased beyond this. 2. There will be sufficient appropriate habitat to support the population in the long-term including patches of tall heather available for nesting and roosting, areas grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding. 3. Distribution of species within site is maintained. 4. Distribution and extent of habitats supporting the species is maintained. 5. Developments should not be permitted where they can be shown to have likely adverse impacts upon hen harrier. 6. Populations of legally controllable predator species, such as foxes and carrion crows, will not pose a threat to ground nesting birds. 7. Hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines. 8. There will be no disturbance of any nest location. 9. Illegal human persecution of protected bird species should not occur. 10. All factors affecting the achievement of these conditions are under control

Merlin The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The size of the population must be being maintained at 13 breeding pairs or increased beyond this.
2. There will be sufficient appropriate habitat to support the population in the long-term including patches of tall heather available for nesting and roosting, areas grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
3. Distribution of species within site is maintained.
4. Distribution and extent of habitats supporting the species is maintained.
5. Developments should not be permitted where they can be shown to have likely adverse impacts upon merlin.
6. Populations of legally controllable predator species, such as foxes and carrion crows, should not pose a threat to ground nesting birds.
7. Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
8. There will be no disturbance of any nest location.
9. Illegal human persecution of protected bird species should not occur.
10. All factors affecting the achievement of theses conditions are under control

Peregine The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The size of the population must be being maintained at 13 breeding pairs or increased beyond this.
2. Mountainous and moorland terrain with cliffs, crags and quarries for nesting and roosting plus grasslands, bracken of low trees/scrub for feeding with an adequate supply of prey species in the form of small birds and small mammals to maintain successful breeding.
3. The range of the population must not be contracting.
4. Distribution and extent of habitats supporting the species is maintained.
5. Developments should not be permitted where they can be shown to have likely adverse impacts upon peregrine.
6. Populations of legally controllable predator species, such as foxes and carrion crows, should not pose a threat to ground nesting birds.
7. Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines.
8. There will be no disturbance of any nest location.
9. Illegal human persecution of protected bird species should not occur.
10. All factors affecting the achievement of theses conditions are under control

Red Kite The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The size of the population must be being maintained at 2 breeding pairs or increased beyond this.

2. Sufficient Broadleaf woodland required for nesting and roosting plus heath and rough grassland for feeding with an adequate supply of prey species in the form of carrion, small birds and small mammals to maintain successful breeding. (NOTE: Red kite do not nest within the SPA.) 3. Developments should not be permitted where they can be shown to have likely adverse impacts upon red kite. 4. Adjoining hunting territories will be managed by controlled grazing to improve structural diversity within the grasslands. This will increase seed production and maximise prey availability e.g. small passerines. 5. There will be no disturbance of any nest location. 6. Illegal human persecution of protected bird species should not occur. 7. All factors affecting the achievement of theses conditions are under control.	
Site Vulnerability: Persecution, habitat destruction, accidental nest destruction, poorly planned habitat management works, inappropriate grazing, lack of nest sites.	
Reason for Designation (qualifying features)	**Environmental Conditions Needed to Support Site Integrity**
Hen harrier *Circus cyaneus* Merlin *Falco columbarius* Peregrine *Falco peregrinus* Red kite *Milvus milvus*	Manage recreational access. Ensure habitat management works are appropriate. Keep grazing at appropriate levels.

Table 2: Berwyn and South Clwyd Mountain SAC

Site Name: Berwyn and South Clwyd Mountain SAC, SH917280 , Wales
Site Description: Berwyn is an extensive area of acidic North Wales upland, reaching an altitude of 827 m, straddling the Glyndwr, Montgomery and Meirionnydd districts of Clwyd, Powys and Gwynedd respectively. It comprises blanket mire and heather-dominated heath, with some acidic grassland and Bracken *Pteridium aquilinum* dominated areas. It is one of the largest and most important upland massifs of this type in Wales. It supports large and diverse assemblages of breeding upland birds, including raptors such as Hen Harrier *Circus cyaneus*, Merlin *Falco columbarius* and Peregrine *Falco peregrinus*. The site is considered important for the following habitats and species: **European dry heaths** for which this is considered to be one of the best areas in the United Kingdom.

Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*) for which the area is considered to support a significant presence.
Blanket bogs for which this is considered to be one of the best areas in the United Kingdom.
Transition mires and quaking bogs for which the area is considered to support a significant presence.
Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*) which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares, and for which the area is considered to support a significant presence.
Calcareous rocky slopes with chasmophytic vegetation, which is considered to be rare as its total extent in the United Kingdom is estimated to be less than 1000 hectares, for which the area is considered to support a significant presence.

Conservation Objectives for SAC:

7130 Blanket bogs

1. There will be no measurable decline in blanket bog; the area of the habitat must be stable or increasing.
2. Dry blanket bog on moisture shedding ridges and slopes will be defined as ericoid (typically *Calluna*) dominated, with clearly subordinate *Erica tetralix*. *Empetrum nigrum*, *Vaccinium vitis-idaea* and/or *V. myrtilus* will be present at high frequency. *Eriophorum vaginatum* typically constant but sometimes only at low cover – other graminoids are typically scarce. *Vaccinium oxycoccus* may sprawl over the thick bryophyte mat but other elements of "wet" bog such as *Narthecium* and *Drosera* are characteristically sparse. Hypnoid mosses (typically *Hypnum jutlandicum* and *Pleurozium schreberi*) often the dominant bryophyte component, and *Sphagna* where present most often represented by *Sphagnum capillifolium*.
3. Wet blanket bog on plateaux and col areas is characterised by a more even balance between *ericoids* and *graminoids*. *Eriophorum vaginatum* generally achieves a higher cover than in drier situations and *E. angustifolium* is constant. Representation of *Molinia caerulea* and *Trichophorum cespitosum* is variable according to past management and hydrology. Smaller elements such as *Vaccinium oxycoccus*, *Narthecium* and *Drosera* are typically present. Hypnoids and *Sphagnum capillifolium* may still comprise the main bryophyte element, but often joined by species of Sphagnum sect. Sphagnum.
4. All areas of blanket bog should exhibit a high water table just below the surface of the ground for the majority of the year and this consistent with continued peat formation.
5. In areas of wet bog in particular, the vegetation should develop or retain an irregular pattern with drier hummocks and wetter hollows.
6. The quality of blanket bog (including in terms of ecological structure and function) must be maintained.
7. Areas with habitats classed as degraded or modified blanket bog and bare peat should be restored to a more sustainable state by encouraging the growth of typical blanket bog vegetation and the blocking of drainage ditches.
8. Burning blanket bog will be discouraged as it retards the development of hummock & hollows as well as the development of more sensitive Sphagna.
9. There should be no moor drains or grips draining the peat body.
10. There should be no evidence of damage caused, for example, by active drainage or burning.
11. Any typical species must also be at FCS, as defined below.
12. Non-native plant species should be absent.

13. There should be no decline in the range or abundance of characteristic plant species and vegetation communities.
14. All factors affecting the achievement of these conditions are under control.

4030 European dry heaths:
1. There will be no measurable decline of dry heath area; the area of the habitat must be stable or increasing.
2. The European dry heath consists principally of NVC type H12 *Calluna vulgaris–Vaccinium myrtillus* heath, with frequent *Empetrum nigrum* and occasional *Vaccinium vitis-idaea*. Other heath vegetation present includes areas of H18 *Vaccinium myrtillus–Deschampsia flexuosa* heath and in some areas stands of damp H21 *Calluna vulgaris–Vaccinium myrtillus–Sphagnum capillifolium* heath. These latter heaths occur in an intermediate position between the drier heaths and blanket mire and support occasional plants of *Listera cordat.a*
3. Its quality (including in terms of ecological structure and function) must be being maintained.
4. The areas of heath vegetation should be retained and where possible permitted to re-establish on areas modified or degraded as a result of agricultural improvement, or through inappropriate management.
5. The dry heathland should have a diverse age structure in the heather and other shrubby plants.
6. Management will ensure the development of a mosaic of age structures through pioneer, building, mature to degenerate heather with at least 10% identified for no-management and allowed to develop through to maturity.
7. Management will not be undertaken within sensitive habitat areas.
8. Some native scrub development will be acceptable up to 10% cover with higher densities, up to 20% within e.g. identified black grouse management zones.
9. Heather and other plants should not exhibit signs of suppressed growth forms due to grazing.
10. There should be areas of long heather providing nesting habitat for ground nesting birds such as grouse, merlin and hen harriers; and areas of lower young heather, and wet flushes where birds can feed on heather shoots and invertebrates.
11. Non-native plant species should be absent.
12. Any typical species must also be at FCS, as defined below.
13. All factors affecting the achievement of these conditions are under control.

6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia)
1. The extent of the calcareous and neutral grasslands should be maintained or increase in size at the expense of bracken, scrub and other more improved grasslands. No loss in extent is acceptable.
2. The calcareous grassland varies floristically. At low altitudes the sward of the calcareous grassland should be rich in calcicolous species such as *Carlina vulgare*, *Briza media* and *Sanguisorba minor*. Locally scarce species such as *Gymnadenia conopsea* and *Blackstonia perfoliata* should also be present. At higher elevations the calcareous sward has more acid species present. Along with the typical indicator species of calcareous grassland, acid loving species such as *Agrostis tenuis* and *Potentilla erecta* are regular. Within the sward, fine leaved grasses and herb species like *Briza media*, *Carlina vulgaris* and *Thymus polytrichus* will be regular, although due to the upland nature of the site other more typically acid-loving herbs like heath *Galium saxatile* and *Campanula rotundifolia* may commonly occur. Though described as grasslands, more than half of the ground cover will consist of herbaceous

species.
3. The limestone grassland areas will have a wide variety of plant communities with the limestone grasslands having those typical of thin, lime rich soils.
4. Grazing will be at levels that allow plants to flower and set seed whilst preventing the spread of trees and scrub.
5. Bracken will only be found in a few isolated patches at the perimeters.
6. Within the sward tree and scrub seedlings, and robust or tussock forming grasses such as *Dactylis glomerata*, and *Deschampsia cespitosa* are uncommon or at low cover. While weeds and other agriculturally favoured species such as *Lolium perenne*, *Urtica dioica*, *Cirsium arvensis* and *C. vulgare* are rare or absent.
7. Introduced species should be absent and control measures should be taken if any such species becomes established.
8. High levels of grazing results in localised soil erosion on steeper parts of the escarpment, which degrades some areas. However, grazing pressure should be sufficient to open small transient patches of bare ground within the sward providing a seed bed for the vascular plant species and suitable habitat for the diminutive bryophytes, macro-lichens and short-lived vascular plant species which are particularly characteristic of limestone grassland on the steeper, more exposed slopes.
9. On deeper soils south of the quarry acid grassland develops and in places forms a mosaic of habitats with the calcareous grassland. On these soils the spread of gorse and bracken should be controlled.
10. All factors affecting the achievement of these conditions are under control.

7140 Transition mires and quaking bogs
1. There will be no measurable decline in Transition mires and quaking bogs; the area of the habitat must be stable or increasing.
2. Typically characterised by a range of low-growing sedges over an extensive carpet of *Sphagnum* bog mosses, accompanied by other mosses, rushes and some scattered herbs.
3. The water table is above the surface of the substrate, giving rise to characteristic floating mats of vegetation.
4. The vegetation normally has intimate mixtures of species considered to be acid-lovers and others thought of as lime-lovers.
5. There should be no moor drains or grips draining the mire.
6. There will be no threats to the transition mire habitat from burning or grazing.
7. There is no significant input of nutrient-rich water from ditches and surrounding land.
8. All factors affecting the achievement of theses conditions are under control.

8120 Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii)
1. There will be no measurable decline of habitat, the area of the habitat must be stable but due to its nature an increase in extent is unlikely.
2. The feature is typically characterised by sensitive pioneer species including maidenhair spleenwort, and bryophytes that are able to colonise the scree, as the crags and ledges provide shelter from grazing and frost action.
3. The flora representative of this feature reflects the base rich nature of the rocks including limestone, calcareous-schists and the more basic igneous rocks such as serpentine and basalt.
4. The scree community is important for the rich fern flora and acts as refugia for a number of rare species.

5. Light grazing will prevent the succession to scrub and minimise colonisation by species such as ash and hazel whilst not damaging the feature through overgrazing.
6. The scree will remain largely undisturbed by human activity and the depositional slopes will continue to accumulate small amounts of scree. The vegetation is only likely to be truly representative of this feature where it occurs on stable scree on less steep slopes where the vegetation can accumulate.
7. The existing diversity of species in each of the above communities should be maintained.
8. There will be no reduction in extent as a result of undesirable human activity such as afforestation, quarrying, climbing or civil engineering works.
9. The use of herbicides, such as Asulox to control the spread of bracken, should be restricted to areas where they will not adversely impact the feature.
10. Only native species should be present.
11. All factors affecting the achievement of theses conditions are under control.

8210 Calcareous rocky slopes with chasmophytic vegetation
1. There will be no measurable loss of habitat, the area of the habitat must be stable but due to its nature an increase in extent is unlikely.
2. The chasmophytic vegetation will consist of plant communities colonising cracks and fissures of rock faces. The type of plant communities developing will be largely determined by the base-status of the rock face.
3. The chasmophytic vegetation is usually dominated by ferns such as *Asplenium ruta-muraria* and small herbs such as *Thymus praecox* and *Hieracium spp*. The inaccessibility of rock habitats to grazing animals, specially rock ledges provides a refuge for many vascular plants that are sensitive to grazing, including numerous local and rare species.
4. Bryophytes and crustose lichens should form a dominant component in crevices but are also found on open rock surfaces where there is a lack of competition form vascular plants. Ledge communities are recognised as part of the feature on the site due to the spectacular stepped topography.
5. Grass benches should be floristically diverse supporting species characteristic of the feature such as *Campanula rotundifolia, Centaurea nigra and Dryopteris spp*.
6. The existing diversity of species in each of the above communities should be maintained.
7. Only native species should be present.
8. Chasmophytic vegetation and grass benches vegetation will not exhibit signs of overgrazing.
9. There will be no reduction in extent as a result of undesirable activities such as quarrying.
10. Small scale excavations may enhance the interest of the site by providing additional exposures but would be deleterious to the highly vulnerable scree and clitter slopes.
11. The use of herbicides, such as Asulox, to control the spread of bracken should be restricted to areas where they will not adversely impact the feature.

Site Vulnerability: The blanket bog, heaths, fens, and grasslands have been threatened by inappropriate agricultural development including drainage, reseeding, application of fertilisers, burning, track construction and the adoption of damaging grazing regimes.

<table>
<tr><td colspan="2">Some areas of grassland and heath are also threatened by the encroachment of bracken.
These problems are being addressed successfully by means of management agreements with owners and occupiers and through joint agreements with the Tir Gofal scheme.
Local tourist pressure and damage by recreational vehicles can cause erosion problems. This is being addressed by visitor management and wardening as well as positive management works of vegetation reinstatement on eroded areas.</td></tr>
<tr><th>Reason for Designation</th><th>Environmental Conditions Needed to Support Site Integrity</th></tr>
<tr><td>Annex 1 habitats that are a primary reason:

4030 European dry heaths
Berwyn contains the largest stands of upland European dry heath in Wales. The dry heath is characteristic of Berwyn’s more easterly location and less oceanic climate than the other major Welsh uplands, and consists principally of NVC type H12 Calluna vulgaris – Vaccinium myrtillus heath, with frequent crowberry Empetrum nigrum and occasional cowberry Vaccinium vitis-idaea. Other heath vegetation present includes areas of H18 Vaccinium myrtillus – Deschampsia flexuosa heath and in some areas stands of damp H21 Calluna vulgaris – Vaccinium myrtillus – Sphagnum capillifolium heath. These latter heaths occur in an intermediate position between the drier heaths and blanket mire and support occasional plants of lesser twayblade Listera cordata.
7130 Blanket bogs
Berwyn supports the most extensive tract of near-natural blanket bog in Wales. Much of the blanket bog vegetation is dominated by NVC type M19 Calluna vulgaris – Eriophorum vaginatum blanket mire, with crowberry Empetrum nigrum and an often extensive hypnoid moss cover; within this community cloudberry Rubus chamaemorus is found close to the southernmost limit of its British range. On deeper peats, there are smaller stands of M18 Erica tetralix – Sphagnum papillosum mire, some of which exhibit distinctive surface patterning. The mire vegetation shows transitions to heather-dominated dwarf-shrub heath

Annex I habitats that are present as a qualifying feature:
6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia)</td><td>Control of tourist pressure and access
Appropriate management/grazing
Limitation of erosion</td></tr>
</table>

7140 Transition mires and quaking bogs 8120 Calcareous and calcshist screes of the montane to alpine levels (Thlaspietea rotundifolii) 8210 Calcareous rocky slopes with chasmophytic vegetation	

Table 3: Brown Moss

Site Name: Brown Moss SAC, SJ561394, Shropshire, England.
Site Description: Brown Moss (32.02ha) is a series of pools set in heathland and woodland. The pools support Floating water plantain *Luronium natans* for which the SAC is designated, and vary considerably in their water chemistry and also in their water levels which fluctuate considerably and apparently independently. Floating water plantain appears to behave as a metapopulation on this site, colonising the various pools according to their suitability.The site is of special importance for the marsh, swamp and fen communities associated with the pools which occupy hollows in the sand and gravel substrate.
Conservation Objectives for SAC: **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 *Luronium natans,* • The structure and function (including typical species) of the habitat of *Luronium natans,* • The supporting processes on which the habitat of *Luronium natans* rely, • The populations of *Luronium natans, and,* • The distribution of *Luronium natans* within the site. Supplementary Advice to support the Conservation Objectives is not currently available.
Definition of Favourable Condition for Brown Moss SSSI: Subject to natural change, to maintain, in favourable condition, the habitat for the internationally important population of Floating Water Plantain (*Luronium natans*), with particular reference to the standing open water. (Maintenance implies restoration if the feature is not currently in favourable condition).
Site Vulnerability: Colonisation by trees is being addressed but continues to be of concern due to the shading, nutrient and hydrological effects on the open water and heathland. The presence of *Crassula helmsii* is a threat to *Luronium natans* and various control mechanisms are being explored. The site dried out almost completely in summer 2013. The influence of groundwater and direction of flow is thought to be key to the

management of the notified feature. Surface drains and ditches also exist, some draining surrounding farmland, others linking the pools. Some of these have become silted up or diverted and need further investigation to determine the quantity and quality of water coming into the site. High phosphorus and nitrogen concentrations in groundwater and surface water feeding the pools is being caused by agricultural run-off, gathering geese, septic tanks and release from sediment. The eutrophication this causes impacts on the suitability of the pools for Floating water plantain. Of the total external and internal sources of phosphorus, sediment was the major contributor. Phosphorus release from sediment contributed up to 84% of the total supply. Birds are a major contributor leading to high phosphorus levels in pools, thereby affecting macrophyte communities. Control of geese has been mooted but the area is open access land and is well used by the local public. Nitrogen deposition exceeds site relevant critical loads.	
Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
Annex II Species that is a primary reason for selection of site: Floating Water Plantain *Luronium natans.*	Sensitive to; • Hydrological changes, • Water pollution, • Invasive species, • Siltation, • Air pollution including atmospheric nitrogen deposition, • Shading through tree colonisation, and Changes in grazing regime.

Table 4: Cannock Chase SAC

Site Name: Cannock Chase SAC, SJ982188 , Staffordshire, England
Site Description: Area 1236.93 ha The area of lowland heathland at Cannock Chase is the most extensive in the Midlands. The character of the vegetation is intermediate between the upland or northern heaths of England and Wales and those of southern counties. Dry heathland communities are of the heather – western gorse (*Calluna vulgaris – Ulex gallii*) and heather – wavy hair-grass (*Calluna vulgaris – Deschampsia flexuosa)* types. Within the heathland, species of northern latitudes occur, such as cowberry *Vaccinium vitis-idaea* and crowberry *Empetrum nigrum*. Cannock Chase has the main British population of the hybrid bilberry *Vaccinium intermedium*, a plant of restricted occurrence. The scarcity of water over much of the Chase effectively confines wetland flora and fauna to the stream valley systems and a scatter of natural and artificial pools and damp depressions. The Oldacre and Sherbrook valleys have small-scale mosaics of spring-fed mire and wet heath vegetation, a result of complex water chemistry. Where acidic conditions prevail the

mires are mostly formed of bog mosses *Sphagnum* spp. with cranberry *Vaccinium oxycoccus*, cottongrasses *Eriophorum* spp. and cross-leaved heath *Erica tetralix*.

Conservation Objectives for SAC:

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

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

Supplementary Advice to support the Conservation Objectives is not currently available. (November 2016)

Definition of Favourable Condition for Cannock Chase SSSI:

Site Vulnerability: Cannock Chase Special Area of Conservation is also a Country Park and lies in the heart of Cannock Chase Area of Outstanding Natural Beauty. Given its location it is a popular outdoor recreation destination and is subject to high visitor pressure. The Cannock Chase SAC Partnership has been set up to deliver robust access management measures to mitigate the negative effects of predicted future increases in recreational usage of the SAC. Current management of SAC land is targeted at restoring and strengthening the heathland vegetation mosaics.

As well as negative effects from recreational pressure, the site is sensitive to under grazing, drainage of the wetland areas and hydrological changes. *Phytophthora pseudosyringae,* a disease on bilberry in the dry heath habitat, is spreading on site. Air pollution, particularly atmospheric Nitrogen deposition, is impacting on the SAC and the site is also vulnerable to wildfires/arson and the spread of invasive species.

Reason for Designation	Environmental Conditions Needed to Support Site Integrity
Annex I habitats: H4010. Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath H4030. European dry heaths	Robust access management measures to mitigate damage from visitors. Restore and strengthen the heathland vegetation mosaics. Monitor and manage spread of Phytophthora pseudosyringae. Reduced atmospheric pollution including Nitrogen impacting on site. Control of invasive species. Adequate fire prevention.

Table 5: Downton Gorge

<table>
<tr><td colspan="2">Site Name: Downton Gorge SAC, SO443743, Herefordshire, England.</td></tr>
<tr><td colspan="2">Site Description: Downton Gorge (69.3 ha) lies on a stretch of the River Teme, it is an example of ancient semi-natural woodland with steep ravines and dingles occurring in side valleys. The site includes several nationally scarce types of woodland and is important for a range of species including ferns. The site includes Downton Gorge National Nature Reserve.</td></tr>
<tr><td colspan="2">Conservation Objectives for SAC:

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 its component vegetation and typical species, plus transitional communities) and habitats of qualifying species;
• The structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species;
• The supporting processes on which qualifying natural habitats and habitats of qualifying species rely;
• The populations of qualifying species;
• The distribution of qualifying species within the site.

Draft Suppementary Advice on Conserving and Restoring Site Features is available for this site and has been consulted for this site account.</td></tr>
<tr><td colspan="2">Definition of Favourable Condition for Downton Gorge SSSI: To maintain, in favourable condition, the Tilio-Acerion ravine forest. (Maintenance implies restoration if the feature is not currently in favourable condition).</td></tr>
<tr><td colspan="2">Site Vulnerability: The site is potentially vulnerable to the effects of air- and water-borne pollution, particularly in respect of its significant lichenological interest. Exceedance of the critical values for air pollutants may modify the chemical status of its substrate, accelerating or damaging plant growth, altering its vegetation structure and composition and causing the loss of sensitive typical species associated with it. The critical values for nitrogen and acidity for this feature at this SAC are currently exceeded.
Defining and maintaining the appropriate hydrological regime is a key step in moving towards achieving the conservation objectives for this site and sustaining this feature.
Interior woodland conditions need to be protected, including from change due to damage at the site edge.</td></tr>
<tr><td>Reason for Designation</td><td>Environmental Conditions Needed to Support Site Integrity</td></tr>
<tr><td>Annex I Habitats that are a primary reason for selection of site:
H9180. Tilio-Acerion forests of slopes, screes and ravines (priority</td><td>• Reduction in air and water borne pollution.
• Prevention of over grazing by deer,</td></tr>
</table>

feature); Mixed woodland on base-rich soils associated with rocky slopes	• Contol of invasive or introduced non-native species, • Maintainance and restoration of connectivity in the wider landscape • Protection from light pollution (from direct glare, chronically increased illumination and/or temporary, unexpected fluctuations in lighting)

Table 6: Elenydd SAC

Site Name: Elenydd SAC, SN824704, Ceredigion / Powys, Wales.
Site Description: The Elenydd – Mallaen area occupies the southern section of the Cambrian Mountains in central Wales, stretching from the upper Cothi and Tywi valleys north-west of Llandovery to the Ystwyth, Elan and Wye valleys in the north. These hills are built of rocks of Silurian and Ordovician age and the landforms are typical of the 'slate uplands' of south-central Wales, with plateaux separated by steep-sided valleys. Elenydd is located in the centre of this area. It is one of the most important areas of hill land in Wales for nature conservation and is of outstanding interest for its range of breeding birds. Much of the hill vegetation is also of special interest. Elenydd is important in Mid Wales for its nutrient-poor upland lakes. The area supports a wide variety of uncommon plants and animals.
Conservation Objectives for SAC: **Blanket Bogs** The extent, quality and diversity of blanket bog vegetation within the constituent sites is maintained and, where possible, degraded bog is restored to good condition. 1. Populations of uncommon bog plants, such as tall bog-sedge, slender sedge, magellanic bog-moss and round-fruited collar-moss, are stable or increasing. 2. The bogs continue to provide suitable habitat for breeding birds, including golden plover, dunlin and red grouse, and invertebrates, such as large heath butterfly. 3. Peat profiles containing important pollen records are maintained. 4. All factors affecting the achievement of these conditions are under control. **European Dry Heaths** The extent, quality and diversity of heath vegetation within the constituent sites is maintained and, where possible, degraded heath is restored to good condition. 1. The main heathland areas have a varied age structure with a mosaic of young heath, mature heath and degenerate heath. 2. Sunny slopes in certain areas support vegetation that includes bell heather and western gorse and steep north and east facing slopes have a rich variety of mosses and liverworts beneath the dwarf shrub canopy, including bog mosses in some areas. 3. Populations of uncommon plants, such as lesser twayblade, are stable or increasing. 4. The larger heathland areas provide suitable habitat for breeding birds, including red grouse and merlin.

5. All factors affecting the achievement of these conditions are under control.
Calaminarian grasslands of the *Violetalia calaminariae* The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The habitat covers at least its current measured area.
2. Lichens dominate large blocks of metal rich spoil from mine workings, tips, walls and other built structures.
3. Lichens, mosses, ferns and a few higher plants such as sea campion are present on rock outcrops in cliffs, open cuts and about the entrances to shafts and adits.
4. On open, usually level ground, plant communities are found represented by the moss genus *Weissia* and a range of crustose metallophyte lichens. The moss *Ditrichum plumbicola* and sea campion occur in the most base-rich areas, usually associated with scattered lime mortar from adjacent buildings.
5. Heath, shrub, trees or other woody species are scarce or absent
6. Light grazing prevents the growth of tall herbs, scrub and woodland. Grazing levels are carefully managed to avoid undesirable levels of ground disturbance.
7. Areas of disturbed bare ground occupy less than 10% of potential areas that could be occupied by this habitat.
8. There is less than 1% cover of non-native plants.
9. There is no newly dumped material.
10. The habitat is spreading gradually across this extensive site wherever suitable conditions exist.
11. All factors affecting the achievement of these conditions are under control.
Oligotrophic to mesotrophic standing waters of the *Isoeto-Nanojuncetea* The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The plan area contains several upland lakes with mildly acidic, nutrient-poor (oligotrophic) water and fairly stoney beds. Water plants found here include shoreweed, water lobelia, alternate watermilfoil, quillwort, spring quillwort, bulbous rush, floating bur-reed, broad-leaved pondweed, intermediate water-starwort and water moss.
2. Fully developed oligotrophic lake vegetation is present in each of the lakes, including all of the component species typical of the SAC feature, as represented in the Elenydd SAC.
3. For each of the lakes where it occurs, the extent and species composition of the oligotrophic lake vegetation is stable or increasing in range and/or diversity.
4. The rare stonewort *Nitella gracillis*, scarce six-stamened waterwort and awlwort are found in Llyn Gynon. Six-stamened waterwort is also found growing in shallow water on the stony bed of Dolymynach Reservoir.
5. Populations of these water plants are all stable or increasing and the water quality of the lakes remains suitable for their survival in the long term.
6. Plants indicating unfavourable condition for this feature e.g. filamentous algae associated with eutrophication and invasive non-native species will absent or maintained or restored below an acceptable threshold level.
7. With the exception of Dolymynach Reservoir, near-natural hydrological and geomorphological processes and forms will be operating in the lakes e.g. water levels, water depth, stability of bed substrate, with no artificial regulation of water levels or altered sediment regimes.

<table>
<tr><td colspan="2">8. Low nutrient and shade levels are maintained.
9. All factors affecting the achievement of these conditions are under control.
Floating Water Plantain The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The floating water-plantain populations are viable throughout their current distribution in the plan area (maintaining themselves on a long-term basis), namely in Llyn Cerrigllwydion Uchaf, Llyn Cerrigllwydion Isaf, Gwynllyn and Llyn Gynon.
2. Each floating water-plantain population will be able to complete sexual and/or vegetative reproduction successfully.
3. Potential for genetic exchange between floating water-plantain populations, in and/or outside the plan area, will be evident in the long-term.
4. Near-natural hydrological and geomorphological processes and forms will be operating in the 4 lakes e.g. water levels, water depth, stability of bed substrate, with no artificial regulation of water levels or altered sediment regimes.
5. Low nutrient and shade levels will be maintained, with no species present indicative of unfavourable conditions e.g. filamentous algae.
6. The dispersal of floating water plantain will be unhindered.
7. There will be no non-native invasive species present.
8. All factors affecting the achievement of the above conditions are under control.</td></tr>
<tr><td colspan="2">Site Vulnerability:
Erosion, burning, water abstraction, nitrogen & acid deposition, scrub encroachment, afforestation, water pollution, invasive plant species.</td></tr>
<tr><td>Reason for Designation</td><td>Environmental Conditions Needed to Support Site Integrity</td></tr>
<tr><td>Annex I Habitats that are a primary reason for selection of site:
Calaminarian grasslands of the Violetalia calaminariae,
Blanket bogs

Annex I Habitats present as a qualifying feature but not a primary reason for selection of site:
Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoeto-Nanojuncetea,
European dry heaths.

Annex II species that are a primary reason for selection of this site:
Floating Water Plantain Luronium natans</td><td>Maintain water quality and level.
Manage scrub encroachment.
Control pollution.
Control and manage recreational access.
Control introduced species.</td></tr>
</table>

Table 7: Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses

Site Name: Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses SAC, SJ486364, Shropshire/Wrexham, England/Wales.
Site Description: Fenn`s, Whixall, Bettisfield, Wem and Cadney Mosses (949.2ha) together form an outstanding example of lowland raised mire, straddling the English/Welsh border. It is amongst the largest and most southerly raised bogs in the UK. The site as a whole supports a wide range of characteristic acid peat bog vegetation including thirteen species of *Sphagnum* moss, which represent successional stages in the development of a raised mire.
Conservation Objectives for SAC: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely Supplementary Advice to support the Conservation Objectives is not currently available.
Definition of Favourable Condition for Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SSSI: To maintain, in favourable condition, the active raised bogs and degraded raised bogs still capable of natural regeneration on the site.
Site Vulnerability: The lowland raised mire is dependent upon high water levels and a continuation of active peat-forming processes. Much of the site is subject to mineral planning consents for peat extractions which are currently being reviewed. The site has a history of peat-cutting and until recently, part of the site has been subject to large-scale commercial extraction, involving drainage over much of the peat body. Afforestation and agricultural improvement on marginal areas of the peat body have accelerated the lowering of water levels, resulting in encroachment by scrub and a decline in the extent of peat-forming communities. Nutrient enrichment through water in drainage ditches will damage low-nutrient bog habitats. Aerial nitrogen deposition is similarly raising nutrient levels on the bog surface. A greater part of the site is now owned, leased or managed under agreement by conservation organisations. Within these areas, mire rehabilitation management is taking place under the guidance of a management plan. It is intended to seek to increase the areas under positive conservation management by implementation of the joint Countryside Council for Wales/English Nature acquisition strategy. The Fenn's and Whixall NNR has an up to date management plan and visitor management strategy.

Reason for Designation	Environmental Conditions Needed to Support Site Integrity
Annex I Habitats that are a primary reason for selection of site: Active raised bog (priority habitat). Annex I Habitats present as a qualifying feature but not a primary reason for selection of site: Degraded raised bogs still capable of natural regeneration; Degraded raised bog	Maintenance of appropriate (high) water levels. Prevention of nutrient-rich drainage water contaminating the site. Control and amelioration of aerial nitrogen deposition. Prevention of afforestation and removal of scrub/trees on designated habitat. Prevention of peat extraction. Monitoring and control invasive species.

Table 8: Fens Pools SAC

Site Name: Fens Pools SAC, SO920888, Dudley, England
Site Description: Area: 20.40ha The site comprises of a series of small pools and a wide range of other habitats from swamp, fen and inundation communities to unimproved neutral and acidic grassland and scrub. Great crested newts *Triturus cristatus* occur as part of an important amphibian assemblage. The site, which shows evidence of post industrial activities, overlies Etruria marls and coal measures of the Carboniferous period.
Conservation Objectives for SAC: 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 the qualifying species • The structure and function of the habitats of the qualifying species • The supporting processes on which the habitats of the qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site. Supplementary Advice to support the Conservation Objectives is not currently available. (November 2016)
Definition of Favourable Condition for Fens Pools SSSI: To maintain the extent of the amphibian habitat (terrestrial and aquatics) at Fens Pools. No loss of area or fragmentation of site (through significant barriers to amphibian dispersal) compared with status at designation. On this site favourable condition is defined in terms of the amphibian and Great Crested Newt attributes and targets.

Site Vulnerability: The Great Crested Newts are under constant pressure from activities including: fly tipping; off road vehicles; unlicenced grazing and under-management of areas including the pools, woodland and scrub areas. High illicit stocking with tethered horses means that the grass sward is severely over-grazed. Scrub management around the pools has not been carried out in the last few years. In addition some pools have dried out and are getting smaller due to vegetation encroachment. Infected alpine newts identified in 2009 with Chytrid fungus may pose a risk to the great crested newt population (GCN), the effects of this disease is unknown. Surveys since 2009 haven't detected the fungus in smooth, alpine or crested newts. The numbers of GCN has remained constant since 2009 even though the alpine newt numbers have increased, indicating that the alpine newts are not out-competing the GCN for food and having a detrimental impact on the notified feature. Off road vehicles/burnt out vehicles pose a pollution threat to the GCN when the abandonment affects the breeding pools for the GCN. Fens Pools is partially isolated as a result of its location with in a large urban area. The connectivity / genetic interchange with other great crested newt populations is believed to be low or non-existent.	
Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
S1166*. Triturus cristatus*; Great crested newt	A reduction in grazing pressure. Appropriate scrub control and maintenance of unshaded pools. Monitoring the alpine newt population and check for signs of disease. Control of pollution from burnt out vehicles and tipping and generally maintaining good water quality. Improved habitat linkages for Great Crested Newts. Minimise introduced fish populations.

Table 9: Granllyn SAC

Site Name: Granllyn SAC, SJ 224115, Powys, Wales
Site Description: Breeding population of Great Crested Newts (Triturus cristatus) for which this was, at the time of notification, the largest population in mid-Wales and one of the most important areas in Europe for this species. The site is situated in the village of Guilsfield just outside of Welshpool on the Mid Wales border. The site is made up of two water bodies Granllyn Pool and The Moat that act as breeding sites for the great crested newts. The Granllyn Pool is a kettle formation with a peat soil and pond bottom. Surrounding these water bodies the rest of the site in composed of generally improved and well-grazed pasture. The exception to this being the grassland surrounding the Granllyn Pool (the main breeding site) which was planted up in 2004 to form a community woodland site. There is a wet juncus area in the northern most pasture of the Moat & Field (unit 2). Small blocks of woodland, hedgerows, minor roads, a cemetery and orchard are also included within the site boundary.

Conservation Objectives for SAC: **Great Crested Newts** The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. No less than 100 great crested newts are present on the site. 2. At least 2 display/breeding ponds are to be found throughout the entire site. 3. Great crested newt larvae are found in Granllyn Pool breeding ponds in at least one out of every two years. 4. The newt display/breeding ponds have a water depth of 10cm of more during the summer months. 5. Native macrophytes cover no more than 75% of pond/water body surfaces. Aquatic marginal vegetation is present around the pond edges. 6. Breeding/display ponds are not be heavily shaded by surrounding bank-side vegetation. 7. Algal blooms and surface sheens are absent from display/breeding ponds. 8. Fish are not present in breeding/display ponds supporting great crested newts. 9. Only small numbers of water and wildfowl can be seen on the ponds. 10. The terrestrial habitat surrounding breeding ponds comprise of refuge areas, foraging areas, hibernacula and corridors that aid the dispersal of great crested newts. If these features are not present the conservation management aim will be to provide them. 11. Off site habitats that function as stepping stone or corridors located between SAC compartments are maintained for migration, dispersal; foraging and genetic exchange purposes. 12. All factors affecting the achievement of the above conditions are under control.	
Site Vulnerability: Invasive plants, dominant emergent species and trees, introduction of predators (fish), waterborne pollution, lack of terrestrial habitats, development and recreational use.	
Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
Annex II species that is a primary reason for selection of this site: Great crested newt *(Triturus cristatus)*	Appropriate pond management. Maintenance of water quality. Scrub/tree management.

Table 10: Johnstown newt sites SAC

Site Name: Johnstown Newt Sites SAC, SJ 310466,Wrexham, Wales
Site Description: The site is located in the environs of the village of Johnstown, south west of Wrexham, at an altitude of 130m above mean sea level. It is of special interest for its population of the great crested newt *Triturus cristatus*. This species has suffered a marked decline throughout Great Britain and Continental Europe as a result of habitat loss. Great Britain is considered to support

one of the strongholds for this species in Western Europe. The Bettisfield Formation feldspathic sandstone and coal measures underlie the site and a number of capped mine shafts are present within the boundaries of the site. Where present, natural soils are of over-consolidated till (boulder clay) origin. The majority of the water bodies originated following the cessation of mineral extractive industries including coal mining and quarrying for clay and associated industrial developments. Certain ponds, particularly at Hafod, were specifically created for amphibian conservation purposes. Surrounding areas of land support a mosaic of scrub and planted trees, grassland, and tall ruderal vegetation. These form important foraging and over wintering areas for adult and juvenile amphibians.
Conservation Objectives for SAC: The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied: 1. No less than 300 great crested newts will be present on the site 2. At least 30 display/breeding ponds will be found throughout the entire site 3. Great crested newt larvae will be found in 7 or more of the breeding ponds 4. Half of the display/breeding ponds on the site will have a water depth of 10cm of more during the summer months. 5. Native macrophytes will cover at least half of the pond surface yet some of the water surface will still remain open. 6. Aquatic marginal vegetation will be present around the ponds 7. Breeding/display ponds will not be heavily shaded by surrounding vegetation 8. Algal blooms and surface sheens will be absent from display/breeding ponds 9. Fish will not be present in breeding/display ponds which support great crested newts 10. Only small numbers of water and wildfowl will be seen on the ponds 11. The terrestrial habitat surrounding breeding ponds will comprise of refuge areas for newts, foraging areas, areas of hibernacula and corridors which will aid the dispersal of great crested newts 12. Off site habitats that function as stepping stone or corridors located between SAC compartments will be maintained for migration, dispersal, foraging and genetic exchange purposes 13. Off-site features that impact on successful dispersal, such as roadside gully-pots, will not be subject to future construction 14. Non-native aquatic species will not be present 15. Amphibian chytridiomycosis will not be present 16. All factors affecting the achievement of the foregoing conditions are under control.
Site Vulnerability: The important great crested newt populations are dependent on the preservation of suitable aquatic and terrestrial habitat. These are vulnerable to destruction and inappropriate management. Situated in the urban fringe, these post-industrial sites are subject to threat from unregulated public access, fly-tipping and pollution. They are also subject to pressures for development. Management agreements and acquisition by public bodies has secured appropriate management of some areas. Close liaison with planning authorities and the provision of site wardening are controlling many of the pressures. Habitat management is underway on areas owned by the local authority to secure optimum habitat conditions.

Reason for Designation	Environmental Conditions Needed to Support Site Integrity
Annex II species that are a primary reason for selection of this site: Great crested newt *Triturus cristatus*	Management of pollution and fly-tipping. Management of development. Management of recreational pressure.

Table 11: Montgomery Canal

Site Name: Montgomery Canal SAC, SJ220058, Powys, Wales
Site Description: The Montgomery Canal is a partially restored but largely unused waterway. It runs for approximately 36 kilometres from near berbechan (three kilometres north-east of Newtown) to the English border at Llanymynech. It also has a small number of linked off-line reserves (kept as small individual management units); these were created to protect examples of the habitats and species found in the canal when restoration of the canal was started in the 1970s. It supports the largest, most extensive population of floating water-plantain *Luronium natans* in lowland Britain. This is a semi-natural population, having colonised from drift material or seed but needing periodic human disturbance for continued growth; in this respect the canal is a substitute for the species' former slow-moving, mesotrophic river niche, which has been largely destroyed in lowland Britain. The floating water-plantain is just one of a number of species of submerged, floating and marginal plant species that make up the canal habitat SSSI feature. This habitat is distributed along the entire length of the canal within the SSSI; the interest and quality varies from species-poor to species rich, depending a number of factors, including water depth and management frequency.
Conservation Objectives for SAC: The vision for this feature is to maintain the extent and distribution of *L. natans* within the Montgomery Canal at favourable conservation status, where all of the following conditions are satisfied: 1. The *L. natans* population in favourable condition will reflect the natural carrying capacity of the canal habitat and will be limited principally by species ability to spread or be relocated (vegetative or otherwise), the suitability of the rooting medium and competition between species as part of habitat succession. 2. Recreation pressure, principally through boat movements and fisheries management, will not significantly affect the maintenance of the species, or its ability to disperse throughout the canal network and any associated off-line reserves. 3. The ecological status of the water environment, including elements of water quality and physical habitat quality, will be sufficient to support the population of *L. natans* in favourable condition. 4. All factors affecting the achievement of the above conditions are under control.
Site Vulnerability: Enrichment through agricultural or domestic nutrient inputs is a likely threat as this could affect the populations of floating water-plantain. Several sections of canal currently suffer from lack of management. CCW will liase with owners and occupiers to achieve an appropriately scaled and timed management. To ensure that bank protection and other engineering works are undertaken in a sensitive manner, CCW will liase with competent and relevant authorities to agree on appropriate methods and

practices. For example, the mowing of terrestrial and marginal vegetation would not harm aquatic plants but herbicide run-off from the towpath could be a problem. The effects of boat traffic on populations of floating water-plantain are uncertain and are being investigated by British Waterways. It is certain that the species will be detrimentally affected above a certain point as the actions of propeller/wash will detach floating leaves and create turbidity which will reduce light transfer to submerged leaves. The population of floating water-plantain is vulnerable to colonisation by aggressive species which can have an impact on the canal's ecology, through blanket coverage of the canal channel and increased nutrient input because of a large leaf biomass. The introduction of certain fish species could also damage aquatic plant populations.	
Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
Annex II species that are a primary reason for selection of this site: Floating Water Plantain *Luronium natans.*	Dredging and weed cutting to maintain open water and water flow. Maintenance of sufficiently good water quality. Maintenance of water clarity. Protected from mechanical damage.

Table 12: Mottey Meadows SAC

Site Name: Mottey Meadows SAC, SJ840134, Staffordshire, England
Site Description: Mottey Meadows (43.87ha) contains lowland hay meadows with limited influence of agricultural intensification and so demonstrates good conservation of structure and function. There are transitions to other dry and wet grassland types. The site is important for a range of rare meadow species, including fritillary *Fritillaria meleagris* at its most northerly native locality. Mottey Meadows SAC represents one of the best areas in England for Lowland Meadow with *Alopecurus pratensis*, *Sanguisorba officinalis.* It has been maintained through traditional agricultural practices and contains an extensive example of an alluvial flood meadow.
Conservation Objectives for SAC: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely Supplementary Advice to support the Conservation Objectives is not currently available. (November 2016)
Definition of Favourable Condition for Mottey Meadows SSSI: To maintain, in favourable condition, the lowland hay Meadow. (Maintenance implies restoration if the feature is not currently in favourable condition).

Site Vulnerability: The meadows are dependent upon traditional agricultural management - hay-cutting and aftermath grazing with no use of agrochemicals. The site is vulnerable to nutrient run-off from adjacent agricultural land. The site is owned and managed by Natural England with all the above issues addressed through the site's management plan. The site is also vulnerable to a lowering of both ground and surface water levels, because the floristic composition is dependent on a high water table in autumn and winter. This will be addressed through consultation with the Environment Agency, and any problems arising from licensed abstractions will be dealt with through the review process under the Habitats Regulations.	
Reason for Designation:	**Environmental Conditions Needed to Support Site Integrity:**
Annex I Habitats that are a primary reason for selection of site: H6510. Lowland hay meadows (*Alopecurus pratensis, Sanguisorba officinalis*)	Maintenance of autumn/winter high water levels. Maintenance of traditional management. Reduced nutrient input.

Table 13: Rhos Goch SAC

Site Name: Rhos Goch SAC, SO197483, Powys, Wales.
Site Description: 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).
Conservation Objectives for SAC: **Active raised bogs** The vision for this feature is for it to be in a favourable conservation status within the site, where all of the following conditions are satisfied: 1. Raised bog habitat with only a few scattered trees covers at around 20 % of the site. 2. The bog surface consists of a series of pools and hummocks. 3. 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. 4. Purple moor-grass is not overwhelmingly dominant on the raised bog. 5. Scattered birch trees and willow scrub, where present, do not form a closed canopy. 6. There is no significant bracken encroachment around the bog edges or on the bog dome. 7. Water levels on the bog remain high throughout the year. 8. The vegetation is not affected by atmospheric pollution. 9. All other factors affecting the achievement of the foregoing conditions are under control.

Transition mires and quaking bogs The vision for this feature is for it to be in a favourable conservation status within the site, where all of the following conditions are satisfied:
1. “Transition mire”, comprising basin bog and swamp vegetation, with some scattered trees and scrub, covers at around 10% of the site.
2. There is a broad zone of “transition mire” extending to at least 6 ha on the southwest side of the raised bog dome (unit 1), with smaller patches of similar vegetation close to the main ditches in Portway meadows (unit 2).
3. 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.
4. In the central zone of this transition mire, bog-mosses are gradually replaced by others, such as bog groove-moss and spear-mosses, with a greater range of other typical “poor-fen” plants, including bogbean, water mint, bog pondweed, marsh marigold, lesser spearwort, common marsh-bedstraw and forget-me-nots.
5. 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. Here 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 bladderwort.
6. There are large patches of rusty willow scrub but they occupy less than 10% of the south western bog transition zone in total and the willow and birch trees are not encroaching into the open bog and swamp areas.
7. 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.
8. There are poached areas with sparse vegetation, where grazing animals roam, but these cover less than 5% of the swamp zone in total.
9. Water levels are maintained so that surface water is present throughout the year.
10. There is no significant input of nutrient-rich water from ditches and surrounding land.
11. All other factors affecting the achievement of the foregoing conditions are under control.
12. There are good populations of wetland breeding birds, including water rail, snipe, sedge warbler and reed bunting.

Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)* The vision for this feature is for it to be in a favourable conservation status within the site, where all of the following conditions are satisfied:
1. Around 20% of the site supports alluvial forest.
2. The majority of this woodland is found in the “lagg zone” of the raised bog around the northeastern edge of the common (unit 1). With small patches within the meadows at Portway (unit 2), Dol-y-cannau (unit 3) and Cefn-y-blean (unit 5).
3. The tree canopy consists of mixtures of downy birch, alder and rusty willow, with some ash and aspen in places.
4. The ground flora consists of a variety of wetland plants, including common reed, greater tussock sedge, purple moorgrass, meadowsweet, hemp-agrimony, bittersweet, soft rush, opposite-leaved golden-saxifrage and marsh marigold.

5. The woodland is maintained as far as possible by natural processes.
6. The canopy is fairly even but there occasional gaps where trees have died.
7. The location of open glades varies over time.
8. Standing and fallen dead wood is plentiful.
9. Non native trees and shrubs, such as Scots pine and sycamore, are rare.
10. Plants indicating high nutrient levels, such as common nettle, bramble, cleavers and creeping buttercup, occur locally but are nowhere overwhelmingly dominant.
11. Plants indicating surface drying, such as purple moor-grass, bracken and bramble, do not dominate the woodland ground flora.
12. Grazing is light enough to allow regeneration of trees and shrubs.
13. Water levels are maintained so that surface water is present throughout the year.
14. There is no significant input of nutrient-rich water from ditches and surrounding land.
15. All other factors affecting the achievement of the foregoing conditions are under control.
16. The woodland supports populations of typical breeding birds.

Bog Woodland The vision for this feature is for it to be in a favourable conservation status within the site, where all of the following conditions are satisfied:
1. Around 10 - 15 % of the site supports bog woodland.
2. All of this woodland occurs in patches around the edges of the raised bog or in the adjacent “lagg zone” around the north-eastern edge of the common.
3. The tree canopy consists of mainly downy birch on the bog surface and mixtures of downy birch, rusty willow and alder in the lagg zone.
4. The ground flora generally consists of purple moor-grass and common reed over carpets of bogmosses. Other typical plants found here include marsh cinquefoil, water horsetail, lady fern, bilberry and velvet bent grass. Royal fern is abundant in some areas.
5. The woodland is maintained as far as possible by natural processes.
6. The canopy may be fairly open, particularly on the raised bog dome, with large glades.
7. The location of open glades may vary over time.
8. Standing and fallen dead wood are common in places.
9. Non native trees and shrubs, such as Scots pine, are rare.
10. Plants indicating high nutrient levels, such as common nettle, bramble, cleavers and creeping buttercup are absent.
11. Plants indicating surface drying, such as bracken, do not dominate the ground flora.
12. Grazing is light enough to allow some regeneration of trees and shrubs.
13. Water levels are maintained so that water table is at or close to the surface throughout the year.
14. All other factors affecting the achievement of the foregoing conditions are under control.

<table>
<tr><td colspan="2">Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caereleae) The vision for this feature is for it to be in a favourable conservation status within the site, where all of the following conditions are satisfied:
1. Species-rich “fen-meadow” vegetation occupies between 6 and 10% of the site in total.
2. A large part of Portway meadows (unit 2) support this vegetation and there are other patches on the drier ground at the south-west end of the common (unit 1), Llanshiver (unit 4) and Cefn-yblaen (unit 5).
3. The vegetation consists of mixtures of purple moor-grass and sharp-flowered rush, with a wide variety of other plants, including devil’s-bit scabious, meadow thistle, fen bedstraw, marsh valerian, flea sedge, quaking grass, cross-leaved heath, tawny sedge and marsh orchids.
4. Purple moor-grass and rushes are not completely dominant and there is no significant accumulation of dead vegetation from year to year.
5. Plants indicating disturbance and nutrient enrichment, such as Yorkshire fog, floating sweetgrass, rough-meadow grass, marsh thistle, creeping buttercup and cleavers are not prominent in these areas.
6. The fen meadow areas may have scattered trees or bushes but are generally free from dense or invading scrub.
7. Some bare ground is present but cattle poached areas are not extensive.
8. Water levels are maintained so that the water table is close to the surface throughout the year but these areas are not subject to regular flooding.
9. There is no significant input of nutrient-rich water from ditches and surrounding land.
10. All other factors affecting the achievement of the foregoing conditions are under control.
11. There are good populations of wetland breeding birds, such as snipe and lapwing.</td></tr>
<tr><td colspan="2">Site Vulnerability:
Scrub encroachment, afforestation, water abstraction, atmospheric pollution, over grazing.</td></tr>
<tr><th>Reason for Designation</th><th>Environmental Conditions Needed to Support Site Integrity</th></tr>
<tr><td>Annex I Habitats that are a primary reason for selection of site: Active raised bogs, Transition mires and quaking bog
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caereleae), Bog woodland, Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae).</td><td>Control of atmospheric pollution and deposition.
Scrub management.
Maintenance of appropriate grazing regime.</td></tr>
</table>

Table 14: River Clun

Site Name: River Clun SAC, SO393754, Herefordshire, Shropshire, England.
Site Description: The River Clun SAC (14.93ha, 7.4 km) includes only the lower reaches of the river and supports a significant population of Freshwater Pearl Mussel *Margaritifera margaritifera,* one of the few lowland populations left in the UK.
Conservation Objectives for SAC: 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. Supplementary Advice to support the Conservation Objectives is not currently available.
Definition of Favourable Condition for River Teme SSSI which contains the River Clun SAC: To maintain, in favourable condition, the habitats for the population of Pearl Mussel (*Margaritifera margaritifera)*. (Maintenance implies restoration if the feature is not currently in favourable condition).
Site Vulnerability: *Margaritifera margaritifera* is dependent on very high water quality, requiring low sediment, phosphate and nitrogen levels and clean gravels. It is also relies on the presence of trout for part of its breeding cycle. Intensification of agriculture across the catchment is a significant threat to the long-term survival of the isolated population at this site i.e. enhanced sedimentation through poor agricultural practice leading to smothering of adult and juvenile mussels and eutrophication of waters through fertiliser run-off from adjacent land. In addition upstream domestic sewage treatment works are believed to give a significant nutrient loading. Recent increase in the occurrence of alder disease also poses a risk through loss of shading bankside tree cover. Some of these issues will be addressed by revised authorisation, Review of Consents /AMP 5 processes. Sustainable agricultural management is being promoted via production of Whole Farm Plans, Environmentally Sensitive Area Agreements and Countryside Stewardship Agreements for landowners within the catchment. A Nutrient Management Plan has been produced by NE and EA which has investigated the issues in depth and an Action Plan is underway. Residential and employment development in the catchment has been limited through the HRA process until necessary modifications have been made to sewage treatment works.

Reason for Designation	Environmental Conditions Needed to Support Site Integrity
Annex II Species that are a primary reason for selection of site: Freshwater pearl mussel *Margaritifera margaritifera*	Maintained good water quality (targets on 0.01mg/litre of orthophosphate (SRP), 1.5mg/l of Total Nitrogen (TON) and 10mg/l suspended solids) Maintained salmonid populations. Maintained riparian vegetation.

Table 15: River Dee and Bala Lake (England)

Site Name: River Dee and Bala Lake SAC, SJ422503, Cheshire / Denbighshire / Gwynedd / Shropshire / Flintshire / Wrexham, England / Wales.
Site Description: River Dee and Bala Lake (1308.92) is an important example in England of water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. It supports populations of Sea Lamprey and Floating Water Plantain which are important in England and significant populations of several fish species and otter *Lutra lutra*.
Conservation Objectives for SAC: (England) 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. Supplementary Advice to support the Conservation Objectives is not currently available.
Definition of Favourable Condition for River Dee and Bala Lake SSSI: Maintain in a favourable condition the water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho- Batrachion* vegetation. Maintain, in favourable condition, habitats for the populations of Atlantic salmon, bullhead, brook lamprey, river lamprey, sea lamprey, otter and floating water-plantain.
Site Vulnerability: The habitats and species for which the site is designated are dependent on the maintenance of good water quality and suitable flow conditions. Fish species require suitable in-stream habitat and an unobstructed migration route. Otters also require suitable terrestrial habitat to provide cover and adequate populations of prey species.

<table>
<tr><td colspan="2">The site and its features are threatened by practices which have an adverse effect on the quality, quantity and pattern of water flows. In particular the following may threaten riverine ecosystems: inappropriate flow regulation; excessive abstraction (for industry, agriculture and domestic purposes); threats to water quality from direct and diffuse pollution; eutrophication and siltation. Degradation of riparian habitats due to engineering works, agricultural practices and invasive plant species may also have an adverse effect. The Atlantic salmon population is threatened by excessive exploitation by high sea, estuarine and recreational fisheries. Introduction of non-indigenous species could also threaten both fish and plant species.

These issues are being addressed by a variety of statutory bodies that are in a position to overcome these threats through regulatory powers and partnerships with landowners, industry and other interested parties.</td></tr>
<tr><th>Reason for Designation</th><th>Environmental Conditions Needed to Support Site Integrity</th></tr>
<tr><td>Annex I Habitats that are a primary reason for selection of site:
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (Rivers with floating vegetation often dominated by water-crowfoot) .

Annex II Species that are a primary reason for selection of site:
• Salmo salar; Atlantic salmon
• Luronium natans; Floating water-plantain

Annex II Species present as a qualifying feature but not a primary reason for selection of site:
• Petromyzon marinus; Sea lamprey
• Lampetra planeri; Brook lamprey
• Lampetra fluviatilis; River lamprey
• Cottus gobio; Bullhead
• Lutra lutra; Otter</td><td>Maintenance of water quality.
Maintenance of flow.
Avoid excessive water extraction (industry, domestic, agriculture).
Resist degradation of riparian habitats.
Control salmon exploitation at sea.
Resist invasive species.</td></tr>
</table>

Table 16: River Dee and Bala Lake (Wales)

Site Name: River Dee and Bala Lake SAC, SH887311 to SJ287710, Cheshire / Denbighshire/ Gwynedd/ Shropshire/ Flintshire/ Wrexham, England/ Wales.
Site Description: The source of the River Dee lies within the Snowdonia National Park and its catchment contains a wide spectrum of landscapes from high mountains around Bala, steep-sided wooded valleys, near Llangollen, to the rich agricultural plains of Cheshire and north Shropshire and the vast mudflats of the estuary. The course and topography of the River Dee and its tributaries were strongly influenced and modified during the last Ice Age. The site extends from the western extremity of Llyn Tegid taking in the entire lake and its banks to its outfall into the River Dee. It then takes in the river and its banks downstream to where it joins the Dee Estuary SSSI. A number of the Dee's tributaries are also included, these being the Ceiriog, Meloch, Tryweryn, and Mynach. Llyn Tegid, the Tryweryn and the Dee form part of the River Dee Regulation System. The flow of water is controlled by Environment Agency Wales (EAW), primarily in order to minimise flooding and for the transportation of water to abstraction points down stream. The level of control is such that the Dee itself is said to be the most regulated river in Europe. Parts of the Rivers Dee and Ceiriog lie within both Wales and England. They have therefore been notified as two separate SSSIs – the Afon Dyfrdwy (River Dee) SSSI in Wales and the River Dee (England) SSSI in England. However, the features for which the SSSIs are notified, in particular migratory fish, depend upon the whole river ecosystem.
Conservation Objectives for SAC: While not a feature in its own right the ecological status of the water course is a major factor in determining FCS for all of the site features. The vision for the water course is therefore described below. This section is an integral part of the conservation objectives for all features of this SAC. **Vision For the Water Course** The vision for the water course is for it to be in favourable conservation status, where all of the following conditions are satisfied: 1. The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure (It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process). 2. There will be no deterioration in water quality other than that temporarily generated by natural variations in water flow or by man made variations occurring as a result of operating the River Dee flow control regime within its normal operating parameters. 3. The Dee flow regime should remain within 10% of 'recent actual flow' as described by Bethune (2006). 4. The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC will be avoided. 5. Artificial factors impacting on the capability of each feature to occupy the full extent of its potential range should be modified where

necessary to allow passage, eg. weirs, bridge sills, or other forms of barrier.
6. Natural limiting factors such as waterfalls, which may limit the natural range of a feature or its dispersal between naturally isolated populations, should not be modified.
7. Flow objectives for assessment points in the Dee Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary.
8. Levels for nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain nutrients below these levels (It is anticipated that these limits will concur with the standards used by the Review of Consents process).
9. The levels of water quality parameters, in addition to those deemed to be nutrients and including levels of suspended solids, that may affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain them below these levels (It is anticipated that these limits will concur with the standards used by the Review of Consents process).
10. Potential sources of pollution, nutrient enrichment and/or suspended solids that have not been addressed in the review of Consents such as, but not confined to, diffuse pollution or disturbance to sediments, will be considered in assessing plans and projects.

The conservation objective for the water course as defined above must be met for each of the following features.

Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho- Batrachion* vegetation The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The extent of this feature within its potential range in this SAC should be stable or increasing
2. The extent of the sub-communities that are represented within this feature should be stable or increasing.
3. The conservation status of the feature's typical species should be favourable.
4. All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

Atlantic Salmon The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The SAC feature populations will be stable or increasing over the long term.
2. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
3. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis
4. All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

Floating Water Plantain The vision for this feature is for it be in favourable conservation status, where all of the following conditions are satisfied:
1. There will be no contraction of the current *L. natans* extent and distribution, and the populations will be viable throughout their

current distribution & will be able to maintain themselves on a long-term basis. Each *L. natans* population must be able to complete sexual and/or vegetative reproduction successfully.
2. The lake will have sufficient habitat to support existing *L. natans* populations within their current distribution and for future expansion.
3. All factors affecting the achievement of these conditions are under control.

Sea Lamprey, River Lamprey, Brook Lamprey The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The SAC feature populations will be stable or increasing over the long term.
2. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
3. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis
4. All factors affecting the achievement of these conditions are under control.

Bullhead The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The SAC feature populations will be stable or increasing over the long term.
2. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
3. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis
4. All factors affecting the achievement of these conditions are under control

European Otter The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The SAC otter population is stable or increasing over the long term, both within the SAC andwithin its catchment.
2. There will be no loss of otter breeding or resting sites other than by natural means (such asnaturally occurring river processes) within the SAC or its catchment.
3. There number of potential resting sites within the SAC will not be a factor limiting that limitsthe otter population's size or extent
4. There should be no reduction of fish biomass within the SAC or its tributaries except for thatattributable to natural fluctuations
5. There should be no loss of amphibian habitat likely to provide a source of prey for membersof the SAC otter population.
6. The potential range of otters in the within the SAC or its catchment is neither being reducednor is likely to be reduced for the foreseeable future.
7. All known or potential access or dispersal routes within the catchement for otters that might be considered part of the SAC population should be maintained such that their function is notimpaired including the incorporation of measures or features required to avoid disturbance.
8. Off site habitats likely to function as 'stepping stones' within the catchment for members of the SAC otter population will be maintained for migration, dispersal, foraging and geneticexchange purposes.
9. All man-made structures within or likely to be used by otters from the SAC population mustincorporate effective measures to facilitate the safe movement and dispersal of otters.

10. All known, controllable factors, affecting the achievement of these conditions are undercontrol (many factors may be unknown or beyond human control).

Site Vulnerability: The habitats and species for which the site is designated are dependent on the maintenance of good water quality and suitable flow conditions. Fish species require suitable in-stream habitat and an unobstructed migration route. Otters also require suitable terrestrial habitat to provide cover and adequate populations of prey species.

The site and its features are threatened by practices which have an adverse effect on the quality, quantity and pattern of water flows. In particular the following may threaten riverine ecosystems: inappropriate flow regulation; excessive abstraction (for industry, agriculture and domestic purposes); threats to water quality from direct and diffuse pollution; eutrophication and siltation. Degradation of riparian habitats due to engineering works, agricultural practices and invasive plant species may also have an adverse effect. The Atlantic salmon population is threatened by excessive exploitation by high sea, estuarine and recreational fisheries. Introduction of non-indigenous species could also threaten both fish and plant species.

These issues are being addressed by a variety of statutory bodies that are in a position to overcome these threats through regulatory powers and partnerships with landowners, industry and other interested parties.

Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
Annex I Habitats that are a primary reason for selection of site: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (Rivers with floating vegetation often dominated by water-crowfoot) . Annex II Species that are a primary reason for selection of site: • *Salmo salar*; Atlantic salmon • *Luronium natans*; Floating water-plantain Annex II Species present as a qualifying feature but not a primary reason for selection of site: • *Petromyzon marinus*; Sea lamprey • *Lampetra planeri*; Brook lamprey • *Lampetra fluviatilis*; River lamprey • *Cottus gobio*; Bullhead • *Lutra lutra*; Otter	Maintenance of water quality. Maintenance of flow. Avoid excessive water extraction (industry, domestic, agriculture). Resist degradation of riparian habitats. Control salmon exploitation at sea. Resist invasive species.

Table 17: River Severn SAC/SPA/European Marine Site(EMS), Ramsar.

Site Name: Severn EstuarySAC/SPA/EMS, Ramsar, Bristol City, Gloucestershire, Bath & North East Somerset, Somerset, South Gloucestershire, England. Bro Morgannwg/Vale of Glamorgan, Caerdydd/Cardiff, Casnewydd/ Newport, Sir Fynwy/ Monmouthshire, Wales.

Site Description:

The Severn Estuary is located between Wales and England in south-west Britain. It is a large estuary with extensive intertidal mud-flats and sand-flats, rocky platforms and islands. Saltmarsh fringes the coast backed by grazing marsh with freshwater ditches and occasional brackish ditches. The 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 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. The fish fauna is very diverse with more than 110 species identified. The site is of particular importance for migratory fish.

Conservation Objectives for SAC:

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.

Conservation Objectives for SPA:

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.

Site Vulnerability:

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

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.

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 dependant upon those habitats (birds: feeding/ roosting, and fish: feeding/ nursery and shelter areas).

Changes in ownership and other land practices can result in changes in management and use of land (eg.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.

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.

There is uncertainty over water quality in the Estuary due to diffuse (including agricultural) or direct pollution (eg. industrial, sewage treatment works, thermal, radioactive).

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.

Commercial fishing activities can cause habitat damage and disturbance to wildlife.

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.

Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
The site is designated under Article 4(4) of the Habitats Directive (92/43/EEC) as it hosts the following habitats listed in Annex I: • Sandbanks which are slightly covered by sea water all the	Reduction of human impacts on disturbance to birds and damage to habitats. Reduction, removal (where possible), and prevention of

time. (Subtidal sandbanks) • Estuaries • Mudflats and sandflats not covered by seawater at low tide. (Intertidal mudflats and sandflats) • Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*) • Reefs **Qualifying species:** The site is designated under Article 4(4) of the Directive (92/43/EEC) as it hosts the following species listed in Annex II: • Sea Lamprey (*Petromyzon marinus)* • River Lamprey (*Lampetra fluviatilis)* • Twaite Shad (*Alosa fallax)* SPA • A037 *Cygnus columbianus bewickii*; Bewick's swan (Non-breeding) • A048 *Tadorna tadorna*; Common shelduck (Non-breeding) • A051 *Anas strepera*; Gadwall (Non-breeding) • A149 *Calidris alpina alpina*; Dunlin (Non-breeding) • A162 *Tringa totanus*; Common redshank (Non-breeding) • A394 *Anser albifrons albifrons*; Greater white-fronted goose (Non-breeding) Waterbird assemblage	barriers to migratory species. Limit coastal squeeze by provision of sustainable coastal defences, Improvement to existing structures and delivery of compensatory habitat. Appropriate levels and timing of grazing, and management of intertidal saltmarsh habitat. Understand/prepare for changes in species distribution (caused by climate change/other events). Prevention/reduction in decline in water and sediment quality (applying relevant measures to all relevant tributaries in England and Wales).

Table 18: River Wye SAC

Site Name: River Wye SAC, SO109369 , Monmouthshire, Gloucestershire, Herefordshire, Powys, England/Wales
Site Description: River Wye (2234.89ha) represents a high quality example of water courses of plain to montane levels with *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation and is also significant for Transition mire and quaking bog. The riverine habitat supports important and significant populations of many fish species and Otter *Lutra lutra*.

Conservation Objectives for SAC:

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.

Supplementary Advice to support the Conservation Objectives is not currently available. (November 2016)

Definition of Favourable Condition for River Wye SSSI: Maintain the river as a habitat for floating formations of water crowfoot (*Ranunculus*) of plain and submountainous rivers, populations of Atlantic salmon, allis shad, twaite shad, bullhead, lampreys, and whiteclawed crayfish, and the river and adjoining land as habitat for populations of otter.

Site Vulnerability: Water quality impacts arising from changing agricultural land-use within the catchment are having direct and indirect effects on the SAC interests through effects of diffuse pollution such as nutrient run-off and increased siltation. English Nature and the Countryside Council for Wales are seeking to address such issues through improved targeting of existing and new agri-environment schemes and through improvements in compliance with
agricultural Codes of Practice.
Water quality is also affected by synthetic pyrethroid sheep-dips and by pointsource discharges within the catchment. The impact of sewage treatment works on the SAC is being addressed through the Asset Management Plan process and review under the Habitats Regulations. Loss of riparian habitat is occurring as a result of changes in agricultural land-use practices and other factors, including riverside development and the loss of alder tree-cover through disease. These impacts and concerns over water quality will be identified and actions recommended within the joint English Nature/Environment Agency/Countryside Council for Wales conservation strategy for the river.
Fishing activities are implicated in the decline of the salmon; initiatives such as the Wye Salmon Action Plan will help to address this issue. There is increasing demand for abstraction from the river for agriculture and potable water. The impact of this is still being investigated by the Environment Agency, but maintenance of water levels and flow will be addressed under the review of consents under the Habitats Regulations.
Demand for increased recreational activities is a source of potential concern for the future. Regularisation of the functions of the competent authorities, currently being sought, should reduce the risk of damage to the SAC as a result of developments for such activities.

Reason for Designation	Environmental Conditions Needed to Support Site Integrity
Annex I Habitats that are a primary reason for selection of site: Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation. Annex I Habitats present as a qualifying feature but not a primary reason for selection of site: Transition mires and quaking bogs. Annex II Species that are a primary reason for selection of site: White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes,* Sea lamprey *Petromyzon marinus,* Brook lamprey *Lampetra planeri,* River lamprey *Lampetra fluviatilis,* Twaite shad *Alosa fallax,* Atlantic salmon *Salmo salar,* Bullhead *Cottus gobio,* Otter *Lutra lutra.* Annex II Species present as a qualifying feature but not a primary reason for selection of site: Allis Shad *Alosa alosa.*	Maintain water quality & flow. Control recreational activities. Control water abstractions. Maintain water table level. Removal & prevention of barriers to fish migration. Control human activities and disturbance. Control of fishing level.

Table 19: Tanat & Vrynwy Bat Sites

Site Name: Tanat & Vrynwy Bat Sites SAC, SJ171152, SJ177181, SJ164236, SJ187234, SJ109237, SJ048258, Powys, Wales.
Site Description: The site consists of six separate SSSI divided into ten management units, all situated within the northeastern part of Montgomeryshire. The greatest distance between any two sites is less than 20 kilometres. Two of the SSSI contain buildings that house maternity roosts (Bryngwyn and Hendre), whilst the other four are disused mines containing hibernation roosts. Five of the sites (the exception being Bryngwyn) also contain a small amount of associated habitat, in the form of broadleaved woodland or hedgerows. Other roosts of both types are known both within this locality and further south within Montgomeryshire. It is not known how the different sites relate to one another in terms of the seasonal movements of the bats, and so no judgement can be made as to whether they support one meta-population or several smaller populations.

The numbers of bats at all the sites varies significantly from year to year, but at the time of writing Hendre contained the largest number of breeding bats (2nd largest in Montgomeryshire, in top ten in Wales) and Allt-y-Main Mine the largest hibernating group (2nd largest in Montgomeryshire, probably in top twelve in Wales). The overall population, as judged by annual counts, has shown an increase in recent years, consistent with the national trend, and the SAC is thought to support at least 4% of the UK population of this species. Numbers have not been increasing at all of the individual sites however. Bryngwyn suffered a major reduction for unknown reasons in between 1999 and 2003, from which it appears to be slowly recovering. Garth-eryr suddenly lost virtually all its bats between 1997 and 2002 (reasons again unknown), and yet the nearest maternity roost (Hendre) has increased its numbers. It appears that either the Hendre bats are now hibernating elsewhere, or the Garth-eryr bats were from an unknown maternity roost that may since been lost.
Conservation Objectives for SAC: There is only one feature for the site, and so the vision for this feature is the same as that for the site. The two maternity roosts contain a minimum of 300 adult Lesser Horseshoe Bats in total every year, with at least 200 at Hendre Cottage and at least 100 at Bryngwyn Hall Stables and Coach House. The buildings are maintained in a suitable condition for use by the bats, to ensure that the roofs are in good repair, not heavily shaded by surrounding trees, and the roof space is undisturbed (except in emergencies). Access for the bats to and from the buildings and roof spaces is unhindered and flight paths along surrounding hedgerows and woodland edges are protected. All other factors that affect the species are under control. The four hibernation roosts contain a minimum of 200 Lesser Horseshoe Bats in total every year, with at least 50 in each of Allt-y-main Mine and Penygarnedd Mine; and evidence of continued use of West Llangynog Slate Mine and Garth-eryr. All four sites are maintained in a suitable condition for use by the bats, by ensuring that they remain undisturbed (except for monitoring purposes), and that the entrance is free from obstruction. The extent, quality and connectivity of broadleaved woodland habitat is also maintained and may be enhanced if possible. All other factors that affect the species are under control.
Site Vulnerability: Full protection of bat species depends upon no disturbance to both summer (breeding) and winter (hibernating) roosts and continuity of invertebrate food supply by appropriate traditional land management, for example, maintenance of continuous hedgerows. The winter roosts (hibernacula) are not vulnerable as all mine entrances are now securely grilled and the underground workings are considered to be stable. The bats which use two of the four mines may be vulnerable because the associated breeding roosts are not known. The two known breeding roosts are potentially vulnerable to accidental fire, and casual or deliberate human disturbance, for example blocking of entrances. All roost sites are the subject of a programme of monitoring visits to check site integrity and count the numbers of bats. The quality of surrounding feeding habitats is maintained through land management agreements with owners/occupiers.

Reason for Designation	Environmental Conditions Needed to Support Site Integrity
Annex I species that are a primary reason for selection of this site: Lesser Horseshoe Bat *Rhinolophus hipposideros.*	Identification of unknown summer roost sites Ongoing protection of known summer roost sites

Table 20: The Stiperstones and the Hollies

Site Name: The Stiperstones and the Hollies SAC, SJ375006, Shropshire, England.
Site Description: The Stiperstones and the Hollies (601.46ha) represents a Nationally important area of dry heath, showing transitions between lowland and northern upland heaths and also hosts a significant presence of sessile oak woodlands with *Ilex* and *Blechnum.* The tors and boulders of the upper slopes provide important habitat for several species of moss and also support a diverse lichen flora. The most extensive vegetation type present is H12 *Calluna vulgaris – Vaccinium myrtillus* dry heath, which is characteristic of the uplands. South-facing slopes support stands of H8 *Calluna vulgaris – Ulex gallii* heath, a predominantly lowland vegetation community of south-west Britain. The northern end of the ridge, known as The Hollies, is an area of 'holly parkland' of great antiquity and considered to be unique for both its size and for the age of the holly Ilex aquifolium trees. These trees, which have unusually large girths, are at least 250 years old.
Conservation Objectives for SAC: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely Supplementary Advice to support the Conservation Objectives is not currently available.
Site Vulnerability: The heathland is dependent on the continuation of traditional heather moorland management with rotational burning or cutting supplemented by light grazing. In the recent past, lack of management on parts of the site has resulted in scrub encroachment, and on other parts high stocking levels has caused overgrazing and a deterioration of the heathland interest. These issues are being addressed by an effective management programme on that part of the site which is managed as a National Nature Reserve and, on land in private ownership, by management agreements and ESA payments.

The sessile oak woods have been traditionally managed either as high forest or as oak coppice. Neglect and grazing of coppiced woods in the past has led to deterioration in the woodland interest. Traditional management of these woods has been reinstated by effective management of the National Nature Reserve and by agreement of a site management statement with woodlands in private ownership.	
Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
Annex I Habitats that are a primary reason for selection of site: European dry heaths. Annex I Habitats present as a qualifying feature but not a primary reason for selection of site: Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles.	Control of afforestation. Control of grazing pressure. Maintain appropriate woodland management. Monitor and control invasive species.

Table 21: West Midland Mosses – only site in Shropshire is Clarepool Moss

Site Name: West Midland Mosses SAC, SK026282, Cheshire / Shropshire / Staffordshire, England.
Site Description: West Midland Mosses (184.18ha) is a collection of sites which between them represent nationally important dystrophic water bodies, transition mires and quaking bogs. West Midlands Mosses contains three notable pools, one at Clarepool Moss and two at Abbots Moss, that are examples of dystrophic lakes and ponds in the lowlands of England and Wales, where this habitat type is rare. The pool at Clarepool Moss is unusual as a dystrophic type on account of its relatively base-rich character, which is reflected in the presence of a diverse fauna and flora. The West Midland Mosses SAC sites also display excellent examples of spatial transitions from very acidic communities to base-rich vegetation and from open water to terrestrial habitats, as well as temporal transitions from base-rich vegetation to rain-fed bog vegetation.
Conservation Objectives for SAC: Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of qualifying natural habitats • The structure and function (including typical species) of qualifying natural habitats, and • The supporting processes on which qualifying natural habitats rely

Supplementary Advice (Draft) can be found at:
http://publications.naturalengland.org.uk/publication/6449667604742144

The draft contains targets relating to the two listed habitat features briefly summarised below:

H3160 Natural dystrophic lakes and ponds
Maintaining the total extent of the H3160 feature at 2.9ha.
Targets relating to non-native species, maintaining the characteristic zonation of fringing vegetation, maintaining a characteristic zonation of fringing vegetation around the open water body, maintaining a characteristic and well defined hydrosere associated with the water body, maintaining the natural shoreline of the lake and the substrate as predominantly peaty.
Restoring the abundance of the species listed below to enable each of them to be a viable component of the H3160 Annex 1 habitat;
Characteristic species;

Utricularia spp (bladderworts), *Sphagnum* spp, *Comarum palustre* (marsh cinquefoil), *Juncus bulbosus* (bulbous rush), *Nymphaea alba, Menyanthes trifoliata* and *Potamogeton polygonifolius* (bog pondweed) with associates of *Sparganium angustifolium* (floating bur-reed), *Eleogiton fluitans* (floationg club-rush)and *Drepanocladus* spp. Assemblage of dragonflies and damselflies (including white-faced darter *Leucorrhinia dubia*, downy emerald *Cordulia aenea* and black darter *Sympetrum danae)*.

Controlling fish populations, restoring stable nutrient levels and aciditylevels to reflect unimpacted conditions. Restoring water quality to 'good' chemical status (i.e. compliance with relevant Environmental Quality Standards).
At a site, unit and/or catchment level restore natural hydrological processes to provide the conditions necessary to sustain the H3160 feature within the site.
Restoring as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk) .
Maintaining the natural connectivity of the water body to other water bodies. This feature is groundwater dependent. Connectivity with surface water may provide pollution source to the feature.
Maintain the management measures (either within and/or outside the site boundary as appropriate) which are necessary to maintain or restore the structure, functions and supporting processes associated with the H3160 feature.

H7140. Transition mires and quaking bogs
Restoring the total extent of the H7140 feature to 110 hectares, based on the mapped extent of peat and basin dimensions.
Ensuring the component vegetation communities of the H7140 feature are referable to and characterised by the following National Vegetation Classification types (including transitions between them ; M1, M2, M3, M4, M5, M9, M18, M22, S2, S3, S24, S27, W2,W4, W5.
Restoring the abundance of species listed to enable each of them to be a viable component of the H7140 habitat.
Ensuring invasive and introduced non-native species are either rare or absent, but if present are causing minimal damage to the H7140 feature.

At a site, unit and catchment level, restoring natural hydrological processes to provide the conditions necessary to sustain the H7140 feature within the site and surface water and groundwater supplies to a natural, low-nutrient status. Restoring the extent, quality and spatial configuration of land or habitat surrounding or adjacent to the site which is known to support (directly or indirectly) the H7140 feature. Restore as necessary, the concentrations and deposition of air pollutants to at or below the site-relevant Critical Load or Level values given for this feature of the site on the Air Pollution Information System (www.apis.ac.uk).	
Site Vulnerability: Colonisation of open schwingmoors or *Sphagnum* lawns and rafts in the West Midland Mosses by birch and pine is controlled by works under Management Agreement or by National Nature Reserve management. Several sources of nutrient enrichment, including atmospheric deposition of nutrients, pose a potential threat at these sites.	
Reason for Designation	**Environmental Conditions Needed to Support Site Integrity**
Annex I Habitats that are a primary reason for selection of site: Natural dystrophic lakes and ponds (Acid peat-stained lakes and ponds), Transition mires and quaking bogs (wet mires often identified by an unstable `quaking` surface).	Control of afforestation. Control of nutrient input. Control of recreational disturbance.

Table 22: Midland Meres and Mosses (Ramsar Phase 1)

Site Name: Midland Meres and Mosses (Ramsar phase 1), Shropshire/ Clwyd/ Cheshire/ Staffordshire, England.
Site Description: Phase 1 of the Ramsar designation covers 513.25ha and is entirely co-incident with the following 16 Sites of Special Scientific Interest (SSSI). These are Bagmere, **Berrington Pool**, Betley Mere, **Bomere, Shomere & Betton Pools**, **Brown Moss**, Chartley Moss, **Clarepool Moss**, **Fenemere**, Flaxmere, Hatchmere, **Marton Pool (Chirbury), Quoisley Mere**, Tatton Mere, The Mere (Mere), **White Mere** and **Wynbunbury Moss** SSSI's. NB. Those SSSIs in the Ramsar phase 1 designation indicated in bold above are considered in this screening document. Diverse series of lowland open water and peatland sites supporting habitats such as meres with associated fringing habitats, reed swamp, fen, carr and damp pasture. Peat accumulation has resulted in nutrient poor peat bogs (mosses) forming in some sites on the fringes of the meres or completely infilling basins.These habitats support a wide range of nationally important flora and fauna.

<table>
<tr><td colspan="2">Conservation Objectives:
Ramsar criterion – peatland.
The conservation objectives for the site are to maintain in favourable condition:
• the habitat types for which the site is designated.</td></tr>
<tr><td colspan="2">Site Vulnerability: Invasive species: considered a major impact on this site.
Water quality: eutrophication is considered a major impact on this site.
Recreational pressure and disturbance: in line with other bog and mire habitats, trampling and erosion are likely to be a significant issue where public access occurs. Water quality: declines in water quality through nutrient enrichment and sediment. Land use in surrounding areas: agricultural practices and urban runoff are likely to affect the scattered sites through nutrient enrichment and sedimentation.</td></tr>
<tr><th>Reasons for Designation:</th><th>Environmental Conditions Needed to Support Site Integrity</th></tr>
<tr><td>Criterion 1a. A particularly good example of a natural or near natural wetland, characteristic of this biogeographical region, The site comprises the full range of habitats from open water to raised bog.
Criterion 2a. Supports a number of rare species of plants associated with wetlands. The site contains the nationally scarce six-stamened waterwort Elatine hexandra, needle spike-rush Eleocharis acicularis, cowbane Cicuta virosa, marsh fern Thelypteris palustris and elongated sedge Carex elongate.
Criterion 2a. Contains an assemblage of invertebrates, including the following rare wetland species. 3 species considered to be endangered in Britain, the caddis fly Hagenella clathrata, the fly Limnophila fasciata and the spider Cararita limnaea. Other wetland Red Data Book species are; the beetles Lathrobium rufipenne and Donacia aquatica, the flies Prionocera pubescens and Gonomyia abbreviata and the spider Sitticus floricola.</td><td>Environmental Conditions needed to support site integrity will need to be considered at the full Habitats Regulations stage since this range of sites is varied and needs consideration in relation to specific plans and policies.</td></tr>
</table>

Table 23: Midland Meres and Mosses (Ramsar Phase 2)

<table>
<tr><td colspan="2">Site Name: Midland Meres and Mosses (Ramsar phase 2), Shropshire/ Clwyd/ Cheshire/ Staffordshire, England.</td></tr>
<tr><td colspan="2">Site Description: Phase 2 of the Ramsar sites covers 1740.3ha and is entirely co-incident with the following 19 Sites of Special Scientific Interest (SSSI). These are: Abbots Moss, Aqualate Mere, Black Firs & Cranberry Bog, Brownheath Moss, Chapel Mere, Cole Mere, Cop Mere, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses, Hanmer Mere, Hencott Pool, Linmer Moss, Llyn Bedydd, Morton Pool & Pasture, Oak Mere, Oakhanger Moss, Oss Mere, Rostherne Mere, Sweat Mere & Crose Mere and Vicarage Moss.

NB. Those SSSIs in the Ramsar phase 2 designation indicated in bold above are considered in this screening document.</td></tr>
<tr><td colspan="2">Conservation Objectives:
Ramsar criterion – peatland.
The conservation objectives for the site are to maintain in favourable condition:
• the habitat types for which the site is designated.</td></tr>
<tr><td colspan="2">Site Vulnerability: Invasive species: considered a major impact on this site. Water quality: eutrophication is considered a major impact on this site. Land take for development · Recreational pressure and disturbance: in line with other bog and mire habitats, trampling and erosion are likely to be a significant issue where public access occurs. Water quality: declines in water quality through nutrient enrichment and sediment. Land use in surrounding areas: agricultural practices and urban runoff are likely to affect the scattered sites through nutrient enrichment and sedimentation.</td></tr>
<tr><td>Reason for Designation:</td><td>Environmental Conditions Needed to Support Site Integrity</td></tr>
<tr><td>Criterion 1a. A particularly good example of a natural or near natural wetland, characteristic of this biogeographical region, The site comprises the full range of habitats from open water to raised bog.
Criterion 2a. Supports a number of rare plants associated with wetlands, including the nationally scarce cowbane Cicuta virosa, elongated sedge Carex elongate and bog rosemary Andromeda polifolia. Also present are the nationally scarce bryophytes Dicranum undulatum, Dircranum affine and Sphagnum pulchrum.
Criterion 2a. Containing an assemblage of invertebrates, including several rare wetland species. There are 16 species of Red Data Book insect listed for the site including the following endangered species: the moth Glyphipteryx lathamella, the caddisfly Hagenella clathrata and the sawfly Trichiosoma vitellinae.</td><td>Environmental Conditions needed to support site integrity will need to be considered at the full Habitats Regulations Assessment stage since this range of sites is varied and needs consideration in relation to specific plans and policies.</td></tr>
</table>

Table 24: Midland Meres & Mosses Ramsar Phases 1 and Phase 2 – individual sites and features

Ramsar phases split into Ramsar features/SSSI unit from Information on Natura 2000 Sites in the West Midlands, Prepared for Natural England by Treweek Environmental Consultants, 2009.

Phase 1 Sites/Ramsar feature	Open water	Swamp	Fen	Basin Mire	Raised bog	Wet pasture	Carr	Invertebrates	Plants
Clarepool Moss	+			+				dotted footman	
Wybunbury Moss				+		+	+	assemblage *Carorita limnaea*	*Andromeda polifolia Thelypteris palustris*
Brown Moss	+	+	+	+					*Luronium natans*
Berrington Pool	+	+	+						
Betley Mere	+	+	+			+	+		
Bomere, & Shomere Pools	+	+		+			+		*Elatine hexandra* *Thelypteris palustris*
Fenemere	+	+	+			+	+		*Cicuta virosa* *Thelypteris palustris*
Marton Pool	+	+					+		
Quoisley Meres	+	+	+			+	+		*Cicuta virosa* *Thelypteris palustris*
White Mere	+						+		*Carex elongata* *Eleocharis acicularis*

Phase 2 Sites/Ramsar feature	Open water	Swamp	Fen	Basin Mire	Raised bog	Wet pasture	Carr	Invertebrates	Plants
Fenns and Whixall Moss					+		+	assemblage *Hagenella* small pearl-	*Andromeda polifolia* *Dicranum undulatum* *Sphagnum pulchrum*
Aqualate Mere	+	+	+			+	+	assemblage	
Black Firs & Cranberry Bog	+			+			+		*Cicuta virosa*
Brownheath Moss			+				+		*Carex elongata*
Chapel Mere	+	+					+		
Cole Mere	+					+	+		*Carex elongata*
Cop Mere	+	+	+				+		
Hencott Pool							+		*Carex elongata* *Cicuta virosa*
Linmer Moss				+					*Thelypteris palustris*
Morton Pool & Pasture	+	+				+	+		*Thelypteris palustris*
Oss Mere	+	+				+	+		*Cicuta virosa* *Thelypteris palustris*
Sweat Mere & Crose Mere	+	+	+			+	+		*Carex elongata* *Thelypteris palustris*

Natural England is in the process of revising conservation objectives for SSSI units in Shropshire in order to take secondary European Features such as species into account. The tables below include Conservation Objectives where they have been provided by Natural England. The most up to date Conservation objectives for the SSSI units will be sought from Natural England prior to carrying out a full Appropriate Assessment on any lower tier document.

Table 25: Ramsar Midland Meres & Mosses Phase 1 individual site descriptions

Site Name: Berrington Pool SSSI, SJ525072, Shropshire, England
Site Description: Berrington Pool (4.69ha) is a small but deep mere in a steep-sided hollow, with water of comparatively low fertility. There is a rich flora of emergent species, including some which are uncommon, notably slender sedge *Carex lasiocarpa* at one of its most southerly localities in Britain. There are extensive beds of white water lily *Nymphaea alba*. Vegetation dominated by water horsetail *Equisetum fluviatile* and bottle sedge *Carex rostrata* is better represented here than at any other Shropshire mere. Other emergent plants include greater reedmace *Typha latifolia*. The aquatic fauna is of interest, especially for dragonflies, of which ten species are known to breed here. The site includes an area of fen at the western end of the pool, with a flora which includes bladder sedge *Carex vesicaria* and, in a ditch, water violet *Hottonia palustris*.
Definition of Favourable Condition for SSSI:
Site Vulnerability: Biological disturbance (trampling / erosion etc) from increased public access and from native and non-native invasive species such as crassula or scrub, lowering of the water table from abstractions or conversely water-logging, eutrophication and siltation from surrounding land use, in particular agricultural run-off and potentially sewage outfalls.

Site Name: Bomere, Shomere & Betton Pools SSSI, SJ504078, Shropshire, England
Site Description: Bomere, Shomere & Betton Pools (59.08ha), as a group, are particularly important for the variety of water chemistry, and hence flora and fauna, which they display. The site also includes a small basin mire, a more extensive area of peat around Shomere and an area of woodland.
Definition of Favourable Condition for SSSI:
Site Vulnerability: Bomere, Shomere and Betton Pools – biological disturbance from (trampling/erosion etc) from increased public access – watersports are already popular at the site and having an impact – as well as from native and non-native invasive species such as crassula, rhododendron and sycamore, fluctuations in the water table from nearby land drainage or abstractions, eutrophication from surrounding land use, in particular agricultural run-off and potentially sewage outfalls.

Site Name: Brown Moss SSSI, SJ562395, Shropshire, England also SAC
Site Description: Brown Moss (31.32ha) differs from the other North Shropshire Mosses in consisting of a series of pools set in an area of heathland and woodland, rather than an expanse of peat. It has been suggested that the site may once have been peat covered, and that peat removal in the past has led to the present condition of the site.
Definition of Favourable Condition for SSSI: Subject to natural change, to maintain, in favourable condition, the habitat for the internationally important population of Floating Water Plantain (*Luronium natans*), with particular reference to the standing open water. (Maintenance implies restoration if the feature is not currently in favourable condition).
Site Vulnerability: Colonisation by trees is being addressed but continues to be of concern due to the shading, nutrient and hydrological effects on the open water and heathland. The presence of *Crassula helmsii* is a threat to *Luronium natans* and various control mechanisms are being explored.

Site Name: Clarepool Moss SSSI, SJ433342, Shropshire, England – part of West Midlands Mosses SAC
Site Description: Clarepool Moss (15.62ha) is a basin mire which has developed, in part at least, as a quaking bog (Schwingmoor). In this respect it is similar to Chartley Moss (Staffordshire) and Wybunbury Moss (Cheshire), but different from the other major sites in North Shropshire.
Qualifying features of West Midland Mosses SAC: H3160. Natural dystrophic lakes and ponds; Acid peat-stained lakes and ponds H7140. Transition mires and quaking bogs; Very wet mires often identified by an unstable `quaking` surface
Site Vulnerability (for SAC): Colonisation of open schwingmoors or *Sphagnum* lawns and rafts in the West Midland Mosses by birch and pine is controlled by works under Management Agreement or by National Nature Reserve management. Several sources of nutrient enrichment, including atmospheric deposition of nutrients, pose a potential threat.

Site Name: Fenemere SSSI, SJ445228, Shropshire, England
Site Description: Fenemere (16.34ha) is a particularly rich and interesting mere with eutrophic water. Fenemere is also important for its rich aquatic invertebrate fauna. There are extensive beds of white and yellow water-lilies *Nymphaea alba* and *Nuphar lutea*,but otherwise the

aquatic vegetation is sparse, consisting of horned pondweed *Zannichellia palustris*, fennel-leaved pondweed *Potamogeton pectinatus* and Canadian pondweed *Elodea canadensis*.

Reed beds are well developed round the edge and dominated by common reed *Phragmites australis*. Other species present include lesser reedmace *Typha angustifolia*, bulrush *Schoenoplectus lacustris* and bur-reed *Sparganium erectum*. Great duckweed *Lemna polyrhiza*, a scarce plant, occurs in the reed beds. On the western side of the mere there is a broad belt of alder carr, in which tussock sedge *Carex paniculata*, cyperus sedge *C. pseudocyperus* and cowbane *Cicuta virosa* occur.

The site includes, to the north and west of the mere, a series of damp pastures which are exceptionally rich botanically. The flora includes marsh orchid *Dactylorhiza incarnata*, bogbean *Menyanthes trifoliata*, marsh arrow-grass *Triglochin palustris* and water dropwort *Oenanthe fistulosa*.

Definition of Favourable Condition for SSSI:

Site Vulnerability:

Site Name: Marton Pool, Chirbury SSSI, SJ296027, Shropshire, England

Site Description: Marton Pool (17.21ha) is a natural lake of moderate fertility, somewhat detached from the main series of Shropshire meres. There are extensive areas of reedswamp and carr. It is among the most valuable of the Shropshire meres for aquatic plants, and the flora includes fan-leaved water crowfoot *Ranunculus circinatus*, blunt-leaved pondweed *Potamogeton obtusifolius* and small pondweed *P. berchtoldii*. Water-lilies, both white, *Nymphaea alba* and yellow, *Nuphar lutea* are present, but not abundant.

Definition of Favourable Condition for SSSI:

Site Vulnerability:

Site Name: Quoisley Mere SSSI, SJ549456, Cheshire, England

Site Description: Quoisley Meres (28.25ha) has been selected to represent a type of mere with nutrient rich open water and well developed fringing habitats. The site also includes areas of damp grassland.

Definition of Favourable Condition for SSSI:

Site Vulnerability:

Site Name: White Mere SSSI, SJ414330, Shropshire, England
Site Description: White Mere (31.97ha) is one of the richest of the North Shropshire meres for aquatic plants, with a flora which includes needle spike-rush *Eleocharis acicularis*, shoreweed *Littorella uniflora*, small pondweed *Potamogeton berchtoldii* and grey club-rush *Schoenoplectus tabernaemontani*.
Definition of Favourable Condition for SSSI:
Site Vulnerability:

Table 26: Ramsar Midland Meres & Mosses Phase 2

Site Name: Aqualate Mere SSSI, SJ770205, Staffordshire
Site Description: Aqualate Mere (241.00ha) is the largest of the meres with the most extensive reedswamp community. The mere and its surrounds form a complex of open water, fen, grassland and woodland unrivalled in Staffordshire for the variety of natural features of special scientific interest. The esker formation on the north side of the mere is of national geomorphological importance in its own right. The large area and juxtaposition of seminatural habitats supports an outstanding assemblage of beetles, moths and sawflies. The site has nationally important numbers of breeding herons *Ardea cinerea* and passage shoveler *Anas clypeata* and is regionally significant for breeding waders.
Definition of Favourable Condition for SSSI:
Site Vulnerability: Reductions in water levels from ground water and surface water abstractions, eutrophication from raised nitrogen and phosphorous and siltation entering the site via incoming water, largely from the nearby canal, as well as the presence of invasive species, in particular fish.

Site Name: Brownheath Moss SSSI, SJ562395, Shropshire
Site Description: Brownheath Moss (31.32ha) differs from the other North Shropshire Mosses in consisting of a series of pools set in an area of heathland and woodland, rather than an expanse of peat. It has been suggested that the site may once have been peat covered, and that peat removal in the past has led to the present condition of the site.
Definition of Favourable Condition for SSSI:
Site Vulnerability:

Site Name: Cole Mere SSSI, SJ433332, Shropshire
Site Description: Cole Mere is one of the largest of the Shropshire meres, with an almost complete fringe of woodland. There is a comparatively rich flora of aquatic macrophytes, including small pondweed *Potamogeton berchtoldii*, fan-leaved water crowfoot *Ranunculus circinatus* and autumnal water-starwort *Callitriche hermaphroditica*. Lesser yellow water-lily *Nuphar pumila* occurs here at what is probably its only English locality – the main centre of distribution of this species is the Scottish Highlands. Most of the surrounding woodland is of artificial origin but is included in the site since it is of value as a habitat for birds and adds to the diversity of the site. However, near the eastern end there is an area of semi-natural alder carr in which greater spearwort *Ranunculus lingua* and the rare elongated sedge *Carex elongata* occur. At the south-eastern end of the site there is an area of damp, rush-dominated pasture, with characteristic species such as lesser spearwort *Ranunculus flammula* and carnation sedge *Carex panicea*. The aquatic invertebrate fauna of Cole Mere is particularly diverse.
Definition of Favourable Condition for SSSI:
Site Vulnerability:

Site Name: Cop Mere SSSI, SJ802297, Staffordshire
Site Description: Cop Mere (37.8ha) is a shallow lake lying in a hollow in Keuper Marl. In many respects it is an outlier of the series of meres concentrated in North Shropshire and Cheshire. However, it differs from many of the meres in having a distinct inflow and outflow, the River Sow, which enters the mere at the western end and leaves at the eastern end.
Definition of Favourable Condition for SSSI:
Site Vulnerability: Reductions in water levels (possibly from long-term increased abstraction rates from the River Sow), eutrophication and siltation from surrounding agricultural run-off and invasive species, especially encroaching rhododendron scrub.

Site Name: Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SSSI, SJ490365, Shropshire/Clwyd, England/Wales also SAC
Site Description: Fenn's, Whixall, Bettisfield, Wem and Cadney Mosses (948.4ha) together form an outstanding example of a lowland raised mire. The moss complex, which straddles the border between Shropshire, England and Clwyd, Wales, is one of the largest and most southerly raised mires in Britain. The site is highly valued ecologically as an example of mire development occurring under relatively warm and dry conditions and lying at the edge of the British range for this type of habitat.

Definition of Favourable Condition for SSSI: To maintain, in favourable condition, the active raised bogs and degraded raised bogs still capable of natural regeneration on the site.
Site Vulnerability: The lowland raised mire is dependent upon high water levels and a continuation of active peat-forming processes. Much of the site is subject to mineral planning consents for peat extractions which are currently being reviewed. The site has a history of peat-cutting and until recently, part of the site has been subject to large-scale commercial extraction, involving drainage over much of the peat body. Afforestation and agricultural improvement on marginal areas of the peat body have accelerated the lowering of water levels, resulting in encroachment by scrub and a decline in the extent of peat-forming communities. A greater part of the site is now owned, leased or managed under agreement by conservation organisations. Within these areas, mire rehabilitation management is taking place under the guidance of a management plan. It is intended to seek to increase the areas under positive conservation management by implementation of the joint Countryside Council for Wales/English Nature acquisition strategy.

Site Name: Hanmer Mere SSSI (Wales)
Site Description: Naturally eutrophic (nutrient rich) mere, supporting water plants including curled pondweed, horned pondweed, floating beds of yellow water lily, and marginal vegetation including reedmace and branched bur-reed. Another important element of this feature is the semi-natural vegetation types associated with the mere including swamp and mere marginal vegetation, marshy grassland, wet woodland and broad-leaved woodland together with a small stream flowing out of the mere.
Definition of Favourable Condition for SSSI:
Site Vulnerability: Water quality - There is no known inflow for the mere and all it's water either runs off the immediate catchment area or results from rainfall. Nutrient run-off from agricultural land. **Fishery management and angling.** A fish survey undertaken in 1996 indicated that the mere has remarkably low fish stocks with only small numbers of pike, bream and eel present. The mere is currently fished at low intensity by a private angling club and this should continue without any intensification. **Recreational interest** The mere has a history of low usage and minimal disturbance. The present low intensity usage should be maintained. Public access is limited to the public footpath following the eastern side of the mere, and should continue to be confined to areas where appropriate facilities are in place.

Site Name: Hencott Pool SSSI, SJ490160, Shropshire
Site Description: Most of Hencott Pool (11.5ha) is swamp carr on very wet peat dominated by alder *Alnus glutinosa* and common sallow *Salix cinerea* with frequent crack willow *Salix fragilis*. Although there are considerable areas of bare peat beneath the trees, there is a rich flora of fen plants. The site is notable for the size of its population of elongated sedge *Carex elongata*. Other uncommon species include purple smallreed *Calamagrostis canescens*, cyperus sedge *Carex pseudocyperus*, cowbane *Cicuta virosa*, great spearwort *Ranunculus lingua* and fine-leaved water dropwort *Oenanthe aquatica*. There are locally extensive moss carpets of *Calliergon cordifolium*, *C. cuspidatum* and *Sphagnum squarrosum*.
Definition of Favourable Condition for SSSI: Stand loss due to natural processes e.g. in minimum intervention stands is acceptable eg due to wind blow or Phytopthera disease. Stand destruction may occur if the understorey and ground flora are irretrievably damaged even if the canopy remains intact, eg by pollution. As a guideline, loss can be defined as at least 0.5 ha or 0.5% of the stand area, whichever is the smaller. Targets for extent may be modified where a target has been set to increase the extent of other habitat features on the site at the expense of woodland. This site is a former pool and is now entirely scrubbed over with willow and alder carr (Lockton and Whild, 2003). It was in this late stage of succession at notification (Walker, 1984) and the whole site has to be considered as woodland at the moment. Standing water is usually present under the woodland and fen vegetation survives in certain places under the trees and scrub. The site is important as an example of the succession from open water to basin bog to alder car (Walker, 1984), and therefore it would be beneficial to retain and restore some of the other features of interest that demonstrate the transition from open water to alder carr. Therefore some loss in extent of the successional woodland, providing it was restored to open water or open fen vegetation would be acceptable. Although it is too early give estimates of extent for restored vegetation it should be no more than 5.7ha which was the total of fen and open water on the 1881 Edition OS Map. There should be no loss in extent of the area covered by semi natural vegetation.
Site Vulnerability: Eutrophication mainly from surrounding agricultural run-off, lowering of the water table from surrounding activities, invasive species, in particular Canadian geese that graze, trample and enrich the vegetation.

Site Name: Llyn Bedydd SSSI (Wales)
Site Description: The SSSI has two special features. **Standing water** Llyn Bedydd is a small 'mere' developed in a natural depression (kettle-hole) after the last ice age which covered this area some 20,000 years ago. The lake comprises an area of open water supporting a variety of water plants below, floating on the surface, and rising above the surface of the water, as well as natural bank side vegetation. **Wet woodland** The wet woodland habitat is an uncommon habitat in Wrexham, and is dominated by alder, willow and other plants and animals tolerant of wet conditions and flooding.
Definition of Favourable Condition for SSSI:
Site Vulnerability: Water quality and pollution, fishery management, woodland

Site Name: Morton Pool & Pasture SSSI, SJ301239, Shropshire, England
Site Description: The chief interest of Morton Pool (3.72ha) is the fen and carr vegetation around it. The dominant species are alder *Alnus glutinosa* and sallow *Salix cinerea* with yellow flag *Iris pseudacorus*, reed canary grass *Phalaris arundinacea* and sedges, including lesser pond sedge *Carex acutiformis* and tussock sedge *Carex paniculata*, in the field layer. Uncommon plant species in this habitat include bird cherry *Prunus padus*, alder buckthorn *Frangula alnus* and marsh fern *Thelypteris thelypteroides*.
Definition of Favourable Condition for SSSI:
Site Vulnerability:

Site Name: Oss Mere SSSI, SJ565438, Shropshire, England
Site Description: Oss Mere (28.32ha) is a shallow mere of moderate fertility, bordered on two sides by reedswamp and alder carr. The site also includes woodland on dry peat and on fringe of damp grassland. Within the mere both white and yellow water lilies *Nymphaea alba* and *Nuphar lutea* occur, but are scarce. Horned pondweed *Zannichellia palustris* is the dominant submerged aquatic plant. The alder carr is particularly rich, and has a flora which includes cyperus sedge *Carex pseudocyperus*, cowbane *Cicuta virosa*, bog violet *Viola palustris*, marsh

fern *Thelypteris thelypteroides* and royal fern *Osmunda regalis*, all of which are uncommon in Shropshire.
Definition of Favourable Condition for SSSI: Maintain the Fen, Marsh and Swamp, Broadleaved, mixed and yew woodland and Standing open water in favourable condition
Site Vulnerability:

Site Name: Sweat Mere & Crose Mere SSSI, SJ434304, Shropshire, England
Site Description: Sweat Mere and Crose Mere (38.58ha) are two dissimilar meres constituting a site of exceptional importance. They are the remnants of a once considerably larger wetland complex which included Whattall Moss, which in historic times was an acid peat bog but now is almost entirely affected. The meres and their surrounds form a complex of open water, reedswamp, fen and woodland habitats unrivalled in Shropshire for the variety of natural features of special scientific interest. Both meres have been subject to detailed research and intensive study. In particular the phytoplankton and the pollen stratigraphy of Crose Mere are very well documented.
Definition of Favourable Condition for SSSI:
Site Vulnerability:

Appendix 3 Tables of effect pathways and international sites potentially affected by them.

Table 1: Air pollution potential effects pathways

Environmental change	International Site potentially vulnerable to impact	Issues for further consideration
Local deposition of air pollutants caused by traffic emissions changing the plant species composition of vulnerable vegetation etc	Berwyn & South Clwyd Mountains SAC, Montgomery Canal SAC, Midland Meres and Mosses Ramsar Phase 1 & 2, River Dee & Bala Lake SAC, River Clun SAC, Tanat bat SAC West Midland Mosses SAC are within 200m of A roads.	Those parts of sites within 200m of a major road may be at risk from increased acidification and nitrogen deposition causing changes in terrestrial plant communities for which the sites have been designated. This problem is worse at sites which already have acid soils and have little buffering capacity. Predicting whether traffic levels will increase and then establishing whether this will translate into increased levels of deposition on a site is difficult.
Diffuse air pollution	Berwyn & South Clwyd Mountains SAC, Brown Moss SAC Cannock Chase SAC Downton Gorge SAC, Elenydd SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Midland Meres and Mosses Ramsar Phase 1 & 2 Montgomery Canal SAC, Rhos Goch SAC, River Clun SAC, River Dee SAC, River Wye SAC The Stiperstones and the Hollies SAC, West Midland Meres and Mosses SAC,	Many habitats are sensitive to increased levels of nitrogen, acidification or other airborne pollution. A number of sites are currently over their critical loads for acid and nitrogen deposition. Any further increase in background levels of diffuse air pollution could have cumulative effects and exacerbate an adverse situation. Measures need to be explored for reducing air emissions in the region to stabilise background levels of air pollution.

Table 2: Hydrological potential effect pathways

Environmental change	International Site potentially vulnerable to impact	Issues for further consideration
Water quality effects from direct increase in run-off from hard standing and pollution from overloading water treatment infrastructure	Brown Moss SAC, Downton Gorge SAC, Fenn's, Whixall, Bettisfield, Cadney and Wem Mosses SAC, Montgomery Canal SAC, Midland Meres and Mosses Ramsar Phase 1 & 2, River Clun SAC, River Dee and Bala Lake SAC, River Severn SPA/Ramsar West Midland Mosses SAC	Capacity of existing wastewater infrastructure to deal with additional homes needs to be considered, especially during flood events. Some sites require local / specific management solutions. However scope for SUDS should be considered for upstream housing and other developments to reduce pollutants such as oil and road salt.
Pollution during flood events and problems resulting from raised or diverted water tables	Midland Meres and Mosses Ramsar Phase 1 & 2 River Clun SAC, River Dee and Bala Lake SAC	Some of the constituent sites in the Midland Meres and Mosses Ramsar Phase 1 & 2 suffer from water logging as a result of diverted or raised water tables. Species within the River Clun SAC and River Dee and Bala Lake SAC are vulnerable to short term increased pollution/ sedimentation resulting from flash flooding.
Concentration of pollutants or contaminants due to reduced/ low flow	River Clun SAC, River Dee & Bala Lake SAC, River Severn SPA/Ramsar Midland Meres and Mosses Ramsar Phase 1 & 2	Species within the River Clun SAC are reliant on a clean, cool, stable flow of water. Concentration of pollutants in rivers and pools can be toxic to a wide range of species and low water levels combined with high nutrient levels leads to algal blooms and reduced light levels in standing water.
Water abstraction resulting in lowered water tables / levels	Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, River Clun SAC, River Dee & Bala Lake SAC, River Severn SPA/Ramsar West Midland Mosses SAC, Midlands Meres and Mosses Ramsar Phase 1 & 2	Increased abstraction arising from housing and economic development could impact on a range of international sites.

Increased silt runoff from development & roads	Brown Moss SAC, Montgomery Canal SAC, Midland Meres and Mosses Ramsar Phase 1 & 2, River Clun SAC, River Dee SAC, West Midland Mosses SAC	Freshwater Pearl Mussels are particularly sensitive to increased silt levels within the River Clun SAC. Other sites are reliant on a clean, stable flow of water with low sediment levels.
Water quality impacts through boat use of Shropshire Union Canal	Midland Meres and Mosses Ramsar Phase 2 (Cole Mere), Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Montgomery Canal SAC.	There are overspills and sluice gates between the canal and Cole Mere Ramsar site and Fenn's, Whixall, Bettisfield, Cadney and Wem Mosses SAC and Ramsar site. The Montgomery Canal SAC may become reconnected in future (according to the Montgomery Canal Management Plan) to the existing navigable part of the Montgomery Canal in Shropshire, and from there to the Shropshire Union Canal.

Table 3: Recreational potential effect pathways

Environmental change	International Site potentially vulnerable to impact	Issues for further consideration
Induced development (i.e. need for increased infrastructure on a designated site to deal with an increase in visitor pressure) and related land use change in or around site.	Berwyn & South Clwyd Mountains SAC, Downton Gorge SAC, Elenydd SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Rhos Goch SAC, The Stiperstones and the Hollies SAC, West Midland Meres and Mosses SAC, Midland Meres and Mosses Ramsar Phase 1 & 2.	Increased recreational pressure can lead to the need for greater facilities and infrastructure on designated sites. Sites depend on supporting habitat outside the protected area boundary. Given the complexity of wetland sites in and around Shropshire there is potential for impacts relating to land use change around the designated sites as well as directly adjacent or within the designated areas.
Disturbance or damage / erosion caused by recreational/ amenity use.	Aqualate Mere Ramsar site, Berwyn SPA, Brown Moss SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Granllyn SAC,	These sites are currently adversely affected to a degree by recreational pressure and are at risk from an increase in the number of households and improved physical accessibility in the region. The pathways by which recreational pressure impacts each site needs to be

	Johnstown Newt Sites SAC, Midlands Meres and Mosses Ramsar Phase 1 & 2, Montgomery Canal SAC, The Stiperstones & The Hollies SAC.	examined to understand the mechanisms by which further risk can be avoided. Risks include trampling, erosion, fishing,eutrophication from dog faeces and swimming by people and dogs.
Interference with grazing and other management necessary for the maintenance of designated features of international sites.	Aqualate Mere Ramsar site, Berwyn SPA, Brown Moss SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Granllyn SAC, Johnstown Newt Sites SAC, Midlands Meres and Mosses Ramsar Phase 1 & 2, Montgomery Canal SAC, The Stiperstones & The Hollies SAC.	Grazing is crucial to the favourable condition of many sites. There may be conflict between visitors, their dogs and livestock unless carefully managed.

Table 4: Biosecurity potential effect pathways

Environmental change	International Site potentially vulnerable to impact	Issues for further consideration
Intentionally or accidentally introduced species.	Berwyn & South Clwyd Mountains SAC, Brown Moss SAC, Cannock Chase SAC, Downton Gorge SAC, Elenydd SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Granllyn SAC Johnstown Newt Sites SAC, Midland Meres and Mosses Ramsar Phase 1 & 2 Montgomery Canal SAC, Rhos Goch SAC, River Clun SAC, River Dee SAC, The Stiperstones and the Hollies SAC, West Midland Meres and Mosses SAC,	All international sites could be affected by introduced or non-native species. Introduced species can alter plant communities, introduce disease or out-compete important species. Aquatic sites are particularly sensitive. Examples are the spread of the invasive shrimp *Dikerogammarus haemobaphes* along wateways or the introduction of fish to Great Crested Newt sites.

Table 5: Other effects of development

Environmental change	International Site potentially vulnerable to impact	Issues for further consideration
Development of sites being used by bats for breeding when away from the winter hibernation areas	Tanat and Vrynwy Bat Sites SAC.	The populations of bats using hibernation roosts at tanat and Vrynwy Bat Sites SAC are at risk from development in Shropshire since the breeding summer roosts used by these bat populations have not been identified. The species, and the integrity of the international sitecould be at risk from redevelopment of rural sites, minerals sites, caves, mines and woodlands.
Raised night time light levels due to artificial lighting.	Brown Moss SAC, Downton Gorge SAC, Fenn's, Whixall, Bettisfield, Wem & Cadney Mosses SAC, Midland Meres and Mosses Ramsar Phase 1 & 2 Montgomery Canal SAC, River Dee SAC, The Stiperstones and the Hollies SAC, West Midland Meres and Mosses SAC,	Any sites which are important for animal species, particularly invertebrates, birds and nocturnal mammals such as otters and bats, may be adversely affected by artificial lighting. Lighting can attract or repel species, interfere with feeding patterns, lifecycles or behaviour.