Somerset Local Wildlife Sites
And
Local Geological Sites Manual

Policies and Procedures for the Identification and Designation of Wildlife Sites

Version 6 (Jan 2010)

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Glossary of Terms

Term	Definition
BTO	British Trust for Ornithology
C&FGM	Coastal and Floodplain Grassland
CFPGM	Coastal & Floodplain Grazing Marsh
CHEGs	*Clitocybe*, *Hygrocybe*, *Entoloma*, *Geoglossum* spp.
cLWS	Candidate Local Wildlife Site
DEFRA	Department for Environment Food and Rural Affairs
EC	European Commission
EUOCIEC	Eu-Oceanic Calcifuge Index of Ecological Continuity
GCN	Great Crested Newts
GCR	Geological Conservation Review
GIS	Geographic Information System
IHS	Integrated Habitat System
IUCN	International Union for Conservation of Nature
JNCC	Joint Nature Conservation Committee
KUA	Key Urban Areas
LBAP	Local Biodiversity Action Plan
LDF	Local Development Frameworks
LGS	Local Geological Site
LMDW	Lowland Mixed Deciduous Woodland
LWS	Local Wildlife Site
LWS Network	LWS Network Sites
NE	Natural England
NIEC	New Index of Ecological Continuity
NNR	National Nature Reserve
NVC	National Vegetation Classification
PAWS	Plantations on Ancient Woodland Sites
PHT	UK BAP Priority Habitat
PSYM	Predictive System for Multimetrics
RDB	Red Data Book
RIEC	Revised Index of Ecological Continuity
RIGS	Regionally Important Geological and Geomorphological Sites
RIVPAC	River Invertebrate Prediction and Classification
SAC	Special Areas of Conservation
SERC	Somerset Environmental Records Centre

Term	Definition
SLA	Service Level Agreement
SLBAP	Somerset Local Biodiversity Action Plan
SNA	Rebuilding Biodiversity/Nature Map Strategic Nature Area
SPA	Special Protection Areas
SSSI	Sites of Special Scientific Interest
SWT	Somerset Wildlife Trust
UKBAP	UK Biodiversity Action Plan

Section 1:

1. The Somerset Local Sites System

1.1 Introduction

The purpose of this document is to provide a robust and consistent set of policies and procedures to guide the selection of 'Local Sites' across Somerset, on behalf of the Somerset Biodiversity Partnership. In line with the expectations of Planning Policy Statement 9 on Biodiversity and Geological Conservation (August 2005) and DEFRA's Local Site Guidance (*Local Sites: Guidance on the Identification, Selection and Management*, 2006). The document updates the *Guidelines for the Selection of County Wildlife Sites in Somerset* (Version 5.4, 1997 with minor additions 2004).

The 2009 Handbook is divided into two main sections:

- Section 1 describes how the Local Sites System operates
- Section 2 lays out the detailed criteria for the selection of Local Wildlife Sites.

1.1.1 Background

A system to afford statutory protection to a network of sites hosting features of national, European and International importance has been established and operational for many years. Through the designation of Sites of Special Scientific Interest (SSSI), Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites a representative suite of habitats and species has been protected. In Somerset there are currently 294 statutorily designated sites with an area of 41,852 hectares.

Clearly this leaves out many sites that are, nonetheless, of significant value for the conservation of wildlife and geological features. This gap is filled by Local Wildlife Sites (LWS) and Local Geological Sites (LGS). In Somerset, there are 2,093 LWS covering a total of 24,257ha and 218 LGS covering 597ha.

Table 1 The relationship between SSSIs, LWS and LGS

	Biological SSSI	Geological SSSI	Joint SSSI
LWS	No overlap	Overlap allowed	No overlap
LGS	Overlap allowed	No overlap	No overlap

Nationally, most Local Authorities, in partnership with conservation organisations, have established networks of locally valued non-statutory sites. These systems contribute significantly to delivering both UK and Local Biodiversity and Geodiversity Action Plan targets.

In 2000, the Local Sites Review Group (set up by the Department of the Environment, Transport and the Regions) defined the overall objective of a Local Sites system as follows:

"The series of non-statutory Local Sites seek to ensure, in the public interest, the conservation, maintenance and enhancement of species, habitats, geological and geomorphological features of substantive nature conservation value. Local Site systems should select all areas of substantive value including both the most important and the most distinctive species, habitats, geological and geomorphological features within a national, regional and local context. Sites within the series may also have an important role in contributing to the public enjoyment of nature conservation."

DEFRA's *Local Sites: Guidance on their Identification, Selection and Management* (2006) says Local Wildlife Sites are important because they:

- Provide wildlife refuges for most of the UK's fauna and flora and through their connecting and buffering qualities, they complement other site networks.
- Have a significant role to play in meeting overall national biodiversity targets.
- Represent local character and distinctiveness.
- Contribute to the quality of life and the wellbeing of the community, with many sites providing opportunities for research and education.

This guidance also provides the impetus for the current revision as it states "we would expect every system to review their current position and implement changes in line with this guidance in order to meet existing nature conservation policy objectives."

Under the Local Government Act (2004) all local planning authorities are now required to produce Local Development Frameworks (LDF) to replace their existing local development plans. Within these, they will set out how they plan to meet local biodiversity targets through the planning system. Planning Policy Statement 9 instructs that councils should:

"*..indicate the location of designated sites of importance for biodiversity and geodiversity, making clear distinctions between the hierarchy of international, national, regional and locally designated sites*" within their Local Development Frameworks. It goes on to say "*Criteria-based policies should be established in local development documents against which proposals for any development on, or affecting, such sites will be judged. These policies should be distinguished from those applied to nationally important sites*".

All 5 district councils are currently working on their LDF documents, but none are complete at the time of completion of this handbook.

1.2 Scope of the Manual

Although updating the previous *Guidelines for the selection of County Wildlife Sites in Somerset* (Version 5.4), this manual provides a comprehensive approach to policies and procedures relating to the Local Wildlife Site systems in Somerset. Its purposes are:

- To describe the processes for Local Wildlife Site selection and de-selection.
- To define how these will be applied by SERC in a standard manner across Somerset, co-ordinated by the Somerset Biodiversity Partnership.
- To lay out a detailed set of selection criteria (with all related appendices) in line with the DEFRA Local Sites Guidance (2006) for the selection of terrestrial Local Wildlife Sites (including coastal and upper intertidal). Marine and lower Intertidal habitats and species will not be covered.

The policies and procedures should ideally relate to the full extent of Somerset's natural environment: terrestrial, aquatic, sub-littoral, and marine. However, it should be noted that the contents of the manual and their application have been developed furthest with regard to the terrestrial environment.

1.3 Out of Scope

- This manual will not lead to an immediate re-evaluation of all existing LWSs against the criteria laid out here. This will be carried out as sites are systematically re-surveyed.

- It is hoped that funding may be available for surveying a sample of existing LWS to ascertain to what extent the current suite may be out of date.
- The criteria for the selection of LGS will not be reviewed here. However, given that the suite of sites does not change rapidly, this is not an urgent priority at this time.

1.4 Definitions

Please note that the term 'designation' does not imply statutory designation.

1.4.1 Local Wildlife Site (LWS)

A Local Wildlife Site is a discrete area of land, water or foreshore/seabed which is considered to be of nature conservation significance at a county level or higher. This status will have been confirmed by the LWS Selection Panel. Once a site is designated LWS, it remains as one until it is proven not to meet the criteria. A Local Wildlife Site may be designated on habitat and or species criteria or may be a Network LWS (refer to subsection 1.4.4)

1.4.2 Candidate Local Wildlife Site (cLWS)

A Candidate Local Wildlife Site is:

- An area for which biodiversity data has been evaluated by SERC and shown to meet the LWS criteria but has not yet been formally designated by the LWS Selection Panel.

A cLWS carries the same status and has the same level of protection as a fully designated LWS.

1.4.3 Local Geological Site (LGS)

Regionally Important Geological and Geomorphological Sites (RIGS) are currently considered the most important places for Earth science outside statutorily protected land such as Sites of Special Scientific Interest (SSSIs). RIGS are identified by locally developed criteria based on national guidelines. They are important as an educational, historical and recreational resource.

They are selected on a local or regional basis using four nationally agreed criteria:

- The value of a site for educational purposes in life-long learning;
- The value of a site for study by both professional and amateur Earth scientists;
- The historical value of a site in terms of important advances in Earth science knowledge, events or human exploitation;
- The aesthetic value of a site in the landscape, particularly in relation to promoting public awareness and appreciation of Earth sciences.

Local RIGS groups often devise additional criteria based on these national parameters depending on local or regional circumstances.

RIGS are broadly equivalent to local Wildlife Sites and other non-statutory wildlife designations in their level of protection through the planning system. They can be listed in local authorities' development plans and are mapped as planning constraints. RIGS can be protected through the planning system if a RIGS group recommends sites to the local planning authority. There are active quarry sites in Somerset that would probably meet the RIGS criteria that were not identified as LGS.

It has been agreed by the Wildlife Sites review group that a review of the LGS criteria and sites was beyond the scope of the current review work.

1.4.4 LWS Network Sites

In line with the DEFRA guidelines, this handbook contains criteria for the identification of network/buffering sites that will form part of a Network LWS.

LWS Network Sites (LWS Network) are areas of semi-natural habitat likely to make a major contribution to the movement, dispersal and genetic exchange of species within the local landscape. These wildlife corridors include, for example, areas of species-rich, semi-improved grassland, double hedgerows/hedge-banks, significant belts or areas of scrub, semi-natural or plantation broadleaved woodlands and ponds.

Areas of habitat such species-rich semi-improved grassland which can buffer SSSIs will also form part of the Network LWS.

The LWS Network criteria will continue to develop over time e.g. to buffer Species and Habitat LWSs in Rebuilding Biodiversity Strategic Nature Areas.

In addition to the Local Wildlife Site criteria laid out in this handbook, in Somerset, the concept of biodiversity networks has been developed through the ECONET project. This shows the likely distribution of important species in the county based on SERC records. This data has been further extrapolated to show species ranges to account for the natural movement of animals (e.g. bats foraging). In a planning context, this range becomes a consideration zone where a proposed development may affect a given species. The habitat itself is the impact zone where a development is likely to have a *significant* effect. The impact zone is further separated into significant and non-significant populations of the species under consideration.

Boundaries of Econet Impact Zones and Consideration Zones are supplied to Local authorities by SERC and can be requested from SERC through data searches. **These Econet zones are designed to provide additional information to assess impacts on e.g. European Protected species, but do not automatically imply LWS status.**

1.4.5 Key Urban Areas

Lower thresholds for identifying such sites will operate in defined Key Urban Areas (refer to Figure 1 to Figure 4.)

The DEFRA Guidelines allow for thresholds to vary within in different areas operating under the same LWS system. In Somerset there are lower size and quality thresholds for LWSs in specified Key Urban Areas (KUA) than in the rest of Somerset. The boundaries within which the lower thresholds are applied appear in figure 1. KUA boundaries will be kept under review. Ultimately they may be extended to other major towns in Somerset but for the time being will only apply to Bridgwater, Taunton and Yeovil. Any changes to boundaries will be updated in the handbook.

The lower thresholds in Somerset's expanding urban areas are to safeguard and prevent loss of biodiversity in areas where:

- Development pressure is most intense.
- Small patches of semi-natural habitat provide key areas for wildlife.
- The loss of small network features severely compromises key species that use and live in the urban landscape

There are often no alternative features that can be used by wildlife should they destroyed.

KUA boundaries have been drawn up in consultation with the relevant District Councils. Boundaries are set as follows:

- 200 m outside the current built up area,
- Areas identified for possible future development or as part of existing or proposed Green Infrastructure.
- For Taunton and Bridgwater they incorporate a zone 100 m on either side of public rights of way that connect to urban areas, up to a distance of 500 m from current developed areas. This was not done for Yeovil as the town is entirely surrounded by proposed development and associated green space.

1.5 Developing the Criteria

The revised guidelines for selecting Local Wildlife Sites are based on *Local Sites: Guidance on their Identification, Selection and Management* (DEFRA, 2006) which suggests designation based on the following principles:

- A comprehensive rather than representative suite of sites
- Selection founded on national, regional and local biodiversity principles
- Selection criteria with measurable thresholds developed with reference to the following factors:
  - Size
  - Diversity
  - Naturalness
  - Rare or exceptional feature
  - Fragility
  - Connectivity within the landscape
- Of lesser, but nonetheless relevant, importance is the community factor:
  - Value for appreciation of nature
  - Value for learning.
- In Somerset the following Ratcliffe (1977) Criteria are **not** used to determine LWSs,
  - Recorded history and cultural associations
  - Typicalness

1.6 Key differences between current LWS Criteria and previous version (V5.4)

- There are different thresholds for size and quality of LWS between the large areas of primarily rural Somerset and Key Urban Areas (refer to Figure 1).
- In addition to habitat and species criteria there are new Network LWS criteria – a comprehensive suite of Network LWSs will be identified within Key Urban areas. Outside Key Urban Areas identification of a comprehensive suite of network sites will not be prioritised.
- Outside these Key Urban Areas, thresholds for many species criteria have been raised.
- SSSIs and, in the future, areas of LWS meeting habitat and species criteria may be buffered by areas of land meeting a lower threshold than the core LWS area. These will form part of the Network LWS.

1.7 Relationship with UK Biodiversity Action Plan (BAP) Priority Habitats and Species

Section 41 of the Natural Environment and Rural Communities Act (2006) requires the Secretary of State to publish a list of species and habitats of principal importance for the purpose of conserving biodiversity. These are published as "Priority habitats and species" in the UK BAP.

The LWS habitat criteria are principally based on these UK BAP Priority Habitats (BRIG, 2008). Outside of Key Urban Areas in Somerset, all sites containing at least 0.5 ha of a UK BAP Priority Habitat will be designated LWS on habitat criteria with the exception of Coastal & Floodplain Grazing Marsh (CFPGM), some types of Lowland Mixed Deciduous Woodland (LMDW) and Hedgerows.

CFPGM is a *habitat complex*, not a unique habitat and is defined by physical characteristics, such as flooding frequency, rather than based on biological criteria. The definition of LMDW is very broad and includes almost any woodland with a canopy cover with more than 50% native broadleaved species. In addition the UK BAP definition of hedgerow as a habitat is not felt to be sufficiently detailed for the context of Somerset.

Within Key Urban Areas, all UK BAP Priority habitat 0.25 Ha and greater (except CFPGM but including all LMDW) will qualify as LWS. Smaller areas may qualify under the network criterion.

A list of Somerset LBAP Priority Species has been developed for Somerset and is available from SERC. All these species are now material considerations in development planning in Somerset. The criteria used to select species for the list are part of the download. The LWS species criteria are partly based on Somerset LBAP priority species but also take account of Nationally Notable Species and Somerset Notable Species. The Somerset Notable Species dictionary (Large, 2000) is also available as a download from the SERC website.

2. Process for the Selection of Local Wildlife Sites

2.1 Introduction

This section outlines the procedure for selecting and de-selecting Local Wildlife Sites used by the panel. In Somerset, Local Sites are known as Local Wildlife Sites, and are referred to as such in this document. Both the 2004 and 1991 criteria are now publicly available via SERC, which was not the case previously.

The selection of all Local Wildlife Sites in Somerset based on the written criteria (section 2), from the full range of habitat present in the county, will be undertaken through the rigorous application of the following guidelines. The procedure for the confirmation of LWS selection will be carried out by a panel of experts from within the county, who operate as an approved LWS selection panel. Sites can be selected under habitat or species guidelines or both.

2.2 Identification of Sites

In the past, the majority of LWS have been identified from data collected by SERC and the Somerset Wildlife Trust (SWT). However, sites can be nominated for selection by any person or organisation. The person or organisation nominating a site should provide sufficient information to SERC to allow them to evaluate it against the following criteria. The identification of a candidate LWS by SERC will then be confirmed by the LWS selection panel. There is a minimum amount of information that must be available in order to apply the criteria. SERC can provide guidance on the collection of this information.

Landowner consultation is crucial in order to foster good relationships. Surveys will not be carried out by SERC or SWT without permission from the landowner or tenant. All organisations and individuals are strongly encouraged to obtain appropriate permission before carrying out any survey work. However, SERC has no way of guaranteeing that all data it receives from other organisations and the public has been collected with landowner permission.

2.3 Written Evidence (Environmental Data)

Selection must be supported by validated written evidence sufficient to judge a site against the criteria. This can include annotated aerial photographs provided they contain sufficient information. For example, if a site is on the Ancient Woodland Inventory and the aerial photograph shows this to be extant, apparently semi-natural, broad-leaved woodland, it would automatically be designated LWS. Written evidence can be collected and submitted by any party. All written evidence should be validated by SERC who will also retain a copy for future reference.

2.4 LWS Selection Panel

In the past, Local Authorities gave SERC the sole responsibility for identification of Local Wildlife Sites. From now on, SERC's initial evaluation and identification of LWSs will be formally ratified by the LWS selection panel. All planning authorities have formally delegated their authority to designate LWS to this panel.

- The panel will consist of the representatives from the following organisations:
  - Somerset Environmental Records Centre (SERC)
  - Somerset Wildlife Trust
  - Natural England

  - Somerset County Council - County Ecologist
  - Relevant Local Authorities
- Minimum number required for quorum – 3 (out of 5)
- Representatives from Environment Agency, Forestry Commission or relevant specialists will be invited if required ensuring the panel has necessary expertise.
- The panel's role is to ratify/confirm/approve SERC's recommendations.
- Sites nominated as LWS go to SERC, who will carry out a first evaluation and make recommendations to the panel:
  - If site is a good fit with the criteria; panel to ratify candidate LWS as fully designated LWS
  - If site does not fit criteria; panel to ratify rejection of site as LWS
  - If site is borderline; panel to debate and decide if site should be designated LWS
- Panel meetings will be quarterly and may be held either in person or virtually via email or telephone
- Extraordinary meetings may be held if sites require ratification prior to the next scheduled meeting.

2.5 LWS Site Boundaries

LWS boundaries are usually chosen because they are clearly defined by features on the ground, such as a hedge or fence line. This may mean that the site includes areas which clearly do not meet the necessary selection criteria (such as areas of poor semi-improved grassland within a field of otherwise unimproved grassland). Sites can also include entire parcels of ground (i.e. individual fields, or blocks within woodland) which do not clearly meet the criteria, but are justified in the context of an overall site complex (e.g. blocks of conifer of no apparent interest which are isolated within otherwise semi-natural woodland). Sites adjacent to LWS, SSSI, NNR, SAC, SPA, Ramsar or target habitats within an SNA may also be considered.

For sites where the presence of a UK BAP Priority Habitat has been confirmed by field survey, the boundaries may be amended using aerial photographic evidence. This only applies where the additional land is contiguous with the original site and analysis shows it to be the same or a related habitat. This would **only** be appropriate for habitats which have a distinctive appearance on aerial photos e.g. Heathland.

2.6 The LWS Designation Procedure

It should be noted that this refers to non-statutory designation unlike that for SSSIs.

The LWS Panel is responsible for **all** additions, deletions and boundary changes to the fully designated LWS list. The panel can meet in person or by writing, e-mail or telephone conference. There are three methods of designation:

2.6.1 Full Panel Discussion

For those sites where LWS designation is not clear, the LWS Panel members will consider each site on an individual basis. Panel members will be provided with a copy of the evidence and summary information (prepared by SERC and in the form of a table). The summary lists the relevant LWS criteria for each site, and any concerns or problems (e.g. if the site does not easily conform to the LWS criteria, or if only part of the site is of LWS standard). The issues relating to each site are

discussed, until agreement is reached on whether the site meets the criteria and what its boundary should be.

2.6.2 Endorsement

For clear-cut LWS selection or non-selection cases, the panel members are specifically informed of **all** candidate sites and are given summary information about these in the form of a table. This table is compiled by SERC staff, and includes the reasons behind the recommendation to select or reject each site. Where a site is selected as a LWS, the relevant LWS criteria are listed. The panel will look at one or two examples of these to be sure that the interpretation of the LWS guidelines by SERC staff is correct. The panel then endorses the remaining recommendations *en bloc* (i.e. adopts these, with the discretion to look in more detail and reverse any recommendations from SERC staff).

2.6.3 Delegation

For minor and non-controversial boundary amendments (such as re-digitising sites so that they are correct with respect to the Ordinance Survey maps, or correcting mistakes in digitisation) the panel members have given SERC staff the authority to take decisions on their behalf. The list of decisions does not have to be presented to, specifically approved or adopted by the panel.

2.7 The LWS De-selection Procedure

Sites may be de-selected as Local Wildlife Sites if it is found that their nature conservation interest has deteriorated to such an extent that they are no longer of LWS standard. As with the selection procedure, where there is clear and irrefutable evidence that a site is no longer of LWS standard, the panel will delegate the process to SERC. Otherwise, cases will be considered by a full panel discussion.

Sites may be de-selected if:

- There is no evidence to support their continued designation as LWS.
- New evidence clearly shows that the LWS interest has been lost.

Summary of the LWS Process

Identification of Sites

Sites can be nominated for selection by any person or organisation, providing sufficient information is available to SERC to allow them to evaluate it against the following criteria.

Preliminary evaluation

Sites nominated as LWS go to SERC, who will carry out a first evaluation and make recommendations to the panel

LWS Selection Panel

SERC's initial evaluation of LWS will be formally ratified by a selection panel. All planning authorities have formally delegated their authority to designate LWS to this panel.

The panel will consist of the following representatives:

- SERC
- SWT
- Natural England
- County Ecologist
- Relevant Local Authorities

The LWS Designation Procedure

The panel can meet in person or by writing, e-mail or telephone conference. There are three methods of designation:

Delegation

For minor and non-controversial boundary amendments (such as re-digitising sites so that they are correct to the landline maps or correcting mistakes in digitisation) the panel members have given SERC staff the authority to take decisions on their behalf. The list of decisions does not have to be presented to, specifically approved or adopted by the panel.

Endorsement

For clear-cut LWS selection or non-selection cases, the panel members are specifically informed of **ALL** candidate sites and are given summary information about these in the form of a table. The panel will look at one or two examples of these to be sure that the interpretation of the LWS guidelines by SERC staff is correct. The panel then endorses the remaining recommendations.

Full Panel Discussion

For those sites where LWS designation is not clear, the LWS Panel members will consider each site on an individual basis. The issues relating to each site are discussed, until agreement is reached on whether the site meets the criteria and what its boundary should be.

Challenges to Decisions

Owners or occupiers of sites may challenge the factual basis on which a parcel of land has been selected or rejected as LWS. This procedure will be used to determine whether the selection process has been properly applied, NOT to change the selection of a site simply because the owner requests it.

Notification and Adoption

After sites are selected, the relevant Local Authority and other SERC SLA holders will be supplied with updated boundaries of those within their area.

Landowners will then be notified by SERC.

2.8 Challenges to Decisions

Owners or occupiers of sites may challenge the factual basis on which a parcel of land has been selected or rejected as LWS. This procedure will be used to determine whether the selection process has been properly applied, **not** to change the selection of a site simply because the owner requests it. The procedure should be operated by SERC through the auspices of the panel and controversial cases will be addressed by the full panel (by exchange of e-mails, if necessary). However, in some cases, it may be sufficient for the panel to delegate the consideration of certain issues to SERC staff.

The selection or rejection of a site, or part of a site, may be challenged if:

- All or part of the boundary of a site has been drawn inappropriately
- Appropriate evidence is made available to confirm whether or not the site actually contains the specific feature which has justified its selection or rejection. Examples might include whether a particular species is present or whether the relevant feature is of sufficient quality or quantity.

The panel will take into account landowners' comments and hear objections where they are put forward. Landowners objecting will be invited to attend panel meeting and be able to bring their own expert witnesses or evidence. If the panel is unable to decide, the appeal can be referred to the full LWS partnership. They will have a deadline of one month by which they must submit any comments or challenges to decisions. However, this may be extended on request if there are extenuating circumstances.

2.9 Notification of and Adoption by Local Authority

Local Authorities will be sent details of candidate and designated LWS in GIS software format. These will be in a single GIS layer containing all relevant information for each site. This will include a list showing the criteria met, the date of survey and evaluation and the date of ratification by the panel.

After sites are selected, the relevant Local Authority will be formally notified of those within their area. Once the Local Authority has adopted a site, in line with DEFRA guidelines, it should be incorporated into Local Development Frameworks and / or their successors at the earliest opportunity. Ideally, a rolling programme of review of LWS selection should be phased, as far as is practicable, to coincide with the Local Development Framework process for each Planning Authority.

2.10 Notification to Landowners

After candidate LWS sites are selected or designated LWS sites de-selected, landowners will be notified by either SERC or the relevant Local Authority. When trying to identify landowners in order to notify them, consultation of Land Registry constitutes a sufficient attempt to identify the landowner. This is in contrast to the efforts made by SERC / SWT when obtaining permission to carry out field surveys where exhaustive efforts are made to secure landowner permission before entering land to survey.

2.11 On-going Advice & Support to Landowners

Currently, there is no active project to survey for new sites or re-survey existing ones. Nor is there a project to provide on-going formal advice and support to landowners once their land has been designated as LWS. This is principally due to a lack of funding at this time. Such a scheme would be

very useful in maintaining or even enhancing the quality of existing LWS by encouraging suitable management. It would also result in more accurate and up to date records of the condition of all the Local Wildlife Sites.

Should funding become available in the future, it will be important to ensure this project is also used to raise awareness of the LWS process among other independent advisors such as land agents. It is likely that this role would be carried out by the Wildlife Trust.

DEFRA's guidelines state that the Local Sites Group should provide support and advice to landowners. They also recommend the establishing of Local Site Partnerships incorporating local businesses as well as councils and wildlife organisations that could potentially provide expertise and financial support to landowners. Refer to the DEFRA Guidance for further details (DEFRA, 2006).

2.12 Recording the LWS selection process

The selection process should be documented by SERC (e.g. reasons for selection, persons involved in the selection process and date selection was made) and this documentation should be held with the written evidence to provide a transparent audit trail. The collection, management and presentation of written evidence are dependent on resources being available. The reasons for selection should be part of the data provided to Local authorities together with LWS boundaries.

2.13 Criteria Review

The criteria will need to be reviewed periodically. This is to ensure that they remain relevant and accurate. It is suggested that a full review is carried out at least once every five years. Small changes to the Criteria can be endorsed by the Local Sites Partnership at any time provided the changes become part of the publicly available documents; the Somerset Biodiversity Partnership will be kept informed of such decisions.

Regular review (at least every five years) of the guidance should be carried out by SERC with detailed consultation with members of the panel, relevant statutory agencies and appropriate species, habitat and earth science specialists. The guidance should be endorsed by the steering group (The Somerset Biodiversity Steering Group) prior to publication.

2.14 Review of Existing LWS boundaries and selection criteria

It is not proposed to automatically re-evaluate all existing sites against the criteria below. Existing sites will only be amended if new and recent evidence conclusively shows that they no longer meet any criteria and in line with the procedures above.

It is hoped that funding will be available for systematically surveying for LWS and re-surveying old LWS to ensure that all substantive sites for wildlife are identified as LWS. If available survey data is 'recent', there may be no need to re-survey.

Recent means 20 years old or less for woodland and 10 years old for non-woodland habitats, provided up-to-date aerial photos corroborate the continued presence of the habitat and 5 years where up-to-date aerial photos are less conclusive. i.e. For woodlands in the year 2010 31st December 1989 should be regarded as the cut-off point, in 2011 use 31st December 1990 etc.

Section 2:

3. Local Wildlife Site Criteria

3.1 Introduction

Following the process detailed in Section 1 any site that meets one or more of the criteria detailed below should be designated as a 'Local Wildlife Site'. A further set of criteria with slightly lower thresholds should be applied within Key Urban Areas (KUA).

Lower thresholds for habitat, species and Network LWSs can be applied within and immediately around larger urban areas in Somerset. This is because even small patches of suitable habitat can provide critically important areas for biodiversity They may be used for commuting and feeding e.g. by bats roosting in urban areas, may support Somerset LBAP priority species and may be key areas for urban populations to experience and appreciate wildlife. (Refer to Figure 1 for boundaries of key urban areas)

The Network LWS will include only those sites that do not meet other criteria.

Gardens will not *normally* be identified as LWS through species criteria, although there may be exceptions to this. However, where gardens contain patches of semi-natural habitat of 0.25 Ha or more, they may be evaluated against LWS criteria. (This applies throughout Somerset).

Table 2 Summary of the types of LWSs in Somerset

	Higher Threshold	**Lower Threshold**
Habitat Criteria	Applies to whole of Somerset (refer to 3.2)	Key Urban Areas only (refer to 4)
Species Criteria	Applies to whole of Somerset (refer to 5)	Key Urban Areas only (refer to 6)
Network Criteria	Applies to whole of Somerset but identification of a comprehensive suite will not be prioritised (refer to 7)	Key Urban Areas only (refer to 0) comprehensive application ideal.

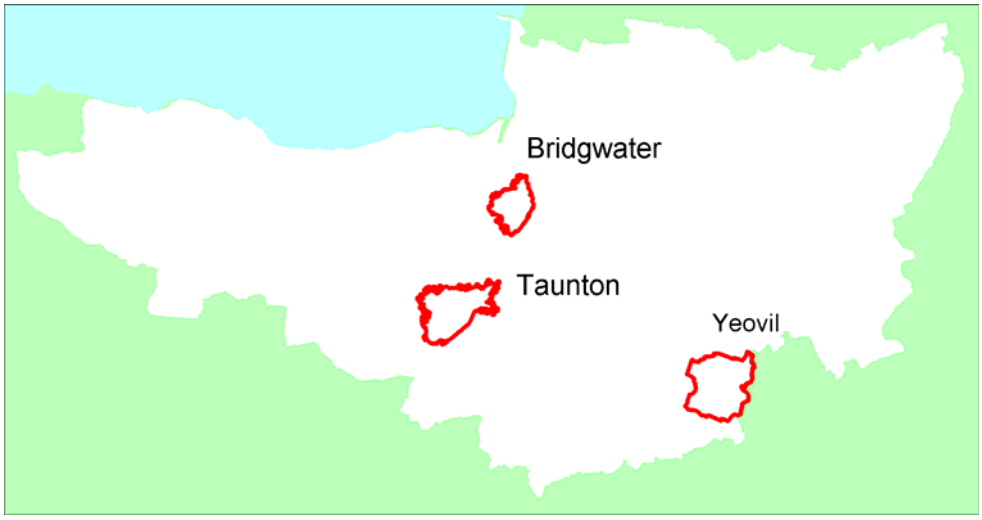

Figure 1 Map showing boundaries of Key Urban Areas (KUA) in Somerset

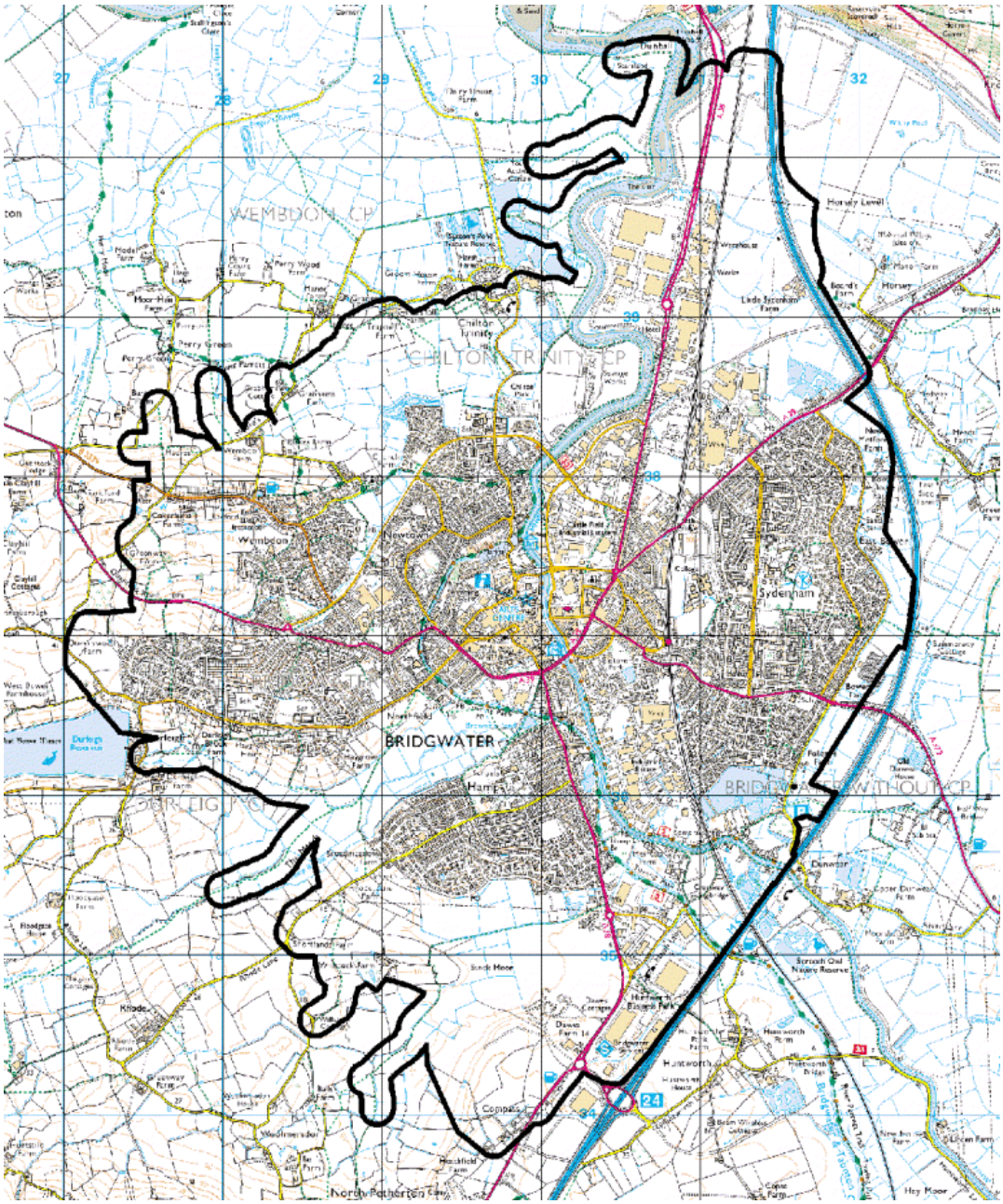

Figure 2 Detailed boundary for Bridgwater Key Urban Area (KUA)

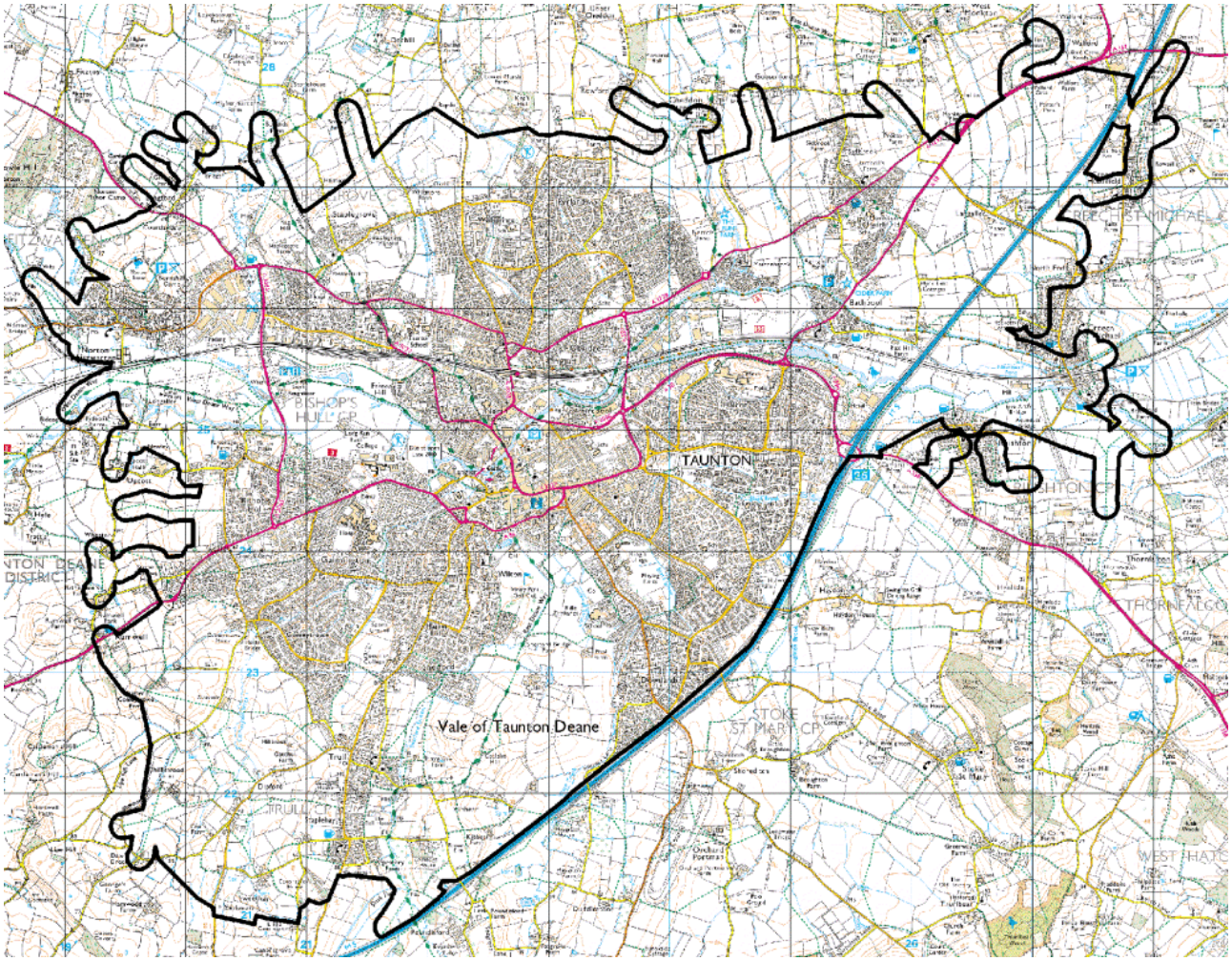

Figure 3 Detailed boundary for Taunton Deane Key Urban Area (KUA)

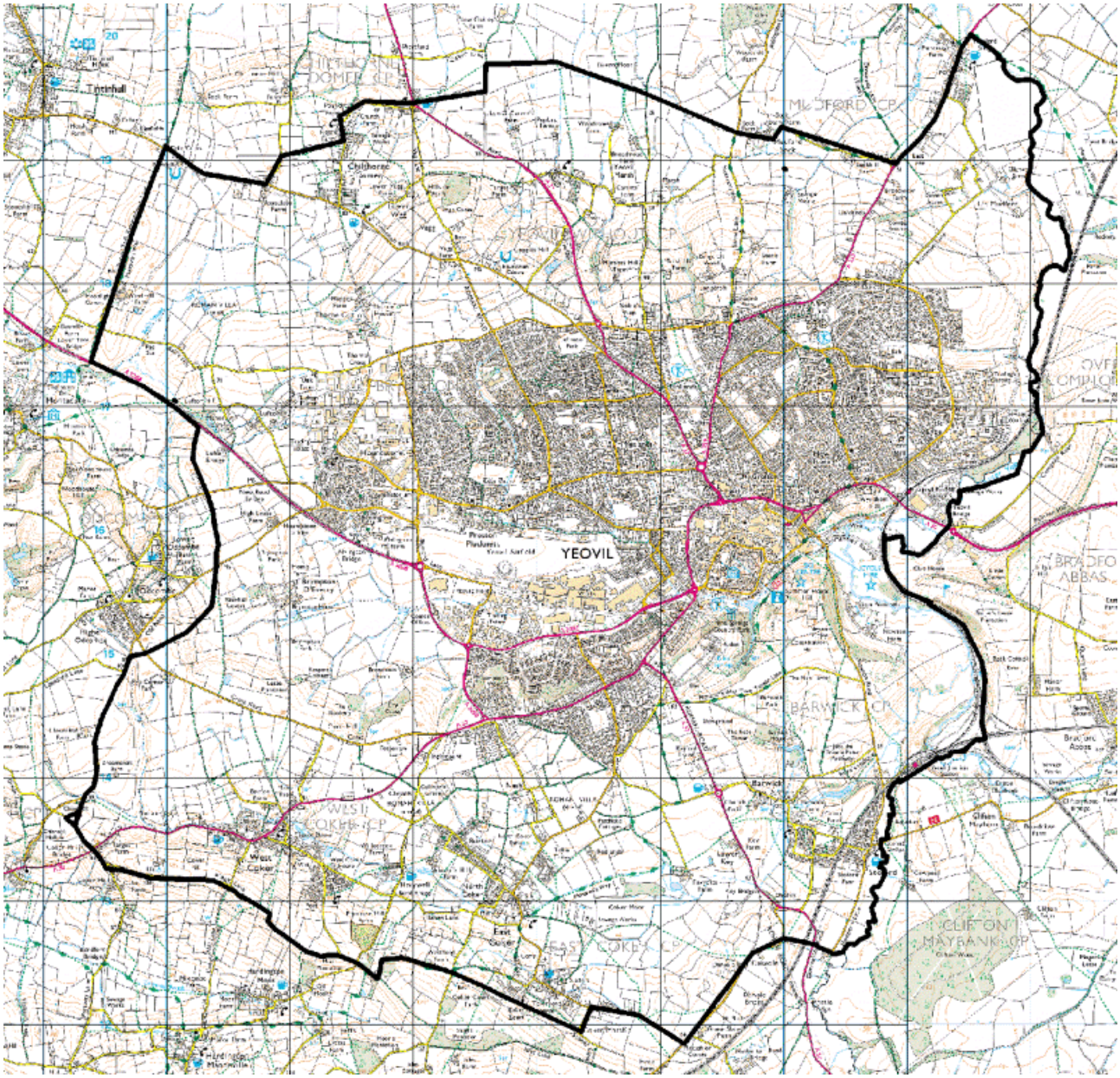

Figure 4 Detailed boundary for Yeovil Key Urban Area (KUA).

3.2 How to apply the habitat criteria

3.2.1 Size Thresholds

Throughout Somerset, the presence of a singles UK BAP Priority Habitat (PHT) covering an area greater than 0.5 ha or a mosaic of one or more PHT covering a total area of greater than 0.5 ha qualifies a site as LWS. Some PHTs are typically very small in extent and often smaller than the thresholds above. Examples include Fens and Ponds. In such cases there is no lower size threshold for LWSs

3.2.2 Relation to UK BAP Priority Habitat

As stated in subsection 1.7, exceptions to this are Coastal and Floodplain Grassland (CFPGM), Hedgerows and Lowland Mixed Deciduous Woodland (LMDW). CFPGM is excluded because it is defined using non-biotic criteria. CFPGM can include areas which meet other PHTs definitions and these areas will be identified as LWSs. The definition of PHT hedge is so low (any hedgerow that predominantly comprises native species) that almost all hedgerows in Somerset are PHT. LMDW has an extremely broad definition, except in Key Urban Areas only LMDW which meets other woodland criteria will be identified using habitat criteria although many will qualify as part of Network LWSs.

Full descriptions of all UK BAP Priority Habitats (BRIG, 2008) can be found via the UK BAP website www.ukbap.org.uk.

Only those UK BAP Priority Habitats known to definitely **not** occur in Somerset have been excluded from these criteria. Those where presence in the county is uncertain have been retained to cover the possibility of their future discovery

3.2.3 Habitat Quality Thresholds

Priority Habitat Type (PHT) definitions are sometimes rather vague. This can make it difficult to decide if a particular area meets a PHT definition. Correspondences between the various National Vegetation Classification (NVC) communities (Rodwell, 1991-2000) and UKBAP Priority Habitats have been worked out by SERC, as part of the Integrated Habitat System (IHS).

(Refer to Appendix A for correspondence between NVC types and UKBAP Priority habitat).

Open ground habitats such as grasslands and mires need to be shown to be a reasonable fit to a relevant NVC community to qualify for selection.

For objectivity it is useful to use a computer program such as Tablefit, MAVIS or MATCH to obtain a numerical fit to NVC type. A plant community can be considered to be PHT:

Where the 'best' fit is a PHT type NVC community and the next best fit is **not** a PHT type, there must be at least a 'fair' fit. In Tablefit this is 60%.

Where three out of the five best fits are all PHT types, the community can be considered to be a PHT type even if the fit is 'poor' or 'very poor'. There are many examples of plant communities that are either intermediate between two or more different NVC communities or are under-represented in the NVC although being of high value for biodiversity. In such cases they should be allocated to the PHT which best fit.

For woodlands, canopy and ground flora species usually enable easy identification of Priority habitat type.

3.3 EC Habitats Directive

6H1 All sites with one or more habitats that are listed in Annex 1 of the EC Habitats Directive (1992)

(Refer to Appendix B for full list). Size limits will be applied as in the relevant habitat criteria.

3.4 Woodland

3.4.1 Woodland UK BAP Priority Habitats

All stands of UK BAP semi-natural woodland that meet relevant size criteria qualify as LWS, either in the habitat criteria below or as a 'Network' LWS (refer to subsections 7 and 0). Semi-natural woodland is defined as all woodland stands which do not obviously originate from planting, the distribution of species generally reflecting natural variations in site and soil. In these criteria, semi-natural woodlands are also taken to include woods where true semi-natural stands have been slightly modified by planting, e.g. mixed coppice containing <20% of conifers, and <50% non-native broadleaved species e.g. sweet chestnut, sycamore etc. The definition also includes mature plantations of native species which have attained semi-natural characteristics.

6H2.1 Wet woodland (UK BAP Priority Habitat)

6H2.2 Upland oak wood (UK BAP Priority Habitat)

The UK BAP PHT definitions tend not to have a simple altitudinal definition of 'upland'. In a Somerset context, only habitats where the majority of its extent is above 250 masl and is unenclosed should be considered as upland.

6H2.3 Lowland Beech and Yew Woodland (UK BAP Priority Habitat)

Only native in north east of county.

6H2.4 Upland Mixed Ashwood (UK BAP Priority Habitat)

The UK BAP PHT definitions tend not to have a simple altitudinal definition of 'upland'. In a Somerset context, only habitats where the majority of its extent is above 250 masl and is unenclosed should be considered as upland

6H2.5 Traditional Orchards (UK BAP Priority Habitat)

Grass under the trees may meet grassland criteria if canopy cover is less than 20%. Where there is a core contiguous area of orchard ≥ 0.5 ha, and this occupies at 25% of an enclosure, the entire enclosure should be identified as LWS.

If less than 25%, the LWS boundary should follow a line 20 m out from the canopy. Contiguous enclosures with orchard trees which are too few or sparse to meet the PHT criterion should be identified as part of a Network LWS. Refer to criterion **6N1.5** in subsection 7).

6H2.6 Wood-pasture and Parkland (UK BAP Priority Habitat)

This may occur in a woodland habitat where canopy density >20% but in addition, more open wood-pastures and parkland may include various scrub, heathland, improved and species-rich grassland NVC communities.

Until a final definition of this priority habitat has been developed nationally, the following rule will be used to define boundaries:

- At least 20 veteran trees
- Trees with veteran characteristics (see below) present at a minimum density of 0.2 per ha

Generally, the more of the characteristics listed below a tree has, the stronger the indication that it is a veteran:

- Girth large for the tree species concerned – refer to Countryside Survey Field Mapping Handbook, Appendix 5 (Maskell, *et al*. (2007).

- Major trunk cavities or progressive hollowing
- Naturally forming water pools
- Decay holes
- Physical damage to trunk
- Bark loss
- Large quantity of dead wood in the canopy
- Sap runs
- Crevices in the bark, under branches or on the root plate sheltered from direct rainfall
- Fungal fruiting bodies (e.g. from heart rotting species)
- High number of interdependent wildlife species
- Epiphytic plants
- An 'old' look

In addition the tree may also:

- Have a pollard form or show indications of past management
- Have a cultural/historic value
- Be in a prominent position in the landscape

The boundaries of wood pasture and parkland sites will be extended to include all trees with veteran characteristics recorded in the vicinity of the core site, to a maximum inter-tree distance of 300 metres.

Clearly, veteran trees will also occur in sites selected using other criteria e.g. woodlands, grasslands or those selected for important species. Veteran Tree Sites selected using the saproxylic invertebrate Ecological Index of Continuity (refer to **6S9.4**) need not meet the above criteria.

3.4.2 Ancient Woodlands and Plantations on Ancient Woodland Sites (PAWS)

Ancient Woodland is defined as an area that has been under more or less continuous woodland cover for at least 400 years. However, this pre-dates accurate maps. Best available mapped evidence needs to be combined with field survey to determine whether a woodland is likely to be ancient. It is possible for a woodland to meet this definition but not necessarily meet UK BAP Priority Woodland definitions. Ancient woodland indicators will only be counted if they occur in the main body of the woodland rather than on the boundaries only.

6H2.7 All extant, semi-natural, broadleaved woodland ≥ 2 ha shown as wooded on the Ancient Woodland Inventory for Somerset and/or on county Tithe maps (or comparable historical sources).

Excludes any woodland shown as plantation on the above maps.

NB The above criterion can be applied in the absence of field survey data. Where identified remotely, for example using aerial photos, it is sufficient to identify the canopy as broadleaved and semi-natural in formation.

Where recent field survey carried out between February to May inclusive has identified 4 Somerset Ancient Woodland Indicators (refer to A.1.1.1.1Appendix E), the following criteria apply:

6H2.8 Extant, broadleaved woodland ≥ 0.5 ha shown as wooded on the Ancient Woodland Inventory for Somerset and/or on county Tithe maps (or comparable historical sources). Includes any woodland shown as plantation on Tithe maps.

6H2.9 Broadleaved or mixed woodland/plantation on ancient woodland sites ≥ 2 ha and Tithe map woodland or plantation sites (currently semi-natural) ≥ 2 ha.

6H2.10 Conifer plantation ≥ 2 ha on ancient woodland or Tithe map woodland or plantation sites.

6H2.11 New broadleaved plantation or mixed woodland/plantation on ancient woodland sites between 0.5 ha to 2 ha and Tithe map woodland (still semi-natural) ≥ 2 ha.

3.4.3 Other, more recent woodland, scrub woodlands, hedges & green lanes

6H2.12 Conifer, mixed or non-native broadleaved plantations on previously open ground sites with remnant species indicating that the site was likely to have met a UK BAP priority habitat definition prior to planting.

Remnant species may be restricted to the edges, ride-sides and small open areas and adjoining areas. Historic aerial photographs might be a guide. It should be possible to restore the area to a BAP priority habitat, under ideal management, within 15 years of restoration felling. 1946 aerial photographs should be used to help distinguish appropriate site boundaries.

Here non-native broadleaved means ≥ 50% canopy are species not native in that area of the county. Includes mixed woodland stands. Predominantly native broadleaved woodlands would count as BAP priority habitat.

Sites 0.25 ha to 5 ha will be identified as part of the Network LWS.

6H2.13 Natural succession (scrub or woodland) on previously open ground sites with remnant species indicating that the site was likely to have met a UK BAP priority habitat definition prior to succession.

Remnant species may be restricted to the edges, ride-sides and small open areas. It should be possible to restore the area to a BAP priority habitat, under ideal management, within 15 years of restoration felling. 1946 aerial photos should be used to help distinguish appropriate site boundaries.

Sites 0.25 ha – 5 ha will be identified as part of the Network LWS.

6H2.14 Woodland site of ≥ 2 ha which does not occur on 19th Century Historic Maps, but which has a semi-natural canopy and meets all of the following criteria:

- A diverse and well-developed structure (i.e. ground flora / shrub layer / canopy, or ride/glade system).
- A flora which is rich in the context of the woodland community concerned, normally with a vascular plant list in excess of 80 species.
- The above features of value are present in at least 50% of the woodland area.

Not severely degraded (where "severely degraded" means that if the site management were to be immediately changed to the optimum the site would be unlikely to regain most of its previous nature conservation importance within 10 years).

NB Broadleaved woodlands with canopies of less than 50% native species may meet Network LWS criteria.

6H2.15 Sites with ≥ 2 ha of NVC community W23 (*Ulex europeaus - Rubus fruticosus* scrub).

Large blocks of species-poor scrub will not be selected in their own right. However, scrub that is species-rich or supports other species of interest (particularly lower plants, invertebrates, birds or mammals) might be considered under the species criteria. It includes:

- Scrub woodland blocks contiguous with other woodland LWS
- Dense blocks of scrub surrounded by other semi-natural habitat

NB All scrub sites should also be evaluated against species criteria. Smaller blocks of scrub (0.5 Ha and above may meet the Network LWS Criteria)

6H2.16 Green Lanes where both sides of the lane meet the Hedgerow Regulations (1997) definition of "important".
6H2.17 Woodlands within Exmoor National Park that are defined as Section 3 Woodlands on the National Park Conservation Map. Unless field survey has confirmed they do not meet any other LWS criteria. Also excludes those that were selected for Section 3 status on landscape grounds alone.

3.5 Grasslands

3.5.1 UK BAP Grasslands

6H3.1 Lowland calcareous grassland (UK BAP Priority Habitat).
6H3.2 Lowland dry acid grassland (UK BAP Priority Habitat).
6H3.3 Lowland Meadows (UK BAP Priority Habitat).

3.5.2 Other Grassland Habitats

1. For all the above grassland criteria, the following should be noted:
   - Most marshy grassland will be referred to in the Mires section of the criteria. However, NVC community MG8 *Cynosurus cristatus-Caltha palustris* grassland should be included here.
   - Fen meadows and rush-pasture are referred to in the Mires section.
   - If 25% or more of a field area meets the above criteria then the whole field will be selected as LWS.
2. Again, for all of the above grassland criteria, some sites may be a complex mosaic of calcareous, neutral, acid and / or rush pasture or intermediate between these grassland types.

3.6 Heathland

In Somerset, Heathland is defined by a >25% cover of ericaceous plant species and/or Western Gorse.

6H4.1 Upland heathland (UK BAP Priority Habitat). The UK BAP PHT definitions tend not to have a simple altitudinal definition of 'upland'. In a Somerset Context, only habitats where the majority of its extent is above 250 masl and is unenclosed should be considered as upland.
6H4.2 Lowland heathland (UK BAP Priority Habitat).

3.7 Freshwater

Where required, invertebrate sampling at freshwater sites can include both aerial and terrestrial trapping of species associated with water for at least part of their lifecycle.

3.7.1 Standing water (lakes, ponds, gravel pits, reservoirs and canals)

6H5.1 Sites meeting the following criteria: • Above average number of submerged, floating and emergent plant species for a community type (refer to SSSI Guidelines (NCC, 1989) Tables 12-13, pp 125-127). • Contains species that indicate that the site is likely to fall in this category.
6H5.2 Eutrophic standing waters ≥ 2 ha (UK BAP Priority Habitat).
6H5.3 Permanent or seasonal ponds up to 2 ha meeting at least one of the following criteria

(UK BAP Priority Habitat).

- Habitats of international importance – Those meeting criteria under Annex I of the EC Habitats Directive.
- Species of high conservation importance – Ponds supporting Red Data Book species; UK BAP species; species fully protected under the Wildlife and Countryside Act Schedule 5 and 8; Habitats Directive Annex II species; a Nationally Scarce wetland plant species; or three Nationally Scarce aquatic invertebrate species.
- Exceptional assemblages of key biotic groups – Ponds supporting exceptional populations or numbers of key species. Based on (i) criteria specified in guidelines for the selection of biological SSSIs (currently amphibians and dragonflies only), and (ii) exceptionally rich sites for plants or invertebrates (i.e. supporting ≥30 wetland plant species or ≥50 aquatic macro invertebrate species).
- Ponds of high ecological quality – Ponds classified in the top Predictive System for Multimetric (PSYM) category ("high") for ecological quality (i.e. having PSYM score ≥ 75%). (PCT, 2002).
- Other important ponds – Individual ponds or groups of ponds with a limited geographic distribution recognised as important because of their age, rarity of type or landscape context e.g. duneslack ponds.

6H5.4 Ponds scoring over 65% using the PSYM methodology.

(Refer to (PCT, 2002)).

6H5.5 Marl water bodies (alkalinity >100 mg/l CaCO3).

These are ponds with extremely high levels of dissolved calcium such as occur on spring lines in e.g. the Polden Hills. They are often a clear blue in colour and tufa mounds may form in the base of the pond.

3.7.2 Lowland ditch systems

If selected, ditch LWS boundaries should include an 8m buffer on either side of the waterway and extend to the length of ditch from which sample was taken. A single ditch extends from one ditch intersection to the next. Where the water is flowing, boundaries should also extend to the nearest confluence in either direction**.**

If, in a resurvey, an existing LWS ditch / rhyne fails to meet the LWS criteria, but has had its vegetation recently cleared, its LWS status will not be removed unless other serious degradation of the water course has taken place.

6H5.6.1 Complex interconnected ditch systems meeting the following criteria:

- > 1 km. in total ditch length
- And at least 25% of the wet ditches have ≥10 submerged / floating / emergent / wet bank species per 20 m length (at least one 20 m length per field side sampled)
- Or at least 50% of ditches are 'species rich' with at least 7 species from the list in Appendix F per ditch side. Improved grasslands/arable land between ditches will be included within sites as a buffer zone. Exclude completely shaded ditches.

Contiguous fields that meet either the species-rich semi-improved grassland definition (refer to Appendix I) or habitat for breeding waders (lowland) or habitat for wintering waders and wildfowl (G12 and G13 in the FEP Features Manual (Natural England, 2008). Refer to Appendix F for a summary definition of these habitats for the purposes of LWS evaluation.

6H5.6.2 Any single ditch section with a minimum of 15 (brackish ditch 10) submerged/floating/ emergent/wet bank species recorded from a 20 m sample.

Contiguous ditches with at least 10 (brackish ditch 6) of the above species should be included in the LWS boundary.

3.7.3 Flowing waters (rivers and streams)

This is a very varied habitat type, encompassing all natural and near-natural running waters in the UK (i.e. with features and processes that resemble those in 'natural' systems). These range from torrential mountain streams to meandering lowland rivers.

Stream boundaries should extend to the nearest confluence in either direction. In cross boundary catchments, neighbouring counties should be consulted.

6H5.7 Rivers meeting the following criteria are all considered to meet the draft definition for this UK BAP Priority Habitat and could qualify as LWS:

- Headwaters
- Chalk Rivers
- Active shingle rivers
- Geological SSSI designated for fluvial geomorphology.
- Sites identified for fluvial geomorphology through the Geological Conservation Review (GCR).
- Presence of UK BAP Priority or Annex II Habitats Directive species.
- Riverine water bodies of high hydromorphological / ecological status. The Environment Agency and the Scottish Environmental Protection Agency are working on criteria and rules to identify such water bodies, which will be added to the UK BAP criteria when they are available.

Rivers with heavily degraded reaches and which have little scope for improvement, for example because they are heavily canalised, will not be considered for inclusion as BAP priority habitat. Canals and ditches are also excluded from this designation.

6H5.8 The best example in the county of a whole river (from source to saline limit) of each river type.

This habitat type is not part of the latest UK BAP definitions (BRIG, 2008). However, it has been retained here because the latest definitions are still in draft form and do not sufficiently cover areas believed to be of importance in Somerset.

Although various classifications and typologies for rivers exist, none is currently considered adequate for identifying a discrete but comprehensive series of specific, priority habitat types. Consequently a broad 'rivers' priority habitat has been adopted by the UK BAP, which includes the existing priority habitat, chalk rivers. Work to refine the criteria to identify the priority habitat and to map relevant features is on-going and in Jan 2010 they may change as a result.

6H5.9 Active shingle rivers (headwaters) (UK BAP Priority Habitat).

6H5.10 Active shingle rivers (non-headwaters) (UK BAP Priority Habitat).

6H5.11 Any stretch of running water where standard RIVPACS sampling gives an assessment score of the perceived Water Framework Directive ecological status class of 1, 2, or 3.

3.8 Tufa Springs and streams

6H6.1 Tufa spring with actively building tufa mound and/or any associated mire or flush community. Excludes seriously degraded sites. There is no lower size limit for this habitat type.
6H6.2 Sections of streams with significant, solid, tufa deposits. These often coincide with areas of turbulence in running water such as waterfalls.

3.9 Mires & Swamps (including bogs, fens, swamps and most marshy grasslands)

Here, the term mire is used in a broad sense (for example, as used in NVC and Phase 1 classification). It includes blanket bog, raised bog, modified bog (cut-over raised bog sites should only be selected where the hydrology is linked with adjacent wetland LWS/SSSIs), flushes, springs, fens, valley mires, basin mires and flood-plain mires. It includes all of the mire, swamp and tall-herb fen NVC communities.

6H7.1 Blanket bog (UK BAP Priority Habitat).
6H7.2 Lowland raised bog (UK BAP Priority Habitat).
6H7.3 Upland flushes, fens and swamps (UK BAP Priority Habitat). There is no lower size limit for this habitat type. The UK BAP PHT definitions tend not to have a simple altitudinal definition of 'upland'. In a Somerset Context, only habitats where the majority of its extent is above 250 masl and is unenclosed should be considered as upland. This PHT may not occur in Somerset.
6H7.4 Reedbeds (UK BAP Priority Habitat).
6H7.5 Lowland Fens (UK BAP Priority Habitat). There is no lower size limit for this habitat type.
6H7.6 Purple moor grass and rush pastures (UK BAP Priority Habitat).
6H7.7 All swamp ≥ 0.5 ha. Here Swamp refers to any plant community, other than reed bed which fits NVC types S1 to S28), excluding S24 *Phragmites australis-Peucedanum palustris* tall-herb fen.
6H7.8 All aquatic marginal vegetation communities ≥ 0.25 ha.

3.10 Upland

NB Sites selected for upland heath, mire, grassland, scrub and woodland will be selected under other relevant habitat criteria irrespective of altitude.

6H8.1 Sites containing the following NVC community: • U19 (*Thelypteris limbosperma - Blechnum spicant* community).
6H8.2 Inland rock outcrop and scree habitats (UK BAP Priority Habitat).
6H8.3 Bracken communities (NVC U20) with a diverse vernal flora Particularly important examples of vernal plants are the Viola species, which are crucial for a number of important butterfly species. Lower altitude examples of NVC U20 *Pteridium aquilinum-Galium saxatile* community will also be included here.

6H8.4 All Section 3 Moor and Heath within the Exmoor National Park defined on the Section 3 Conservation Map (Wildlife and Countryside (Amendment) Act 1985). Unless field survey shows no other LWS criteria.

3.11 Coastal (including upper intertidal)

6H9.1 Coastal salt marshes (UK BAP Priority Habitat). There is no lower size limit for this habitat type. Boundaries are defined by the extent of the habitat.
6H9.2 Coastal sand dunes (UK BAP Priority Habitat) Excludes severely degraded sites. There is no lower size limit for this habitat type. Boundaries are defined by the extent of supralittoral sandy deposits.
6H9.3 Coastal vegetated shingle (UK BAP Priority Habitat) There is no lower size limit for this habitat type. It is a mosaic of vegetated and non-vegetated shingle that varies over time within a suitable area. Boundaries are therefore defined by the extent of shingle that *could* be vegetated.
6H9.4 Maritime cliff and slopes (UK BAP Priority Habitat) Excludes developed and severely degraded sites.
6H9.5 All Section 3 Cliff and Foreshore within the Exmoor National Park defined on the Section 3 Conservation Map (Wildlife and Countryside (Amendment) Act 1985).

NB Coastal and Floodplain Grazing Marsh (UK BAP Priority Habitat) **does not** fit the LWS criteria as it is defined by physical characteristics such as flooding frequency rather than biological features.

6H9.6 Vegetated maritime cliff and slopes (UK BAP Priority Habitat).
6H9.7 Sabellaria alveolata reefs (UK BAP Priority Habitat).
6H9.8 Seagrass beds (Zostera noltii) (UK BAP Priority Habitat). It is uncertain whether this habitat exists in Somerset.
6H9.9 Intertidal mudflats (UK BAP Priority Habitat).
6H9.10 Sheltered muddy gravels (UK BAP Priority Habitat).
6H9.11 Estuarine Rocky Habitats (UK BAP Priority Habitat.
6H9.12 File Shell beds (UK BAP Priority Habitat).
6H9.13 Intertidal underboulder communities (UK BAP Priority Habitat).
6H9.14 Peat and clay exposures with Piddocks (UK BAP Priority Habitat).

3.12 Other Marine and Intertidal

Criteria for the evaluation of the marine (i.e. sub-tidal) environment off the Somerset coast will be developed in the future when sufficient survey data is available. As a result, they are not covered in the manual at this time.

6H10.1 *Sabellaria spinulosa* reefs (UK BAP Priority Habitat).
6H10.2 Blue Mussel Beds on Sediment (UK BAP Priority Habitat).
6H10.3 Horse Mussel beds (UK BAP Priority Habitat).
6H10.4 Mud habitats in deep water (UK BAP Priority Habitat).

6H10.5 Subtidal sands and gravels (UK BAP Priority Habitat).
6H10.6 Seagrass beds (*Zostera marina* & *Z. angustifolia*) (UK BAP Priority Habitat).
6H10.7 Saline Lagoons (UK BAP Priority Habitat).

3.13 Artificial Habitats

All types of artificial habitat must qualify under other habitat or species criteria.

6H11.1 Open Mosaic Habitats on Previously Developed Land (UK BAP Priority Habitat). Essentially brownfield sites meeting the criteria listed.
6H11.2 Calaminarian grasslands (UK BAP Priority Habitat). There is no lower size limit for this habitat type. Boundaries are defined by the extent of plants adapted to high levels of heavy metals.

3.14 Arable / Ruderal Species Communities

6H12.1 Arable field margins (UK BAP Priority Habitat) As defined in the UK Biodiversity Action Plan (BRIG, 2008). Where only the field margins support the relevant species, only the margins will be identified as LWS. If they extend into the main body of the field, the whole of it will be identified as meeting this criterion.
6H12.2 Margins, whole fields or other sites meeting the Plantlife Criteria for Key sites of at least County importance. (Refer to Appendix J). Where soil type is uncertain the lowest threshold (a score of 20) should apply. There is no fixed lower size limit to sites selected using this criterion.
6H12.3 Arable field margins supporting at least one species from "A list of notable invertebrates associated with cereal field margins" Buglife (2009). (Refer to Appendix D).

3.15 Mosaic Sites

6H13.1 Sites with 2 or more semi-natural habitats in mosaic. Includes those where individually one or more of the habitats may fail to meet LWS criteria with respect to size but are ≥ 0.5 ha in total.

4. Habitat Criteria in Key Urban Areas

KUAH1.1 Species-rich semi-improved grassland - areas of ≥ 0.25 ha grassland which meet the definition for Species-rich semi-improved grassland in Section 3.25.1. (Refer also to Appendix K).
KUAH1.2 All water courses plus their bankside and marginal vegetation up to a distance of 8m, excluding buildings.
KUAH1.3 Scrub/Woodland. All areas of scrub and woodland ≥ 0.25 Ha.
KUAH1.4 All areas of wetland ≥ 0.25 ha. This includes any areas of species-rich or species-poor rush pasture and any stands of swamp species including Reed Beds.
KUAH1.5 All standing water including ditches, including any marginal vegetation (not including ponds in private gardens) unless identified as LWS using other criteria.

KUAH1.6 All Hedgerows >30 years old, at least 20 m long that meet the important Hedgerow Regulations Criteria.

5. Species Criteria applying to all areas of Somerset

The following species criteria may be applied throughout Somerset. A lower threshold may be applied in defined Key Urban Areas (refer to Figure 1).

- The boundaries of sites selected as Local Wildlife Sites on species grounds will vary according to the species' typical ranges and habitat requirements. Site boundaries will be determined by reference to habitats and in the absence of semi-natural habitat will be determined with reference to the autecology and gene ecology of the species concerned.
- When deciding whether the criteria are met the maximum distance between relevant records is 300 m. This note applies to all criteria using notable species unless otherwise stated.
- For all references to RDB, IUCN red list, and nationally notable status in these criteria the current JNCC list of statuses will be used (JNCC, 2010).
- 'Recent' records are normally less than 15 years old unless otherwise stated
- Somerset Notable Species are defined in the Somerset Notables Dictionary 5th Edition (Large, 2000).
- The list of Somerset LBAP priority species (SERC, 2009) is available from SERC.

5.1 Species with European Status

6S1 Sites with recent records of one or more species listed in Annex 2 of the EC Habitats Directive, 1992.
(Refer to Appendix C of this handbook).
With the exception of Otters and Bats for which more specific criteria apply.

5.2 Vascular Plants

6S2.1 All sites with 1 or more species with an IUCN threat category of at least 'Threatened'.
(Refer to IUCN (2001)).

6S2.2 Sites with two or more 'rare' Somerset notable species; three or more 'indicator' Somerset Notable Species, or one 'rare' and two 'indicator' species
(Refer to Somerset Notables Dictionary Fifth Edition (Large, 2000)).

6S2.3 Water bodies with > or = 4 Potamogeton species.

5.3 Non-Vascular Plants (lichens, bryophytes, fungi, charophytes)

6S3.1 Sites with 1 or more RDB, nationally rare, nationally scarce species.

6S3.2 Sites with a CHEGs (*Clitocybe, Hygrocybe, Entoloma, Geoglossum* spp.) score of at least 3 in a single visit or at least 4 in total.
(Refer to Wildlife Sites Guidance Wales (WAP, 2005)).

6S3.3 Site with at least 6 post 1980 records from the Revised Index of Ecological Continuity (RIEC) (Appendix L) or with at 30 post 1980 records from the New Index of Ecological Continuity (NIEC) (Appendix M) or with at least 10 species from the EUOCIEC (Eu-Oceanic Calcifuge Index of Ecological Continuity) (Coppins and Coppins, 2002).

NB JNCC are currently developing methods using Ellenberg Nitrogen Values for Lichens and Bryophytes–to assess site sensitivity to aerial nitrogen. As these methods become available, criteria for selection of LWSs for non-vascular plants based on Ellenberg Scores will be developed. Lichens are very sensitive indicators of environmental change and many require low aerial nitrogen levels. Refer to Sutton *et al*. (2004) for summary of development of this approach.

5.4 Mammals

Unless otherwise stated recent records of 10 years old or less will be used to identify LWSs using the species criteria.

The Red Data Book for Mammals (Morris, 1993) is not used here for evaluation because of the inconsistency of its criteria compared with official red data books.

Badger setts will be recorded separately from the Local Wildlife Site system. The presence of a badger sett in itself will not justify Local Wildlife Site status.

Water voles are widespread and abundant in many areas in Somerset and both they and their places of rest have full legal protection. Individual populations tend not to occupy exactly the same area for a long stretch of time, but tend to 'twinkle on and off like lights'. For these reasons, new LWSs will not be identified using Water Vole records. This will be kept under review and consideration will be given to future identification of Network LWS using recent Watervole records.

5.5 Otter

6S4.1 All confirmed recent otter holt and lying-up sites.

Water courses in *very regular* recent use including all bankside, wetland, scrub and woodland. Almost all water courses in Somerset are visited at least occasionally by Otters.

This criterion is designed to identify stretches of rivers and streams which are used on the most frequent basis.

Sites and boundaries to be determined through regular checks by expert opinion. It may be possible to develop thresholds to determine this.

5.6 Bats

6S4.2.1 All known recent Greater and Lesser Horseshoe Bat summer roosts with more than 20 individuals, together with contiguous semi-natural habitat including hedgerows up to 250 m.

Network features such as hedgerows and streams should be included within the site boundary.

6S4.2.2 All winter roosts where 5+ Lesser Horseshoe Bats and any Greater Horseshoe Bats have been recently recorded, together with contiguous semi-natural habitat including hedgerows up to 250 m.

Network features such as hedgerows and streams should be included within the site boundary.

6S4.2.3 All summer roosts of an important size* of the following bat species, Natterer's, Whiskered, Brandt's, Barbastelle, Noctule and Leisler's, together with contiguous commuting/feeding routes or roost sites semi-natural habitat up to 800 m.

Network features such as hedgerows and streams should be included within the site boundary.

6S4.2.4 All summer roosts of an important size* of the following bat species, Bechstein's, Daubenton's, Pipistrelle, Brown and Grey Long-Eared, together with contiguous semi-natural habitat up to 350 m.

Network features such as hedgerows and streams should be included within the site boundary.

6S4.2.5 Winter roosts of above species with >or= 2 of the above species or more than 10 animals of the above species occupying roost at any time together with contiguous semi-natural habitat.

Network features such as hedgerows and streams should be included within the site boundary to a distance of 250 m.

6S4.2.6 All known recent summer, winter, breeding and maternity roosts of an important size* of all bats species together with contiguous semi-natural habitat.

Network features such as hedgerows and streams should be included within the site boundary to a distance of 200 m.

NB Refer to Appendix N for table taken from Econet report for populations of European importance for all Somerset species.

5.7 Dormouse

6S4.3 All sites where dormice have been recently recorded.

Contiguous, continuous, woody linear features up to 500 m should be identified as part of a Network LWS.

Recent Dormice records are no more than 15 years in this instance.

5.8 Harvest Mouse

6S4.4 All sites with recent records.

5.9 Water Shrew

6S4.5 All sites with evidence of recent live water shrew.

5.10 Birds

For birds, "regularly" will be interpreted as at least 3 years in 5. If available data is insufficiently frequent to decide this, judgment of probabilities will be used.

6S5.1 Sites with > 0.5% of total British breeding population of any native species.

(Refer to 'The New Atlas of Breeding Birds in Great Britain and Ireland, 1988-1991' (Gibbons *et al.*, 1993)).

6S5.2 Sites which regularly have held, recently, more than 0.25% of total British non-breeding population of a species.

(Refer to 'The Atlas of Wintering Birds' (Lack, 1986)).

6S5.3 Sites which regularly support, recently, bird species of European importance. (Annex 1 of Birds Directive).
(Refer to Appendix G of this handbook).

5.11 Reptiles

6S6.1 Sites with recent records of ≥ 3 reptile species.

5.12 Amphibians

6S7.1 Sites with an assemblage score of ≥ 3
(Refer to Appendix H).

6S7.2 Sites where there is a 'good' population of Great Crested Newt, together with a 200 m boundary of semi-natural habitat.
Key network features up to 500 m may also be included where they connect metasites.

6S7.3 Sites where Great Crested Newt is recently recorded as present in a complex of ≥ 3 ponds within 500 m of each other together with contiguous semi-natural habitat.

6S7.4 Any ponds with recent Great Crested Newt records (As the presence of an EU Annex 2 species makes the pond a UK BAP priority habitat).
(Refer to Appendix C).

5.13 Fish

6S8.1 Sites with recent records of one or more species listed on Annex 2 of the EC Habitats Directive.
A site for fish is defined as 200 m upstream and 200 m downstream of the records.
(Refer to Appendix C).

5.14 Invertebrates

6S9.1 Sites with a recently recorded RDB species.

6S9.2 Sites containing White Clawed Crayfish.
Here a site is defined as up to two confluences away up stream and one confluence downstream.
All watercourses upstream of White Clawed Crayfish records should be identified as a Network LWS.

6S9.3 Sites containing ≥ 2 nationally scarce, or ≥ 3 Somerset Notable species or Somerset Priority species.

6S9.4 Sites with veteran trees with a saproxylic invertebrate ecological index of continuity >15
Refer to Harding and Alexander (1994) 'The use of saproxylic invertebrates in the selection and conservation of areas of relic forest in pasture-woodland'.

6S9.5 Any standing water or ditch sample with either at least 10 different invertebrate orders or at least 35 aquatic species.
Such a sample can include aerial and terrestrial trapping of species associated with water for at least part of their life cycle.
A specific running water criterion will be developed in the near future after evaluation of Somerset RIVPAC data from the Environment Agency.

NB While 15 years is normally the definition of a recent record, for all invertebrate criteria, older records will be accepted if the record is reliable, extinction at that site is not confirmed and the relevant habitat is still extant at that site. This is to reflect the relative infrequency of invertebrate recording).

For all invertebrate criteria, Invertebrate records are only taken into account if the recording technique used was site specific (i.e. did not attract invertebrates from a large surrounding geographical area).

5.15 Mixed Taxonomic Group Criteria

6S10.1 Sections of rivers/streams/ditches with 2 or more confirmed recent (within the last 5 years) records of the following species: • Kingfisher • Stoneflies (unless known to be *Nemouridae*) • Otter • Water Vole • Dipper
6S10.2 Sites with recent records of SLBAP Priority Species or Somerset Notable species from three or more taxonomic groups.

NB For the above criterion the following should be noted:

- Records should all fall between confluences or be less than 300 m apart.
- Where sites have been defined on the basis of indicator species, the lengths of river sections to be included within the boundaries will vary according to the species.
- Upstream sections from the records will be included to a greater extent than downstream sections

6. Species Criteria in Key Urban Areas

These criteria should not normally be applied to areas within private gardens. Within gardens records of Somerset LBAP priority species will be flagged up for consideration in the planning process through planning searches once all Local Authorities in Somerset are supplying SERC with digital boundaries of all planning applications.

6.1 Vascular Plants, non-Vascular Plants and invertebrates

6KUAS1.1 Sites with one or more 'rare' Somerset notable vascular plant species, two 'indicator' Somerset Notable vascular plant species or one (at least IUCN 'near threatened') Somerset LBAP vascular plant priority species.
6KUAS1.2 Sites with one or more Somerset notable non-vascular plant species, or Somerset LBAP non-vascular plant priority species.
6KUAS1.3 Sites with one or more Somerset notable invertebrate species or Somerset LBAP invertebrate priority species.

6.2 Mammals, reptiles and amphibians and fish

These taxa should mostly be taken into account though identification of their habitat using habitat criteria and network criteria.

6.3 Birds

6KUAS1.6 Sites with three or more notable species from two or more taxonomic groups.
6KUAS1.4 All recently used breeding sites of Somerset Category B or D notable species (breeding or declining breeder notables).
6KUAS1.5 Sites which regularly have held 3 or more Somerset category C notable species (wintering notables). (Refer to Gibbons, *et al*. (1993)).

6.4 Mixed Taxonomic Groups

6KUAS1.6 Sites with three or more notable species from two or more taxonomic groups.

7. Network LWS Criteria applying to all areas of Somerset

At present there will be no systematic attempt to comprehensively identify all Network LWSs. Further network LWS criteria may be developed in the future.

Outside Key Urban Areas, all areas meeting the Network LWS criteria will be grouped into a single site for each Parish.

6N1.1 Any mapped BAP Priority Habitat (Excluding CFPGM but including LMDW) 0.25 ha to 0.5 ha. Except habitat criteria have lower size threshold (e.g. fens and ponds). Smaller areas may be identified if contiguous with SSSIs.
6N1.2 Green lanes with double hedgerows, where identified.
6N1.3 All watercourses upstream of sites with White Clawed Crayfish. All current records in watercourses are on or within a few kilometres of headwaters.
6N1.4 Rides in woodlands where the woodlands themselves do not meet habitat criteria but the ride supports species-rich plant communities, species indicative of remnant PHT or there is evidence of its use as a commuting link by bats. The ride must exceed 1m in width over most of its length. In these cases only the ride itself would be designated as a Network LWS.
6N1.5 Enclosures with orchard trees which are too few or sparse to meet the PHT criterion where they are contiguous with Orchard PHT LWSs.
6N1.6 Natural succession (scrub or woodland) on previously open ground sites 0.25 ha to 5 ha with remnant species indicating that the site was likely to have met a UK BAP priority habitat definition prior to succession.
6N1.7 Conifer, mixed or non-native broadleaved plantations on previously open ground sites at least 0.25 ha, (but too small or otherwise not meeting habitat LWS criteria) with remnant species indicating that the site was likely to have met a UK BAP priority habitat definition prior to planting. Remnant species may be restricted to the edges, ride-sides and small open areas. It should be possible to restore the area to a BAP priority habitat, under ideal management, within 15 years of restoration felling. 1946 aerial photographs should be used to help distinguish appropriate site boundaries. Here non-native broadleaved means ≥ 50% canopy are species not native in that area of the county.

6N1.8 Species-rich semi-improved grassland contiguous with SSSIs or NNRs.

Further contiguous areas can also be included where the majority of the enclosure lies within 250 m.

Sites must meet the criteria detailed below.

Refer to Appendix K for full definition of species-rich semi-improved grassland.)

NB In time this network criterion is likely to be developed to buffer and link LWSs meeting habitat and species criteria where they occur in Rebuilding Biodiversity Strategic Nature Areas.

Table 3 Summary of Species-rich Semi-improved grassland features

Soil and topography	Wide range of soil conditions often derived from above habitats by a degree of agricultural improvement. Moderately species rich, with typically 8–15 species/m^2. Total cover of wildflowers and sedges usually less than 30%, excluding white clover, creeping buttercup and injurious weeds. Rye-grass cover generally less than 25%.	
Wildflower indicator species	**Yarrow** *Achillea millefolium* **Cuckooflower** *Cardamine pratensis* **Common Cat's-ear** *Hypochaeris radicata* **Autumn Hawkbit** *Leontodon autumnalis* **Field wood-rush** *Luzula campestris* **Black Medick** *Medicago lupulina* **Ribwort Plantain** *Plantago lanceolata* **Self-heal** *Prunella vulgaris*	**Meadow Buttercup** *Ranunculus acris* **Bulbous Buttercup** *Ranunculus bulbosus* **Common sorrel** *Rumex acetosa* **Lesser Trefoil** *Trifolium dubium* **Red Clover** *Trifolium pratense* **Germander Speedwell** *Veronica chamaedrys*
Species abundance threshold	At least four occasional in the sward. A limited number of indicator species from BAP grassland habitats may be present, and may be only rare or localised in the sward. Can substitute for a semi-improved indicator if at least occasional.	
Typical grasses (do not count as indicator species)	**Common Bent** *Agrostis capillaris* **Creeping Bent** *Agrostis stolonifera* **Meadow foxtail** *Alopecurus pratensis* **Sweet Vernal-grass** *Anthoxanthum odoratum* **False Oat-grass** *Arrhenatherum elatius* **Crested Dog's-tail** *Cynosurus cristatus*	**Cock's-foot** *Dactylis glomerata* **Tufted Hair-grass** *Deschampsia cespitosa* **Meadow Fescue** *Festuca pratensis* **Red Fescue** *Festuca rubra agg.* **Timothy** *Phleum pratense* **Yorkshire-fog** *Holcus lanatus*

For the purposes of Network LWS selection, ideally the FEP abundance measures should be used, but alternatives may be acceptable

Table 4 Recommended abundance measures

Frequency	FEP abundance measure (occurrence out of ten 1m2 quadrats in W-shaped walk)	Alternative abundance measure (occurrence out of three 1m2 quadrats)
Rare	1-2 / 10	At least present in the habitat but ideally 1/3
Occasional	3-4 / 10	1 / 3
Frequent	5+ / 10	2 / 3

8. Network Criteria in Key Urban Areas

6KUAN1.1 All features that contribute to the Econet Impact Zones of European species will be identified as forming part of a network LWS.

Identification will primarily take place through interpretation of up-to-date aerial photos (Somerset Econet (2009). The Distribution of Protected and Biodiversity Action Plan Species in Somerset).

6KUAN1.2 Various habitats including allotments, railway embankments, smaller patches of scrub, and verges may be identified as Network LWS where they support or are used by any Somerset LBAP Priority Species or Somerset Notable Species.

NB The boundary of such LWSs will relate to the habitat requirements of the species concerned and will be decided on using the most recent aerial photos available.

In linear features in Key Urban Areas, there must be no more than 500 m between records.

6KUAN1.3 In Key Urban Areas hedgerows meeting the LBAP criteria will be considered for inclusion in a Network LWS.

Each site will be treated on its individual merits.

9. Educational, Social, Access and Aesthetic value

At present these criteria do not include consideration of educational, social, access or aesthetic value of wildlife sites. While these aspects are important to nature conservation we do not believe they should be used as a primary reason for identifying Local Wildlife Sites in Somerset because:

- Somerset already has large areas of land with open access close to centres of population.
- The criteria for these aspects are necessarily subjective and would undermine the objective nature of the criteria used.
- There are established mechanisms for meeting these other objectives e.g. local authority management of urban fringe sites.

If deemed appropriate by the partnership we will continue to develop more rigorous criteria for evaluating levels of educational, social, access and aesthetic value and seek to incorporate these in relevant policies. It is likely that meeting such social criteria would take an area from being part of a network LWS to being a LWS identified in its own right.

Appendix A - NVC Communities and Equivalent BAP Priority Habitats as Calculated by SERC's Integrated Habitat System (IHS)

UK BAP Habitat	IHS Code (Version 2)	NVC Code
Upland Oakwood	WB31	W11 W16 W17
Lowland Beech and Yew Woodland	WB331	W12 W14 W15 But this PHT only relevant in north east of county within native range of Beech
Upland Mixed Ashwoods	WB32	W7c W8 W9
Wet Woodland	WB34	W1 W2 W4 W5 W6 W7
Lowland Mixed Deciduous Woodland	WB36	W8 W10
Lowland Dry Acid Grassland	GA1	U1 U2 U3 U4
Lowland Calcareous Grassland	GC1	Any NVC CG community occurring in Somerset MG1d
Lowland Meadows	GN1	MG5 MG8 MG4
Lowland Heathland	HL1	A habitat complex including any NVC Heathland Community occurring in Somerset
Upland Heathland	HU1	A habitat complex including any NVC Heathland Community occurring in Somerset
Upland Flushes, Fens and		A variety of NVC Mire communities

UK BAP Habitat	IHS Code (Version 2)	NVC Code
Swamps		
Purple Moor Grass and Rush Pastures	EM4	M22 M23 M24 M25
Lowland Fens	EM31	A variety of Mire NVC communities and also a range of grassy, grazed NVC Swamp communities.
Reedbeds	EM11	S4
Lowland Raised Bog	EO2	A24
Blanket Bog	EO1	A24 M15 M19 M20 M25
Inland Rock Outcrop and Scree Habitats		No direct NVC translation
Calaminarian Grasslands		No direct NVC translation
Open Mosaic Habitats on Previously Developed Land		A variety of Open Ground NVC Communities
Maritime Cliff and Slopes	MC1	A habitat complex encompassing many different NVC Communities including all NVC Maritime Cliff Communities occurring in Somerset
Coastal Vegetated Shingle	SS31	SD1
Intertidal underboulder communities		None
Sabellaria alveolata reefs		None
Coastal saltmarsh		Any NVC Saltmarsh community occurring in Somerset (except SM1)
Intertidal mudflats		None
Seagrass beds		SM1
Sheltered muddy gravels		None
Peat and clay exposures		None
Estuarine rocky habitats		None
Sabellaria spinulosa reefs		None
Subtidal sands and gravels		None
Horse mussel beds		None
Mud habitats in deep water		None

UK BAP Habitat	IHS Code (Version 2)	NVC Code
File shell beds		None
Blue mussel beds		None
Saline lagoons		None
Coastal Sand Dunes	SS1	Any NVC Sand Dune Community occurring in Somerset
* No direct conversion or not biotically defined *		
Mesotrophic Lakes	AS31	No direct NVC translation
Rivers		No direct NVC translation
Ponds		No direct NVC translation
Eutrophic Standing Waters	AS41	No direct NVC translation
Arable Field Margins	CR61	No direct NVC translation
Hedgerows	LF11	No direct NVC translation
Traditional Orchards		No direct NVC translation
Wood-Pasture & Parkland	WM5	No direct NVC translation
Coastal and Floodplain Grazing Marsh	CF1	A habitat complex but not biotically defined - it can overlap with a number of other priority habitats

Appendix B – Habitats listed in Annex 1 of the EC Habitats Directive (1992)

Refer to criterion 6H1

Corine code	Habitat	**Minimum size** (hectares)
11.25	Sandbanks which are slightly covered by sea water all the time	-
13.2	Estuaries	-
14	Mudflats and sandflats not covered by seawater at low tide	-
21	Lagoons	-
	Reefs	-
17.2	Annual vegetation of drift lines	-
17.3	Perennial vegetation of stony banks	-
18.21	Vegetated sea cliffs of the Atlantic and Baltic coasts	-
15.11	Salicornia and other annuals colonising mud and sand	1
15.12	Spartina swards	-
15.13	Atlantic salt meadows (Glauco-Puccinellietalia distansis)	1
16.211	Embryonic shifting dunes	-
16.212	Shifting dunes along the shoreline with *Ammophila arenaria* (white dunes)	-
16.221 to 16.227	Fixed dunes with herbaceous vegetation (grey dunes)	-
16.31 to16.35	Humid dune slacks	-
22.13	Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation	-
22.14	Dystrophic lakes	-
31.11	Northern Atlantic wet heaths with Erica tetralix	1
31.2	Dry heaths (all subtypes)	1
34.2	Caliminarian grasslands	0.5
34.31 to 34.34	Semi-natural dry grasslands and scrubland facies on calcareous substrates (Festuco-Brometalia)	0.5
37.31	Molinia meadows on chalk and clay (Eu-Molinion)	0.5
51.2	Degraded raised bogs	0.5
52.1 & 52.2	Blanket bog	-

Corine code	**Habitat**	**Minimum size** (hectares)
54.5	Transition mires and quaking bogs	0.5
53.3	Calcareous fens with *Cladium mariscus* and *Carex davallianae*	0.5
54.12	Petrifying springs with tufa formations (Cratoneurion)	-
54.2	Alkaline fens	0.5
61.1	Siliceous scree	-
41.12	Beech forests with Ilex and Taxus rich in epiphytes (Ilici-Fagion)	0.5
41.13	Asperulo-Fagetum beech forests	0.5
41.4	*Tilio-Acerion* ravine forests	0.5
41.53	Old oak woods with Ilex and Blechnum in the British Isles	0.5
42.A71 to 42.A73	*Taxus baccata* woods	0.5
44.A1 to 44.A4	Bog woodland	0.5

Appendix C – Species listed in Annex 2 of the EC Habitats Directive (1992)

Refer to criterion 6S1; 6S7.4; 6S8.1.
The EU codes contain hyperlinks to Annex 2 species accounts on the JNCC website www.jncc.gov.uk/ProtectedSites/SACselection/SAC_species.asp

EU code	Latin name	Common name
1013	*Vertigo geyeri*	Geyer's whorl snail
1014	*Vertigo angustior*	Narrow-mouthed whorl snail
1015	*Vertigo genesii*	Round-mouthed whorl snail
1016	*Vertigo moulinsiana*	Desmoulin's whorl snail
4056	*Anisus vorticulus*	Ram's-horn snail
1029	*Margaritifera margaritifera*	Freshwater pearl mussel
1044	*Coenagrion mercuriale*	Southern damselfly
1065	*Euphydryas (Eurodryas, Hypodryas) aurinia*	Marsh fritillary butterfly
1079	*Limoniscus violaceus*	Violet click beetle
4035	*Gortyna borelii lunata*	Fisher's estuarine moth
1083	*Lucanus cervus*	Stag beetle
1092	*Austropotamobius pallipes*	White-clawed (or Atlantic stream) crayfish
1095	*Petromyzon marinus*	Sea lamprey
1096	*Lampetra planeri*	Brook lamprey
1099	*Lampetra fluviatilis*	River lamprey
1102	*Alosa alosa*	Allis shad
1103	*Alosa fallax*	Twaite shad
1106	*Salmo salar*	Atlantic salmon
1149	*Cobitis taenia*	Spined loach
1163	*Cottus gobio*	Bullhead
1166	*Triturus cristatus*	Great crested newt
1303	*Rhinolophus hipposideros*	Lesser horseshoe bat
1304	*Rhinolophus ferrumequinum*	Greater horseshoe bat
1308	*Barbastella barbastellus*	Barbastelle
1323	*Myotis bechsteinii*	Bechstein's bat
1349	*Tursiops truncatus*	Bottlenose dolphin
1351	*Phocoena phocoena*	Harbour porpoise
1355	*Lutra lutra*	Otter
1364	*Halichoerus grypus*	Grey seal

EU code	Latin name	Common name
1365	*Phoca vitulina*	Common seal
1386	*Buxbaumia viridis* (Moug.) Moug. & Nestl.	Green shield-moss
1390	*Marsupella profunda* Lindb.	Western rustwort
1393	*Drepanocladus (Hamatocaulis) vernicosus* (Mitt.) Warnst.	Slender green feather-moss
1395	*Petalophyllum ralfsii* (Wils.) Nees & Gott.	Petalwort
1421	*Trichomanes speciosum* Willd.	Killarney fern
1441	*Rumex rupestri*s Le Gall	Shore dock
1528	*Saxifraga hirculus* L.	Marsh saxifrage
1614	*Apium repens* (Jacq.) Lag.	Creeping marshwort
1654	*Gentianella anglica* (Pugsley) E.F. Warburg	Early gentian
1831	*Luronium natans* (L.) Raf.	Floating water-plantain
1833	*Najas flexilis* (Willd.) Rostk. & W.L. Schmidt	Slender naiad
1902	*Cypripedium calceolus* L.	Lady's-slipper orchid
1903	*Liparis loeselii* (L.) Rich.	Fen orchid
4035	*Gortyna borelii lunata*	Fisher's estuarine moth
4056	*Anisus vorticulus*	Ram's-horn snail

Appendix D – Notable invertebrates associated with cereal field margins (source Buglife)

Refer to Criterion 6H12.3.

Spiders and allies (Arachnida: Araneae and Pseudoscorpiones)	
Hahnia microphthalma	RDBK
Pseudomaro aenigmaticus	RDBK
Tegenaria picta	RDBK
Centromerus incilium	Nb
Lepthyphantes insignis	Nb
Porrhomma errans	Nb

True Bugs (Hemiptera)	
Heteroptera	
Hallodapus montandoni	RDB3
Aphanus rolandri	Na polyphagous
Drymus latus	Nb
Leafhoppers, planthoppers, froghoppers, treehoppers & cicadas (Auchenorrhyncha)	
Macrosteles cristatus	Nb (apparently associated with clover *Trifolium* spp.)
Eurysa brunnea	
Beetles (Coleoptera)	

Ground beetles (Carabidae)	
Harpalus froelichii	RDB2 BAP (sandy fields in Breckland adjacent to semi-natural sandy grassland)
Ophonus laticollis	Na Species Statement
Zabrus tenebrioides	Na
Carabus monilis	Nb
Harpalus smaragdinus	Nb
Lasiotrechus discus	Nb
Notiophilus quadripunctatus	Nb

Leaf beetles (Chrysomelidae) (with plant associations)	
Cassida denticollis	RDB 1 (Creeping Thistle (Yarrow))
Cassida nebulosa	pRDB K (goosefoot)
Ochrosis ventralis	RDB 3 (Bittersweet, *Matricaria* sp.)

Leaf beetles (Chrysomelidae) (with plant associations)	
Cassida nobilis	Notable B (Corn Spurrey)
Chrysolina sanguinolenta	Notable A (Toadflax)
Longitarsus ballotae	Notable B (Black Horehound)
Longitarsus dorsalis	Notable B (ragworts)
Longitarsus ganglbaueri	Notable A (ragworts)
Longitarsus suturalis	Notable B (ragworts etc.)
Phyllotreta aerea	Notable B (crucifers)
Phyllotreta cruciferae	Notable B (crucifers)
Phyllotreta vittata	Notable A (crucifers)

Weevils (Curculionoidea) (with plant associations)	
Perapion lemoroi	RDB Ind (knotgrass)
Acentrotypus brunnipes	RDB1 (chamomiles, mayweeds)
Omphalapion beuthini	RDB3 (chamomiles, mayweeds)
Omphalapion laevigatum	RDB Ind (chamomiles, mayweeds etc.)
Notes on RDB species: All these weevils (with the exception of *O. beuthini*, a fairly recent discovery in England) have declined markedly during the past half-century and are very poorly known. However, all either feed on field-margin plants or have been recorded specifically from cereal fields (*P. lemoroi*).	
Sibinia pyrrhodactyla	Nb
Baris picicornis	Nb (Wild Mignonette)
Ceutorhynchus atomus	Na Thale Cress etc.)
Ceutorhynchus pulvinatus	Na Flixweed)
Ceutorhynchus rapae	Nb Hedge Mustard, Flixweed etc.)
Datonychus angulosus	Na (hemp-nettles)
Sirocalodes mixtus	Nb (fumitories)
Sirocalodes quercicola	Na (Common Fumitory)
Stenocarus ruficornis	Nb (Common Poppy)
Ceutorhynchus resedae	Nb (Wild Mignonette, Weld)

Rove beetles and allies (Staphylinidae /Scydmaenidae/Silphidae)	
Lathrobium pallidum	RDBK
Stenus assequens	N
Astenus immaculatus	N
Philonthus nitidicollis	Nb
Atheta difficilis	N
Atheta aegra	N

Rove beetles and allies (Staphylinidae /Scydmaenidae/Silphidae)	
Ilyobates bennetti	N
Ilyobates propinquus	N
Oxypoda exoleta	N
Oxypoda lurida	N
Aleochara brevipennis	N
Stenus aceris	Local
Othius laeviusculus	Local
Xantholinus jarrigei	Local
Staphylinus dimidiaticornis	Local
Staphylinus brunnipes	Local
Staphylinus compressus	Local
Quedius semiaeneus	Local
Mycetoporus nigricollis	Local
Bolitobius analis	Local

Ants, bees and wasps (Hymenoptera: Aculeata) (with plant associations)	
Odynerus simillimus	RDB1, RDB1
Bombus ruderatus	BAP Priority (clovers etc.)
Hylaeus signatus	Nb wild mignonette
Andrena hattorfiana	RDB2 (Field & Small Scabious
Andrena trimmerana	Nb (Early flowering shrubs in hedges, e.g. Blackthorn)
Sphecodes crassus	Nb
Melitta tricincta	Nb (Red Bartsia)

Appendix E – Somerset Vascular Plant Ancient Woodland Indicators

Refer to criterion 6H.2

The following list was compiled by SERC after extensive analysis of vascular plant data from a sample of ancient woodland and secondary woodland sites (Thompson et al., 1997).

Scientific name	Common Name
Anemone nemorosa	Wood Anemone
Chrysosplenium alternifolium	Alternate-leaved Golden Saxifrage
Colchicum autumnale	Autumn Crocus
Euphorbia amygdaloides	Wood spurge
Galanthus nivalis	Snowdrop
Galium odoratum	Sweet Woodruff
Hypericum androsaemum	Tutsan
Lamiastrum galeobdolon	Yellow Archangel
Lathraea squamaria	Toothwort
Luzula pilosa	Hairy Woodrush
Luzula sylvatica	Great Woodrush
Melica uniflora	Wood Mellick
Milium effusum	Wood Millet
Neottia nidus-avis	Bird's-nest Orchid
Paris quadrifolia	Herb Paris
Polygonatum multiflorum	Common Soloman's Seal
Polystichum aculeatum	Hard-shield Fern
Prunus avium	Wild Cherry
Quercus petraea	Sessile Oak
Ranunculus auricomus	Goldilocks Buttercup
Ribes rubrum sens. str.	Red Currant
Sorbus torminalis	Wild Service Tree
Taxus baccata	Yew
Ulmus glabra	Wych Elm
Viola reichenbachiana	Early Dog Violet

Appendix F –Species list for species-rich ditches

Refer to criterion 6H5.6.1.

Scientific Name	Common Name
Alisma lanceolatum	Narrow-leaved water-plantain
Alisma plantago-aquatica	Water-plantain
Apium inundatum	Lesser marshwort
Apium nodiflorum	Fool's water-cress
Baldellia ranunculoides	Lesser water-plantain
Berula erecta	Lesser water-parsnip
Bolboschoenus maritimus	Sea club-rush
Butomus umbellatus	Flowering rush
Callitriche sp.	Water-starwort sp.
Carex sp.	Sedge sp.
Catabrosa aquatica	Whorl-grass
Ceratophyllum sp.	Hornwort sp.
Chara/Nitella/Tolypellia sp.	Stonewort sp.
Eleocharis palustris	Common spike-rush
Eleogiton fluitans	Floating club-rush
Equisetum fluviatile	Water horsetail
Galium palustre	Common marsh bedstraw
Glyceria sp.	Sweet-grass sp.
Groenlandia densa	Opposite-leaved pond-weed
Hippuris vulgaris	Mare's tail
Hottonia palustris	Water violet
Hydrocharis morsus-ranae	Frogbit
Iris pseudacorus	Yellow flag
Juncus bulbosus	Bulbous rush
Lemna trisulca	Ivy-leaved duckweed
Lemna sp.	Duckweed Species
Menyanthes trifoliata	Bogbean
Myosotis laxa ssp. *Cespitosa*	Tufted Forget-me-not
Myosotis scorpioides	Water forget-me-not
Myriophyllum alterniflorum	Alternate water-milfoil
Myriophyllum sp.	Water-milfoil sp.

Scientific Name	Common Name
Nuphar lutea	Yellow water-lily
Oenanthe aquatica	Fine-leaved water-dropwort
Oenanthe crocata	Hemlock water-dropwort
Oenanthe fistulosa	Tubular water-dropwort
Persicaria amphibia	Amphibious bistort
Phalaris arundinacea	Reed canary-grass
Phragmites australis	Common reed
Potamogeton sp.	Pondweed sp.
Potentilla palustris	Marsh cinquefoil
Ranunculus sp.	Water-crowfoot species
Rorippa microphylla	Narrow-fruited water-cress
Rorippa nasturtium-aquaticum	Water-cress
Rumex hydrolapathum	Great water-dock
Sagittaria sagittifolia	Arrow-head
Schoenoplectus lacustris	Common club-rush
Schoenoplectus tabernaemontani	Grey club-rush
Sium latifolium	Greater water-parsnip
Sparganium emersum	Unbranched bur-reed
Sparganium erectum	Branched bur-reed
Spirodela polyrhiza	Greater duckweed
Typha angustifolia	Lesser reedmace / lesser bulrush
Typha latifolia	Great reedmace / great bulrush
Utricularia sp.	Bladderwort species
Veronica anagallis-aquatica	Blue water-speedwell
Veronica beccabunga	Brook-lime
Veronica catenata	Pink water-speedwell
Wolffia arrhiza	Rootless duckweed
Zannichellia palustris	Horned pondweed
Total Species recorded (If ≥ 7 species-rich ditch)	

Appendix G – Annex 1 of the Birds Directive

Refer to criterion 6S5.3

Scientific Name	English Name
Acrocephalus melanopogon	Moustached Warbler
Acrocephalus paludicola	Aquatic Warbler
Aegolius funereus	Tengmalm's Owl
Alcedo atthis	Kingfisher
Anser albifrons subsp. flavirostris	Greenland white-fronted goose
Anser erythropus	Lesser White-Fronted Goose
Anthus campestris	Tawny Pipit
Aquila chrysaetos	Golden Eagle
Aquila clanga	Spotted Eagle
Ardea purpurea	Purple Heron
Ardeola ralloides	Squacco Heron
Asio flammeus	Short-Eared Owl
Aythya nyroca	Ferruginous Duck
Botaurus stellaris	Great Bittern
Branta leucopsis	Barnacle Goose
Branta ruficollis	Red-Breasted Goose
Bubo bubo	Eagle Owl
Bubo scandiaca	Snowy Owl
Bulweria bulwerii	Bulwer's Petrel
Burhinus oedicnemus	Stone-Curlew
Calandrella brachydactyla	Short-Toed Lark
Calidris alpina subsp. schinzii	Dunlin
Calonectris diomedea	Cory's Shearwater
Caprimulgus europaeus	Nightjar
Charadrius morinellus	dotterel
Chlamydotis undulata	Houbara Bustard
Circus aeruginosus	Marsh Harrier
Circus cyaneus	Hen Harrier
Circus macrourus	Pallid Harrier
Circus pygargus	Montagu's Harrier
Coracias garrulus	Roller
Crex crex	Corncrake
Cursorius cursor	Cream-Coloured Courser
Cygnus columbianus	Bewick's Swan
Cygnus cygnus	Whooper Swan
Egretta garzetta	Little Egret
Emberiza caesia	Cretzschmar's Bunting
Emberiza hortulana	Ortolan Bunting
Falco columbarius	Merlin
Falco eleonorae	Eleonora's Falcon
Falco naumanni	Lesser Kestrel
Falco peregrinus	Peregrine Falcon
Falco rusticolus	Gyrfalcon
Ficedula albicollis	Collared Flycatcher
Ficedula parva	Red-Breasted Flycatcher
Gallinago media	Great Snipe
Gavia arctica	Black-Throated Diver
Gavia immer	Great Northern Diver
Gavia stellata	Red-Throated Diver
Glareola pratincola	Collared Pratincole
Grus grus	Crane
Gyps fulvus	Griffon Vulture
Haliaeetus albicilla	White-Tailed Eagle
Himantopus himantopus	Black-Winged Stilt
Hydrobates pelagicus	Storm Petrel
Hydroprogne caspia	Caspian Tern
Ixobrychus minutus	Little Bittern

Scientific Name	English Name
Lanius collurio	Red-Backed Shrike
Lanius minor	Lesser Grey Shrike
Larus genei	Slender-Billed Gull
Larus melanocephalus	Mediterranean Gull
Larus minutus	Little Gull
Limosa lapponica	Bar-Tailed Godwit
Loxia scotica	Scottish Crossbill
Lullula arborea	Woodlark
Luscinia svecica	Bluethroat
Melanocorypha calandra	Calandra Lark
Mergellus albellus	Smew
Milvus migrans	Black Kite
Milvus milvus	Red Kite
Neophron percnopterus	Egyptian Vulture
Nycticorax nycticorax	Night Heron
Oceanodroma castro	Madeiran Storm-petrel
Oceanodroma leucorhoa	Leach's Storm-petrel
Otis tarda	Great Bustard
Pandion haliaetus	Osprey
Pelagodroma marina	White-faced Storm-petrel
Pernis apivorus	Honey Buzzard
Phalaropus lobatus	Red-Necked Phalarope
Philomachus pugnax	Ruff
Platalea leucorodia	Spoonbill
Plegadis falcinellus	Glossy Ibis
Pluvialis apricaria	Golden Plover
Podiceps auritus	Slavonian Grebe
Porzana parva	Little Crake
Porzana porzana	Spotted Crake
Porzana pusilla	Baillon's Crake
Pterodroma feae	Fea's Petrel
Pterodroma madeira	Zino's Petrel
Puffinus assimilis	Little Shearwater
Pyrrhocorax pyrrhocorax	Red-billed Chough
Recurvirostra avosetta	Pied Avocet
Sterna dougallii	Roseate Tern
Sterna hirundo	Common Tern
Sterna paradisaea	Arctic Tern
Sterna sandvicensis	Sandwich Tern
Sternula albifrons	Little Tern
Surnia ulula	Northern Hawk Owl
Sylvia nisoria	Barred Warbler
Sylvia rueppelli	Rüppell's Warbler
Sylvia sarda	Marmora's Warbler
Sylvia undata	Dartford Warbler
Tadorna ferruginea	Shelduck
Tetrao urogallus	Western Capercaillie
Tetrax tetrax	Little Bustard
Tringa glareola	Wood Sandpiper
Troglodytes troglodytes fridariensis	Fair Isle Wren
Xenus cinereus	Terek Sandpiper

Appendix H – Amphibian assemblages

Refer to criterion 6S7.1

		Score 1 (Low Populations)	**Score** 2 (Good Populations)	**Score 3** (Exceptional Populations)
Great Crested Newt	Seen or netted in day. Counted at night.	<5 <10	5-50 10-100	>50 >100
Smooth Newt	Netted in day or counted at night	<10	10-100	>100
Palmate newt	Netted in day or counted at night	<10	10-100	>100
Common toad	Estimated Counted	<500 <100	500-5,000 100-1,000	>5,000 >1,000
Common frog	Spawn clumps counted	<50	50-500	>500

Scores have to be for breeding sites observed during the breeding season. Daytime netting should be made during a 15 minute period for sites with less than 50 m of water's edge, for 30 minutes for sites with 50-100 m etc.

Appendix I – Summary definition of habitat for breeding / wintering waders & wildfowl

Refer to criterion 6H5.6.1.

Summary definition of habitat for breeding waders (lowland) and habitat for wintering waders and wildfowl. Exert from sections G12 and G13 in the FEP Features Manual (Natural England, 2008).

Habitat for Breeding Waders - Lowland

- Open fields (>2 ha) in coastal and flood plain grazing marshes where water levels are maintained at high levels from 1st March to 31st May
- The following wading birds regularly breed or nest in the field: curlew, redshank, snipe, black-tailed godwit, ruff, lapwing and oystercatcher.
- When no good species records exist, fields with the following should be considered as the high priority habitats:
    - SSSIs and/or fields with species that are listed in the appropriate National Character Areas target statement
    - Fields within extensive blocks > 10 ha
    - Fields that are 2 – 10 ha and have no more than one boundary with hedges or trees > 2m, are not adjacent to major roads or crossed by power lines or rights of way.
    - Fields with an uneven surface due to natural/ artificial humps and hollows, former saltmarsh rills, foot-drains or collapsed drainage channels.
    - Fields within 1km of an intertidal habitat (e.g. saltmarsh or mud flats) or other major wetland habitat.

Condition assessment

3. Cover of rushes should be less than 40% and on the remainder the cover of grass or sedge tussocks should be between 5% and 60%. (A tussock is a single plant or a clump of plants at least 15 cm wide that is more than 3 cm taller than the surrounding vegetation.)
4. The average sward height during April and May should be between 5 cm and 15 cm, unless the land has been shut for hay. (The sward should consist of patches of taller and shorter vegetation.)
5. The ground is wet between March and May (so that either: water lies continually on the surface of more than 5% of the field; or a 6-inch nail can easily be pushed into the ground on more than 10% of the field).

Habitat for Breeding Waders – Upland

- Enclosed wet grassland, usually in the moorland fringe.
- If any of the following birds regularly breed in the field: curlew, redshank, snipe and lapwing.
- When there are no species records the following should be considered the highest priority habitat:
    - Fields that have a high proportion of flat ground (less than 8°). On ground that slopes more than 8°, there should be a high proportion of terraces, steps and other more level ground and
    - SSSIs and/or fields with species that are listed in the appropriate target statement.
    - Fields within extensive blocks that are larger than 10 ha.

- Fields that are 2 – 10 ha have no more than one boundary with hedges or trees > 2m, are not adjacent to major roads or crossed by power lines or rights of way (stone walls, sheep netting and low fence lines are not considered negative features).
- Fields with an uneven surface due to natural or artificial humps and hollows, flushes, ditches or collapsed drainage channels.
- Fields where cattle grazing is available.

Condition assessment

6. Cover of rushes should be less than 40%, and on the remainder the cover of tussocks of grass or sedge should be between 5% and 60%.
7. The average sward height during April and May should be between 5 cm and 15 cm, unless the land has been shut for hay. (The sward should consist of patches of taller and shorter vegetation.)
8. In-field scrub cover should be zero.

Habitat for wintering waders and wildfowl

- Open coastal and flood plain grazing marsh (normally areas > 2 ha) where water levels are kept high in the winter, often creating shallow pools.
- If any of the following birds regularly feed or roost in the field during the winter months:
  - Geese – barnacle goose, brent goose, bean goose, pink-footed goose or white-fronted goose;
  - Swans – whooper swan or Bewick's swan;
  - Ducks – wigeon, shoveler or pintail; or
  - Wading birds – black-tailed godwit, curlew, golden plover or redshank.
- When no good species records exist, fields with the following should be considered as the highest priority habitat:
  - SSSIs and/or fields with species that are listed in the appropriate JCA target statement
  - Fields within extensive blocks > 10 ha
  - Fields that are 2 – 10 ha have no more than one boundary with hedges or trees > 2m, are not adjacent to major roads or crossed by power lines or rights of way.
  - Fields with an uneven surface due to natural/ artificial humps and hollows, former saltmarsh rills, footdrains or collapsed drainage channels.
  - Fields within 1km of an intertidal habitat (e.g. saltmarsh or mud flats) or other major wetland habitat.

Condition assessment

9. Cover of rushes should be less than 40%, and on the remainder the cover of grass or sedge tussocks should be between 5% and 60%. (Refer to G12 Condition Assessment 1 for definition of a tussock).
10. The sward height should be between 5 cm and 15 cm in November.
11. There is standing water on more than 5% of the field and the ground is wet (a 6-inch nail can easily be pushed in) on more than 50% of the field between November and February.

Appendix J – Plantlife Criteria for the selection of important Arable Plant Areas (IAPAs)

Based on 'Important Arable Plant Areas: identifying priority sites for arable plant conservation in the United Kingdom' (Byfield and Wilson, 2005).

Refer to criterion 6H12.2.

The criteria are used to select sites of two levels of importance:

- County importance
- Local importance

Sites are selected on the basis of particular threatened species, exceptional plant assemblages, or priority habitats of particular importance to botanical science.

Sites of county importance

Select:
All additional populations of species listed as *threatened* in approved UK red lists; and/or as a UK Biodiversity Action Plan priority species (not included above); and / or
All populations of species recorded in three or fewer localities in a specific county since 1995.

Select:
All arable sites meeting the following thresholds according to the weighted evaluation scoring system for arable species assemblages:

- chalk & limestone derived soils: 30-44
- clay soils: 20-29
- sands & freely-draining acidic soils: 20-34

Sites of local importance
An Important Plant Area (IPA) is a natural or semi-natural site exhibiting exceptional botanical richness and/or supporting an outstanding assemblage of rare, threatened and/or endemic plant species and/or vegetation of high botanic value.

Appendix II

Species scores

Species	Species score
Adonis annua	8
Agrostemma githago	9
Ajuga chamaepitys	8
Alopecurus myosuroides	2
Althaea hirsuta	8
Alyssum alyssoides	8
Anagallis arvensis ssp. foemina	5
Anchusa arvensis	1
Anthemis arvensis	8
Anthemis cotula	7
Anthoxanthum aristatum	8
Anthriscus caucalis	3
Apera interrupta	4
Apera spica-venti	6
Aphanes australis	1
Arnoseris minima	9
Avena strigosa	5
Brassica nigra	2
Briza minor	5
Bromus arvensis	6
Bromus interruptus	9
Bromus secalinus	7
Bunium bulbocastanum	6
Bupleurum rotundifolium	9
Camelina sativa	5
Caucalis platycarpos	9
Centaurea cyanus	8
Chaenorhinum minus	1
Chenopodium ficifolium	2
Chenopodium hybridum	3
Chenopodium murale	7
Chenopodium polyspermum	2
Chenopodium urbicum	9
Chrysanthemum segetum	7
Descurainia sophia	3
Echium plantagineum	8
Erodium cicutarium	1
Erodium moschatum	3
Erysimum cheiranthoides	2
Euphorbia exigua	6
Euphorbia platyphyllos	3
Filago gallica	9
Filago lutescens	8
Filago pyramidata	8
Filago vulgaris	6
Fumaria bastardii	2
Fumaria capreolata	3
Fumaria densiflora	3
Fumaria muralis ssp. neglecta	7
Fumaria occidentalis	5
Fumaria parviflora	7
Fumaria purpurea	4
Fumaria reuteri	8
Fumaria vaillantii	7
Galeopsis angustifolia	9
Galeopsis segetum	9
Galeopsis speciosa	7
Galium spurium	8
Galium tricornutum	9
Gastridium ventricosum	5
Geranium columbinum	2
Geranium pusillum	2
Holosteum umbellatum	9
Hyoscyamyus niger	7
Hypochoeris glabra	7
Iberis amara	7
Kickxia elatine	2
Kickxia spuria	3
Lamium amplexicaule	1
Lamium confertum	3
Lathyrus aphaca	7
Lavatera cretica	7
Legousia hybrida	3
Lepidium campestre	3
Lithospermum arvense	8
Lolium temulentum	9
Lythrum hyssopifolium	8
Malva neglecta	2
Melampyrum arvense	8
Mentha arvensis	1
Mercurialis annua	2
Misopates orontium	7
Myosurus minimus	7
Nepeta cataria	7
Orobanche minor	2
Papaver argemone	7
Papaver dubium ssp. lecoqii	2
Papaver hybridum	3
Petroselinum segetum	3
Polycarpon tetraphyllum	5
Polygonum boreale	4
Polygonum rurivagum	3
Ranunculus arvensis	9
Ranunculus muricatus	6
Ranunculus parviflorus	3
Ranunculus sardous	3
Raphanus raphanistrum	1
Rhinanthus angustifolius	7
Scandix pecten-veneris	9
Scleranthus annuus	8
Sherardia arvensis	1
Silene gallica	8
Silene noctiflora	7
Sinapis alba	2
Spergula arvensis	7
Stachys arvensis	6
Teucrium botrys	7
Thlaspi perfoliatum	7
Torilis arvensis	8
Torilis nodosa	3
Valerianella dentata	8
Valerianella rimosa	8
Veronica agrestis	1
Veronica polita	2
Veronica praecox	8
Veronica triphyllos	8
Veronica verna	8
Vicia parviflora	7
Vicia tetrasperma	2
Viola tricolor ssp. tricolor	6

Appendix K – Definition of species-rich semi-improved grassland

Refer to Criterion KUAH1.1

In this context Species-rich Semi-improved Grassland is defined using the following adaptation of the definition in the FEP Features Manual 2nd Edition (Natural England, 2008).

- Cover of rye-grasses and white clover is less than 30%.
- Moderately species-rich sward, for example wildflower and sedges:
  - Usually over 10% (excluding white clover and creeping buttercup
  - >= 8 species/m^2, including grasses
  - Four semi-improved grassland wildflower indicators (Table K1.) and / or BAP grassland indicator species at least **occasional** in the sward. Ideally abundance should be evaluated objectively in one the ways (Table K2.).

Table K1. Semi-improved grassland indicator list

Autumn Hawkbit	*Leontodon autumnalis*
Black Medick	*Medicago lupulina*
Bulbous Buttercup	*Ranunculus bulbosus*
Cat's-ear	*Hypochoeris radicata*
Common Sorrel	*Rumex acetosa*
Cuckooflower	*Cardamine pratensis*
Field Wood-rush	*Luzula campestris*
Germander Speedwell	*Veronica chamaedrys*
Lesser Trefoil	*Trifolium dubium*
Meadow Buttercup	*Ranunculus acris*
Red Clover	*Trifolium pratense*
Ribwort plantain	*Plantago lanceolata*
Selfheal	*Prunella vulgaris*
Yarrow	*Achillea millefolium*

For the purposes of Network LWS selection, ideally the FEP abundance measures should be used, but alternatives may be acceptable:

Table K2. Recommended abundance measures:

Frequency	**FEP abundance measure** (occurrence out of ten 1m^2 quadrats in W-shaped walk)	**Alternative abundance measure** (occurrence out of three 1m2 quadrats)
Rare	1-2 / 10	At least present in the habitat but ideally 1/3
Occasional	3-4 / 10	1 / 3
Frequent	5+ / 10	2 / 3

NB The above definition of "good quality semi-improved grassland of moderate species richness" is taken from FEP Guidance 008 – Identification of Grassland Features (RDA, 2005).

In time this network criterion is likely to be developed to buffer and link LWSs meeting habitat and species criteria where they occur in Rebuilding Biodiversity Strategic Nature Areas.

Appendix L – Revised Index of Ecological Continuity (RIEC)

Reproduced with kind permission from Coppins & Coppins (2002); 'Indices of Ecological Continuity for Woodland Epiphytic Lichen Habitats in the British Isles'.

Anisomeridium ranunculosporum
Arthonia vinosa
Biatora sphaeroides
Catinaria atropurpurea
Cresponea premnea
Degelia atlantica/or plumbea/or Parmeliella triptophylla
Dimerella lutea
Enterographa crassa
Lecanographa lyncea
Lobaria amplissima
L. pulmonaria
L. scrobiculata
L. virens
Loxospora elatina
Nephroma laevigatum
Pachyphiale carneola
Pannaria conoplea
Parmotrema crinitum
Peltigera collina
P. horizontalis
Porina leptalea
Punctelia reddenda
Pyrenula chlorospila/or macrospora
Rinodina isidioides
Schismatomma quercicola/or Pertusaria pupillaris
Stenocybe septata
Sticta limbata
S. fuliginosa/or sylvatica
Thelopsis rubella
Thelotrema lepadinum

Maximum total - 30

RIEC is calculated by the number of species n/20 $\times$ 100;
e.g. 6 RIEC species gives an **RIEC of 30.**

The **Bonus** concept does not apply to the RIEC.

Interpretation of RIEC values:
Assuming that atmospheric pollution has not been an overriding factor, the RIEC values can generally be interpreted thus:

0–25 = no indication of ecological continuity; the woodland is either a plantation or has been clear felled and regenerated, or coppiced.
30–45 = evidence of some degree of ecological continuity.
50–70 = strong evidence of ecological continuity.
75–100+ = clear evidence of an ancient woodland with a long history of ecological continuity; the woodland has never been clear-felled or extensively coppiced, although trees may have been felled on a selective basis.

Interpretations may need to vary in different areas. For example, New Forest hardwood plantations (planted *c.* 1800) may score as high as 50 where they are surrounded by woodland of much longer ecological continuity (Rose 1976: 294). Secondly, in the highly favourable climate of the western Highlands of Scotland, planted policy woodlands can attain values as high as 60.

Appendix M – New Index of Ecological Continuity (NIEC)

Reproduced with kind permission from Coppins & Coppins (2002); 'Indices of Ecological Continuity for Woodland Epiphytic Lichen Habitats in the British Isles'.

Main species

Agonimia allobata
A. octospora
Anisomeridium ranunculosporum
Arthonia astroidestera
A. ilicina
A. vinosa
Bacidia biatorina
Biatora epixanthoides
B. sphaeroides
Buellia erubescens
Catinaria atropurpurea
Cetrelia olivetorum *s. lat.*
Chaenotheca sp. (excl. C. ferruginea)*
Cladonia caespiticia
C. parasitica
Collema furfuraceum/or subflaccidum*
Cresponea premnea
Degelia atlantica/or plumbea*
Dimerella lutea
Enterographa sorediata
Heterodermia japonica
Lecanactis subabietina
Lecanographa amylacea
L. lyncea
Lecanora jamesii
L. quercicola
L. sublivescens
Leptogium cyanescens
L. lichenoides
L. teretiusculum
Lobaria amplissima
L. pulmonaria
L. scrobiculata
L. virens
Loxospora elatina
Megalospora tuberculosa
Micarea alabastrites/or cinerea*
M. pycnidiophora
Mycoporum antecellens
Nephroma laevigatum
N. parile
Ochrolechia inversa
Opegrapha corticola
O. prosodea
Pachyphiale carneola
Pannaria conoplea/or rubiginosa*
Parmeliella parvula
P. triptophylla
Parmotrema crinitum
Peltigera collina
P. horizontalis
Pertusaria multipuncta
P. velata
Phaeographis sp. (excl. P. smithii)*
Phyllopsora rosei
Porina coralloidea
P. hibernica
Punctelia reddenda
Rinodina isidioides
Schismatomma niveum
S. quercicola/ or Pertusaria pupillaris*
Stenocybe septata
Sticta fuliginosa/ or sylvatica*
S. limbata
Strangospora ochrophora
Thelopsis rubella
Thelotrema lepadinum
Usnea ceratina
U. florida
Wadeana dendrographa

The maximum total above is 70, but the following rare species are among those that can be considered as **Bonus species**: (see Section 2.1.1 for guidelines for Bonus species):

Anaptychia ciliaris
Arthonia anombrophila
A. anglica
A. arthonioides
A. zwackhii
Bacidia circumspecta
B. subincompta
Buellia hyperbolica
Bunodophoron melanocarpum (S England only)
Catillaria alba
Caloplaca herbidella
C. lucifuga
Collema fragrans
C. nigrescens
C. subnigrescens
Cryptolechia carneolutea
Fuscopannaria mediterranea
F. sampaiana
Hypotrachyna endochlora
H. sinuosa
H. taylorensis
Leptogium burgessii
L. cochleatum
Megalaria grossa (S England only)
M. laureri
Menegazzia terebrata
Mycoporum lacteum
Opegrapha fumosa
Parmelinopsis horrescens
P. minarum
Parmeliella testacea
Parmotrema arnoldii
Porina rosei
Pseudocyphellaria crocata
P. intricata
P. norvegica
Pyrenula nitida *s.str.*
Ramonia sp.* (excl. R. interjecta)
Rinodina colobinoides
Schismatomma graphidioides
Sphaerophorus globosus (S England only)
Sticta canariensis/or dufourii*
Teloschistes flavicans
Usnea articulata

*Note that only one species is counted when alternatives or "sp." are given.

Sites with a *T* value of 30 or more are considered to be of high conservation importance, whereas those scoring < 20 are likely to be of limited importance. (See Section 2.4).

Appendix N – Definition of Significance, Home Range and Area Requirements of Mapped Species

Extract from Somerset Econet, Version 4; The Distribution of Protected and Biodiversity Action Plan Species in Somerset (SCC, 2009).

Common Name	Scientific Name	Significant Group		Home Range (km)	Habitat Requirement (Average hectares per individual / breeding pair for birds)
		Roost Type	or Roost Size[1]		
Greater Horseshoe Bat	*Rhinolophus ferrumequinum*	Any maternity or hibernation roost or swarming site.	50	4 to 7.5	6 to 7
Lesser Horseshoe Bat	*Rhinolophus hipposideros*		30	2 to 6	12 to 53
Barbastelle Bat	*Barbastella barbastellus*		20	6 to 12	2 to 70 x 2 areas
Serotine Bat	*Eptesicus serotinus*		10	1 to 14	16 to 4760
Bechstein's Bat	*Myotis bechsteini*		20	1.5 to 3.8	3 to 30
Brandt's Bat	*Myotis brandtii*		30	5.7 to 10	No data
Daubenton's Bat	*Myotis daubentonii*		20	3 to 15	2 to 15 of water
Whiskered Bat	*Myotis mystacinus*		30	1.25 to 3.5	20 to 35
Natterer's Bat	*Myotis nattereri*		20	0.25 to 6	2 to 20
Noctule Bat	*Nyctalus noctula*		15	2 to 6	No data
Pipistrelle, Common	*Pipistrellus pipistrellus*		25	1.5 to 2	50+
Pipistrelle, Soprano	*Pipistrellus pygmaeus*		25	1.75 to 2	No data
Brown Long-eared Bat	*Plecotus auritus*		10	0.5 to 2.8	0.75 to 1.5
Grey Long-eared Bat	*Plecotus austriacus*		10	1.4 to 5.5	No data
Common Otter	*Lutra lutra*	Female with cubs		5 to 39; (c.15 Somerset)	2 to 50 of water
Common (or Hazel) Dormouse	*Muscardinus avellanarius*	Female with litter		0.2	20 (colony)
Great Crested (or Warty) Newt	*Triturus cristatus*	Peak adult count <10 = >5	Peak adult count 10+ = >10	0.5	4 of terrestrial habitat (colony)
Large Blue Butterfly	*Maculinea arion*	Colony		0.6	2 (colony)
Marsh Fritillary Butterfly	*Euphydryas aurinia*	Colony		No data	70 (colony)
Stag Beetle	*Lucanus cervus*	Presence		0.2	1.06 (male)

[3] The minimum number of bats if the record does not list the type of roost

Common Name	Scientific Name	Significant Group	Home Range	Habitat Requirement
White-clawed Crayfish	*Austropotamobius pallipes*	Presence	0.001 to 0.008	No data
Water Vole	*Arvicola terrestris*	Colony	0.08 to 0.6	40 to 50 metres of bank side per pair (watercourses up to 20 metres wide)
Barn Owl	*Tyto alba*	Breeding pair	2 to 3	50
Bearded Tit	*Panurus biarmicus*	Breeding pair	1.96	2 to 9
Bittern	*Botaurus stellaris*	Breeding pair	No data	20
Cetti's Warbler	*Cettia cetti*	Breeding pair	0.4 to 0.5 (male)	0.41 to 2.1
Firecrest	*Regulus ignicapillus*	Presence[2]	0.20	0.5 to 1.5
Garganey	*Anas querquedula*	Breeding pair	1.6	No data
Hobby	*Falco subbuteo*	Breeding pair	3	No data
Kingfisher	*Alcedo atthis*	Breeding pair	1 to 5	No data
Lapwing	*Vanellus vanellus*	Breeding pair	1.5	1
Little Ringed Plover	*Charadrius dubius*	Breeding pair	2	0.25 to 0.5
Long-eared Owl	*Asio otus*	Breeding pair	2.5	No data
Marsh Harrier	*Circus aeruginosus*	Breeding pair	3.1	100 to 1250
Nightjar	*Caprimulgus europaeus*	Breeding pair	2 to 7	2
Peregrine Falcon	*Falco peregrinus*	Breeding pair	2 to 18	No data
Adder	*Vipera berus*	Suitable habitat area of greater than 200 hectares	2	0.083 to 1
Grass Snake	*Natrix natrix*	Presence	0.825	0.5 to 33
Heath Fritillary Butterfly	*Mellicta athalia*	Colony	No data	0.5 (colony)
Lesser Silver Water Beetle	*Hydrochara caraboides*	Presence	No data	No data
Wood White Butterfly	*Leptidia sinapsis*	Colony	No data	No data

[4] There are no recent records of firecrest breeding in Somerset although the Somerset Ornithological Society records males singing and lists it as a breeding bird. Therefore, presence has been selected as a significant group.

Appendix O - References

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