Rotherham | Local Wildlife Site System

Part 1 | The Framework for Rotherham's Local Wildlife System

March 2011

www.rotherham.gov.uk

Rotherham Metropolitan Borough Council
Where Everyone Matters

ACKNOWLEDGMENTS

This document is based upon the Rotherham LWS Framework produced by Baker Shepherd Gillespie 13th April 2007 (Reference: 2283_003_rep#4_ph_rmbc). This amended document has been produced in 2010 to incorporate revised national priorities and planning policy to provide a contemporary framework for the adopted Rotherham Local (Wildlife) Site System.

A large number of people have provided advice and/or information to aid in the production of the selection guidelines, and the panel is very grateful for the contributions of all of these people.

In addition, BSG has reviewed the selection guidelines for other counties in England and has been guided and informed by these documents. We owe a special debt of gratitude to the Selection Guidelines for North Yorkshire. In many instances their selection guidelines for habitats and species provided ideal templates from which we have borrowed and adapted to suit our own needs in Rotherham.

CONTENTS

INTRODUCTION

This document sets out the framework for a non-statutory Local Wildlife Site system which will operate in Rotherham. A supporting document entitled "Local Wildlife Sites Selection Guidelines for Rotherham" forms part 2 of the guidelines.

The guidelines are for the selection of Local Wildlife Sites based on biodiversity characteristics only. The guidelines do not extend to consideration of Local Sites selection for reasons of geological conservation or for social reasons. Geodiversity assessment is to be developed separately to produce a geodiversity action plan and accompanying priority site selection criteria.

BACKGROUND

Non-statutory Local Wildlife Sites are widely recognised for their vital contribution in delivering both UK and local biodiversity targets whilst maintaining local character and distinctiveness. Planning Policy Statement 9 (PPS9)[1] reaffirms the importance of Local Wildlife Sites and sets out policies on the protection of biodiversity through the planning system and identifies that Local Development Frameworks should identify all local nature areas on their proposals maps. The recent guidance produced by Defra[2] aims to promote a consistent approach to the operation of Local Wildlife Site systems and to ensure that local wildlife heritage is protected.

The Local Sites Review Group set up in 1999 by the then Department of the Environment, Transport and the Regions (DETR) 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."

Although Rotherham has a number of sites of national nature conservation importance protected through statutory designations, there is a need for a comprehensive system that identifies sites of Borough Importance and protects them through the local planning system.

Rotherham has operated a Heritage Sites Register which dates back to the West Riding administration. The Natural History Heritage Sites on the Register are sites of natural history importance and some of these sites were originally identified and graded by the West Riding. A South Yorkshire County Council/Nature Conservancy Council Phase 1 Habitat Survey of the Borough of Rotherham was undertaken in 1980/1981 and provided some further additions to the register. There are few written details of the site selection criteria that were used by either West Riding or South Yorkshire County Council.

Within the current Unitary Development Plan (UDP) (adopted June 1999) these same Heritage Sites are identified on the Proposals Map and are defined as having 'Known Interest Outside of Statutorily Protected Sites'.

Policy ENV 2.2. of the UDP states that:
'The Council's Countryside Study ... now covers all known sites and features in the Borough whether of national and regional (Category 1), Borough-wide (Category 2) or local (Category 3) significance in its Heritage Sites Register ... The register acts as a survey or audit of the extent and state of the environmental resources of the Borough ... The Council is therefore committed to keeping the Heritage Sites Register under constant review and publicly accessible.'

In 2000, Rotherham Metropolitan Borough Council employed an ecologist to progress the Local Biodiversity Action Plan[3] which was published in 2004. This process was begun by the Rotherham

[1] ODPM (2005). *Planning Policy Statement 9: Biodiversity and Geological Conservation.* HMSO
[2] Defra (2006). *Local Sites Guidance on their Identification, Selection and Management*. DEFRA
[3] Rotherham's Biodiversity Forum. (2004). *Rotherham's Biodiversity Action Plan*. RMBC

Biodiversity Forum, which was established in 1997: the forum continues to deliver the objectives of Rotherham's Biodiversity Action Plan and comprises representatives from a wide range of nature conservation organisations.

In 2001 the digitisation of habitat data from the Biological Records Centre was undertaken with funding support from the South Yorkshire Forest Partnership. In addition a range of habitat types were mapped digitally in 2003 by reference to the Phase 1 survey information, the Heritage Sites Register and the digitised aerial photographs of the Borough. These processes identified a large number of areas of known and potential nature conservation interest. Other areas of land for which there were no biological records were surveyed in 2006 to prepare a baseline dataset for the borough to allow for a comprehensive assessment against Local Wildlife Site selection criteria.

LOCAL WILDLIFE SITES

What is a Local Wildlife Site?

In England there are a variety of different site designations that impart statutory protection for their national or international importance for nature conservation. These sites are the most important in the UK and have been designated under national legislation, European Community Directives and International Conventions. They include Ramsar Sites, Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs) (Table 1). In Rotherham there are four biological SSSIs and two geological SSSIs.

Table 1 – International and National Designations

Site Designation	Explanation
Sites of International Importance	
Ramsar Sites	These sites are also designated as SSSI and are listed under the Convention on Wetlands of International Importance.
Special Protection Areas (SPAs)	These sites are also designated as SSSI and SPA under the EC Directive on the Conservation of Wild Birds.
Special Areas of Conservation (SACs)	These sites are also designated as SSSI and SAC under the EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora.
Sites of National Importance	
National Nature Reserves (NNRs)	These sites are designated as SSSI and declared as NNRs under the National Parks and Access to the Countryside Act 1949 or under section 35 of the Wildlife and Countryside Act 1981 as amended.
Sites of Special Scientific Interest (SSSIs)	These sites are notified under section 28 of the Wildlife and Countryside Act 1981 as amended.

Local Nature Reserves (LNR) also receive statutory protection, but are usually of local or regional importance. The designation of LNRs is undertaken by local authorities and is dependent upon their ownership or control of the site. The designation also requires the site to have some value to local people. In Rotherham there are currently six LNRs.

Non-statutory sites of local nature conservation value, unlike national and other statutory designations are identified within the context of the Borough of Rotherham. The selection of non-statutory sites in the Borough of Rotherham will be based on agreed criteria and quality standards that reflect the extent, variation and quality of the nature conservation resource in the Borough.

Local Wildlife Sites in Rotherham

Defra recommend[4] that in order to promote a common understanding of the kind of sites in question, as well as a more common currency in terms of the general level of importance of such sites, the generic term “Local Site” should be used. This is the term used in the Government’s new planning policy advice[5]. This term may be subdivided to describe an individual site as either a “Local Wildlife Site” or a “Local Geological Site”, but Local Geological Sites are not considered as part of this exercise.

“Local Wildlife Site” is the term given to a non-statutory site of nature conservation value in the Borough of Rotherham. Most counties in the UK now operate non-statutory site designation systems and guidelines for the selection of sites are increasingly being published and made available to planning authorities, business and the general public. Although Local Wildlife Site is the formal title for non-

[4] Defra (2006). *Local Sites: Guidance on their Identification, Selection and Management*. Defra
[5] ODPM (August 2005). *Planning Policy Statement 9: Biodiversity and Geological Conservation*. HMSO

statutory sites in Rotherham it should be recognised that other terms such as Site of Scientific Interest (SSI) or Site of Importance for Nature conservation (SINC) are in use in other places and are often long-standing and well-known locally.

Local Wildlife Sites in Rotherham are designated on the basis of their ecological interest but it is also acknowledged that these local sites provide other benefits to individuals particularly if they are open to the public and contribute to the education and quality of life of the local community. The selected sites will all have substantive nature conservation interest and will therefore have some value for appreciation and learning. Each selected site may be assessed for appreciation and learning value and where this is appropriate to the site access and the sensitivity of the site's features, suitable promotion may be developed.

It is recognised that some climate change will occur although the detailed climate response is uncertain. It is expected that climate change will have a significant effect on species and habitats in the UK. It is anticipated that changes will be required to conservation policy and management of sites including Local Wildlife Sites, will be necessary to help prevent a loss of species and habitats for which a site has been designated[6].

The Role of Local Wildlife Sites in Rotherham

In Rotherham, the designation of Local Wildlife Sites will fulfil a number of different roles, which are listed below. It should be noted, however, that the roles are not set in any order of priority, and all of them are important functions of the overall Wildlife Site system.

Local Wildlife Site networks provide a comprehensive rather than representative suite of sites. Designation enables the most important nature conservation sites in the Borough as well as the statutory site designation systems to be identified and protected.

- Local Wildlife Sites provide wildlife refuges for most of the UK's fauna and flora and through their connecting and buffering qualities, they complement other site networks,

- Local Wildlife Sites have a significant role to play in meeting overall national biodiversity targets and achieving the objectives of local and countywide conservation strategies, Biodiversity Action Plans and environmental sustainability,

- Local Wildlife Sites contribute to and represent local character and distinctiveness,

- Local Wildlife Sites contribute to the quality of life and the well-being of the community, with many sites providing opportunities for research and education, as well as affording local people the opportunity of contact with nature,

- Designation enables the prioritisation of advice, practical assistance and financial support for landowners and managers. Local Wildlife Site notification provides landowners/managers with information on the wildlife value of their land to assist them in making choices on management. In prioritising allocation of grants, such as payments through the Environmental Stewardship Higher Level Scheme, agencies will be able to target grants towards Local Wildlife Sites. Other bodies will be able to channel resources to provide advice and practical assistance with management. Practical links may be made with Community Strategies, such as local group help with conservation management of appropriate sites,

- Ecological survey undertaken to identify potential Local Wildlife Sites and to monitor existing Local Wildlife Sites contributes towards the local authority's Local Plan requirements under section 5 of the Town and Country Planning Regulations 2004[7] and Key Principle I of PPS9[8] which requires local authority plans to be based on adequate and up to date information about

[6] Hossell, J.E., Briggs, B. and Hepburn, I. R.2000. *Climate Change and UK Conservation: A review of the impact of climate change on UK species and habitat conservation policy*. DETR

[7] The Town and Country Planning (Local Development) (England) Regulations 2004. HMSO.

[8] OPDM 2005. Planning Policy Statement 9: Biological and Geological Conservation.

the local resources,

- The process of site evaluation, in preparation for Local Wildlife Site designation, can help to identify gaps in knowledge about the conservation resource of an area or site that can in turn inform further survey, research or monitoring,

Wildlife Sites and the planning system

This section outlines some of the key Government policy and guidance in relation to non-statutory sites of nature conservation importance. Much of current government policy and guidance is strongly influenced by the UK's commitments to international conventions and agreements on the environment, biological diversity and sustainable development.

In 1992 the UK Government signed the Convention on Biological Diversity (Biodiversity) which requires that biodiversity should be used sustainably in order that the development of human society does not lead to its long-term decline. The UK Government was also required to draw up an Action Plan as to how biodiversity would be maintained. This Plan was published in 1995[9] and subsequently detailed action plans for priority habitats and species have been produced. The relationship between national Biodiversity Action Plans and habitat types assessed under these guidelines is provided in Table 2. Government's announcement on the rationalisation of local authority plans (ODPM, November 2002) identifies Local Biodiversity Action Plans as one of the plans to be subsumed into Community Strategies. Local authorities will need to demonstrate that local biodiversity planning has been considered within their Community Strategy and that Community Strategies as a whole are informed by the purposes of biodiversity planning.

The Biodiversity Strategy for England[10] recognises the importance of designated local sites, in providing important wildlife refuges and stepping stones linking different habitats and helping to maintain biodiversity. The strategy also identifies the key role that Local sites play in Local Biodiversity Action Plans and in community strategies. Defra published their Local Sites guidelines in 2006 and this provides a standard for site identification, selection, management, protection and monitoring to ensure a consistent approach across England. The standards for selection are based primarily on nature conservation value, but also recognise the importance of local wildlife sites for social and educational enjoyment.

Planning Policy Statement 9: Biodiversity and Geological Conservation provides a statement of national planning policy for biodiversity and geological conservation in England. It recognises that Local Sites have a fundamental role to play in helping to meet overall national biodiversity targets, contributing to the quality of life and the well-being of the community, and in supporting research and education. PPS9 advises that Regional Spatial Strategies should "*include policies to conserve and enhance biodiversity at the regional and sub-regional levels"*. Local Development Frameworks should identify the location of all designated sites, including Local Sites, on their proposals maps. Criteria-based policies should be established by Local Planning Authorities within the Local Development Framework against which proposals for any development on or affecting such sites will be judged, and clear distinctions should be made between the hierarchy of international, national, regional, and locally designated sites[11].

Section 40(1) of the NERC Act 2006[12] states that "every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". The term Public Authority includes local authorities and local planning authorities.

Section 40(3) goes on to state that "conserving biodiversity includes, in relation to a living organism or type of habitat, restoring or enhancing a population or habitat".

Section 41(1) states that "the Secretary of State must, as respects England, publish a list of the living

[9] HM Government (1994). *Biodiversity The UK Action Plan*. Cm2428. HMSO
[10] Defra, 2002.Working with the Grain of Nature (pp 24 and 58).
[11] sections 2.20-2.23 of *Planning Policy Statement 12: Local Development Frameworks*
[12] *The Natural Environment and Rural Communities Act* 2006

organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity". This replaces a similar reference to the list that was found in Section 74 of the Countryside and Rights of Way Act 2000 (the CRoW Act).

The importance of those aspects of the natural environment that cannot readily be replaced once lost is reflected in *Biodiversity: the UK Action Plan,* which states:

"While some habitats, particularly those populated by mobile species which are good colonisers, have some potential for re-creation, the majority of terrestrial habitats are the result of complex events spanning many centuries which defy re-creation over decades. Therefore the priority must be to sustain the best examples of native habitats where they have survived rather than attempting to move or re-create them elsewhere when their present location is inconvenient because of immediate development proposals."

Article 10 of the Habitats Directive[13], which is brought into force through Regulation 37 of the Conservation (Natural Habitats etc) Regulations 1994, includes the encouragement of the *management of features of the landscape, which are of major importance for wild flora and fauna. Such features are those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems for marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species*. Local Sites systems contribute to the fulfillment of this requirement and can play a very important part in maintaining the links that join up and support the nationally and internationally recognised sites.

There is clear policy guidance on the need and desire to protect wildlife in the countryside and in towns and cities and by identifying sites that are important at a local level the continued representation of the full extent of our biodiversity is more certain.

The Relationship between UK BAP habitat types and Local Wildlife Site habitats

In 1995 the UK Biodiversity Steering Group[14] identified 17 broad habitat types which were subdivided into 26 UK Priority Habitats of national conservation concern. Following two years of research and consultation an updated list of priority habitats and species was published in 2007[15] by the UK Biodiversity Partnership; this list, a result of the most comprehensive analysis ever undertaken in the UK, now contains 1150 species and 65 habitats that have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP).

Prior to the publication of the Rotherham Biodiversity Action Plan, the Rotherham Biodiversity Forum undertook habitat and species audit work to identify the presence of national priorities in Rotherham and to identify those that are considered to be important locally.

The habitat types identified to be of importance within Rotherham form the basis of the habitat categories used for the selection of Local Wildlife Sites in Rotherham and are summarised in Table 2. National Vegetation Classification[16] references are given for the habitat types where relevant although this is not necessarily a complete list of all the vegetation communities present in the Borough.

[13] Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora. Annex G Article 10.
[14] UK Steering Group Report (1995) *Volume 2. Biodiversity: Action Plans.* HMSO
[15] UK Biodiversity Action Plan; Report on the Species and Habitat Review. BRIG (ed. Ant Maddock) 2007
[16] JNCC, Edited by Rodwell J. S. *British Plant Communities* Cambridge University Press.

Table 2 – The Relationship between UK Biodiversity Habitat Action Plans and important biodiversity habitats in Rotherham

(adapted from North Yorkshire SINC Panel, 2002)[17]

UK BAP Broad Habitat Type	UK Priority Habitats	Other Important Habitats / land-use features in Rotherham	Local Wildlife Site Habitat Types (including NVC types where relevant)
Broad-leaved and yew woodland	Wet woodland Upland mixed ash woodland Lowland mixed deciduous woodland	Oak-birch woodland	Wet woodland (W1 –W7) Mixed ash woodland (W8, W9 and W13) Lowland oak/birch woodlands (W10, W16) Scrub (W21-W24)
Lowland wood pastures and parkland	Lowland wood pastures and parkland	Historic parkland landscapes	Parkland (U4. U20, MG6, MG7, W10, W16, W16)
Boundary and linear features	Hedgerows	Herb-rich road verges	Ancient and/or species rich hedgerows (W21-W24) Grasslands
Arable and Horticulture	Arable field margins	Arable fields and fallow (ruderal / segetal plant communities)	Cereal field margins Arable weed communities (OV1-OV17)
Improved grassland	Coastal and floodplain grazing marsh	Permanent pasture	Improved grassland (includes species-poor semi-improved grassland) (MG6, MG7, MG9, MG10)
Unimproved Neutral grassland	Lowland meadow. Coastal and floodplain grazing marsh	Road verges	Unimproved and semi-improved neutral grassland (MG1, MG4, MG5, MG6 and MG9) Floodplain grazing marsh (MG10, MG 9, M27)
Acid grassland	Lowland dry acid grassland	Road verges	Acid grassland U1, U2, U4.
Calcareous grassland	Lowland calcareous grassland	Road verges	Calcareous grassland (CG2,CG3, CG4 and CG5)
Lowland Heathland	Lowland heathland	Lowland acid grassland mosaics	Lowland heathland (includes lowland acid grassland mosaics(H1, H8, H9)
Fens, carr, marsh, swamp and reedbed	Reedbeds Lowland Fen Coastal and floodplain grazing marsh	Wet grass / Marsh Swamp Carr Rush pasture Wet ditches and drains	Fen and carr (W1-W6) Reedbed (S1, S3, S4) Wet grassland MG8, MG9-MG11, MG13), Marsh and swamp (S5-S10, S12, S14, S15, S17-S23, S25-S28; M1/2 unlikely, M3, M10, M13, M16 M21-M23, M25-M27, M36)
Standing open water	Eutrophic standing waters Mesotrophic lakes Ponds	Ponds, including garden ponds	Standing water (includes reservoirs) (A2, A5, A7, A8-A13, A14?, A15, A16, A19, A20, A24)
Rivers and streams	Rivers	River corridors	Rivers and streams (A2, A5, A8-A12, A15-A18, S14, S22, S23 & S26)
Canals	Ponds		Standing water

[17] North Yorkshire SINC Panel. 2002. *Sites of importance for Nature Conservation in North Yorkshire*

ROTHERHAM LOCAL WILDLIFE SITE SYSTEM

Rotherham Local Wildlife Site Panel

The Rotherham Local Wildlife Site Panel was established as a consultation panel for the development of Rotherham's Local Wildlife Site system. Various other bodies including the Yorkshire Naturalist' Union and numerous other individuals have also provided advice and information to the Panel through the Rotherham Biodiversity Forum. The Panel will continue in order to appropriately administer the system; the role of the Local Wildlife Sites Panel is to:

- Endorse the basis for Local Wildlife Site selection. The Local Wildlife Site Panel is the key scientific authority of the Local Wildlife Sites process.
- Evaluate proposed or candidate Wildlife Sites against the selection guidelines and to recommend the adoption of new Local Wildlife Sites for inclusion in the Local Development Framework.
- Review as part of an ongoing process the habitat and species selection guidelines and revise them as necessary.
- Assist in the provision of guidance on the management of Local Wildlife Sites.
- To co-ordinate the survey programme of the Local Wildlife Sites.

The Local Wildlife Site Panel will be formalised by way of a Terms of Reference document. The Panel members have the necessary technical knowledge and local understanding of the Borough to be able to objectively apply the criteria for the selection of the Local Wildlife Sites.

Format of the Local Wildlife Site Framework and Selection Guidelines

The procedures for the selection of Local Wildlife Sites are published as two documents that should be read in conjunction. In addition to this Framework document, the detailed selection guidelines cover firstly the selection of Local Wildlife Sites based on habitat characteristics; and secondly the selection of sites based on the presence of important species or groups of species.

For each habitat the selection guidelines describe the status of the habitat in the International, National, Natural Area and Borough context, and set out the criteria and attributes on which the designation of a Local Wildlife Site is based. For each species group, details of the legal protection and status afforded, as at the date of publication, are provided where applicable.

Selection of Local Wildlife Sites

The Local Wildlife Site selection guidelines set out a selection process based on the ecological evaluation criteria recommended by the Defra guidance[2]. For each criterion, measurable site attributes are identified, and an assessment of the quality of a site is then judged against selection thresholds for the attributes.

For example, under the criterion of rarity the selection guideline may indicate that a particular species or habitat type is so rare that any example of that type should be considered for designation. However, to ensure that the site is an example of the habitat that warrants protection it may need to be greater than a certain size. In this example size is a selection criterion, the area of the site is a measurable attribute and the minimum area requirement is a selection threshold.

This approach to Local Site selection recognises that all attributes are of equal importance regardless of the detail or extent of knowledge about the attributes within Rotherham, although some attributes alone may not be sufficient to warrant designation. For example, the size (area) of a site may be used to set a minimum threshold for selection so long as the quality of the habitat that makes up the site meets the selection thresholds for other site attributes. The process is also relatively simple and involves the assessment of what features are important and what attributes best reflect that importance. It is readily

accessible to non-specialists and the thresholds used for selection can be adjusted as the nature conservation resource changes or as knowledge about habitats and species of importance increases.

Habitat selection criteria

Defra has recommended consideration of ten criteria in the selection of local sites; Defra's definitions of the criteria used are provided in section 4.4 with notes as to their application for Rotherham:

- Size or extent
- Diversity
- Naturalness
- Rare or exceptional feature
- Fragility
- Typicalness
- Recorded history and cultural associations
- Connectivity within the landscape
- Value for appreciation of nature
- Value for learning

The Rotherham Local Wildlife Site system uses most of these criteria and examples of how the habitat criteria have been reflected in the selection guidelines are shown in Table 3 below. Fragility has not been used as a criterion for the selection of Local Wildlife Sites in Rotherham as this criterion cannot be satisfactorily defined or measured for the habitats beyond the position that all UK and local priority habitats are fragile and should be conserved. Value for appreciation of nature and value for learning are considered to be inherent properties of all nature conservation sites; however, as the system includes sites in public and private ownership it is not appropriate to use these as criteria for selection.

Table 3 – Relationships between habitat selection criteria, attributes and thresholds

(adapted from North Yorkshire SINC Panel, 2002)[17]

Criterion	Attribute	Threshold Example
Size / extent	Area or population size.	Minimum area or minimum number of breeding pairs etc.
Naturalness	Habitat features indicate the habitat is long established or has natural characteristics.	Rivers with a dynamic range of natural features and a high water quality.
Typicalness	Habitat features and species assemblages that represent the combination of biotic and abiotic factors influencing the site.	Any sites that support more than the minimum threshold of species characteristic of the habitat type.
Rare or exceptional feature	Species rarity. Habitat and / or vegetation community rarity.	All sites that support populations of nationally scarce or Red Data Book Species.
Diversity	Diversity of species in total or diversity of species from particular biotic groups. Diversity of habitat and vegetation structure.	Any sites that support more than the minimum threshold of a list of species.

Connectivity within the landscape	Individual sites need to be considered in terms of the contribution they make to overall network of sites.	Location or proximity of site in relation to other recognised sites of interest either as similar habitat or habitat mosaic. The site is part of a recognised wildlife corridor
Recorded history and cultural associations	Past investigation or recording of a site.	Sites on Ancient Woodland Inventory.

Species selection criteria

The species selection guidelines have been based on the use of five selection criteria. The three principal criteria used are Rarity, Diversity and Typicalness; Naturalness and Size have only been used in specific circumstances. Examples of how the species criteria are reflected in the selection guidelines are shown in Table 4.

The use of species assemblages for site selection is most useful for groups for which there has been regular and widespread recording. This enables an overview of the importance of a particular site to be determined, as some assemblages of species are characteristic of longstanding habitats. The use of assemblages for some animal groups also allows assessment of habitats that may be inherently poor or uncharacteristic from a botanical point of view.

The species selection guidelines for selecting Local Wildlife Sites are based on a number of common issues that should be applied to the selection of sites.

For the purposes of these selection guidelines selection is based on species that are:

(a) Native to the South Yorkshire region.
(b) Native to Britain, but have recently naturally colonised the region.
(c) Native species that have been introduced through recognised species conservation programmes.
(d) Known archaeophytes (pre-1600 introductions) of the region.

Species that have been, or are believed to have been, deliberately introduced or are casual occurrences in the Borough are not eligible for inclusion.

The designation of sites should be based on reliable records and for some groups this will require specialist skills. Data must also be reasonably up to date and the term 'regularly' has been used in the selection guidelines to indicate that the species should have been recorded for a minimum of 3 years (not necessarily consecutively) out of the previous 5 years immediately before designation is made.

Table 4 – Relationships between species selection criteria and attributes

(adapted from North Yorkshire SINC Panel, 2002)[15]

Criterion	Attribute
Size or extent	The size of the population of a species has been used in some selection guidelines. For example the number of individual of species of amphibian present at a site has been used to assess the significance of a population.
Typicalness	This criterion is reflected in some of the selection guidelines where a good assemblage of species has been used to identify typical examples of particular species groups for particular habitats. For example the guideline for assemblages of breeding birds for particular habitats.

Diversity	This criterion is reflected in some of the selection guidelines where assemblages of species have been used to identify good, diverse populations of species belonging to a particular species group.
Rare or exceptional feature	Presence of nationally rare, nationally scarce and county rare species has been widely used in the selection guidelines.
Naturalness	Assemblages of vascular and non-vascular plants can reflect the naturalness of a site(for example ancient woodland indicator species)

Criteria definitions

Provided below are the Defra definitions of the selected criteria used together with notes (as appropriate) on the application of the criterion in the development of selection thresholds for Rotherham.

Size or extent

The ability of a site to support a species depends, in part, upon its extent. The requirements of many species of animal for minimal areas for foraging and territories for breeding may preclude their survival within smaller areas of otherwise suitable habitat. The same may also be true of certain plant species where the long-term viability of populations may require a minimal extent of habitat free from adverse environmental influence, allowing for turnover within local populations. Although, for mobile species, including many birds, mosaics of different habitat features or elements at the wider landscape scale are essential, the presence of individual blocks of a particular habitat type of a minimal size can nevertheless be critical. Where the interest of a site is an active natural process, such as the banks of a river, the site boundary should encompass the area of active process as well as any adjacent area to which the process will imminently spread. Although larger sites can be critically important for supporting viable populations of certain species, smaller sites can also be important where species are able to use them as 'patches' of a larger habitat resource dispersed across the landscape. Small sites may also be the only locally available patches of accessible natural greenspace offering opportunities for the appreciation of nature.

This criterion can be applied in different ways. For habitats it does not act as a single selection criterion because it is used to set minimum thresholds for habitats that also have to be of a particular quality in order to be eligible for Local Wildlife Site selection. In relation to the selection guidelines for species groups, size is used to set a selection threshold for populations of particular species.

Diversity

A key principle of nature conservation is to sustain the diversity of wildlife and habitats, including maintaining genetic diversity within populations of animals and plants as well as the diversity of species and habitats. Some habitats are characteristically more species-rich than others. For example, unimproved calcareous grassland is considerably richer in plant species than heathland. However, each habitat type is characterised by its own range of species. Conserving the diversity that these different habitats represent, and the diversity of their respective floras and faunas, means effectively conserving the integrity of these contrasting environments, one richer in plant species, and the other poorer.

This criterion can be applied to a range of characteristics of a site, but is most often measured in terms of diversity of species, habitats and vegetation communities which, in turn, reflect the physical characteristics of a site such as diversity of soil types, hydrology, micro-climate and topography. The criterion is used in the selection guidelines through the choice of thresholds that have been set for habitats and species. For habitats the selection thresholds for the number of characteristic species of a habitat type will usually reflect the species diversity of a site. For species groups diversity is reflected in the selection thresholds set for good species assemblages.

Naturalness

Human activities past and present have had such an impact that even those parts of the landscape that seem least modified are now more usually described as 'semi-natural'. In this context, the concept of 'naturalness' is probably better considered not as the absence of human intervention or legacy within a site but the degree to which a site supports natural features or demonstrates active or past natural

processes.

Within urban areas, natural processes of colonisation and succession can transform previously developed land into seemingly natural vegetation. But it is often the early stages of such natural recolonisation that, though less apparent, are more significant for the presence of rare or scarce species of conservation importance. Therefore, naturalness should be considered as much in terms of process as the presence of 'natural' features.

This criterion is used in the habitat selection guidelines to reflect the longevity of the habitat, for example Ancient Woodland Sites are considered to be particularly valuable because they have been continuously wooded since 1600 and support assemblages of plant species characteristic of long established woodland sites.

Rare or exceptional feature

This is perhaps the most self evident of the criteria. The local loss of a rare species or habitat may result directly in the reduction in its wider geographical range. For species that are rare, local populations may represent an important part of the total species gene pool. The loss of a local population may result in the irreversible loss of genetic diversity, local races or subspecies and ultimately of species themselves.

This is an important criterion that reflects one of the primary aims of nature conservation, namely, the prevention of the further loss of species from their natural range. Rarity is also a valuable criterion because it can be measured more readily than some other criteria. For example, standards are set for the classification of species as rare or scarce at a national, local or county level. Rarity is not just applicable to species, but also to habitats, geological and geomorphological features and assemblages of species. Rarity can be broadened to include those habitats and species that are rare, threatened or in decline over a wider geographic area such as continental Europe for which the UK has a particular responsibility (for example great crested newt, Natterer's bat or lowland heathland). *The Biodiversity Audit of Yorkshire and the Humber*[18] lists rare and declining habitats and species within the region. These lists and the records from Rotherham Biological Records Centre have been used to inform the preparation of the habitat and species selection guidelines for Rotherham.

Rarity is generally represented at different hierarchical levels. These different levels impart greater degrees of importance to the species. However, this can depend on the level at which rarity is measured, as some species that are rare at the national or international level can be relatively frequent at the local level if Rotherham is a stronghold for the species.

The different levels of rarity identified in the selection guidelines refer to:

(a) Species that are of international importance. These species are identified in European Community Directives (Habitats and Birds Directives).
(b) Species that are of national importance. These species are identified in the Red Data Books for the UK and in the Wildlife and Countryside Act 1981 (as amended). Nationally rare species occur in less than 16 10km grid squares and nationally scarce species occur in 16-100 10km grid squares in the UK.
(c) Species that are rare in Rotherham, taken to be those that occur at 3 or fewer localities in the Borough.

At the more local level care has to be taken when considering the rarity of particular species: incomplete survey coverage can give rise to a misleading classification of a species as "rare".

Typicalness

Generally, Local Sites will not be typical of the landscapes in which they are found; their designation is likely to reflect the fact that they are special in some way. Rather, their value lies in them exemplifying a type of habitat, geological feature, or a population of a species, that is characteristic of the natural components of the landscape in which they are found. Wildlife habitats and geological features play an important role in helping define a 'sense of place' or local distinctiveness. They represent the 'natural

[18] Selman, R., Dodd, F and K. Bayes (1999). *A Biodiversity Audit of Yorkshire and The Humber*. Yorkshire and Humber Biodiversity Forum.

character' of an area, especially where this has been lost or eroded from the wider landscape. Similarly, sites may exemplify natural processes past or present whether geological or biological. In this way, Local Sites are likely to typify the best of the natural environment of an area.

This is an important criterion because it reflects the desire to ensure that the full characteristic variety of the natural environment of Rotherham is maintained, not just the rare or the particularly species-diverse.

The criterion is used in both the habitat and species selection guidelines by the setting of selection thresholds for numbers of characteristic species of each habitat type or of characteristic assemblages within species groups.

Recorded history and cultural associations
Past investigation or recording of a site can add greatly to its value for understanding processes and change in the natural environment. Many sites also have links to historic events or have literary or other associations in art. Besides revealing environmental change (or stasis) over time such recording or portrayal can also reveal changes in perception of the natural environment and the economic value that it has been ascribed at different times. Because the natural environment has been extensively shaped and influenced by human activity, the natural features that we have inherited and which provide important components of regional and local distinctiveness also represent important parts of our cultural heritage. A good example of this is the relationship between local geology and building stone. Not only are many towns and cities dominated by buildings made of locally quarried stone, but the former quarries from which such stone came are commonly sites of local value for their geological or ecological interest. Because Britain has played an important role in the history of Earth Science, many sites are of significance as the places where scientific concepts were first demonstrated.

This criterion is used to enable the selection of ancient woodland and ancient species-rich hedgerows Local Wildlife Sites, where cartographic evidence and historic documentation is required to confirm their historic presence.

Connectivity within the landscape
Besides being of intrinsic interest themselves and directly supporting wildlife within their boundaries, Local Sites also have an important role in supporting populations of species within the wider landscape. Such species may not depend on any single site or piece of habitat but rather require a habitat resource which is comprised of numerous patches which though dispersed, are accessible and are potentially parts of a functional network. Individual sites need to be considered in terms of the contribution they make to such networks; not simply the quantity of habitat they provide, but its geographical position. The quality of habitat and the nature of the surrounding matrix are also extremely pertinent considerations.

This is an important criterion that reflects one of the primary aims of nature conservation (Article 10 of the EC Habitats Directive; paragraph 12, PPS 9) addressing the issue of the adverse impacts of habitat fragmentation on species populations.

It is often not possible, however, without detailed study, to quantify the significance of the inter-relationships between different blocks of habitat in maintaining species populations. Consequently, this criterion has been used in the selection of Local Sites to encourage the protection of groupings of sites even when some of the sites within the grouping may fall just short of the selection thresholds.

Quality of information

It is imperative that Local Wildlife Sites are designated on the basis of the best available information. Sites should be generally evaluated on the basis of reliable information that is as up to date as possible. Historical species records will be taken into consideration and can add weight to the selection of a site. Information should have been obtained through field survey by a suitably qualified and/or experienced person. For difficult to identify species, verification by an acknowledged expert may be required.

Limitations imposed by availability of information

It is important that the selection guidelines are based on information that enables the substantive nature

conservation value of sites to be determined and justified. For some species groups there is little or no systematic information held for Rotherham and it is not possible to develop effective guidelines for these groups as a basis for selection. In time with further study some of these species groups may prove useful in Local Wildlife Site selection and the selection guidelines will be adapted accordingly. Consequently, the selection guidelines are based upon the current best available information about the extent, quality and distribution of habitats and species in Rotherham. Data are more available for some habitats and species groups than others, which is reflected in the selection guidelines. For example, widely studied species groups (such as birds) feature prominently in the selection guidelines because the recording for birds in Rotherham is substantial and is being constantly monitored and updated by a network of amateur and professional ornithologists.

Alternatively, species groups that are difficult to locate and/or identify (for example invertebrates, lichens or bryophytes) will require specialist survey and evaluation work, or verification by an acknowledged expert may be required. This limits the data that can be collected or made useful.

It is important for the integrity of the Local Wildlife Sites System that the appraisal of sites remains valid and up to date. Data records will need to be updated on a regular basis through continual monitoring of sites.

APPLICATION OF THE LOCAL WILDLIFE SITE SELECTION GUIDELINES

Local Wildlife Site assessment and notification procedure

Any individual or organisation can propose a site to any panel member for inclusion in the Local Wildlife Sites series where they believe the site to be of a suitable level of interest. Sites may also be proposed for removal from the series if their level of interest is shown by supporting information to have fallen below the threshold level of the relevant guideline. The supporting information such as records of species/habitats should be submitted to the Biological Records Centre to ensure a complete record of evidence is deposited and kept in one place.

Rotherham Metropolitan Borough Council and the Local Wildlife Site Panel are responsible for the notification of sites that are of suitable quality to be designated Local Wildlife Sites. This will follow a site assessment of any candidate Local Wildlife Sites using the selection guidelines. A minimum of five panel members are required to approve the notification of sites. The approved list of Local Wildlife Sites will then be passed to Planning Services within Rotherham Metropolitan Borough Council (RMBC) for their adoption as a Supplementary Planning Document linked to the relevant policies in the existing Unitary Development Plan and eventually the forthcoming Local Development Framework. The working relationship between RMBC and the Local Wildlife Site Panel will be outlined by a Terms of Reference document setting out the process for site selection, protection, monitoring and management advice provision.

This selection process is to be undertaken for the first time in 2007. Rotherham Biological Records Centre holds information relating to the habitats and species recorded for any given area of land, including many of the sites previously known as Heritage Sites. Each site will be considered against the selection guidelines and the relevant selection guideline or guidelines under which a site qualifies, along with explanatory notes, will be recorded appropriately. The resulting list, following consultation with the Panel, will constitute the Candidate Local Wildlife Sites; appropriate survey work and assessment will establish consent with the desk study indication. Sites confirmed as possessing the required value will then be mapped and appropriate citation documentation will be completed; these sites will then be put forward for adoption within the planning framework.

Following the initial selection process sites may be nominated for notification and adoption via the Panel; appropriate data will need to be collected or supplied to support the nomination. Any sites subject to ecological survey work, either via any of the Panel members or made available by other organisations will also be assessed to establish value and potential for nomination.

Site notification and adoption will be undertaken in consultation with relevant landowners and managers; appropriate documentation will be prepared and issued accordingly.

Monitoring site conditions

Local Wildlife Sites will ideally be revisited at least every 10 years to review their status and condition and to undertake further relevant survey work. It is proposed to re-survey 10% of the Local Wildlife Sites each year. It is possible, however, that there may not be sufficient resources available to permit a complete re-survey within these timescales. Resulting survey and monitoring information will be entered into the Rotherham Biological Records Centre. The Local Wildlife Site Panel will co-ordinate the implementation of a program of monitoring in association with RMBC and the Biological Records Centre.

Where a site is designated as a Local Wildlife Site and future access is prohibited by the landowner; the site will continue to de designated as a Local Wildlife Site.

Review of designated Local Wildlife Sites

The Local Wildlife Sites will be reviewed on a rolling programme as part of the monitoring programme outlined in 5.2. The process of review is essential to ensure that a common standard is maintained in line with government guidance that sites should be of “substantive nature conservation interest.” To ensure consistency a review procedure and documentation will be completed for each site proposed for addition

or deletion to the system as appropriate.

The Panel will consider any Local Wildlife Sites that may be proposed for de-allocation if their level of interest is believed to have dropped below the level of the Local Wildlife Site criteria and is considered to be unrestorable.

Local Wildlife Site System review procedure

The Local Wildlife Site Selection Framework and Guidelines will be reviewed every five years and any proposed amendments ratified by the Local Wildlife Sites Panel. In addition, individual selection guidelines for habitats or species will be reviewed as part of an on-going monitoring programme and any amendments considered necessary will be brought to the Panel Meeting that will be held twice yearly.

Determining Local Wildlife Site boundaries

Once a site has been assessed as being of Local Wildlife Site quality, consideration is given to the identification of the boundaries of the Local Wildlife Site. This can be problematic for some sites but the determination of boundaries should be undertaken so as to ensure that the area of land that meets the selection guidelines is included within the Local Wildlife Site boundary. In addition boundaries should be drawn so that they can be readily located on maps and on the ground. Care will need to be taken to ensure that they are not drawn such that they include significant areas of land that do not satisfy the selection criteria and thus place an undue constraint on potential development. They may (and where possible should), however, include habitat that is of lesser value where it is an integral part of the management unit or provides a buffer zone for a fragile habitat and occupies less than 50% of the area of the land parcel under consideration.

When determining Local Wildlife Site boundaries:

(a) The boundary should be determined by readily identifiable management units, for example a hay meadow, woodland, or roadside verge, where the majority of the area concerned satisfies the selection criteria.

(b) Where there is an aggregation of separate management units adjacent to each other the boundary should be drawn to include all sites as a single Local Wildlife Site.

(c) Where there is a grouping of separate qualifying management units of the same habitat type (for example a series of unimproved meadows) that is in close proximity to each other they may also be referred to as a single Local Wildlife Site.

(d) For large stands of a single habitat type with only a minority of the area being of Local Wildlife Site quality or of marginal Local Wildlife Site quality, the boundary may be drawn to the nearest topographic feature or a line between two features so that the majority of the area of land identified as a Local Wildlife Site is of Local Wildlife Site quality.

(e) For wetland Local Wildlife Sites where the protection of the water supply and quality is vital to the maintenance of the interest of the Local Wildlife Site, the boundary may be drawn to include the immediate catchment of the site where the boundary can be readily identified by observable physical boundaries or topographic features. It is acknowledged that buffer zones are important for wetlands in protecting the supply and quality of water and consequently, these may warrant inclusion within a Local Wildlife Site designation for this particular function.

(f) For mixed habitat sites that are not part of recognised land management units (for example former-industrial land) the boundary may be drawn to include all areas of individual habitats of Local Wildlife Site quality and all other areas of habitat that in combination meet the mixed habitat selection guidelines. The boundary may be drawn to the nearest topographic feature or a line between two features or an observable physical boundary habitat so that the majority of the area is of Local Wildlife Site quality.

(g) For species or species assemblages of Local Wildlife Site quality that have a requirement for different habitats and land parcels during their life cycle, Local Wildlife Site boundaries may be drawn to include all habitats or features that can be shown to be important to the maintenance of the interest of the Local Wildlife Site.

(h) For rivers, it is difficult to define static boundaries on what are dynamic systems. Rivers such as the Rother and Don may change course by erosion, thus quickly rendering the Wildlife Site maps out of date. In these circumstances the boundary of the site designation upstream and downstream at fixed points should be provided and the riverbank boundaries should be regularly checked and/or determined on the ground as and when required. On other less dynamic rivers flood banks can be used to determine Local Wildlife Site boundaries.

(i) The selection guidelines will not be applied to domestic or industrial (including agricultural) buildings, or to domestic gardens. Other artificial structures, for example, mine shafts, tunnels, bridges, historic monuments (except those that are also domestic dwellings), may, however, be considered for designation.

Determining the land ownership of Local Wildlife Sites

The Local Wildlife Sites are likely to be owned by a variety of private landowners involved in farming and/or forestry, bodies such as British Waterways and Yorkshire Water and land owned and managed by Rotherham Metropolitan Borough Council.

Landowners will be notified when sites in their ownership are selected with information relating to the nature of the interest. The Local Wildlife Sites Panel will seek to co-ordinate the provision of support and advise to land managers for the positive management of sites through the partnership. The Local Wildlife Sites system should be used as a way of targeting advice, sources of funding and support for land managers.

ADOPTION OF LOCAL WILDLIFE SITES WITHIN ROTHERHAM'S PLANNING SYSTEM

It is proposed to integrate the Local Wildlife Site System into Rotherham's planning regime via preparation of a Supplementary Planning Document (SPD) linked to Unitary Development Plan Policy ENV2.2 (Interest outside Statutorily Protected Sites), the policy which currently protects the Heritage Sites and eventually to the new Local Development Framework (LDF).

Once adopted by the Borough Council, the SPD will allow any site satisfying the guidelines to be adopted as a Local Wildlife Site for use in planning control and development plan preparation. Formal adoption of the SPD, the initial set of qualifying Local Wildlife Sites, and any ongoing adoption or deletion of new sites, will be secured through a Committee Report to the Rotherham Cabinet Member for Regeneration and Environment.

OPERATION OF THE LOCAL WILDLIFE SITE SYSTEM

The operation of the Local Wildlife Site system is laid out in the Local Wildlife Site Panel Terms of Reference document. All member organisations of the Local Wildlife Site Panel will be involved in the operation of the Local Wildlife Site system including site monitoring, protection and management and will liaise with each other as necessary.

Rotherham Metropolitan Borough Council will undertake the administration of the Local Wildlife Sites system, including data organisation, storage and distribution. Rotherham Metropolitan Borough Council is responsible for convening and administrating the Local Wildlife Sites Panel. The Council provides the central contact for all Panel members with regard to queries or advice that may be required on the operation of the Local Wildlife Site system. The Council will also be responsible for contacting land owners and managers regarding the designation of Local Wildlife Sites however it is anticipated that advice on suitable management will be available via the organisations represented on the Panel.

Rotherham Metropolitan Borough Council is currently responsible for the maintenance and upkeep of the Rotherham Biological Records Centre. Site designation will be based only on records held by the Records Centre. Where new sites are added to the Local Wildlife Sites system or others deleted, the Biological Records Centre will update these records.

ADVICE AND SUPPORT FOR SITE MANAGEMENT

The Local Wildlife Sites Panel will provide, on request, management guidance for sites and support owners in the production of management plans for sites for their nature conservation interest. Management plans should be kept simple and be based on recognised broad objectives identified for the habitats concerned and that link with the delivery of national and local objectives for biodiversity. Broad management objectives are outlined in Appendix 1 and are adapted from the UK Biodiversity Action Plan Habitat Action Plans and the Forestry Practice Guides for the management of semi-natural woodlands.

APPENDIX 1 BROAD MANAGEMENT OBJECTIVES FOR HABITATS WITHIN ROTHERHAM

WOODLAND HABITATS[19]

- Maintain semi-natural woodland types
- Maintain or restore diversity of structure
- Maintain or restore diversity of species and increase where appropriate
- Maintain a mature habitat by retaining old, dead or dying trees
- Minimise rates of change
- Use low-key establishment techniques

ANCIENT & SPECIES-RICH HEDGEROWS

- Maintain the integrity of ancient & species-rich hedgerows by ensuring that they are protected from loss
- Maintain or restore structural integrity and function
- Maintain species diversity
- Promote the restoration of neglected hedgerows
- Promote an increase in community awareness and appreciation of ancient & species-rich hedgerows

GRASSLAND HABITATS

- Maintain the integrity of semi-natural grassland sites by ensuring that they are protected from damage or loss
- Manage grassland in order to maintain, or work towards favourable conservation status
- Promote sustainable grassland management
- Promote the restoration of neglected semi-natural grasslands
- Promote an increase in community awareness and appreciation of lowland semi-natural grassland

HEATHLAND HABITATS

- Maintain the integrity of heathland sites by ensuring that they are protected from damage or loss
- Manage heathland in order to maintain, or work towards favourable conservation status
- Identify opportunities for restoring or creating lowland heathland, by consolidation of existing heathland sites
- Promote an increase in community awareness and appreciation of heathland

[19] Forestry Authority Forest Practice Guides: *The Management of Semi-natural woodlands*.

WETLANDS

- Maintain the integrity of wetland sites by ensuring that they are protected from damage or loss.
- Manage wetlands in order to maintain favourable conservation status
- Promote sustainable use of resources in order to conserve water quality and quantity within catchments containing wetlands
- Identify opportunities for restoring wetlands, by consolidation of existing wetland sites
- Identify opportunities for creating wetlands by incorporating soft engineering features such as reed-bed wastewater treatment systems into new development.
- Promote an increase in community awareness and appreciation of wetlands

STANDING OPEN WATER

- Maintain the integrity of open standing water habitats by ensuring that they are protected from damage or loss.
- Manage open water habitats in order to maintain favourable conservation status.
- Promote the sustainable use of open water habitats in order to conserve water quality and quantity within catchments containing open water habitats.
- Identify opportunities for restoring open water habitats for nature conservation where not in conflict with existing uses.
- Identify opportunities for creating multi-functional open water habitats in order to reduce recreation pressures acting upon existing open water habitats.
- Promote an increase in community awareness and appreciation of open water habitats.

RUNNING WATER HABITATS

- Maintain the integrity of running water habitats by ensuring that they are protected from damage or modification of semi-natural features.
- Manage running water habitats in order to maintain favourable conservation status.
- Promote the sustainable use of running water habitats in order to conserve water quality and quantity within catchments.
- Identify opportunities for restoring running water habitats for nature conservation where not in conflict with existing uses.
- Identify running water habitats, which could provide recreation opportunities in order to reduce recreation pressures acting upon running water habitats of high nature conservation value.
- Promote an increase in community awareness and appreciation of running water habitats.

Notes

Rotherham | Local Wildlife Site System

Part 2 | Site Selection Guidelines For Rotherham

March 2011

www.rotherham.gov.uk

Rotherham Metropolitan Borough Council
Where Everyone Matters

Acknowledgements

This document is based upon the Rotherham LWS Selection Guidelines produced by Baker Shepherd Gillespie 3rd April 2007 (Reference: 2283_006_SC_ph_rmbc#7). This amended document has been produced in 2010 to incorporate revised national priorities and planning policy to provide a contemporary framework for the adopted Rotherham Local (Wildlife) Site System.

A large number of people provided advice and/or information to aid in the production of the guidelines, and the wildlife sites panel is very grateful for the contributions of all of these people.

In addition, Baker Shepherd Gillespie has reviewed the selection guidelines for various counties in England including Derbyshire, Nottinghamshire, Leicestershire and Rutland, Lincolnshire and Cambridgeshire and has been guided and informed by these documents. We owe a special debt of gratitude to the Selection Guidelines for North Yorkshire. In many instances their guidelines for habitats and species provided ideal templates from which we have borrowed and adapted to suit our own needs in Rotherham.

Contents

List of Tables

Introduction

This document sets out the selection criteria for a non-statutory Local Wildlife Site system which will operate in Rotherham. A supporting document entitled "Framework for Rotherham's Local Wildlife Site System" forms part 1 of the guidelines.

These detailed selection guidelines cover firstly the selection of Local Wildlife Sites based on habitat characteristics; and secondly the selection of sites based on the presence of important species or groups of species.

It is important that Local Wildlife Sites are designated on the basis of the best available information. This should be obtained through field survey by a suitably qualified and/or experienced person. Sites should be evaluated on the basis of reliable information that is as up to date as possible. For difficult to identify species, verification by an acknowledged expert may be required.

Habitat Selection Guidelines

Habitat Selection

In 1995 the UK Biodiversity Steering Group[1] identified 17 broad habitat types which were subdivided into 26 UK Priority Habitats of national conservation concern. Following two years of research and consultation an updated list of priority habitats and species was published in 2007[2] by the UK Biodiversity Partnership; this list, a result of the most comprehensive analysis ever undertaken in the UK, now contains 1150 species and 65 habitats that have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP). Of the 65 UK Priority habitats 56 occur in England; these habitats form the habitats of principle importance for conserving biodiversity in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 and are subject to Government policy PPS9.

Prior to the publication of the Rotherham Biodiversity Action Plan, the Rotherham Biodiversity Forum undertook habitat and species audit work to identify the presence of national priorities in Rotherham and to identify those that are considered to be important locally.

The habitat types identified to be of importance within Rotherham form the basis of the habitat categories used for the selection of Local Wildlife Sites in Rotherham; the relationships between the national and local priorities with the Local Wildlife Site habitat categories is summarised in Table 1 and further information is contained in the supporting Framework document.

The following Habitat selection guidelines include, for each broad habitat category, descriptions of the habitats, details of the criteria and attributes to be considered for each habitat, detailed selection criteria and guidance as to the application of the criteria. Where appropriate indicative habitat-based botanical species lists are provided to support the application process.

The habitat selection guidelines will not be applied to domestic or industrial (including agricultural) buildings, or to domestic gardens. Other artificial structures, for example, mine shafts, tunnels, bridges, historic monuments (except those that are also domestic dwellings), may, however, be considered for designation.

The National Vegetation Classification

A number of the selection criteria in these guidelines make use of the National Vegetation Classification system, or NVC (Rodwell 1991-2000). This provides a country-wide classification system for natural and semi-natural vegetation, and is the most widely accepted and established way of identifying and describing habitat types in the UK. Each habitat type is identified by a code (e.g. W10) and defined by the presence of a number of indicator species and their relative abundances. Assessment of habitats

[1] UK Steering Group Report (1995) *Volume 2. Biodiversity: Action Plans.* HMSO
[2] UK Biodiversity Action Plan; Report on the Species and Habitat Review. BRIG (ed. Ant Maddock) 2007

against the NVC is carried out using a standard methodology based on quadrat sampling. The presence and abundance of indicator species is then compared with the NVC definitions to determine the relevant habitat code. In the use of the NVC, it must be remembered that habitats do not always neatly fit into one NVC code, and often fall somewhere along a continuum between two habitat types. Where this is the case, a degree of discretion is required from the surveyor in order to assign the most appropriate code.

Threshold setting

The concepts of criteria, ecological attributes and thresholds are discussed in the Framework document. The level at which quality and quantity thresholds for sites are set will influence the number and the quality of Local Wildlife Sites. During the development of these guidelines the data held on the Recorder database at the Rotherham Biological Records Centre was used to test the impact of applying different thresholds. Further tests against the data sets were carried out during the selection of the draft list of Local Wildlife Sites; resulting in the thresholds presented in this document.

Table 1 Relationships between national and local priorities with the Rotherham Local Wildlife Site Habitat Categories

UK Priority Habitat	Rotherham Habitat Action Plan	Additional Important Habitats / land-use features in Rotherham	Local Wildlife Site Habitat Types
Lowland Dry Acid Grassland Lowland Calcareous Grassland Lowland Meadow Coastal & Floodplain Grazing Marsh	Lowland acid grassland Calcareous grassland Lowland neutral grassland Floodplain grazing marsh	Herb-rich road verges	Lowland acid grassland Calcareous grassland Lowland neutral grassland Wet grassland
Lowland Heathland	Lowland heathland		Lowland heathland
Lowland Mixed Deciduous Woodland Upland Mixes Ashwoods Wet Woodland	Oak-birch woodland (upland) Mixed Ash woodland Wet woodland	Ancient woodland	Ancient woodland Oak-birch woodland Mixed Ash woodlandd Wet woodland
Hedgerows Arable Field Margins	Ancient and / or species-rich hedgerows	Cereal field margins	Ancient hedgerows Species-rich hedgerows
Wood Pasture & Parkland		Lowland wood pasture and parkland Permanent pasture	Lowland wood pasture Parkland Grouped veteran trees
Rivers Ponds Eutrophic Standing Water Mesotrophic Lakes Coastal & Floodplain Grazing Marsh	Ponds and lakes Floodplain grazing marsh		Flowing water Standing water Swamp
Lowland Fen Reedbed Coastal & Floodplain Grazing Marsh	Floodplain grazing marsh		Lowland mire Fen
Open Mosaic Habitats on Previously Developed Land		Former industrial sites Naturally colonized rock exposures	Mixed habitats Structural mosaics

Grassland

Lowland Acid Grassland

Lowland acid grassland occurs on nutrient-poor, generally free-draining soils with pH ranging from 4 to 5.5 overlying acid rocks or superficial deposits such as sands and gravels. In terms of the National Vegetation Classification (NVC) it includes the *Festuca ovina-Agrostis capillaris-Rumex acetosella* grassland (U1), *Deschampsia flexuosa* grassland (U2) and *Festuca ovina-Agrostis capillaris-Galium saxatile* (U4) NVC grassland plant communities. Definition of lowland acid grassland is problematical, but here it is defined as both enclosed and unenclosed acid grassland throughout the UK lowlands (normally below c. 300m). It covers all acid grassland managed in functional enclosures and it often occurs as an integral part of lowland dwarf shrub-heath mosaics and locally in parklands in the Coal Measures Natural Area. It is normally managed as grazing pasture. Unusually, it can also occur on areas of overlying Permian Marl within the Southern Magnesian Limestone Natural Area[3].

Species-richness and abundance vary tremendously depending on community type and locality and can range from less than five species to over 25 species per m^2. Heath bedstraw *Galium saxatile,* sheep's-fescue *Festuca ovina*, common bent *Agrostis capillaris*, sheep's sorrel *Rumex acetosella*, wavy hair-grass *Deschampsia flexuosa*, and tormentil *Potentilla erecta* are frequent in Rotherham sites. Dwarf shrubs such as heather *Calluna vulgaris* and bilberry *Vaccinium myrtillus* also occur but at low abundance[1].

Acid grasslands can have a high cover of bryophytes and, in particular, parched acid grassland can be rich in invertebrates. Many of the invertebrates that occur in acid grassland are specialists that do not occur in other types of grassland. The open parched acid grasslands on sandy soils, in particular, can support a considerable number of ground-dwelling and burrowing invertebrates such as solitary bees and wasps[1].

Lowland dry acid grassland has suffered a serious national decline during the 20th century as a result of agricultural intensification and in some parts of the country afforestation. It was estimated in 1998 that of the 30,000 hectares in the UK[4], 15,000 to 22,000 hectares are found in England[5]. In Rotherham the true extent of lowland acid grassland is unknown although it is primarily found within the Coal Measures Natural Area.

Calcareous Grassland

Calcareous grassland in Rotherham is generally limited to the Magnesian Limestone ridge of the Southern Magnesian Limestone Natural Area that runs north to south covering the eastern half of the Borough. The Magnesian Limestone grassland that forms on the well-drained and thin, base-rich soils is considered to be rare and there are probably only a few hundred hectares in England. This is in addition to the fact that it supports a range of grasses, herbs and animals not found on other grasslands[1].

The two commonest grasses are tor-grass *Brachypodium pinnatum* and upright brome *Bromus erectus*. Lime-loving forbes include carline thistle *Carlina vulgaris* and dwarf thistle *Cirsium acaule* on the northern limit of its range; as well as salad burnet *Sanguisorba minor*, cowslip *Primula veris*, small scabious *Scabiosa columbaria*, greater knapweed *Centaurea scabiosa*, yellow-wort *Blackstonia perfoliata* and common centaury *Centaurium erythraea*. Autumn lady's-tresses *Spiranthes spiralis*, pale St. John's-wort *Hypericum montanum*, spring-sedge *Carex caryophyllea* and grass-of-parnassus *Parnassia palustris* are all grassland plants of particular interest and rarity[1].

NVC plant communities include *Festuca ovina-Avenula pratensis* grassland (CG2), *Bromus erectus* grassland (CG3), *Brachypodium pinnatum* grassland (CG4) and *Bromus erectus-Brachypodium pinnatum* grassland (CG5) communities[1].

[3] Rotherham's Biodiversity Forum 2004. *Rotherham's Biodiversity Action Plan.*
[4] UK Biodiversity Steering Group 1995 *Biodiversity: Volume 2: Action Plans*. HMSO
[5] Sanderson, N.A.1998. *A review of the extent, conservation interest and management of lowland grassland in England*. English Nature Research Report no.259. English Nature.

In the Yorkshire and Humberside region it is estimated that there are approximately 9,000 hectares of calcareous grassland, which account for 20% of the overall resource. They are found on Chalk in the Wolds, Carboniferous Limestone in the Dales, Jurassic Limestone in the North York Moors and along the southern Magnesian Limestone ridge[1].

Lowland Neutral Grassland

Lowland neutral grasslands include lowland meadows, pasture, and wet neutral meadows. Characteristic species of this habitat include pepper saxifrage *Silaum silaus*, dyer's greenweed *Genista tinctoria* and adder's-tongue fern *Ophioglossum vulgatum*. Commoner characteristic species include yellow rattle *Rhinanthus minor*, pignut *Conopodium majus* and red clover *Trifolium pratense*. In terms of NVC plant communities, the range of neutral grassland within Rotherham includes the MG1 *Arrhenetherum elatius* grasslands, MG4 *Alopecurus pratensis-Sanguisorba officinalis* grassland, MG5 *Cynosaurus cristatus-Centaurea nigra* grassland, MG6 *Lolium perenne-Cynosaurus cristatus* grassland and MG9 *Holcus lanatus-Deschampsia caespitosa* grassland[1].

The Local Biodiversity Action Plan for Lowland Neutral Grassland concentrates on meadows and pastures associated with low-input nutrient regimes and covers the major forms of neutral Grassland (MG4 and MG5) that support a specialist group of scarce and declining plants. Unimproved neutral grassland is not restricted to grasslands cut for hay but also occurs as unimproved neutral pastures where livestock grazing is the main land-use. The use of particular fields for grazing pasture and hay cropping changes over time, but the characteristic plant community may persist with subtle changes in floristic composition. In non-agricultural settings, such grassland communities are less frequent but may be found in recreational sites, churchyards, roadside verges. Wet grassland (MG9) can be found in floodplains, areas with impeded drainage and valley bottoms[1].

Nationally unimproved neutral grassland has undergone a decline in the 20th Century, almost entirely due to changing agricultural practice. It is estimated that by 1984 in lowland England and Wales, semi-natural grassland had declined by 97% over the previous 50 years to approximately 0.2 million hectares remaining with less than 15,000ha of species-rich neutral grassland. Losses have continued during the 1980s and 1990s and have been recorded at 2.1% per annum in some parts of England[6]. Recent conservation survey findings in Britain and Northern Ireland reveal that the impact has been pervasive.

The overall outcome of habitat change in the lowland agricultural zone is that the community of unimproved hay meadows and pastures is now highly localized, fragmented and in small stands over much of Britain. Recent estimates for MG5 grassland in England and Wales indicate that there is between 5,000-10,000ha of this community in total[1].

In Rotherham, lowland neutral grassland is found across the Borough within the Coal Measures and Southern Magnesian Limestone Natural Areas. There is no accurate figure relating to the total extent or location of unimproved neutral grassland in the Borough.

[6] UK Biodiversity Steering Group (1995) *Biodiversity: the UK Steering Group Report, Vol 2: Action Plans.* HMSO, London

Grassland Selection Criteria and Attributes

Table 2 Selection criteria and attributes for grassland Local Wildlife Sites [7]

CRITERION	ATTRIBUTE
Size or extent	Area of site or length of verge. Assumes that the appropriate vegetation communities or characteristic species are present throughout the site area.
Typicalness	Presence of typical/characteristic species that represent good examples of the habitat type within the county, the relevant Natural Area or locality. This will be as defined by NVC community types where data is available. Presence of habitats or species that are characteristic, distinctive or unique to the county, Natural Area or locality.
Diversity	Number of grassland plant species recorded as a total and presence of characteristic grassland species.
Rare or exceptional feature	Presence of nationally rare or declining plant species. Presence of regionally important species. Presence of locally rare or declining plant species. Presence of vegetation communities that are rare or of restricted distribution, this could include NVC communities identified by the HAPs within the UK BAP.
Naturalness	Presence, cover & variety of semi-natural grassland communities and species that correspond to long established grassland habitat.
Connectivity within the landscape	Location or proximity of site in relation to other recognised sites of interest either as similar habitat or habitat mosaic. The site is part of a recognised wildlife corridor.

Grassland Selection Guidelines

Grassland sites will be eligible for selection as a Local Wildlife Site if they meet any of the following guidelines:

G1 Areas of semi-natural neutral, calcareous or acid grassland of at least 0.25 ha in size, or at least 50 metres in length if the site is a road verge, that have been identified as supporting any of the NVC communities listed below.

- **MG4 *Alopecurus pratensis – Sanguisorba officinalis* grassland**
- **MG5 *Cynosurus cristatus- Centaurea nigra* grassland (all sub-communities)**
- **MG8 *Cynosurus cristatus – Caltha palustris* grassland.**
- **CG2 *Festuca ovina – Avenula pratensis* grassland (all sub-communities)**
- **CG3 *Bromus erectus* grassland.**
- **CG4 *Brachypodium pinnatum* grassland.**
- **CG5 *Bromus erectus– Brachypodium pinnatum* grassland.**
- **U1 *Festuca ovina – Agrostis capillaris- Rumex acetosella* grassland.**
- **U2 *Deschampsia flexuosa* grassland.**
- **U4 *Festuca ovina - Agrostis capillaries - Galium saxatile* grassland.**

Application

This guideline will be applied to long-established semi-natural grassland and will be based on the assessment of a competent field surveyor. Sites should not have been recently created.

Rationale

Ancient species-rich semi-natural grasslands have declined nationally and once lost these habitat types are difficult or impossible to replace. The NVC grassland communities listed are all linked to Priority UK

[7] Adapted from North Yorkshire SINC Panel 2002 *Guidelines for SINC Selection*

BAP habitats that are listed as habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

G2 Areas of semi-natural neutral or calcareous grassland of at least 0.25ha in size or 50 metres in length that score either:

- **10 or more from the neutral grassland plant species list in Table 3, or**
- **10 or more from the calcareous grassland plant species list in Table 4, or**
- **10 or more from the wet grassland plant species list in Table 5.**

Application
This guideline will be applied to long-established or ancient semi-natural grassland and will be based on the assessment of a competent field surveyor. Sites should not have been recently created.

Rationale
These habitats have declined considerably in the last 50 years within the UK and Rotherham. Further losses will diminish the nature conservation resource of the district and once lost these habitats are difficult or impossible to replace. The indicative botanical species lists all link to Priority UK BAP habitats that are habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

G3 Areas of semi-natural lowland acid grassland of at least 0.25ha in size or 50 metres in length that score 8 or more from the acid grassland plant species list in Table 5.

Application
This guideline is applicable to acid grassland communities in lowland areas. These communities may occur in combination with lowland heathland. Although the true extent of this habitat is not known in Rotherham Lowland acid grassland does occur in relation to the Coal Measures Natural Area.

Rationale
These habitats have declined considerably in the last 50 years within the UK and Rotherham. Further losses will diminish the nature conservation resource of the district and once lost these habitats are difficult or impossible to replace. The indicative botanical species lists all link to Priority UK BAP habitats that are habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

G4 Areas of semi-natural grassland of at least 0.5 ha in size and with a score of 20 or more from the neutral, wet, calcareous and acid grassland plant species list in combination.

Application
This guideline can be applied to mixed grassland sites where the area of each particular grassland community is too small to be considered under any of the other guidelines, or where the individual stands of the different grassland types do not meet the selection threshold scores.

Rationale
Some sites can support a mosaic of acid through to calcareous grassland communities especially where there are changes in underlying geology, soils or hydrological conditions. In combination, however, these communities support a diverse variety of plants of unimproved grassland.

Table 3 Plant species of semi-natural neutral grassland

Scientific name	Common name
Achillea ptarmica	Sneezewort
Agrimonia eupatoria	Agrimony
Ajuga reptans	Bugle
Alchemilla spp(native)	Lady's mantle spp
Anemone nemorosa	Wood anemone
Anthoxanthum odoratum	Sweet vernal-grass
Carex spp	Any sedge (except carex hirta)
Centaurea nigra	Common knapweed
Conopodium majus	Pignut
Dactlyorhiza spp.	Any marsh orchid species
Dactylorhiza fuchsii	Common spotted-orchid
Daucus carota	Wild carrot
Euphrasia sp.	Eyebright sp.
Festuca arundinacea	Tall fescue
Festuca pratensis	Meadow fescue
Filipendula ulmaria	Meadowsweet
Galium mollugo	Hedge bedstraw
Galium verum	Lady's bedstraw
Genista tinctoria	**Dyer's greenweed**
Geranium pratense	Meadow cranesbill
Helictotrichon pratense	Meadow oat-grass
Hypericum maculatum	Imperforate St John's-wort
Hypochaeris radicata	Cat's-ear
Knautia arvensis	Field scabious
Lathyrus linifolius	Bitter vetchling
Lathyrus pratensis	Meadow vetchling
Leontodon autumnalis	Autumnal hawkbit
Leontodon hispidus	Rough hawkbit
Leucanthemum vulgare	Ox-eye daisy
Listera ovata	Common twayblade
Lotus corniculatus	Bird's-foot-trefoil
Lotus pedunculatus	Greater birds-foot-trefoil
Lychnis flos-cuculi	Ragged robin
Lysimachia nummularia	Creeping Jenny
Ophioglossum vulgatum	**Adder's tongue fern**
Persicaria bistorta	Common bistort
Pimpinella major	Greater burnet-saxifrage
Primula veris	Cowslip
Primula vulgaris	Primrose
Ranunculus bulbosus	Bulbous buttercup
Rhinanthus minor	Yellow rattle
Sanguisorba officinalis	Great burnet
Saxifraga granulata	**Meadow saxifrage**
Silaum silaus	**Pepper saxifrage**
Stachys officinalis	Betony
Stellaria graminea	Lesser stichwort
Thalictrum flavum	**Common meadow rue**
Tragopogon pratensis	Goat's-beard
Trifolium medium	Zigzag clover
Trisetum flavescens	Yellow oat-grass
Valeriana officinalis	Common valerian

Species in **bold** score 2

Table 4 Plant species of semi-natural calcareous grasslands

Scientific name	Common name
Agrimonia eupatoria	Agrimony
Alchemilla spp (native)	Lady's mantle spp
Allium vineale	**Wild onion**
Aquilegia vulgaris	Columbine
Anacamptis pyramidalis	Pyramidal orchid
Anthyllis vulneraria	Kidney vetch
Arabis hirsuta	Hairy rock-cress
Blackstonia perfoliata	Yellow-wort
Brachypodium pinnatum	Tor grass
Bromopsis erecta	Upright brome
Briza media	Quaking grass
Campanula glomerata	**Clustered bellflower**
Campanula rotundifolia	Harebell
Carduus nutans	Musk thistle
Carex spp	Any sedge (except C*. hirta*)
Carlina vulgaris	Carline thistle
Catapodium rigidum	Fern-grass
Centaurea scabiosa	Greater knapweed
Cerastium arvense	Field mouse-ear
Cirsium acaule	**Dwarf thistle**
Cirsium eriophorum	**Woolly thistle**
Clinopodium vulgare	Wild basil
Conopodium majus	Pignut
Dactylorhiza fuchsii	Common spotted orchid
Daucus carota	Wild carrot
Erigeron acer	Blue fleabane
Euphrasia sp.	Eyebright sp.
Festuca ovina	Sheep's fescue
Filipendula vulgaris	**Dropwort**
Fragaria vesca	Wild strawberry
Galium verum	Lady's bedstraw
Genista tinctoria	Dyer's greenweed
Gentianella amarella	Autumn gentian
Gymnadenia conopsea	**Fragrant orchid**
Helianthemum nummularium	Common rockrose
Helictotrichon pratense	Meadow oat-grass
Helictotrichon pubescens	Downy oat-grass
Hippocrepis comosa	Horseshoe vetch
Hypericum hirsutum	Hairy St John's-wort
Hypericum montanum	Pale St John's-wort
Hypericum perforatum	Peforate St John's-wort
Knautia arvensis	Field scabious
Leontodon hispidus	Rough hawkbit
Cruciata laevipes	Crosswort
Dactylorhiza praetermissa	Southern marsh-orchid
Linum catharticum	Fairy flax
Listera ovata	Common twayblade
Leontodon saxatilis	Lesser hawkbit
Linum catharticum	Fairy flax
Lotus corniculatus	Birds-foot-trefoil
Orchis morio	Green-winged orchid
Myosotis ramosissima	Early forget-me-not
Ononis repens	Restharrow

Ononis spinosa	**Spiny restharrow**
Ophrys apifera	Bee orchid
Ophrys insectifera	**Fly orchid**
Orchis mascula	Early purple orchid
Origanum vulgare	Wild marjoram
Pimpinella major	Greater burnet-saxifrage
Parnassia palustris	**Grass of parnassus**
Pimpinella saxifraga	Burnet saxifrage
Plantago media	Hoary plantain
Platanthera bifolia	Lesser butterfly orchid
Pilosella officinarum	Mouse-ear hawkweed
Polygala vulgaris	Common milkwort
Potentilla neumanniana	**Spring cinquefoil**
Primula veris	Cowslip
Rhinanthus minor	Yellow rattle
Rosa pimpinellifolia	Burnet rose
Sanguisorba minor	Salad burnet
Saxifraga granulata	**Meadow saxifrage**
Scabiosa columbaria	Small scabious
Serratula tinctoria	**Saw-wort**
Spiranthes spiralis	**Autumn lady's tresses**
Succisa pratensis	Devil's bit scabious
Thymus praecox	Wild thyme
Trisetum flavescens	Yellow oat-grass
Viola hirta	Hairy violet

Species in **bold** score 2

Table 5 Plant species of semi-natural wet grassland

Scientific name	**Common name**
Achillea ptarmica	Sneezewort
Agrostis stolonifera	Creeping bent
Alopecurus pratensis	Meadow foxtail
Angelica sylvestris	Wild angelica
Caltha palustris	Marsh-marigold
Cardamine pratensis	Cuckooflower
Carex disticha	**Brown sedge**
Carex ovalis	Oval sedge
Carex spicata	Spiked sedge
Cirsium dissectum	**Meadow thistle**
Cirsium palustre	Marsh thistle
Dactylorhiza incarnata	**Early marsh-orchid**
Dactylorhiza praetermissa	Southern marsh-orchid
Deschampsia cespitosa	Tufted hair-grass
Festuca arundinacea	Tall fescue
Festuca pratensis	Meadow fescue
Festuca rubra	Red fescue
Filipendula ulmaria	Meadowsweet
Galeopsis tetrahit	Common hemp-nettle
Geum rivale	Water avens
Glyceria declinata	Small sweet-grass
Hypericum tetrapterum	Square-stalked St John's-wort
Juncus effusus	Soft-rush
Juncus inflexus	Hard rush
Lathyrus pratensis	Meadow vetchling
Lotus pedunculatus	Greater bird's-foot-trefoil
Lychnis flos-cuculi	Ragged-robin
Myosotis laxa	Tufted forget-me-not
Pedicularis sylvatica	Lousewort
Persicaria amphibia	Amphibious bistort
Pulicaria dysenterica	Common fleabane
Ranunculus flammula	Lesser spearwort
Sanguisorba officinalis	Great burnet
Thalictrum flavum	Common meadow-rue
Trifolium fragiferum	**Strawberry clover**
Valeriana officinalis	Common valerian
Valeriana dioica	Marsh valerian

Species in **bold** score 2

Table 6 Plant species of semi-natural acid grassland

Scientific name	Common name
Agrostis canina	Velvet bent
Agrostis capillaris	Common bent
Aira caryophyllea	Silver hair-grass
Aira praecox	**Early hair-grass**
Anthoxanthum odoratum	Sweet vernal-grass
Calluna vulgaris	Heather
Campanula rotundifolia	Harebell
Carex binervis	Green-ribbed sedge
Carex pilulifera	Pill sedge
Catapodium rigidum	Fern-grass
Cerastium arvense	Field mouse-ear
Chamaemelum nobile	Chamomile
Danthonia decumbens	**Heath-grass**
Deschampsia flexuosa	Wavy hair-grass
Echium vulgare	Viper's-bugloss
Festuca ovina	Sheep's-fescue
Filago minima	Small cudweed
Filago vulgaris	Common cudweed
Galium saxatile	Heath bedstraw
Genista tinctoria	Dyer's greenweed
Geranium pusillum	Small-flowered crane's-bill
Hypericum pulchrum	Slender St John’s-wort
Jasione montana	Sheep's-bit
Lathyrus linifolius	Bitter-vetch
Leontodon autumnalis	Autumn hawkbit
Leontodon saxatilis	Lesser hawkbit
Luzula campestre	Field woodrush
Luzula multiflora	Heath wood-rush
Nardus stricta	Mat-grass
Pedicularis sylvatica	Lousewort
Pilosella officinarum	Mouse-ear-hawkweed
Polygala vulgaris	Common milkwort
Potentilla anglica	Trailing tormentil
Potentilla erecta	Tormentil
Rumex acetosella	Sheep's sorrel
Sagina nodosa	Knotted pearlwort
Senecio sylvaticus	Heath groundsel
Senecio viscosus	Sticky groundsel
Solidago virgaurea	Goldenrod
Spergularia rubra	Sand spurrey
Stachys officinalis	Betony
Stellaria pallida	Lesser chickweed
Succisa pratensis	Devil's-bit scabious
Teucrium scorodonia	Wood sage
Trifolium arvense	Hare's-foot clover
Trifolium micranthum	Slender trefoil
Trifolium striatum	Knotted clover
Vaccinium myrtillus	Bilberry
Veronica officinalis	Heath speedwell
Viola canina	Heath dog-violet
Viola tricolor	**Wild pansy**

Species in **bold** score 2

Heathland

Lowland Heathland

Lowland heathland habitat includes any areas of semi-natural vegetation in which dwarf shrubs, particularly heathers, are prominent. It is a habitat of international importance and is found below 300m in altitude on acid soils with low soil nutrients, although it can occur on more basic soils with herbs commonly associated with calcareous grassland. Although it is by nature a relatively species-poor habitat, lowland heath is often associated with birds, reptiles, invertebrates, bryophytes and lichens which add to the importance of the habitat[1].

Lowland heath is a rare habitat in Rotherham, only occurring in small, isolated patches and often in mosaics of woodland, flushes and acid grassland. The NVC communities associated with lowland heath in Rotherham include H8, H9 and H1[1].

Lowland Heathland Selection Criteria and Attributes

Table 7 Selection criteria and attributes for heathland Local Wildlife Sites[8]

CRITERION	ATTRIBUTE
Size or extent	Area of site. Assumes that the appropriate vegetation communities or characteristic species are present throughout the site area.
Typicalness	Presence of typical/characteristic species that represent good examples of the habitat type within the county, the relevant Natural Area or locality. Presence of habitats or species that are characteristic, distinctive or unique to the borough or Natural Area or locality.
Diversity	Number of heathland/grassland plant species recorded as a total and presence of characteristic grassland species.
Rare or exceptional feature	Presence of vegetation communities that are rare or of restricted distribution.
Naturalness	Presence, cover & variety of semi-natural grassland communities and species that correspond to long established heathland habitat.
Connectivity within the landscape	Location or proximity of site in relation to other recognised sites of interest either as similar habitat or habitat mosaic, in particular acid grassland.

Lowland Heathland Selection Guidelines

Heathland sites will be eligible for selection as a Local Wildlife Site if they meet the following guideline:

HE1 Any area of over 0.25ha in which the vegetation is dominated by assemblages of at least 25% dwarf shrub (Calluna / Erica spp., Ulex galli and/or Vaccinium myrtillus) cover.

Application

These guidelines should be applied to any heathland vegetation in Rotherham.

Rationale

The occurrence of these vegetation types in these areas is generally very low and even small examples of the habitat are likely to be of interest and often occur as part of a habitat mosaic with acid grassland and woodland communities.

Lowland Heathland is listed as a Priority UK BAP habitat and as a habitat of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and is subject to government policy PPS9.

[8] Adapted from North Yorkshire SINC Panel 2002 *Guidelines for SINC Selection*

Woodland

Woodlands under this section include all broadleaf semi-natural woodland and mixed broadleaf and coniferous plantations on former ancient semi-natural woodland sites. Also included are woodland sites of more recent origin.

Ancient Woodland

Ancient woodland in England is defined as an area of land that is known to have been wooded continuously since at least 1600 AD Ancient woodlands include both ancient semi-natural woodland and plantations on ancient woodland sites[9].

Ancient semi-natural woodland – these are ancient woodland sites that have retained the native tree and shrub cover that has not been planted, although it may have been managed by coppicing or felling and allowed to regenerate naturally[10].

Ancient replanted woodland - ancient woodland sites where the original native tree cover has been felled and replaced by planting[7].

Ancient woodlands generally have richer, more characteristic floras, greater vegetation structure and age class diversity and in general a high nature conservation interest. It is now widely recognised that ancient woodlands support a suite of species that are confined to older sites.

The most definitive data on the Borough's ancient woodland resource is the Ancient Woodland Inventory (AWI[11]). Sites of less than 2 ha are deliberately excluded from the Inventory and as a consequence some small stands of ancient woodland are omitted. The AWI also only provides 'basic data' and does not give any indication of the relative conservation value of individual woods.

Oak-Birch Woodland

Oak-birch woods are usually found on the acidic soils of the Coal Measures Natural Area and are the most common woodland within Rotherham. They are characterised by a predominance of oak (mainly sessile oak *Quercus petraea*, but sometimes pedunculate oak *Quercus robur*) and silver birch *Betula pendula* in the canopy, with varying amounts of holly *Ilex aquifolium*, rowan *Sorbus aucuparia* and hazel *Corylus avellana* as the main understorey shrubs. The field layer varies depending on localized variations in the soil and past and current management practices, but is typically species-poor. Bracken *Pteridium aquilinium* and wavy hair-grass dominate on the most acidic soils with heather and bilberry occasionally appearing in the canopy openings. On the less acidic soils the floral diversity increases with bramble *Rubus fruticosus*, creeping soft-grass *Holcus mollis* and bluebell *Hyacinthoides non-scripta* becoming more frequent. In terms of NVC communities, Rotherham's oak-birch woods usually fall into either *Quercus robur - Pteridium aquilinum – Rubus fruticosus* (W10) or *Quercus* spp - *Betula* spp – *Deschampsia flexuosa* woodland (W16) [1].

None of the oak-birch woods in Rotherham exhibit the rich bryophyte communities and other distinguishing features of the upland Atlantic oak woodland of western Britain. Although not in the upland zone, oak-birch woodland in Rotherham may be viewed as drier, more southerly counterparts of Upland Oakwoods identified in the UK BAP and are therefore a regional local key habitat. Many of Rotherham's oak-birch woodlands are ancient woodlands, although clear felling following the two World Wars has resulted in many of these woods being dominated by a maturing, even-aged canopy. Silver birch dominates many of these regenerating woodlands, which is typical of the natural successional development of oakwoods. There is a lack of mature and ancient trees and their associated wildlife in Rotherham's ancient woodlands. Many ancient woodland sites have been planted with non-native trees such as beech *Fagus sylvaticus,* sycamore *Acer pseudoplatanus* and sweet chestnut *Castanea sativa*. Before the beginning of the 20th century most of Rotherham's oak-birch woodlands would have been managed as coppice with standards[1].

[9] **Goldberg E (2006)** **Ancient woodland: guidance material for local authorities.**
[10] English Nature *Ancient Woodland Inventory(provisional) for England- digital boundaries.*
[11] Nature Conservancy Council 1981. Ancient Woodland Inventory

(Upland) Mixed Ash Woodland

The term '(Upland) Mixed Ashwoods' is used for woods on base-rich soils where ash *Fraxinus excelsior* is a dominant species. Locally field maple *Acer campestre*, oaks (most commonly pedunculate oak), hazel, wych elm *Ulmus glabra* occur.

Other less frequent but characteristic trees growing in these woods include wild service-tree *Sorbus torminalis,* small-leaved lime *Tilia cordata* and large-leaved lime *Tilia platyphyllos*. These typically limestone woods are also important for yew *Taxus baccata* which may form small groves in intimate mosaics with the other major trees, whilst alder *Alnus glutinosa* may occur where there are transitions to wet woodland. Very occasionally Midland hawthorn *Crataegus laevigata* grows in some southerly woods, as Rotherham is near the northern extent of its natural distribution. Despite variations in canopy composition the ground flora remains broadly similar with bluebell, ramsons *Alium ursinum*, primrose *Primula vulgaris*, wood anemone *Anemone nemerosa* and dog's mercury *Mercurialis perennis* reaching local dominance[1].

Nationally the largest examples occur on limestone, i.e. well-drained, base-rich soils. Rotherham has some good examples of this type of woodland although it is also found on more acidic, poorly-drained soils where there is flushing of nutrients. "Upland" in the name reflects the abundance of this type of woodland on base-rich or leached soils in upland Britain rather than the altitude at which individual sites occur. In Rotherham, good examples of mixed ashwoods are generally restricted to ancient woodlands in the Southern Magnesian Limestone Natural Area. However, small narrow tracts of woodland may be found on the more acidic soils of the Coal Measures, particularly in riparian areas or around flushes and often in the transitional zone between wet woodlands and the adjoining habitat[1].

NVC plant communities characterized by this habitat in the Borough of Rotherham include *Fraxinus excelsior - Acer campestre - Mercurialis perennis* (W8) and *Fraxinus excelsior - Sorbus aucuparia - Mercurialis perennis* woodland (W9) together with occasional small fragments of *Taxus baccata* woodland (W13) where yew groves occur on the Magnesian Limestone. The boundaries between this type and lowland mixed deciduous woodland may be unclear in places because the two types form a ecological continuum determined by soil conditions, climate etc.

Nationally the UK ancient (upland) mixed ashwood resource is estimated at 40,000- 50,000ha, the total area of upland ashwood is greater with a rough estimate of approximately 67,500ha.In Rotherham it is estimated to be at 105ha[1].

Wet Woodland

Wet woodland occurs on poorly-drained or seasonally-wet soils with a range of nutrient and pH status. In the wetter areas alder and willows *Salix* spp. are dominant. Ash, pedunculate and sessile oaks, silver birch and downy birch *Betula pubescens* become more frequent in the transitional zone between the wet woodland and other woodland habitats. In localized areas aspen *Populus tremula* may be dominant. The non-native and potentially invasive sycamore *Acer pseudoplatanus* is also frequent within many wet woodlands. English and wych elms may have been more common in wet wood transitional zones in Rotherham prior to Dutch elm disease. Wet woodlands are frequently narrow, linear strips or small fragments which are generally associated with watercourses, floodplains, springs and wet flushes. In Rotherham, they are often found in a mosaic with other key woodland habitats, in particular acid oak-birch woodlands on the Coal Measures and species-rich upland mixed ashwoods on the Southern Magnesian Limestone. The field layer in wet woodlands is often diverse and common plants include opposite-leaved golden-saxifrage *Chrysosplenium oppositifolium*, lesser celandine *Ranunculus ficaria*, creeping buttercup *Ranunculus repens*, wood avens *Geum urbanum* and herb Robert *Geranium robertanum*. The moist conditions favour bryophyte communities, but historic air pollution caused by heavy industry may have reduced their presence and diversity in Rotherham's wet woodlands

In Rotherham, many of the most important wet woodlands occur within ancient woods and add considerably to the diversity of such sites. Many of Rotherham's wet woodlands are of recent secondary origin but are still of ecological significance as their development is a part of the natural succession process and their low, scrub-like habit provides ideal habitat for a range of key species. Alder, willows and birches are pioneer trees, rapidly responding to land-use and environmental change. These trees support particularly high invertebrate populations[1].

Wet Woodlands in Rotherham tend to be dominated by willow, namely the W1 *Salix cinerea - Galium palustre* woodland, W2 *Salix cinerea - Betula pubescens - Phragmites australis* woodland and W3 *Salix pentandra - Carex rostrata* scrub or by the alder dominated W6 *Alnus glutinosa - Urtica dioica* woodland or W7 *Alnus glutinosa - Fraxinus excelsior - Lysimachia nemorum* woodland.

Woodland Selection Criteria and Attributes

Table 8 Selection criteria and attributes for woodland Local Wildlife Sites[12]

CRITERION	ATTRIBUTE
Size or extent	Area of site (ha)
Diversity	Number of recorded vascular plant species. This also reflects habitat diversity.
Naturalness	Presence of semi-natural/unplanted (AWI & Phase 1 criteria); AWI listed; number and/or cover ancient indicator species; presence and cover/number of native coppice/over-mature native trees. Presence of native veteran trees.
Rare or exceptional feature	Presence of nationally or regionally uncommon NVC types. Presence of significant populations of bluebell.
Typicalness	Presence of habitat and/or species characteristic of Borough or Natural Area
Connectivity within the landscape	Proximity to other sites or position in wildlife corridor.
Recorded history and cultural associations	Presence of historic documentation and cartographic evidence of ancient woodland or continuity of semi-natural woodland cover.

Woodland Selection Guidelines

Woodland sites will be eligible for selection as a Local Wildlife Site if they meet any of the following guidelines.

W1 Woodlands with the characteristics of ancient woodland with a minimum species index score of 10 from Table 9.

Application

This guideline is to be applied to semi-natural woodland sites which are believed to be have been under continuous woodland cover since 1600, supported by mapped evidence. They may have been felled and re-planted but have retained some of their ancient features, in particular a ground flora indicative of ancient woodlands in the region. This guideline can also be applied to ancient woodland sites that have been felled in total or in part and replanted with either broad-leaved or coniferous species. In these instances consideration should be given to the other semi-natural features of the site such as the composition of the field layer and understorey and the extent of regeneration of broad-leaved tree and shrub species. The species in Table 9, when taken as a whole, should be distributed across the majority of the site not just restricted to the margins and rides.

Rationale

This guideline reflects the importance of the ecological continuity of ancient woodlands and the value of longevity, as once lost it cannot be replaced. The soil resource including the soil profile and biota is long established and the lack of general disturbance such as ploughing indicates longevity. Ancient semi-natural woodlands have not stood untouched throughout this time, but have been traditionally managed or neglected at intervals and to various degrees throughout their history.

[12] Adapted from North Yorkshire SINC Panel 2002 *Guidelines for SINC Selection*

W2 Areas of semi-natural woodland of more than 0.5ha in size, of one of the following National Vegetation Classification (NVC) types: -

- **W1 *Salix cinerea-Galium palustre* woodland**
- **W2 *Salix cinerea-Betula pubescens-Phragmites australis* woodland**
- **W6 *Alnus glutinosa-Urtica dioica* woodland**
- **W7 *Alnus glutinosa-Fraxinus-Lysimachia nemorum* woodland**
- **W8 *Fraxinus excelsior - Acer campestre - Mercurialis perennis* woodland**
- **W9 *Fraxinus excelsior - Sorbus aucuparia - Mercurialis perennis* woodland**

Application
This guideline should be applied to semi-natural woodland. The woodland should display biological and physical features consistent with the NVC communities, although there does not have to be an exact fit. For example, the dominant canopy species may not resemble the NVC community, whilst the field layer composition may be a better indication of the NVC community type. The definition of the site boundary will be a recognisable management unit usually using contours or woodland coups as the NVC community stands are likely to lie within larger woodlands. A competent surveyor should base the woodland community classification on field assessment.

Rationale
Semi-natural non-ancient woodlands, especially the larger examples may be important locally or as potential links between ancient woodlands. Well-established old secondary woodlands have often developed significant biodiversity value. The NVC woodland communities listed are all linked to Priority UK BAP habitats that are listed as habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

W3 Woodland sites of 0.5 hectare or more that:

- **If it is an acidic woodland, has a score 6 or more from the species listed on Table 10,**
- **If it is a neutral to calcareous woodland, has a score 12 or more from the species listed in Table 11, or**
- **If it is a wet woodland or scrub community, has a score 10 or more from the species listed in Table 12.**

Application
This guideline will apply to all areas of semi-natural woodland not listed on the Ancient Woodland Inventory and also to plantations (broadleaf and coniferous). The selection of a woodland Local Wildlife Site using the species lists in the tables should ensure the species recorded exhibit a reasonable distribution throughout the stand in all or a significant proportion of the site. If the species recorded from the list are in low numbers or restricted to small patches within the woodland then the site should not normally be eligible for designation as a Local Wildlife Sites. All of the qualifying species do not have to occur throughout the woodland, it is sufficient that some occur throughout.

Rationale
Ancient woodlands that have been felled and/or replanted with coniferous and broadleaf plantation can continue to support features of ancient woodlands such as species-rich rides and remnants of the ancient woodland flora. This interest and the potential for recovery cannot be replaced once lost and should be protected from adverse land-use change such as development or agricultural conversion and intensification. These woodlands are considered an important part of the woodland nature conservation resource of Rotherham. The indicative botanical species lists all link to Priority UK BAP habitats that are habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

Table 9 Botanical indicators of ancient woodlands in South Yorkshire[13]

Scientific Name	English name
Ajuga reptans	Bugle
Adoxa moschatellina	Moschatel
Allium ursinum	Ramsons
Anemone nemorosa	Wood anemone
Campanula trachelium	Nettle-leaved bellflower
Carex pendula	**Pendulous sedge**
Carex remota	Remote sedge
Carex strigosa	Thin-spiked wood sedge
Carex sylvatica	Wood sedge
Crataegus laevigata	**Midland hawthorn**
Chrysosplenium oppositifolium	Opposite-leaved golden saxifrage
Conopodium majus	Pignut
Corylus avellana	Hazel
Dactylorhiza fuchsii	Common spotted orchid
Epipactis helleborine	Broad- leaved helleborine
Equisetum sylvaticum	Wood horsetail
Euonymus europaeus	Spindle
Fragaria vesca	Wild strawberry
Frangula alnus	**Alder buckthorn**
Galium odoratum	Woodruff
Geum rivale	Water avens
Helleborus viridis	**Green hellebore**
Hyacinthoides non-scripta	Bluebell
Hypericum hirsutum	Hairy St John's-wort
Hypericum humifusum	Trailing St John's-wort
Hypericum pulchrum	Slender St John's-wort
Hypericum perforatum	Perforate St John's-wort
Ilex aquifolium	Holly
Lamiastrum galeobdolon	Yellow archangel
Luzula pilosa	Hairy wood rush
Luzula sylvatica	Great wood rush
Lysimachia nemorum	Yellow pimpernel
Melampyrum pratense	Common cow wheat
Melica uniflora	Wood melick
Mercurialis perennis	Dog's mercury
Milium effusum	Wood millet
Orchis mascula	Early purple orchid
Oxalis acetosella	Wood sorrel
Populus tremula	Aspen
Potentilla sterilis	Barren strawberry
Prunus avium	Wild cherry
Quercus petraea	Sessile oak
Primula vulgaris	Primrose
Ranunculus auricomus	Goldilocks
Sanicula europaea	Sanicle
Scrophularia nodosa	Common figwort
Sorbus torminalis	**Wild service tree**
Stellaria holostea	Greater stitchwort
Tilia cordata	**Small-leaved lime**
Tilia platyphyllus	**Large-leaved lime**
Veronica montana	Wood speedwell
Viburnum opulus	Guelder rose
Vicia sepium	Bush vetch
Viola reichenbachiana	Early dog violet

Species in **bold** score 2

[13] Melvyn Jones 1995. *Rotherham's Woodland Heritage*. Rotherwood Press

Table 10 Vascular indicator plants of acid woodland in Rotherham

Scientific name	Common name
Anemone nemorosa	Wood anemone
Blechnum spicant	Hard-fern
Calluna vulgaris	Heather
Ceratocapnos claviculata	Climbing corydalis
Conopodium majus	Pignut
Corylus avellana	Hazel
Cytisus scoparius	Broom
Deschampsia flexuosa	Wavy hair-grass
Holcus mollis	Creeping soft-grass
Hyacinthoides non-scripta	Bluebell
Ilex aquifolium	Holly
Lonicera periclymenum	Honeysuckle
Luzula pilosa	Hairy wood-rush
Luzula sylvatica	Great wood-rush
Malus sylvestris	Crab apple
Melampyram pratense	Common cow-wheat
Mercurialis perennis	Dog's mercury
Milium effusum	Wood millet
Oxalis acetosella	Wood-sorrel
Quercus petraea	Sessile oak
Quercus robur	Pedunculate oak
Sorbus aucuparia	Rowan
Stellaria holostea	Greater stitchwort
Teucrium scorodonia	Wood sage
Veronica montana	Wood speedwell
Chrysosplenium oppositifolium	Opposite-leaved golden saxifrage
Dryopteris dilatata	Broad buckler-fern
Epipactis helleborine	**Broad-leaved helleborine**

Species in **bold** score 2

Table 11 Vascular indicator plants of neutral to calcareous woodland in Rotherham

Scientific name	Common name
Acer campestre	Field maple
Adoxa moschatellina	**Moschatel**
Allium ursinum	Ramsons
Alnus glutinosa	Alder
Anemone nemorosa	Wood anemone
Aquilegia vulgaris	Columbine
Arctium nemorosum	Wood burdock
Brachypodium sylvaticum	False-brome
Bromopsis ramosa	Hairy-brome
Campanula latifolia	**Giant bellflower**
Campanula trachelium	Nettle-leaved bellflower
Carex digitata	Fingered sedge
Carex pendula	**Pendulous sedge**
Carex remota	Remote sedge
Carex sylvatica	Wood-sedge
Chrysosplenium oppositifolium	**Opposite-leaved golden-saxifrage**
Circaea lutetiana	Enchanter's-nightshade
Clematis vitalba	Traveller's-joy
Conopodium majus	Pignut
Cornus sanguinea	Dogwood
Corylus avellana	Hazel

Crataegus laevigata	**Midland hawthorn**
Dactylorhiza fuchsii	Common spotted-orchid
Daphne laureola	Spurge-laurel
Deschampsia cespitosa	Tufted hair-grass
Elymus caninus	Bearded couch
Epipactis helleborine	**Broad-leaved helleborine**
Euonymus europaeus	Spindle
Euphorbia amygdaloides	Wood spurge
Festuca gigantea	Giant fescue
Frangula alnus	**Alder buckthorn**
Fraxinus excelsior	Ash
Gagea lutea	**Yellow star-of-bethlehem**
Galium odoratum	Woodruff
Geum urbanum	Wood avens
Helleborus viridis	**Green hellebore**
Hordelymus europaeus	**Wood barley**
Hyacinthoides non-scripta	Bluebell
Ilex aquifolium	Holly
Lamiastrum galeobdolon	Yellow archangel
Lathraea squamaria	Toothwort
Ligustrum vulgare	Wild privet
Listera ovata	Common twayblade
Lonicera periclymenum	Honeysuckle
Lysimachia nemorum	Yellow pimpernel
Malus sylvestris	Crab apple
Melica uniflora	Wood melick
Mercurialis perennis	Dog's mercury
Milium effusum	Wood millet
Moehringia trinervia	Three-nerved sandwort
Myosotis sylvatica	Wood forget-me-not
Neottia nidus-avis	**Bird's-nest orchid**
Ophrys insectifera	Fly orchid
Orchis mascula	Early-purple orchid
Oxalis acetosella	Wood-sorrel
Phyllitis scolopendrium	Hart's-tongue fern
Platanthera chlorantha	**Greater butterfly-orchid**
Poa nemoralis	Wood meadow-grass
Polygonatum multiflorum	Solomon's-seal
Primula vulgaris	Primrose
Prunus padus	Bird cherry
Ranunculus auricomus	Goldilocks buttercup
Ribes uva-crispa	Gooseberry
Sanicula europaea	Sanicle
Scrophularia nodosa	Common figwort
Sorbus torminalis	**Wild service-tree**
Stellaria holostea	Greater stitchwort
Tamus communis	Black bryony
Taxus baccata	Yew
Tilia cordata	**Small-leaved lime**
Tilia platyphyllos	Large-leaved lime
Ulmus glabra	Wych elm
Valeriana officinalis	Common valerian
Veronica montana	Wood speedwell
Viola reichenbachiana	Early dog-violet
Viola riviniana	Common dog-violet

Species in **bold** score 2

Table 12 Vascular indicator plants of wet woodland in Rotherham

Scientific name	Common name
Populus tremula	Aspen
Allium ursinum	Ramsons
Alnus glutinosa	Alder
Anemone nemorosa	Wood anemone
Betula pubescens	Downy birch
Calamagrostis canescens	**Purple small-reed**
Calamagrostis epigejos	Wood small-reed
Caltha palustris	Marsh-marigold
Cardamine flexuosa	Wavy bitter-cress
Cardamine pretense	Cuckoo flower
Carex paniculata	Greater tussock-sedge
Carex remota	Remote sedge
Chrysosplenium oppositifolium	Opposite-leaved golden-saxifrage
Dryopteris felix-mas	Male fern
Eupatorium cannabinum	Hemp-agrimony
Filipendula ulmaria	Meadowsweet
Geum rivale	Water avens
Glyceria declinata	Small sweet-grass
Lysimachia nemorum	Yellow pimpernel
Mentha aquatica	Water mint
Mercurialis perennis	Dog's mercury
Oxalis acetosella	Wood sorrel
Phalaris arundinacea	Reed canary grass
Phragmites australis	Common reed
Ranunculus ficaria	Lesser celandine
Salix caprea	Goat willow
Salix cinerea	Grey willow
Salix fragilis	Crack-willow
Solanum dulcamara	Bittersweet
Valeriana officinalis	Common valerian

Species in **bold** score 2

Hedgerows

Hedgerows are an integral part of our landscape, comprising rows of closely-growing trees and shrubs and associated ground flora. They are linear features which resemble woodland edge and scrub habitats and some have their origins in the woodland clearance of the 17th and 18th Centuries. Ancient hedgerows support the greatest biodiversity and are defined as being those established before the Enclosure Acts were passed between 1720 and 1840. These hedgerows and the field banks or ditches that they often grow alongside frequently mark Parish boundaries and ancient field systems and have considerable historic interest. Species-rich hedgerows are defined in the UK BAP as those with four or more (in northern England) native woody plants in a 30m length and/or a rich ground flora[1].

Many hedgerows in urban and rural areas are considered to be important assets for wildlife. They may be species-rich, reflect historic field boundaries, and frequently form important green corridors. Hedgerows adjacent to green lanes, tracks and woods tend to be particularly rich[1].

Most hedgerows in Rotherham occur within the Coal Measures Natural Area where hawthorn *Crataegus monogyna*, elder *Sambucus nigra* and blackthorn *Prunus spinosa* are the most common trees and shrubs. Other shrubs associated with them include hazel *Corylus avellana* and dog rose *Rosa canina*[1].

On the more basic soils of the Southern Magnesian Limestone Natural Area hedgerows usually have more varied trees with ash, field maple, elms and dogwood being frequent as well as those previously mentioned. Midland hawthorn *Crataegus laevigata* is native in the Midlands and southeast Britain and is often found on clay soils with oaks. Hedgerow trees left to grow as standards (especially oaks and ash) are important hedgerow features, occasionally veteran with associated interest. In Rotherham, hedgerows are usually included within NVC W21 *Crataegus monogyna – Hedera helix*, W22 *Prunus spinosa - Rubus fruticosus* and W24 *Rubus fruticosus – Holcus lanatus* scrub communities[1].

Although hedgerows are one of the most significant habitats in lowland Britain, they have suffered significant neglect and loss since 1945 but current agri-environmental policy is starting to reverse this trend. Hedgerows are a primary habitat for at least 47 types of plant and animal of conservation concern in the UK, including 13 globally threatened or rapidly-declining ones; this is more than for most other Key Habitats. In Rotherham they are especially important for butterflies and moths, farmland birds, bats and some once-common flowering plants.

It was estimated that 450,000km of hedgerow existed in the UK, of which 42% was thought to be species-rich. In Rotherham there is estimated to be 64km of hedgerows[1], however, the proportion of this total that is comprised of ancient or species-rich hedgerows is unknown.

Species-rich / Ancient Hedgerow Selection Criteria and Attributes

Table 13 Selection criteria and attributes for species-rich/ancient hedgerow Local Wildlife Sites[14]

CRITERION	ATTRIBUTE
Size or extent	Length of hedgerow
Diversity	Number of recorded vascular plant species Diversity of tree and shrub species per length of hedgerow.
Naturalness	Presence of semi-natural/unplanted ancient indicator species Presence of native trees.
Rare or exceptional feature	Presence of nationally or regionally uncommon NVC types. Presence of significant populations of woodland indicator species.
Typicalness	Presence of habitat and/or species characteristic of county or Natural Area
Connectivity within the landscape	Proximity to Local Wildlife Sites or position in wildlife corridor or connectivity with other hedgerows or ancient woodlands.
Recorded history and cultural associations	Presence of historic documentation and cartographic evidence of the presence of a particular hedgerow.

Species-rich/Ancient Hedgerow Selection Guidelines

Hedgerows within an existing Local Wildlife Site boundary or hedgerows that originate from or link with a designated Local Wildlife Site may be assessed against the following selection guidelines to provide supplementary designation evidence. Hedgerows with the potential to meet these criteria but that are not within or linked to a designated Local Wildlife Site should be referred to RMBC Trees & Woodlands.

H1 Any hedgerow that is at least 50metres in length originates from the pre- Enclosure Acts period and supports:

- **10 or more species of native trees and/or shrubs, or**
- **8 or more native tree and shrubs species and has a score of 5 or more for non-woody species listed in Table 11, or**
- **Supports 5 or more veteran trees, or**
- **Ghost hedgerows associated with former ancient woodlands**

Application

The mapping of the boundary of the site must include a buffer zone of at least 2 metres around the hedgerow. This guideline can only be applied to hedgerows that are thought to originate from the pre-Enclosure Acts period. Determination of the origin of a hedge can be based on map evidence and, if no map evidence is available, from field evidence that indicates the hedgerow is ancient (i.e. pre-enclosure). Guidance is given in the Hedgerows Regulations 1997[15] on relevant documents that can be used to determine pre-Enclosure Acts hedgerows including estate maps, tithe maps and awards, various enclosure maps, charters and manorial records. The identification of a hedgerow length should follow the guidance given in the Hedgerow Evaluation and Grading system[16]. Many of the thin, straight hawthorn hedges which characterise later parliamentary enclosures, as well as most hedges which consist mainly of beech, privet or yew or non-native trees and recently planted species-rich hedges are excluded.

Rationale

Hedgerows originating from pre-Enclosure Acts periods are considered as ancient hedgerows by the UK Habitat Action Plan for Hedgerows. They are likely to support a good diversity of plant and animal species and are long established habitats in the landscape. Many may be remnants of ancient woodland

[14] Adapted from North Yorkshire SINC Panel 2002 *Guidelines for SINC Selection*
[15] HM Government (1997). The Hedgerow Regulations 1997. A guide to the law and good practice. HMSO.
[16] Clements, D.K and R.J Tofts (1992). Hedgerow evaluation and grading scheme (HEGS): A method for ecological survey, evaluation and grading of hedgerows. Countryside and Management Planning.

and as such cannot be replaced once lost. Old and over-mature trees are invaluable wildlife habitats providing habitat for a wide variety of mammals, birds, invertebrates and plants.

H2 Any hedgerow that is at least 50meters in length has a minimum of five native woody species and which would qualify as an important hedgerow under the most recent Hedgerow Regulations.

Application
This guideline should be applied to all hedgerows that are known not to have been planted in the last 30 years.

Naturenet[17] provides the following overview of the current (at the publication date of this document) Hedgerow Regulations 1997 'Important Hedgerow' criteria:

To be deemed 'important' a hedgerow must meet one or more of the following criteria:

- The hedgerow marks the boundary of a historic parish or township existing before 1850.
- The hedgerow contains or is within an archaeological feature which is on the Sites and Monuments Record, or a pre-1600 manor or estate.
- The hedgerow is a part of or associated with a field system predating the Enclosure Acts.
- The hedgerow contains species in part I of Schedule 1; Schedule 5; or Schedule 8 of the Wildlife and Countryside Act 1981; or various other defined species including certain Red Data Book species.
- The hedgerow is adjacent to a public right of way (not counting an adopted highway) and at least 4 woody species as defined in Schedule 3 of the regulations plus at least two Associated Features.
- The hedgerow includes one or more of the following:
    - At least 7 woody species;
    - At least 6 woody species plus at least three Associated Features (see below);
    - At least 6 woody species including a black poplar; large-leaved lime, small-leaved lime or wild service tree;
    - At least 5 woody species and at least 4 Associated Features.

Associated Features are as follows:

- A bank or wall for at least half the length
- A ditch for at least half the length
- Gaps over no more than 10% of the length
- At least one standard tree per 50m
- At least 3 ground flora woodland species as defined in Schedule 2 of the Regulations within 1m of the hedgerow
- Connections scoring 4 or more points, where connection a hedgerow counts as one, a broad-leaved woodland or pond counts as two*
- A parallel hedge within 15m*

*These features do not count if a public right of way is being included in the criterion.

Rationale
Not all species-rich hedgerows are pre-enclosure hedgerows but may still support a diversity of plant and animal species and are long-established habitats in the landscape. Old hedgerows often have associated features such as ditches or banks that can add to their wildlife value. Hedgerows are protected by the Hedgerow Regulations 1997 and under Section 97 of the Environment Act 1995. Species-rich hedgerows are considered to be priority habitats in the Rotherham BAP as they are significant both locally and regionally. Hedgerows are listed as a Priority UK BAP habitat and as a habitat of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

[17] http://www.naturenet.net/trees/hedgerow/ 26 August 2009

Lowland Wood Pasture and Parklands

Wood Pasture and Parkland is considered to be a product of historic land management rather than a particular vegetation community. The typical habitat complex has elements of a range of broad habitat types, the nature and extent of which varies from site to site.

Large trees, either pollarded or with spreading crowns, growing in open grassland, which is usually grazed and normally has woodland plants growing amongst it, are characteristic of Wood Pasture and Parkland. Much of this habitat's interest is associated with the typically mature and/or ancient trees and their related invertebrates[1].

The historical continuity and management of parkland and wood pasture habitats provides an important setting for veteran trees. The ecological habitat value of old and veteran tree populations is often great, for example within avenues. This is because there are more ecological habitat niches available and they are more likely to support viable long-term populations of associated species and habitats. Trees in avenues and in groupings are particularly valuable.[18].

The main NVC communities associated with this habitat[3] include *Quercus robur – Pteridium aquilinium – Rubus fruticosus* woodland (W10), *Quercus spp. – Betula spp. – Deschampsia flexuosa* woodland (W16) and *Fagus sylvatica – Deschampsia flexuosa* woodland (W15). Frequently the grassland communities are of interest including the *Festuca ovina – Agrostis capillaris – Galium saxatile* grassland (U4), *Pteridium aquilinium –Galium saxatile* grassland (U20).

The Veteran Trees Initiative (VTI) has produced a book regarding all aspects of veteran trees and their management.[19] In this publication a veteran tree is "*defined as a tree that is of interest biologically, culturally or aesthetically because of its age, size or condition*." This includes trees that are in the ancient stage of their life and trees that are old relative to other specimens of the same species. There are various types of veteran trees, which are differentiated according to management practice - past or present. The VTI guide, which is considered an essential aid in the determination of the value of a veteran and old trees, states that veteran trees are characterised by the presence of features such as:

- large girth for the species concerned
- 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 in damp, shady and dry, open conditions
- 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
- high aesthetic interest
- heart rot

[18] North Yorkshire SINC Panel. 2002 *Sites of Importance for Nature Conservation in North Yorkshire*.
[19] Helen Read (2000). *Veteran Trees - A guide to good management.* English Nature.

Parkland Selection Criteria and Attributes

Table 14 Selection criteria and attributes for parkland and wood pastures Local Wildlife Sites[15]

CRITERION	ATTRIBUTE
Size or extent	Area of site (ha)
Diversity	Diversity of habitats (number of habitats and structural diversity) within the site and/or species groups. Number of veteran trees and quantity of standing & fallen dead-wood material
Naturalness	Presence of native veteran trees Absence of ploughing and/or fertiliser input Absence of intensive grazing
Rare or exceptional feature	Presence of rare saproxylic fungi Presence of saproxylic invertebrates found which are listed in the Index of Ecological Continuity.[20] [21] Presence of lichens listed in the Revised Index of Ecological Continuity[22] [23]
Typicalness	Presence of habitat and/or species characteristic of parkland & wood pasture Presence of habitat and/or species characteristic of the Borough or Natural Area
Connectivity within the landscape	Proximity of site to other Wildlife Sites or within a wildlife corridor Proximity of site to other semi-natural habitats Location of site in relation to other sites supporting veteran trees
Recorded history and cultural associations	Presence of historic documentation and cartographic evidence of past land-use. Presence of ancient woodland.

Parkland, wood pasture and scattered trees selection guidelines

Sites will be eligible for selection as a Local Wildlife Site if they meet either of the following guidelines:

P1 Parkland or wood pasture sites greater than 2ha that support one or more of the habitats traditionally associated with parkland or wood pasture and support blocks, groupings or scattered old or veteran trees in combination with either grazed woodland or grassland.

Application

This guideline can be applied to historic parkland and wood pasture sites with a combination of habitat types. These should include veteran and/or old trees, at densities of two or more per hectare, and additional habitat features such as watercourses, lakes, dead wood (lying or standing), grazed or ungrazed grassland, woodland and old walls supporting various lichens. Additional interest should also be present such as dead wood invertebrates, fungi, bats, other mammals and/or birds. Parkland sites, in part or wholly, could also be identified under other habitat specific guidelines or the species guidelines.

The determination of veteran or old trees should be relative to the species concerned and in accordance with the definitions and features specified within the publication *Veteran Trees: a guide to good management*[16].

[20] Alexander, KNA. (1988). The development of an Index of Ecological Continuity for deadwood associated beetles. In: Welch, RC (ed) Invertebrate indicators of ancient woodland (East Region Regional News) Antenna 12: 69-71.
[21] Harding, PT & Alexander, KNA. (1994). The use of Saproxylic Invertebrates in the Selection and Evaluation of Areas of Relic Forest in Pasture-Woodlands. British Journal of Entomological Natural History, 7 (Suppl), pp21-26.
[22] Rose, F. (1976). Lichenological indicators of age and environmental continuity in woodlands. In (eds) Brown, DH, Hawksworth, DL & Bailey, RH. (1976) Lichenology: progress and problems. pp279-307. London, Academic Press.
[23] Harding & Rose 1986. Pasture woodlands in lowland Britain. Huntingdon, Institute of Terrestrial Ecology.

This habitat guideline does not apply to sites that are significantly altered such as those parklands in primarily arable uses or sites that support heavily improved grassland and a large number of non-native trees. Trees can also be considered under P2.

Rationale
Parkland and wood pasture is a localised habitat and can support some of the oldest surviving trees in Rotherham. Wood Pasture and Parkland is listed as a Priority UK BAP habitat and as a habitat of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and is subject to government policy PPS9.

P2 Groupings (normally 5 or more) of comparatively old (normally 100 years +) and/or veteran broad-leaved trees in former parkland or wood pasture or similar sites and that are known to support fungi and/or invertebrates and/or lichens that are either characteristic or specialist species of veteran trees.

Application
This guideline will normally be applied to groupings of native and non-native trees. These may be historically important avenues or as other planting patterns. Traditional woodland management practices such as pollarding may have been employed. It should not be applied to hedgerow trees. The presence of recorded species groups indicates the value of the ecological habitats the tree(s) provide. Trees can also be designated under the species guidelines in addition to or independently of these habitat guidelines. In exceptional circumstances, an individual veteran tree of significant importance may also be designated. A single veteran tree would need to be of exceptional ecological value (with features identified by Veteran Tree Initiative) to warrant such an exception.

Rationale
Veteran and old trees are a rare habitat in Rotherham and small groupings can support a significant and important variety of plant and animal species. Groupings of these trees generally have a higher ecological value due to the presence of a greater diversity of habitat niches, which in turn are more likely to support viable species populations and are generally less threatened by change than an individual tree.

Freshwater Habitats

Rotherham contains a wide range of freshwater habitats including rivers, streams, canals, lakes, reservoirs and ponds.

Flowing Water Habitats

Rivers and streams are major linear features of the landscape supporting a wide diversity of plants and animals. They act as corridors for the dispersal of both aquatic and terrestrial animals such fish, birds and mammals such as otter. Well-vegetated banks can act as buffer zones reducing any impact of agricultural activity on the biological conditions of the watercourse[1]. Rivers and streams often support a mosaic of features such as rifles and pools, exposed river sediments and sand bars which can be important for a variety of plants and animals.

There are few natural rivers remaining in the UK and throughout its length a river will pass through different stages each with different characteristics and nature conservation value. The different stretches of a river may support different in-channel features which in turn influence the waterside habitats[24]. Canals are included under the standing water section as their plant communities are more characteristic of standing than flowing water systems. Species strongly associated with flowing water habitats, such as water vole and otter, are included in selection guidelines for species groups.

The principal river catchments affecting Rotherham are the Don and Trent catchments. These catchments include the rivers Don, Rother and Dearne as well as a number of smaller rivers and streams such as Anston Brook, Whiston Brook, Maltby Dike, Ulley Brook and Hooton Brook

Much of the River Don and River Rother areas are densely populated and industrialized although the River Rother is of significant wildlife value, particularly for its ornithology, and its concentration of wetland sites and associated species.[25] The River Don flows east from its headwaters in the Pennines down through Sheffield and is joined by the River Rother at Rotherham and the River Dearne at Conisborough before joining the River Ouse near Goole which flows into the upper part of the Humber Estuary. Many of the river reaches between Sheffield and Doncaster are wide and deep reflecting their use for navigation. The greatest uses of water in the catchment are public and industry water supply but there are other uses including fish farming and agriculture. The rivers are also used for navigation and for recreational activities including angling[26].

Flowing Water Selection Criteria and Attributes

Table 15 Selection criteria and attributes for flowing water Local Wildlife Sites [15]

CRITERION	ATTRIBUTE
Size	No minimum size for length. A recognisable management unit defined by physical features on the ground. Ideally, in the long term, 500m standard lengths based upon River Habitat Survey[27] (RHS)/River Corridor Survey[28] (RCS). Width minimum 0.5m from wetland margin – wetland margin.
Rare or exceptional feature	The presence of internationally important plant species. The presence of nationally rare or declining plant species; presence of regionally important species; presence of locally rare or declining plant species or species/communities of restricted distribution that have a population stronghold in Rotherham The presence of a rare habitat type at international-local level.

[24] UK Biodiversity Steering Group (1998). *Biodiversity: The UK Steering Group Report, Volume 2 Action Plans*, 1995.
[25] *River Rother Wildlife Strategy* 1994
[26] The Environment Agency 2003. *The Don and Rother Catchment Abstraction Management Strategy.*
[27] Environment Agency 2003. River Habitat Survey in Britain and Ireland.
[28] National Rivers Authority 1992. River Corridor Surveys.

Diversity	The diversity of hydromorphological features The diversity of BAP Habitat types and plant and animal species.
Naturalness	The presence of features associated with natural rivers such as oxbows, riffles, pools, gravel shoals/shingle, sand bars. Evidence of active meandering.
Typicalness	The presence of nationally important river types as defined by RHS or methodology developed by Nigel Holmes "Typing British Rivers According to their Flora." Comparison of the observed characteristics of the river with Biological General Quality Assessment (includes BMWP & RIVPACS) of what might be expected.
Connectivity within the landscape	The proximity to other habitats including wetlands. Known migration route for wildlife.

Flowing Water Selection Guidelines

Sites will be eligible for selection as a Local Wildlife Site if they meet either of the following guidelines:

RI1 A stretch of river or similar watercourse that supports 1 or more of the following a) – c):

a) Supports a high and/or near natural (class A and B) water quality as determined by Biological General Quality Assessment methodology used by the Environment Agency.

b) A suite of 3 or more of the following natural river habitat features in the stretch of watercourse being evaluated:

- **cascades**
- **islands**
- **oxbows**
- **pools**
- **rapids**
- **riffle and run systems**
- **sand, mud, shingle or gravel banks**
- **unmodified bank profiles**
- **unvegetated point bars**
- **vegetated point bars**

c) A score of 10 or more from the species listed in Tables 16

Application

The guidelines for flowing waters should be applied to areas of permanent or seasonal open flowing water and associated swamp habitats of natural and artificial origin. There is no minimum size threshold for selection; however, linear sites such as rivers should be assessed in sections between readily identifiable features such as bridges. Linear stretches over 500m should, where possible, be broken down into identifiable sections that meet the criteria.

Rationale

Rivers and streams are an important part of Rotherham's biodiversity resource and where detailed information is available designation as a Local Wildlife Site can be considered. Rivers are listed as a Priority UK BAP habitat and as a habitat of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

Table 16 Flowing water vascular plants

Scientific name	Common name
Alisma lanceolatum	**Narrow-leaved water-plantain**
Alisma plantago-aquatica	Water plantain
Apium nodiflorum	Fools watercress
Butomus umbellatus	Flowering rush
Callitriche spp.	Water-starworts
Carex acuta	**Slender tufted sedge**
Carex acutiformis	Lesser pond sedge
Carex riparia	Great pond sedge
Ceratophyllum demersum	Rigid hornwort
Carex pseudocyperus	Cyperus sedge
Carex rostrata	Bottle sedge
Chara sp.	Stoneworts
Eleocharis palustris	Common spike-rush
Equisetum fluviatile	Water horsetail
Equisetum palustre	Marsh horsetail
Eupatoria cannabinum	Hemp-agrimony
Glyceria spp.	Sweet-grasses
Groenlandia densa	Opposite-leaved pondweed
Hippuris vulgaris	Marestail
Hottonia palustris	**Water violet**
Iris pseudacorus	Yellow flag
Hydrocharis morsus-ranae	Frogbit
Lemna gibba	Fat duckweed
Lemna trisulca	Ivy-leaved duckweed
Lycopus europaeus	Gypsywort
Lythrum salicaria	Purple loosestrife
Mentha aquatica	Water mint
Menyanthes trifoliata	Bog bean
Myosotis laxa	Tufted forget-me-not
Myosotis scorpioides	Water forget-me-not
Myosotis secunda	Creeping forget-me-not
Myriophyllum alterniflorum	***Alternate water-milfoil***
Myriophyllum spicatum	Spiked water milfoil
Myriophyllum verticillatum	**Whorled water-milfoil**
Myosoton aquaticum	Water chickweed
Nuphar lutea	Yellow water-lily
Nymphaea alba	White water lily
Oenanthe aquatica	**Fine-leaved water-dropwort**
Oenanthe crocata	Hemlock water-dropwort
Oenanthe fistulosa	Tubular water-dropwort
Oenanthe silaifolia	**Narrow-leaved water-dropwort**
Persicaria amphibia	Amphibious bistort
Phalaris arundinacea	Reed canary-grass
Phragmites australis	Common reed
Potamogeton spp.	Pondweeds
Ranunculus aquatilis	Common water-crowfoot
Ranunculus circinatus	Fan-leaved water-crowfoot
Ranunculus fluitans	River water-crowfoot*
Ranunculus penicillatus	Stream water-crowfoot
Ranunculus spp.	Other water-crowfoot species
Rorippa amphibia	Great yellow-cress
Rorippa microphylla	Narrow-fruited water-cress
Rorippa nasturtium-aquaticum	Water-cress
Rumex hydrolapathum	Water dock
Sagittaria sagittifolia	Arrowhead
Schoenoplectus lacustris	Common club-rush
Schoenoplectus tabernaemontani	**Grey club-rush**
Scutellaria galericulata	Skullcap
Sparganium emersum	Unbranched bur-reed

Sparganium erectum	Branched bur-reed
Spirodela polyrhiza	**Greater duckweed**
Veronica anagallis-aquatica	Blue water speedwell
Berula erecta	Lesser water-parsnip
Bidens cernua	Nodding bur-marigold
Bidens tripartita	Trifid bur-marigold
Typha angustifolia	Lesser bulrush
Typha latifolia	Bulrush

Species in **bold** score 2

Standing Water Habitats

Standing water in the British Isles includes natural systems, for instance lakes and pools, as well as man-made waters such as lakes, reservoirs, ponds and canals. It includes the open water zone (which may contain submerged, free-floating and/or floating-leaved vegetation) and water fringe vegetation (< 5m wide). The transition between open water and land is often occupied by tall emergent vegetation called swamp, reedbed or carr woodland. In practice these communities often form a continuum. Swamp habitats are included in the standing water selection guidelines because of their association with open water. Some sites in Rotherham support good macrophyte flora including yellow water lily *Nuphar lutea*, spiked water milfoil *Myriophyllum spicatum*, water violet *Hottonia palustris*, pondweeds *Potamogeton* sp. and pillwort *Pilularia globulifera*, a nationally scarce water fern. NVC communities in Rotherham include the *Lemna gibba* community (A1), the *Nymphaea alba* community (A7), *Potamogeton natans* community (A9), *Polygonum amphibium* community (A10), *Callitriche stagnalis* community (A16) and the *Elodea canadensis* community (A15).

The transition zone between open water and terrestrial habitats is often occupied by tall swamp or reed vegetation including *Carex paniculata* swamp (S3), *Phragmites australis* swamp and reedbeds (S4), *Glyceria maxima* swamp (S5), *Carex riparia* swamp (S6), *Scirpus lacustris* spp. *lacustris* swamp (S8), *Typha latifolia* swamp(S12), *Sparganium erectum* swamp (S14) and *Glyceria fluitans* water-margin vegetation (S22) and *Carex otrubae* swamp (S18).

Standing waters are usually classified according to their nutrient status and this can change naturally or as a result of pollution. Their nutrient status varies from low to high and intermediates occur, although water bodies in Rotherham are usually more eutrophic (nutrient-rich) or mesotrophic (intermediate). Eutrophic water contains at least 0.035mgl-1 total phosphorus (including phosphorus bound up in plankton) and 0.5mgl-1 or more total inorganic nitrogen (mainly in the form of dissolved nitrates). Mesotrophic waters normally have 0.01-0.03mgl-1P and 0.3-0.65mgl-1N[29].

A dramatic decline in the number and condition of farm and village ponds has been reported nationally and it is likely that this trend has occurred in Rotherham. An increase in the number of garden ponds and fisheries has ameliorated this to some extent although poor design and inappropriate stocking often compromise the wildlife value of such ponds. Lakes and ponds are important habitats because of the many species associated with them, including otter *Lutra lutra*, water vole *Arvicola terrestris*, great crested newt *Triturus vulgaris* and many invertebrates and birds[1].

When levels fall in lakes and reservoirs, previously submerged parts of the banks are exposed to the air. This causes a dramatic change in these locations from an aquatic to a terrestrial environment and has a major influence on the animal and plant life found there. This process is commonly termed drawdown, and the part of the shoreline that is exposed below the top water line is termed the eulittoral, inundation or drawdown zone[30].

The key feature determining the ecology of drawdown zones is the dynamic hydrologic regime, which dictates the chemical and physical character of wetland water, the resulting vegetation, and the use of wetlands by birds and other animals. In contrast to the textbook hydrosere, ending in woodland, water level fluctuations produce a cycle of succession consisting of disturbance, colonisation and growth stages.

[29] UK Biodiversity Steering Group 1995 *Biodiversity: Volume 2: Action Plans*. HMSO
[30] Carlos Abrahams 2005 *The ecology and management of drawdown zones.* British Wildlife volume 16, No. 6, pp395-402.

The nature conservation value of drawdown vegetation rests mainly in the character of its distinctive and resilient temporary communities. Over 85% of wetland species growing in ponds occur in the drawdown zone, and many are restricted to this area. As natural wetlands have been lost to development, the nature conservation importance of artificial waters such as reservoirs has increased. Open seasonal habitats are rapidly becoming less common in the countryside and if managed appropriately, the drawdown zones of artificial sites can provide important refuge habitat for specialised species and communities. Vegetation and bare ground in eulittoral areas can provide valuable habitat for a range of fauna, in particular invertebrate species and shoreline birds.

Typical NVC communities found in drawdown zones: A10 *Polygonum amphibium,* OV30 *Bidens tripartita - Polygonum amphibium* community, MG11 *Festuca rubra - Agrostis stolonifera - Potentilla anserina* grassland, MG11 *Festuca rubra - Agrostis stolonifera - Potentilla anserina* grassland, OV31 *Rorippa palustris - Filaginella uliginosa* community, OV29 *Alopecurus geniculatus - Rorippa palustris* community, OV28 *Agrostis stolonifera - Ranunculus repens* community, OV21 *Poa annua - Plantago major* community, OV32 *Myosotis scorpiodes - Ranunculus sceleratus* community, MG13 *Agrostis stolonifera - Alopecurus geniculatus* grassland, OV33 *Polygonum lapathifoilum - Poa annua* community, OV35 *Lythrum portula - Ranunculus flammula* community and S22 *Glyceria fluitans* water-margin vegetation.

Types of standing water in Rotherham[31]include:

- Natural lakes – lakes formed within a natural basin. Many such lakes will have been modified or altered by human activities e.g. dams.

- Oxbow ponds – Oxbow ponds develop after a river cuts a new path leaving behind the former meander which over time becomes isolated.

- Field ponds – Constructed on farms for watering stock and often associated with the Enclosure Acts.

- Dew ponds – Originally intended as a method of watering stock in areas with little above ground drainage. They were designed so as to create a basin to capture rainfall and surface runoff. Today many are no longer used for stock and have been colonised by a variety of wetland species.

- Reservoirs – Constructed for irrigation and water storage. Often of significant ornithological interest although some support a specialised flora associated with drawdown zones. Examples include Thrybergh and Ulley Reservoirs and Firsby Reservoirs.

- Mineral extraction sites – clay pits, gravel pits, sandpits, brickpits and limestone quarries. These sites are very variable ranging from large deep gravel pits and flooded quarries to relatively small wetlands in brickpits and limestone quarries. These sites become more natural in time through natural colonisation of plants and animals. Many sites are relatively isolated and free from human impacts such as pollution and recreational disturbance. This can be very beneficial for plants, birds and mammals.

- Flashes – standing water bodies created through subsidence of land over former coal workings. An example is Catcliffe Flash.

- Mill lodges and ponds – Originally constructed to store water to power mills. Nature conservation interest can be very variable. Some sites are associated with rare aquatic flora and fauna.

- Ornamental lakes – Often associated with large estates or a parkland landscape. These sites can be of significant biological interest. They are usually eutrophic and can support submerged, floating and marginal wetland vegetation, diverse invertebrate assemblages and wetland birds. Some sites are also important for water voles. Examples include the lakes at Wentworth Park.

[31] Adapted from North Yorkshire SINC Panel 2002 *Guidelines for SINC Selection*

- Fish ponds – Historic fishponds may support a range of features such as rich marginal vegetation, areas of relic fen, swamp or secondary wet woodland. They are often present as a series of interconnecting ponds. An example would be Ravenfield Park.

- Canals – The canals in Rotherham include both disused canals and those still in use/restored such as the Chesterfield Canal. Disused canals can be of great ecological interest due to their lack of disturbance.

- Ditches – Artificially created and maintained drainage channels usually associated with local agricultural land drainage. Depending upon their location they may be permanently watered or may become dry at different times of the year.

- Balancing ponds and lagoons and wader scrapes – These can develop interest for both fauna and flora.

- Garden ponds – Garden ponds can support a range of flora and fauna and in some areas make a significant contribution to local wildlife. However, garden ponds are excluded from these guidelines.

Nationally the extent of the standing water resource is unknown. The UK HAP for Eutrophic Standing Water estimates 1785km^2 excluding small pools, field ponds and brackish waters. Over 800 standing water bodies are recorded for Rotherham with a combined area in excess of 300ha but this largely excludes garden ponds that are known to be widespread and common[1].

Standing Water Selection Criteria and Attributes

Table 17 Selection criteria and attributes for standing water Local Wildlife Sites [27]

CRITERION	ATTRIBUTE
Size or extent	The area of a site or, for canals, length in metres
Diversity	The diversity of vegetation structure and successional stages of marginal, emergent, submerged and floating aquatic vegetation.
Naturalness	The presence of natural features, evidence of longevity and maturation. Absence of invasive alien species. Use of trophic status / nutrient level data. Absence of physical or chemical pollution including absence of human manipulation such as artificial fish stocking
Rare or exceptional feature	The presence of nationally rare or declining species; presence of regionally important species; presence of locally rare or declining plant species or species/communities of restricted distribution, which have a population stronghold in South Yorkshire.
Typicalness	The use of trophic status/nutrient level data. Conductivity, pH, hardness data where available. The type of aquatic NVC communities present.
Connectivity within the landscape	The proximity to and connections with other wetlands or habitats necessary for the survival of other biotic groups (invertebrates & amphibians), including non-designated sites or designated sites. Site in key migration route for wildlife including fish.

Standing Water Selection Guidelines

Areas of standing water, with any integral marginal vegetation that meet any one or more of the following guidelines will be eligible for selection as a Local Wildlife Site.

SW1 Any nutrient-rich standing water site that scores 10 or more from the species listed in Table 18 with at least one species recorded from two of the habitat zones of submerged, floating and swamp habitat.

Application
The guidelines for standing waters should be applied to areas of permanent or seasonal open water and associated swamp habitats of natural and artificial origin. Subsidiary habitats such as wet woodland and fen that may be associated with standing water sites may also be included within the Local Wildlife Site if they warrant designation in their own right. There is no minimum size threshold for selection; however, linear sites such as canals should be assessed in sections between readily identifiable features such as bridges or locks. The majority of the species recorded from Table 18 should be well distributed throughout the site or throughout the relevant habitat zones of the site. If they are rare or restricted within the site the species should not be used in the calculation.

Rationale
The species listed in Table 18 provide an indication of a diverse and good quality standing water habitat, with a range of different vegetation communities, from open water through to marginal swamp vegetation, that are of nature conservation value. The indicative botanical species link to Priority UK BAP habitats that are habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

SW2 A standing water site that supports seasonal draw down zones and open vegetation of inundation habitat characterised by one or both of the following:

- **the presence of 1 or more of the specialist species in bold in Table 19 and 1 or more of the other characteristic species shown in Table 19.**

- **one of the following National Vegetation Classification communities:**
  - **OV29 *Alopecurus geniculatus – Rorippa palustris***
  - **OV30 *Bidens tripartita - Persicaria amphibia***
  - **OV31 *Rorippa palustris – Gnaphalium uliginosum***
  - **OV35 *Lythrum portula – Ranunculus flammula***

Application
This applies to sites that hold standing water due to prolonged or seasonal flooding or standing water sites where the water levels fluctuate. These may be floodplain grasslands or fens or reservoirs.

Rationale
These narrow zones can support highly specialised flora including nationally scarce species.

Table 18 Indicative species list for nutrient rich standing waters (eutrophic to mesotrophic)

Scientific name	**Common name**
Alisma plantago-aquatica	Water-plantain
Apium nodiflorum	Fool's-water-cress
Baldellia ranunculoides	Lesser water-plantain
Berula erecta	Lesser water-parsnip
Bidens cernua	Nodding bur-marigold
Bidens tripartita	Trifid bur-marigold
Butomus umbellatus	**Flowering-rush**
Callitriche hamulata	Intermediate water-starwort
Callitriche platycarpa	Various-leaved water-starwort
Callitriche stagnalis	Common water-starwort
Carex acutiformis	Lesser pond-sedge
Carex disticha	Brown sedge
Carex pseudocyperus	Cyperus sedge
Carex riparia	Greater pond-sedge
Carex rostrata	Bottle sedge
Ceratophyllum demersum	Rigid hornwort
Eleocharis palustris	Common spike-rush
Equisetum fluviatile	Water horsetail
Glyceria fluitans	Floating sweet-grass
Glyceria maxima	Reed sweet-grass
Groenlandia densa	Opposite-leaved pondweed
Hippuris vulgaris	Mare's-tail
Hottonia palustris	**Water-violet**
Hydrocharis morsus-ranae	**Frogbit**
Iris pseudacorus	Yellow iris
Lemna gibba	Fat duckweed
Lemna trisulca	Ivy-leaved duckweed
Lycopus europaeus	Gypsywort
Lythrum salicaria	Purple-loosestrife
Mentha aquatica	Water mint
Myosotis scorpioides	Water forget-me-not
Myosoton aquaticum	Water chickweed
Myriophyllum spicatum	Spiked water-milfoil
Myriophyllum verticillatum	**Whorled water-milfoil**
Nuphar lutea	Yellow water-lily
Nymphaea alba	White 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
Pilularia globulifera	Pillwort
Potamogeton coloratus	**Fen pondweed**
Potamogeton crispus	Curled pondweed
Potamogeton natans	Broad-leaved pondweed
Potamogeton pectinatus	Fennel pondweed
Potamogeton perfoliatus	Perfoliate pondweed
Ranunculus aquatilis	Common water-crowfoot
Ranunculus lingua	Greater spearwort
Ranunculus peltatus	Pond water-crowfoot
R. penicillatus subsp. pseudofluitans	Stream water-crowfoot

Scientific name	Common name
Ranunculus sceleratus	Celery-leaved buttercup
Ranunculus trichophyllus	Thread-leaved water-crowfoot
Rorippa amphibia	Great yellow-cress
Rorippa microphylla	Narrow-fruited water-cress
Rorippa nasturtium-aquaticum	Water-cress
Rorippa palustris	Marsh yellow-cress
Rorippa sylvestris	Creeping yellow-cress
Rumex hydrolapathum	Water dock
Sagittaria sagittifolia	Arrowhead
Schoenoplectus lacustris	Common club-rush
Schoenoplectus tabernaemontani	Grey club-rush
Scutellaria galericulata	Skullcap
Sparganium emersum	Unbranched bur-reed
Sparganium erectum	Branched bur-reed
Typha angustifolia	Lesser bulrush
Typha latifolia	Bulrush
Veronica anagallis-aquatica	Blue water-speedwell
Veronica beccabunga	Brooklime
Zannichellia palustris	Horned pondweed

Species in **bold** score 2

Table 19 Indicative species list for draw-down zones and open vegetation of inundation habitat[27]

Scientific name	Common name
Agrostis stolonifera	Creeping bent
Alopecurus aequalis	**Orange foxtail**
Alopecurus geniculatus	Marsh foxtail
Bidens spp.	Bur marigolds
Callitriche spp.	Water-starworts
Chenopodium polyspermum	Many-seeded goosefoot
Chenopodium rubrum	Red goosefoot
Eleocharis acicularis	Needle spike-rush
Gnaphalium uliginosum	Marsh cudweed
Hydrocotyle vulgaris	Marsh pennywort
Juncus bufonius	Toad rush
Limosella aquatica	**Mudwort**
Littorella uniflora	Shoreweed
Lythrum portula	Water purslane
Myosotis spp	Water forget-me-nots
Persicaria amphibia	Amphibious bistort
Persicaria laxiflora	**Tasteless water-pepper**
Persicaria minor	Small water-pepper
Pilulifera globulifera	**Pillwort**
Polygonum hydropiper	Water-pepper
Potentilla anserina	Silverweed
Potentilla palustris	Marsh cinquefoil
Ranunculus repens	Creeping buttercup
Rorippa spp	The smaller yellow-cress species
Rumex maritimus	**Golden dock**
Rorippa palustris	Marsh dock
Veronica scutellata	Marsh speedwell

Specialist species are highlighted in **bold**, the remaining are classed as characteristic species.

Fen, Mire and Reedbed

Fen, Marsh and Swamp habitats[32] occur where vegetation is ground water fed; they occur on permanently, seasonally or periodically waterlogged peat, peaty or mineral soils where grasses do not predominate. Wetlands comprise many different habitat types, these often grade into one another, making differentiation difficult.

Fens are mires, usually on peat, that receive water and nutrients from the soil, rock and ground water, as well as directly from precipitation. Classification of fens is quite complicated, depending upon the direction of water movement through the peat or soil, and whether the water is base-poor / acidic (poor fen) or is mineral-enriched / calcareous (rich fen).

Marsh is a variable habitat type, but usually refers to grassland on mineral soil, that is periodically waterlogged or has a water table close to the surface for most of the year, although it is not normally above ground level. It occurs on predominantly level areas and includes grasslands with a high proportion of rush species, sedge species or meadowsweet.

Swamp is a habitat typically found in transitional zones between open water and drier land. It is similar to marsh habitat except the water level is generally higher (typically above ground level) and tall emergent vegetation, such as reed grasses and large sedges, are dominant. In these guidelines swamp habitat criteria is included in the open water section.

Reedbeds are classified as wetlands dominated by stands of the common reed *Phragmites australis*, where the water table is at or above ground level for most of the year. They tend to incorporate areas of open water and ditches, and small areas of wet grassland and carr woodland.

Reedbed and rich-fen NVC communities in Rotherham include the *Phragmites australis- Urtica dioica* tall-herb fen (S26), the *Phalaris arundinacea* tall-herb fen (S28), the *Filipendula ulmaria-Angelica sylvestris* mire (M27) and the *Juncus subnodulosus-Cirsium palustre* fen meadow (M22). Lowland poor-fen / acid mires are rare in Rotherham and are not easily categorized by the NVC methodology.

Fen, Mire and Reedbed Selection Criteria and Attributes

Table 20 Selection criteria and attributes for fen, mire and reedbeds[31]

CRITERION	ATTRIBUTE
Size or extent	Area of site (ha). Larger sites are likely to have greater hydrological integrity and will usually be less affected by surrounding land use. However, small sites may be of great interest: some of the most valuable fens and mires.
Naturalness	Absence of artificial drainage or agricultural improvement. Evidence of historical continuity e.g. deep deposits of peat. Presence of natural hydrological influences e.g. springs, flooding etc. Presence of ancient wetland indicators and invertebrates such as flightless water beetles.
Diversity	Diversity of plant species, especially fen/mire indicators. Diversity of plant communities can reflect zonations related to hydrological and edaphic differences.
Rare or exceptional feature	Rarity of plant species, communities or fen types.
Typicalness	Presence of representative examples of NVC community types. Presence of locally distinctive fen/mire types.
Connectivity within the landscape	Connectivity with other semi-natural habitats, especially those representing different stages in the hydrosere (e.g. fens associated with wet woodland or

[32] Definitions adapted from Nottinghamshire Local Biodiversity Action Plan Reedbed and Fens, Marshes and Swamps Habitat Action Plans http://www.nottsbag.org.uk/projects.htm#bap 26 August 2009

	dry unimproved grassland). Location and extent in relation to the physical environment, e.g. where a site forms part of a series of valley or floodplain fens.
Recorded history and cultural associations	Past biological recording, e.g. historical records of flora and fauna which may reflect change or continuity in a site's biota. Historical confirmation of hydrological or management influences e.g. documented sites of springs, sites shown as wetland on early maps.

Fens Mire and Reedbed Selection Guidelines

Sites will be eligible for selection as a Local Wildlife Site if they meet one or more of the following guidelines:

FE1 Lowland mire sites greater than 0.1 ha that support either of the following NVC community types:

- **M22 *Juncus subnodulosus-Cirsium palustre fen meadow***
- **M27 *Filipendula ulmaria-Angelica sylvestris* mire**

Application

This guideline will be applied to areas of lowland acid mire and fen meadow that have been identified as supporting the NVC communities listed above. The classification of the community should be based on a field assessment by a competent surveyor within 5 years of the date of designation.

Rationale

In Rotherham these plant communities and the assemblage of plants and animals they support have become rare. The NVC communities listed can be linked to Priority UK BAP habitats that are listed as habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

FE2 Stands of tall-herb fen and/or reedbed that are greater than 2ha in area and are predominantly comprised of one or more the following NVC communities:

- **S4 *Phragmites australis* swamp and reed-beds**
- **S25 *Phragmites australis-Eupatorium cannabinum* tall herb fen**
- **S26 *Phragmites australis-Urtica dioica* tall-herb fen**
- **S28 *Phalaris arundinacea* tall-herb fen**

Application

This guideline will be applied to areas of tall-herb fen that have been identified as supporting one or more the NVC communities listed above. The classification of the community should be based on field assessment by a competent surveyor completed within 5 years of the date of designation. The tall-herb fen habitat should normally dominate the site, but may occur in combination with other fen, grassland swamp and mire communities and open water or scrub.

Rationale

Tall-herb fens have been adversely affected by agricultural intensification over the last 50 years resulting in the reduction and fragmentation of this habitat. The NVC communities listed can be linked to Priority UK BAP habitats that are listed as habitats of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

FE3 Rich-fen sites greater than 0.5 ha that score 12 or more from the species listed in Table 21.

Application

This guideline may be applied to any fen site, whether of an identified NVC community or not, so long as it includes a representative selection of the species listed in Table 21. These species are characteristic of species-rich, good quality rich-fen types.

Rationale
Rich-fen sites have been adversely affected by agricultural and other land-use changes and remaining sites are often small and isolated from other similar habitat. However, such sites continue to be of high nature conservation value as representative examples of the rich-fen habitat and plant and animal communities it supports.

FE4 Poor-fen and acid mire sites greater than 0.25 ha that score 8 or more from the species listed in Table 22.

Application
This guideline may be applied to any fen site, whether of an identified NVC community or not, so long as it includes a representative selection of the species listed in Table 22. These species are characteristic of good quality poor-fen habitat.

Rationale
Poor-fen sites are rare within Rotherham and support specialised groups of plants and animals adapted to the particular environmental conditions associated with this habitat.

Table 21 Plant species characteristic of rich-fens

Scientific name	Common name
Angelica sylvestris	Wild angelica
Calamagrostis canescens	**Purple small-reed**
Calamagrostis epigejos	Wood small-reed
Caltha palustris	Marsh-marigold
Calystegia sepium	Hedge bindweed
Cardamine amara	Large bitter-cress
Carex distans	Distant sedge
Carex disticha	Brown sedge
Carex nigra	Common sedge
Carex ovalis	Oval sedge
Carex panicea	Carnation sedge
Carex paniculata	Greater tussock-sedge
Carex pendula	Pendulous sedge
Carex riparia	Greater pond-sedge
Carex rostrata	Bottle sedge
Carex spicata	Spiked sedge
Carex viridula subsp*. brachyrrhyncha*	Long-stalked yellow-sedge
Carex viridula subsp. *viridula*	Small-fruited yellow-sedge
Catabrosa aquatica	Whorl-grass
Chrysosplenium oppositifolium	Opposite-leaved golden-saxifrage
Cladium mariscus	Great fen-sedge
Conium maculatum	Hemlock
Crepis paludosa	Marsh hawk's-beard
Dactylorhiza praetermissa	**Southern marsh-orchid**
Dactylorrhiza purpurella	**Northern marsh-orchid**
Eleocharis palustris	Common spike-rush
Epilobium obscurum	Short-fruited willowherb
Epilobium palustre	Marsh willowherb
Epilobium parviflorum	Hoary willowherb
Equisetum palustre	Marsh horsetail
Equisetum telmateia	Great horsetail
Eriophorum angustifolium	Common cottongrass
Eupatorium cannabinum	Hemp-agrimony
Filipendula ulmaria	Meadowsweet
Geum rivale	Water avens
Gnaphalium uliginosum	Marsh cudweed
Hydrocotyle vulgaris	Marsh pennywort
Hypericum tetrapterum	Square-stalked St John's-wort
Juncus acutiflorus	Sharp-flowered rush
Juncus bulbosus	Bulbous rush
Juncus compressus	Round-fruited rush
Juncus conglomeratus	Compact rush
Juncus subnodulosus	**Blunt-flowered rush**
Lotus pedunculatus	Greater bird's-foot-trefoil
Lychnis flos-cuculi	Ragged-robin
Lycopus europaeus	Gypsywort
Lysimachia vulgaris	Yellow loosestrife
Mentha aquatica	Water mint
Molinia caerulea	Purple moor-grass
Myosotis laxa	Tufted forget-me-not
Myosotis scorpioides	Water forget-me-not
Myosotis secunda	Creeping forget-me-not
Myosoton aquaticum	Water chickweed

Scientific name	Common name
Oenanthe fistulosa	Tubular water-dropwort
Pedicularis sylvatica	Lousewort
Persicaria hydropiper	Water-pepper
Phalaris arundinacea	Reed canary-grass
Phragmites australis	Common reed
Potentilla anserina	Silverweed
Pulicaria dysenterica	Common fleabane
Ranunculus flammula	Lesser spearwort
Samolus valerandi	Brookweed
Senecio aquaticus	Marsh ragwort
Stachys palustris	Marsh woundwort
Symphytum officinale	Common comfrey
Thalictrum flavum	Common meadow-rue
Thalictrum minus	Lesser meadow-rue
Triglochin palustre	Marsh arrowgrass
Valeriana dioica	Marsh valerian
Viola palustris	Marsh violet

Species in **bold** score 2

Table 22 Plant species characteristic of poor-fens

Scientific name	Common name
Agrostis canina	velvet bent
Anagallis tenella	**bog pimpernel**
Andromeda polifolia	**bog rosemary**
Calluna vulgaris	heather
Carex spp.	sedges (all species)
***Dactylorhiza spp. (expt D. fuchsii & maculata*)**	**marsh orchids (all species)**
Danthonia decumbens	heath-grass
Drosera spp.	**sundew**
Empetrum nigrum	crowberry
Epilobium palustre	marsh willowherb
Erica tetralix	cross-leaved heath
Eriophorum spp.	cotton-grasses (all species)
Galium palustre	marsh bedstraw
Hydrocotyle vulgaris	marsh pennywort
Isolepsis setacea	bristle club rush
Juncus acutiflorus	sharp-flowered rush
Juncus squarrosus	heath rush
Menyanthes trifoliata	bogbean
Molinia caerulea	purple moor-grass
*Mon*tia *fontana*	blinks
Myrica gale	**bog myrtle**
Narthecium ossifragum	**bog asphodel**
Pedicularis palustris	marsh lousewort
Pedicularis sylvatica	common lousewort
Potentilla palustris	**marsh cinquefoil**
Ranunculus flammula	lesser spearwort
Salix aurita	eared willow
Salix repens	creeping willow
Saxifraga hirculus	**marsh saxifrage**
Scutellaria galericulata	skullcap
Scutellaria minor	**lesser skullcap**
Sphagnum spp.	bog moss
Stellaria uliginosa	bog stichwort
Succisa pratensis	devil's-bit scabious
Trichophorum caespitosum	deer grass
***Utricularia spp.(all species*)**	**bladderwort**
Viola palustris	marsh violet

Species in **bold** score 2

Mixed Habitats and Structural Mosaics

Many habitats occur in mosaics and contain structural variation in the vegetation. Sites may comprise habitats that are individually or collectively of conservation value, but do not necessarily satisfy specific habitat selection guidelines. Sites may also support highly varied structure between different habitats or within the same habitat, and this can provide a range of niches that are valuable for invertebrate groups.[18] These sites can make an important contribution to the local biodiversity value of an area. These guidelines aim to address:

- Sites that may just fail to meet the thresholds set on the basis of their individual habitat components but as a collection of habitats are important for their botanical and/or potential invertebrate value.
- Sites that support varied macro-habitats and provide more structural variation for invertebrates than individual habitats in isolation.
- Sites that support structurally diverse micro-habitat mosaics within various habitat types.

A site supporting varied structural features is likely to support a more diverse invertebrate fauna than a site with homogeneous vegetation. Structural complexity is generally a function of vegetation architecture, although it may also reflect substrate diversity. Complex vegetation architecture may be as a result of different species growing together, for example where small sedges, species of spike rush, species of rush and mosses form a close mosaic in some types of fen and water margin vegetation. In most standing water habitats the vast majority of macro-invertebrate biomass is associated with richly vegetated shallow water margins[15].

Mixed habitat and structural mosaics may occur in a variety of semi-natural and artificial situations including post-industrial sites on for example the following land types[33]:

a) Railway cinder beds/tracks
b) Quarries
c) Sewage works
d) Derelict land
e) Spoil tips and landfill sites

In many cases the animals and plants that appear on post-industrial sites are characteristic of early-successional vegetation communities but over time the vegetation can be expected to succeed to more permanent communities such as grassland, underscrub and/or scrub and woodland[34] However, in some cases these successional processes may be very slow due to a combination of the extreme physical conditions imposed by the substrates and/or the activities of grazing animals such as sheep, deer and rabbits. Post-industrial sites often become quite floristically and faunally diverse within a relatively short time. Plant communities commonly include a range of typical grassland species together with pioneer and ruderal plant species. Orchid species can sometimes become a significant feature.

Newly landscaped / restored post industrial sites where no or minimal natural colonisation has occurred should not be considered under this guideline.

[33] Derbyshire Wildlife Site Selection Guidelines 2003
[34] Shaw 1992 *A preliminary study of successional changes in vegetation and soil development on unamended fly ash in southern England*. Journal of Applied Ecology

Mixed Habitat and Structural Mosaic Selection Criteria and Attributes

Table 23 Selection criteria and attributes for habitat mosaics[28]

CRITERION	ATTRIBUTE
Size or extent	Area of site (ha). Larger sites are likely to have greater hydrological integrity and will usually be less affected by surrounding land use. However, small sites may be of great interest: some of the most valuable fens and mires.
Naturalness	Absence of artificial drainage or agricultural improvement. Evidence of historical continuity e.g. deep deposits of peat. Presence of natural hydrological influences e.g. springs, flooding etc. Presence of ancient wetland indicators and invertebrates such as flightless water beetles.
Diversity	Diversity of plant species, especially fen/mire indicators. Diversity of plant communities can reflect zonations related to hydrological and edaphic differences.
Rare or exceptional feature	Rarity of plant species, communities or fen types.
Typicalness	Presence of representative examples of NVC community types. Presence of locally distinctive fen/mire types.
Connectivity within the landscape	Connectivity with other semi-natural habitats, especially those representing different stages in the hydrosere (e.g. fens associated with wet woodland or dry unimproved grassland). Location and extent in relation to the physical environment, e.g. where a site forms part of a series of valley or floodplain fens.
Recorded history and cultural associations	Past biological recording, e.g. historical records of flora and fauna which may reflect change or continuity in a site's biota. Historical confirmation of hydrological or management influences e.g. documented sites of springs, sites shown as wetland on early maps, sites with common rights of turbary, and sites with a palynological record.

Mixed Habitat and Structural Mosaic Selection Guidelines

Any site that meets one of the following guidelines will be eligible for Local Wildlife Site selection:

HM1 Sites of 0.5ha or more in size that support a combination of two or more individual habitats that are of borderline Local Wildlife Site quality.

Application

This guideline should be applied to any area that supports a mosaic of semi-natural vegetation. Sites should support at least two habitat types that meet at least 80% of a relevant selection guideline for the habitat type.

Rationale

Typically, mixed habitat sites will support different stages in vegetation succession. Often the individual habitat types that are part of the mosaic do not qualify as Local Wildlife Sites in their own right either because they are too small or because they do not support a sufficient number of indicator or characteristic species. In combination, however, these habitat types can support a significant diversity of habitats and species that can make a significant contribution to local biodiversity and nature conservation objectives.

HM2 Sites of 5ha or more in size that support a mosaic of the semi-natural habitats listed in Table 24 that collectively have a habitat diversity score of 9 or more.

Application

This guideline should be applied to any area supporting semi-natural vegetation. Reference should be made to the relevant local or national Biodiversity Action Plan or other supporting nature conservation information to identify whether the site makes an important contribution to the Plan's geographical area or Natural Area.

Rationale
The combination of different habitat types in close proximity to each other and the gradation from one habitat to another often provides a much higher diversity of niches for a wealth of plants and animals than other sites that may be dominated by one particular habitat. These sites are particularly valuable for species that utilise more than one habitat type throughout the day and night for feeding, roosting and protection. The juxtaposition of some of these habitats can also be important for the survival of particular animal species that require two or more habitats at different times during their life cycle such as amphibians and a range of invertebrates. These habitat mosaic sites are often important reservoirs of biodiversity, particularly in areas of the county where there is intensive land-use and/or a lack of sites of Wildlife Site quality for individual habitat types.

HM3 Sites of 5ha or more in size that support a combination of 2 or more habitats that are of borderline (80%) Local Wildlife Site quality and also support at least 3 features indicating high structural diversity as shown in Table 25.

Application
This guideline should be applied to any area that supports a varied habitat structure. Reference should be made to the local Biodiversity Action Plan or other nature conservation source to identify whether the site makes an important contribution to the Plan's geographical area or Natural Area. These sites will be identified in conjunction with an experienced invertebrate ecologist.

Rationale
Varied vegetation structure is important to invertebrates in every aspect and at every scale[35]. This is often not recognised as a valuable component of the nature conservation resource. Large, complex and varied sites are likely to support a significant invertebrate fauna and as such are valuable as vegetation and for invertebrate assemblages.

[35] Kirby, P. 1992. Habitat Management for Invertebrates: A practical handbook. Joint Nature Conservation Committee. Table 19 shows some of the features identified as important for invertebrates within this publication.

Table 24 Habitat mosaics[31]

Habitat	Score
Unimproved neutral grassland	4 points
Unimproved calcareous grassland	4 points
Unimproved lowland dry acid grassland	4 points
Ancient semi-natural woodland	4 points
Lowland heathland	4 points
Open water/and swamp (running or standing)	3 points
Marsh or fen (species-rich)	3 points
Heath/acid grassland mosaic	3 points
Tall coarse grassland and scattered scrub mosaic	2 points
Scrub communities of more than 1 species	2 points
Secondary semi-natural woodland including wet woodland	2 points
Marsh or fen (species-poor)	1 point
Ruderal/bare ground communities	1 point
Single species dominated scrub	1 point
Inundation communities	1 point

Table 25 Features of structural importance for invertebrates[36]

Dead wood (wet and shady situations)
Dead wood (dry and open situations)
Old coppice stools
Woodland rides
Pollards
Sap runs on trees
River shingle
Loose hard substrates (e.g. rubble, brick, stone)
Springs, seepages or pools
Temporary pools
Ditches
Scattered scrub
Varied sward heights from short open turf
Seasonally damp/wet areas
Earthworks
South facing slopes
Steep slopes on banks
Hummocky ground in old disused quarries
Water margins (marginal mud, silt or sand)
Coarse tussocky grassland

[36] North Yorkshire SINC Panel 2002. *Guidelines for Site Selection.*

Species Selection Guidelines

Species Selection

In order to conserve some species, site selection specifically on the basis of their presence will be necessary. The species guidelines for selecting Local Wildlife Sites in Rotherham are based on a number of common issues that should be applied to the selection of sites.

For the purposes of these guidelines selection is based on species that are:

a) Native to the South Yorkshire region.

b) Native to Britain, but have recently naturally colonised the region.

c) Native species that have been introduced through recognised species conservation programmes.

d) Known archaeophytes (pre-1600 introductions) of the region.

Species that have been, or are believed to have been, deliberately introduced or are casual occurrences in the Borough are not eligible for inclusion.

Sites should generally be evaluated on the basis of reliable information that is as up to date as possible, although historical species records will be taken into consideration and can add weight to the selection of a site. The information should have been obtained through field survey by a suitably qualified and/or experienced person. For difficult to identify species, verification by an acknowledged expert may be required.

Use of the term 'regularly' in those guidelines relating to species presence means that the species should have been recorded on the site for a minimum of 3 separate years (not necessarily consecutive) in the last 5 years, unless otherwise stated. In the case of records for invertebrates, rare species are rarely seen and are often not recorded on repeat surveys. For this reason, for invertebrates, sites may be designated on the basis of less regular evidence, but only where there are reasonable grounds to assume that the species concerned is still present or continues to use the site in question. Historical records will be considered if the site and habitats appear to have remained stable since the species were recorded and if the condition of the habitats is still considered appropriate for the species.

The species selection guidelines will not be applied to domestic or industrial (including agricultural) buildings, or to domestic gardens. Other artificial structures, for example, mine shafts, tunnels, bridges, historic monuments (except those that are also domestic dwellings), may, however, be considered for designation.

In 2007, following the most comprehensive analysis ever undertaken in the UK, the UKBAP list was updated – it now contains 1149 species and 65 habitats that have been listed as priorities for conservation action under the UK Biodiversity Action Plan (UK BAP).

June 2008 saw the release of the England List of Species (938) and Habitats (56) of Principle Importance – this is the requirement for the Secretary of State to publish such a list under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. This list replaces the Section 74 list within the CRoW Act 2000. Section 40 of the NERC Act places a duty on all public authorities to have regard for biodiversity; there is an expectation that public bodies would refer to the S41 list when complying with the S40 duty.

Reference is made in these species selection criteria to Species of Principal Importance in order to demonstrate that the S41 species are being used by Rotherham MBC to identify sites for protection and conservation.

Vascular plants

Vascular plants include flowering plants (angiosperms) and ferns (pteridophytes). Assemblages of vascular plants have been used to describe and assess the quality of habitats in part A of this report. As a consequence, this section only considers the presence of rare species for site selection. The guidelines relate to naturally occurring, native species unless part of a species recovery programme.

Vascular plants selection guidelines

V1 Any site that supports a population of a plant fully protected under the Wildlife and Countryside Act 1981 (as amended) as listed in Schedule 8 of the Act and/or is listed as critically endangered, endangered, vulnerable or near threatened in the most recent version of the British Red Data Book and/or is a Species of Principal Importance for conserving biodiversity in England[37].

Application
This guideline should be applied to any site with a population of one of these species. Sites where there has been a recent, deliberate re-introduction excluding species recovery programmes should not normally be included. The guideline will only be applied to those species listed on Schedule 8 that are given full protection (i.e. Section 13(i) of the Act). Consequently, a species such as bluebell (*Hyacinthoides non-scripta*) is not protected as it is only afforded protection under Section 13(2).

The most recent Vascular Plant Red Data List for Great Britain 2005[38] has analysed the taxa according to IUCN criteria. A taxon on the red list is not necessarily threatened but has been assigned an IUCN category which may include Least Concern, Data Deficient or Not Evaluated. This guideline will only be applied to vascular plant species categorised as Near Threatened, Vulnerable, Endangered, or Critically Endangered.

Rationale
These species are the rarest and/or most threatened with extinction in the British Isles.

V2 Any site that supports a population of a plant listed as nationally rare or nationally scarce.

Application
This guideline should be applied to any site with a population of one of these species. Where the species concerned occurs as a short term casual, the site should not normally be designated. Sites where there has been a recent, deliberate re-introduction, excluding species recovery programmes, should also not be included. The viability of the population may be considered in determining whether a site should qualify.

Rationale
The species in the above categories are either nationally rare, occurring in less than 16 10km squares in Britain, or are nationally scarce, occurring in between 16 and 100 10km squares in Britain, and there is a national responsibility for their conservation.[39].

[37] As published by Secterary of State under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006
[38] Cheffings, C.M, Farrell, L (eds) (2005) The Vascular Plant Red Data List for Great Britain
[39] http://www.jncc.gov.uk/page-1755

Non-vascular plants

Non-vascular plants include lichens, bryophytes (mosses and liverworts) and algae. Information on the distribution of these species is not as well recorded as vascular plants. In general, assemblages of these species have not been used to assess habitat quality. Consequently, these guidelines are based primarily on the presence of rare species and, where appropriate, species assemblages.

Non-vascular plants can have very restricted distributions, which can sometimes mean that a species is located on a single tree, stone, rock face, building or area of bare ground. Where this is the case further surveys should be undertaken to determine if the species is more widely spread in the immediate vicinity of the record, to help inform the identification of the boundaries of the Local Wildlife Site.

Non-vascular plants will colonise a range of natural and man-made substrates. Houses, agricultural and industrial buildings whether in use or not, as well as streets, will not be eligible for selection.

Non-vascular plants selection guidelines

Sites that meet one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

NV1 Any site that supports a population of a species fully protected under the Wildlife and Countryside Act 1981 (as amended) as listed in Schedule 8 of the Act and/or is listed in the most recent version of the British Red Data Book and/or is a Species of Principal Importance for conserving biodiversity in England.

Application

All sites for bryophytes, lichens and algae in the above categories should be included. The guideline will only be applied to those species listed on Schedule 8 that are given full protection (i.e. Section 13(i) of the Act).

Rationale

Species listed in the British Red Data Books are the rarest and most vulnerable species in the British Isles, many of which are threatened with local or national extinction. The protection, maintenance and enhancement of these sites are vital for the maintenance of biological diversity throughout the British Isles and Western Europe

NV2 Any site that supports a population of a species listed as nationally rare or nationally scarce.

Application

This guideline should be applied to any site with a population of these species. Where the species concerned occurs as a short term casual, the site should not normally be designated. Sites where there has been a recent, deliberate re-introduction, excluding species recovery programmes, should also not be included.

Rationale

The species in the above categories are either nationally rare, occurring in less than 16 10km squares in Britain, or are nationally scarce, occurring in between 16 and 100 10km squares in Britain, and there is a national responsibility for their conservation.

Fungi

There is a great diversity of fungi and they play a crucial role in ecosystems and can often indicate ecological quality of sites, for example waxcap grassland sites.

Fungi Selection guidelines

Sites that meet one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

FU1 Any site that supports a population of a fungus species listed as fully protected on Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) and/or is listed in the most recent version of the British Red Data Book and/or is a Species of Principal Importance for conserving biodiversity in England.

Application

All sites for fungi in the above categories should be included. Only species afforded full protection under Section 13 (i) of the Wildlife and Countryside Act should be included.

Rationale

Species listed in the British Red Data Books and those identified to be of Principal Importance for conserving biodiversity in England are the rarest and most vulnerable species in the British Isles, many of which are threatened with local or national extinction. The protection, maintenance and enhancement of these sites are vital for the maintenance of biological diversity throughout the British Isles and Western Europe.

FU2 Any site that supports a population of a nationally rare or nationally scarce species of fungus.

Application

This guideline should be applied to any site with a population of these species. Where the species concerned occurs as a short term casual, the site should not normally be designated. Sites where there has been a recent, deliberate re-introduction excluding species recovery programmes should also not be included.

Rationale

The species in the above categories are either nationally rare, occurring in less than 16 10km squares in Britain, or are nationally scarce, occurring in between 16 and 100 10km squares in Britain, and there is a national responsibility for their conservation. This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat.

FU3 Any grassland site that supports at least a locally important number of waxcaps

Application

The number of *Hygrocybe* waxcaps present has been used here to identify important grassland fungi sites as this is an accepted evaluation methodology across Europe[40]. A locally important population of *hygrocybe* waxcaps will be determined by reference to Table 26. This criterion follows that identified within the English Nature report on the assessment of English waxcap sites[41].

The three other groups of waxcap grassland fungi (*Clavariaceae*, *Entoloma* and *Geoglossacea*) have only national threshold criteria set and the data sets are reported to be too incomplete to attempt to give generic selection criteria for regionally or locally important sites.

[40] The South Wales Wildlife Sites Partnership, 2004. *Guidelines for the Selection of Wildlife Sites in South Wales.*

[41] Shelley Evans 2003. *English Nature Research Report Number 555: Waxcap grasslands-an assessment of English Sites*. English Nature.
Evans, S., Marren, P., Harper, M. 2001*. Important Fungus Areas. A provisional assessment of the best sites for fungi in the UK*. Plantlife.

Rationale
The presence of certain species of waxcaps and other larger fungi constitute a quality *waxcap-grassland* site. Hygrocybe is the most recorded group of waxcaps and the pink waxcap *Hygrocybe calyptriformis*, the date waxcap *Hygrocybe spadicea* and the olive earthtongue *Microglossum olivaceum* are Priority Species in the UK BAP, are Species of Principal Importance under Section 41 of the NERC ACT 2006 and are subject to government policy PPS9.

Table 26 Waxcap grassland conservation value assessment

Site Conservation value	**Single visit *Hygrocybe* taxa**	**Total *Hygrocybe* taxa**
Internationally important	15+	22+
Nationally important	11-14	17-21
Regionally important	6-10	9-16
Locally important	3-5	4-8
Of no importance	1-2	1-3

Mammal Selection Guidelines – Bats

Sites that meet one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

M1 Any site that supports roosts of two or more species of bat.

Application

The guidelines are intended to identify and protect the most important regularly used or 'traditional' sites and their supporting habitats. It is not intended to cover sites that support low numbers of bats and/or roost sites that are intermittently used. These guidelines will not be applied to domestic or industrial (including agricultural) buildings. Other artificial structures, for example, mine shafts, tunnels, bridges, historic monuments (except those that are also domestic dwellings) may, however, be considered for designation.

For the purposes of the guidelines, a site may be any place used by bats for roosting. For summer and breeding roosts the site boundary may also include key feeding areas associated with the roost and flyways between them and the roost, where a discreet boundary can be identified. The selection of feeding areas for inclusion within the Wildlife Site should be based on survey information that clearly demonstrates the connection between the roost and the key feeding areas.

Rationale

All species of British bat are protected under Section 9 of the Wildlife and Countryside Act 1981 (as amended) and Regulation 39 of The Conservation (Natural Habitats, &c.) Regulations. This protection is provided because all species of bat have declined significantly throughout the UK in the last 50 years. This decline has been brought about by a variety of factors including a reduction in habitat and subsequent habitat fragmentation, destruction of roost sites, either directly or through chemical treatment of roof timbers, and a reduction in insect food supplies as a result of reduced habitat availability and the extensive use of pesticides.

Bats have a low reproductive rate and consequently breeding success is vital to the survival of populations. When there is a loss through the destruction of a breeding colony the recovery rate is slow. Breeding success is affected by a variety of factors including the quality of roost site, weather conditions, food availability and disturbance of the roost site. Bats are very selective in their choice of breeding roosts and good quality roosts are utilised regularly over a long period of time. Such roost sites often provide a variety of environmental conditions, which the bats are able to utilise depending on the prevailing weather conditions. These roosts are also often close to or well connected by flyways to good feeding habitat. Feeding areas close to roosts are particularly important as are habitat links to feeding grounds further afield.

Hibernation roosts are also important for the survival of a bat population and sites that provide suitable habitat for a variety of species of bat or large numbers of bats are particularly valuable. Hibernating bats require constant, undisturbed, cold but moist environments for hibernation, which will minimise the need for activity during the winter and result in the use of fat reserves. Like breeding roosts, some hibernation sites have been used regularly over many years.

M2 Any site that is regularly used for foraging by at least four species of bat.

Application

Key feeding areas are those locations that bats regularly use for feeding and ones where they spend significant time feeding each night. Identifying key feeding areas for all species may not be possible or desirable, as some species feed over a wide area and in a variety of habitats. For other species, however, such as the Daubenton's bat, which feeds over lakes, rivers and canals it may be appropriate to identify the appropriate water body. The selection of feeding areas for inclusion within the site should be based on regular survey information and not on a single visit.

Rationale
Bats are protected under UK and European legislation because they restricted in distribution or have suffered dramatic declines in recent years in the UK and/or Europe. However, their feeding grounds and commuting routes have no formal protection yet are essential to the maintenance of these species. The need to conserve these habitats is clear.

Mammal Selection Guidelines – All other mammals

Sites that meet one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

M3 Any site that regularly supports a population of a native mammal species listed in Annex 2 of the Habitats Directive or any mammal listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended).

Application
Any site that supports a population of a species that qualifies under this guideline should be considered for designation. Species that have been recently introduced should be excluded unless they are part of a recognised recovery programme.

Rationale
These species are protected under UK and European legislation because they are restricted in distribution or have suffered dramatic declines in recent years in the UK and/or Europe. Consequently, there is a national or international obligation to ensure their conservation. In addition these species are identified as Priority UK BAP species and listed of species of principle importance for conserving biodiversity in England under Section 41 of the NERC Act 2006 and are subject to government policy PPS9.

M4 Any site that regularly supports a population of a native mammal species which is recorded from 3 or more sites in Rotherham, but is considered to be under threat because of its small and/or isolated populations, significant decline or habitat loss or degradation.

Application
If a species is considered to be nationally under threat but has an established presence in 3 or more sites within Rotherham it is considered that Rotherham is of importance to the national population; therefore, any site that supports a population of a species that qualifies under this guideline should be considered for designation. Species that have been recently introduced should be excluded unless they are part of a recognised recovery programme.

Rationale
A number of mammal species have suffered extensive declines in recent years over much of the UK and action is required to halt this decline. Other species occur in small, often isolated populations that are also vulnerable and require protection to ensure that they are not unduly affected.

Birds

The presence of breeding birds will be determined by field evidence including: sightings of the species in the same site throughout the breeding bird season, territorial (singing) male, pairs of birds, nest building activity, nests with eggs or chicks, birds carrying nesting material or faecal sacs.

Eligible sites will exclude domestic, agricultural and industrial buildings whether or not they are in use. When determining the boundaries of a Local Wildlife Site, consideration should be given to breeding and roosting sites.

For the purposes of these guidelines, 'regularly' will be judged by the species being recorded in at least 3 of the most recent 5 years prior to consideration as a Wildlife Site.

Bird Selection Guidelines

Sites that satisfy one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

B1 Any site which regularly supports more than 0.25% of the total British breeding population of any native bird species.

Application

This guideline applies to all native birds.

Rationale

The threshold for the selection of nationally important sites (SSSIs) is 1% of the total population. The threshold of 0.25% is considered to fairly reflect Borough or county important sites for breeding birds. While there is no formal guidance on this matter, a figure of between 0.25% and 0.5% has been adopted by other, larger, counties (for instance North Yorkshire and Derbyshire) and it is considered that Rotherham's approach is reasonable and consistent.

B2 Any site which regularly supports more than 0.25% of the total British non-breeding population of any native bird species.

Application

Whilst this guideline is likely to be mainly applied to wintering populations it can also be applied to other seasons.

Rationale

The threshold for the selection of nationally important sites (SSSIs) is 1% of the total population. The threshold of 0.25% is considered to fairly reflect Borough or county important sites for non-breeding birds. While there is no formal guidance on this matter, a figure of between 0.25% and 0.5% has been adopted by other, larger, counties (for instance North Yorkshire, Cambridgeshire and Derbyshire) and it is considered that Rotherham's approach is reasonable and consistent.

B3 Any site that regularly supports a breeding population of a species on the UK 'Red List' or Species of Principal Importance for conserving biodiversity in England or is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended).

Application

This guideline can be applied to any site known to support a significant proportion of the population for the Borough of Rotherham. Boundaries for these sites must reflect the habitat in which these species breed, as well as any other specific habitat requirements for feeding juveniles.

Rationale

Species identified to be of principle importance for conserving biodiversity in England under Section 41 of the NERC ACT 2006 are the rarest and/or most threatened birds in the UK and there is a national responsibility for their conservation. Red List species are those that are globally threatened according to

IUCN criteria; those whose population or range has declined rapidly; and those that have declined historically and not shown a substantial recent recovery.

B4 Any site which regularly supports a good assemblage of breeding bird species characteristic of the habitat(s) in which they are recorded.

Application
This guideline should be applied to any site which regularly supports a good assemblage of breeding bird species characteristic of the habitat(s) present. This guideline should be applied to the habitats covered by Tables 27 A to D where a 'good' assemblage is defined as meeting the Selection Threshold Value given in the individual table. The list of birds and the scores given to them have been taken from the Guidelines for the Biological Sites of Special Scientific Interest (JNCC, 1998). As a result the lists include species that have not yet been recorded in Rotherham. The selection thresholds have been revised to reflect assemblages that would be of significance in Rotherham following the trialing of the criteria against a range of sites**.**

Rationale
If a site regularly supports breeding populations of these assemblages it is considered to be important because it provides necessary habitat for a range of bird species that are considered to be threatened or of priority importance.

B5 Any waterbody or grouping of waterbodies that regularly supports a significant range and number of over-wintering wildfowl, passage migrants and/or wading bird species.

Application
This guideline will be applied to sites where the Wetland Bird Surveys (WeBS) are carried out and regularly support assemblages and numbers of wintering wildfowl and/or waders considered of local importance. Consideration should only be given to sites assessed by the various local bird groups (RDOS, SBSG, SK58) as being the most significant sites in the Borough.

Rationale
Many water-bodies support valuable assemblages and numbers of wintering birds, but they may not not qualify for Local Wildlife Site designation just on the population of one particular species under the other guidelines. This guideline allows for two or more waterbodies to be included in a single Local Wildlife Site designation because wildfowl and waders will often move between sites within a discreet geographical area, such as a river valley, depending on food availability, levels of human disturbance, predation and roosting opportunities.

Table 27A Breeding Bird Assemblages for Lowland Damp Grassland

Species	Score	Species	Score
Mute swan	3	Snipe	2
Shelduck	2	Black-tailed godwit	5
Gadwall	4	Curlew	2
Teal	3	Redshank	2
Pintail	5	Cuckoo	2
Garganey	5	Short-eared owl	3
Shoveler	4	Yellow wagtail	1
Marsh harrier	5	Whinchat	2
Quail	5	Grasshopper warbler	2
Corncrake	4	Sedge warbler	1
Lapwing	1	Reed bunting	1
Ruff	5		
Selection threshold value: 10			

Table 27B Breeding Bird Assemblages for Scrub (excluding Heath)

Species	Score	Species	Score
Turtle dove	1.5	Grasshopper warbler	2
Cuckoo	2	Whitethroat	2
Long-eared owl	3	Lesser whitethroat	2
Nightjar	3	Garden warbler	1
Tree pipit	1.5	Blackcap	1
Nightingale	3	Red-backed shrike	5
Whinchat	2	Linnet	1
Stonechat	2	Cirl bunting	4
Selection threshold value: 10			

Table 27C Breeding Bird Assemblages for Lowland Open Waters and their Margins

Species	Score	Species	Score
Little grebe	2.5	Avocet	4
Great crested grebe	3	Little ringed plover	4
Black-necked grebe	5	Ringed plover	3
Bittern	5	Snipe	2
Grey heron	3	Redshank	2
Mute swan	3	Red-necked phalarope	5
Shelduck	2	Common tern	3
Gadwall	3	Black tern	6
Teal	4	Cuckoo	2
Pintail	5	Kingfisher	3
Garganey	5	Yellow wagtail	1
Shoveler	4	Grey wagtail	2
Pochard	4	Cetti's warbler	4
Tufted duck	3	Grasshopper warbler	2
Red-breasted merganser	3	Savi's warbler	5
Marsh harrier	5	Sedge warbler	1
Montagu's harrier	6	Reed warbler	2
Spotted crake	6	Marsh warbler	5
Water rail	3	Bearded tit	4
Reed bunting	1		
Selection threshold value: 16			

Table 27D Breeding Bird Assemblages for Woodland

Species	Score	Species	Score
Grey heron	3	Garden warbler	1
Honey buzzard	5	Blackcap	1
Red kite	5	Wood warbler	2
Goshawk	5	Chiffchaff	1
Sparrowhawk	2	Goldcrest	1
Buzzard	3	Firecrest	5
Osprey	5	Spotted flycatcher	1
Hobby	4	Pied flycatcher	2
Black grouse	3	Long-tailed tit	1
Capercaille	3	Marsh tit	1
Woodcock	2	Willow tit	2
Stock dove	1	Crested tit	4
Cuckoo	2	Coal tit	1
Tawny owl	2	Nuthatch	2
Long-eared owl	3	Treecreeper	1
Nightjar	3	Golden oriole	5
Hoopoe	6	Jay	1
Wryneck	6	Raven	3
Green woodpecker	2	Serin	6
Great spotted woodpecker	2	Siskin	2
Lesser spotted woodpecker	3	Redpoll	1
Tree pipit	1.5	Scottish crossbill	4
Nightingale	3	Common crossbill	3
Redstart	1	Bullfinch	1
Fieldfare	6	Hawfinch	3
Redwing	5		
Selection threshold value: 25			

Amphibians and Reptiles

There are nine species of native amphibians and reptiles recorded from Rotherham all of which are at least partially protected under Schedule 5 of the Wildlife and Countryside Act 1981. These are:

- Common toad *Bufo bufo*
- Common frog *Rana temporaria*
- Great crested newts *Triturus cristatus*
- Smooth newts *Triturus vulgaris*
- Palmate newts *Triturus helveticus*
- Grass snake *Natrix natrix*
- Common lizard *Lacerta vivipara*
- Slow worm *Anguis fragilis*
- Adder *Vipera berus*

The UK's rarest reptiles, smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis*, do not occur in Rotherham.

As well as the presence or absence of species the guidelines also use estimates of amphibian population size. These are adapted from the JNCC[42] guidelines for the selection of SSSIs and the English Nature[43] great crested newt *Triturus cristatus* mitigation guidelines. To rely on count data, adequately experienced personnel should gather information through surveys and data should be collected following the guidelines established for estimating population sizes of great crested newts. The selection thresholds defined in Table 28 have been based on these guidelines to provide a comprehensive amphibian assessment system.

There is no accepted method to establish the size of any reptile population and reptiles are difficult to survey quantitatively. The SSSI guidelines for criteria for the selection of amphibian and reptile SSSIs (NCC 1989) recommend that the best sites containing at least three of the above reptile species should be selected as a SSSI and that the concept of outstanding assemblages is the guiding principle. However there is no guidance to indicate what determines a large or moderate population, which are the suggested Local Wildlife Site criteria put forward by Beebee and Grayson[44].

The designation of sites and the identification of site boundaries should attempt to include both proven breeding (amphibians) or likely breeding (reptiles) and terrestrial habitats of importance. For instance, as well as amphibian breeding ponds sites should include adjacent habitat known or likely to be used by the amphibian species for which the site is designated. Hibernating sites should also be included wherever possible.

Where there are clusters of ponds they can be lumped together to form a single site. The ponds should not be separated by any obvious barriers, and preferably connected by suitable terrestrial habitat. In general water bodies within 100 metres of each other should be lumped together as a cluster. Domestic garden sites are excluded from these criteria.

[42] JNCC 1988 *Guidelines for the selection of biological SSSIs*. HMSO
[43] English Nature (2001). *Great crested newt mitigation guidelines*. English Nature
[44] Herpetofauna Worker's Manual (1998).*Possible approaches to defending Herpetofauna sites*

Amphibian and Reptile Selection Guidelines

Sites that meet one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

AR1 Any site that supports four or more species of native amphibian and/or reptiles.

Application

This criteria applies to sites supporting four or more species of amphibians or reptiles that are known to be regularly breeding (amphibians) or likely to be breeding (reptiles). The site should include all known or likely breeding habitat, terrestrial and hibernation habitat. For the purposes of these guidelines, 'regularly' will be defined by the species being recorded in at least 3 of the most recent 5 years prior to consideration as a Wildlife Site.

Rationale

Five species of native amphibian are recorded from the Borough, all of which have declined in the UK over the last 50 years as a result primarily of habitat loss. As well as numbers of species present on a site, the size of the population and whether they known to be breeding is also an important consideration when assessing the value of a site.

Rotherham has records of four native reptiles in the county: the adder, the common lizard, the slow worm and the grass snake. All of these are protected under the Wildlife and Countryside Act 1981 (as amended). Under Section 9 and Schedule 5 it is illegal to kill or injure them or sell any live or dead reptile or anything derived from it such as the skin. However, this does not protect the habitat that the reptiles live in and use for foraging. It is difficult to prove breeding for reptiles and, because of this, sites where a species is known to be present and there is suitable habitat within the site are considered likely to be a breeding site.

It was considered that where four or more species of amphibian or reptile are present on a site, the site is of importance in the Borough. This has been based on a review of the herptile selection criteria of a number of counties, in particular the proposed criteria for Nottinghamshire[45].

AR2 Any site that supports a good population of great crested newt (Triturus cristatus)

Application

A good population will be determined by reference to Table 28.

Rationale

The great crested newt is fully protected by the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats etc.) Regulations. The protection reflects the fact that this species is vulnerable at a European level. Consequently, good populations of this species should be protected.

AR3 Any site that supports an exceptional population of any amphibian species.

Application

An exceptional population of amphibians will be determined by reference to Table 28.

Rationale

Six species of native amphibian are recorded from the UK, all of which have declined over the last 50 years as a result primarily of habitat loss. Exceptional populations of any species of amphibian are rare and merit protection.

AR4 Any site where slow worm or adder is present and considered likely to be breeding.

Application

The area of importance should include all the known breeding, foraging and hibernating habitat.

Rationale

[45] Sheila Wright, 2006, *SINC Selection in Nottinghamshire Herpetofauna Criteria*.

Adders and slow worm are considered rare in Rotherham, having been recorded from 2 or less tetrads in the Borough. It is considered that sites where populations of any of these species exist and are considered likely to be breeding should be recognised as sites of importance for reptiles.

Table 28 Assessment of reptile and amphibian populations

Species	Presence/absence	Low Population	Good Population	Exceptional Population
Great crested newt	Seen or netted in day	<5	5-50	>50
	Counted at night	<10	11-100	>100
Smooth newt	Netted in day	<10	10-100	>100
	Counted at night	<10	10-100	>100
Palmate newt	Netted in day	<10	10-100	>100
	Counted at night	<10	10-100	>100
Common toad	Estimated	<500	500 – 5,000	>5,000
	Counted	<100	100 – 1,000	
Common frog	Spawn clumps counted	<50	50-500	>500

Invertebrates

The determination of site boundaries should take account of the life cycles of the invertebrate species for which a designation is made. Many species require very different habitats for their larval and adult stages and it is important for their survival that there continues to be available the full range of different habitats from one year to the next.

Nationally scarce species are usually sub-divided into nationally scarce A and nationally scarce B species. For the purposes of these guidelines this sub-division is not used and species are simply recognised as being nationally scarce. However, as invertebrates cover such a wide range of groups, the extent of knowledge and survey cover of some species and groups of species is not as detailed as other biotic groups such as vascular plants. Consequently, those guidelines that rely on the presence of a single nationally scarce species, will normally only be applied to species groups that have been relatively well surveyed either nationally or within Rotherham. For the same reason, for many groups of invertebrates there is insufficient information about distribution in Rotherham for specific guidelines to be developed at this time.

Invertebrate Selection Guidelines

Sites that meet one or more of the following guidelines will be eligible for designation as a Local Wildlife Site.

INV1 Any site that supports a population of a nationally rare or nationally scarce species.

Application

Historical records of invertebrates can be considered if the site and habitats are known to have remained stable since the species was recorded and that the condition of the habitats is considered to provide the necessary conditions for that species. Site designation should normally only be made if there is suitable habitat to support a population.

Rationale

The species in the above categories are nationally scarce, occurring in more than 16 but less than 100 10km squares, and nationally rare, occurring in only fifteen or fewer 10 km squares in Britain; as such, there is a national responsibility for their conservation. This criterion may be relaxed where populations are likely to exist in over fifteen 10 km squares but occupy small areas of especially vulnerable habitat[46].

INV2 Any site that regularly supports an assemblage of invertebrate species that produces a total score of 15 or more from the following lists:

- **Species included on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) - *Each species scores 2 points.***
- **Species listed on Annex 2 of the Habitats Directive - *Each species scores 2 points.***
- **Nationally scarce species[47] - *Each species scores 1 point.***
- **Species of Principal Importance (s41 NERC Act 2006) - *Each species scores 1 point.***

Application

This guideline should be applied to any site from which species listed in the most up date publications on national rarity are recorded. Site designation should normally only be made if there is suitable habitat to support the populations. The inclusion of species should be determined by the entomologists present on the Local Wildlife Sites panel.

Rationale

These species are rare and/or threatened at a national or European level or rare within the Borough.

[46] http://www.jncc.gov.uk/page-1755
[47] http://www.jncc.gov.uk/page-1755

Notes