

Coventry Green Belt Review 2014 Ecological Review

For

Coventry City Council

Prepared by

**Habitat Biodiversity Audit Partnership for Warwickshire, Coventry
and Solihull, Warwickshire Wildlife Trust**



Habitat
Biodiversity
Audit

And

Warwickshire Biological Record Centre

Ecological Services, Warwickshire County Council

December 2014



Contents

Executive Summary	4
1. INTRODUCTION	5
1.1. Coventry Green Belt Study Objectives	5
2. Coventry Green Belt Areas	7
2.1. Report Descriptions	10
3. Designated Sites	11
3.1. Sites of Special Scientific Interest SSSI	11
3.2. Local Nature Reserves LNRs	12
3.3. Non-statutory sites: Local Wildlife Sites	14
3.3.1. Non-Statutory Sites: Local Geological Sites	17
4. Warwickshire Phase 1 Habitats Survey	19
4.1. Habitat Connectivity	27
5. Interpretation	27
6. Species Records	32
7. Monitoring	33
7.1. National Indicators:	33
7.2. Local Indicators	33
8. Biodiversity Offsetting	34
9. Conclusions	34
Figure 1 Habitat Distinctiveness Scores 2008 - 2014	8
Figure 2 Green Belt areas map.....	9
Figure 3: Coventry LNR's.....	13
Figure 4: Coventry Green Belt LWS.....	16
Figure 5: Coventry Local Geological Sites (LGS).....	17
Figure 6: Phase 1 habitat map of Coventry.....	20
Figure 7 Phase 1 habitat key.....	21
Figure 8: Coventry Green Belt Phase 1 habitat distinctiveness	23
Figure 9: Phase 1 habitat distinctiveness for Coventry	24
Figure 10: the components of ecological networks.....	29

Figure 11: Distinctiveness scoring indicating 'Bigger' and 'Better' 30

Figure 12: Woodland connectivity indicating 'Connected' and 'Better' 31

EXECUTIVE SUMMARY

The aim of this report is to identify any ecological or geological features that will need to be taken into consideration within and adjacent to potential residential and commercial sites identified within the Coventry Green Belt.

The report uses up to date habitat and sites evidence plus species data available for the City of Coventry. This evidence is evaluated using ground breaking methodologies to show habitats of 'distinctiveness' and features that enable species to move around the Green Belt. This 'functional' analysis is the cornerstone to sustainable development and principles enshrined in the National Planning Policy Framework (NPPF).

The output of this report is a series of maps and notes showing where development may impact on ecology to a greater and lesser degree within potential residential and commercial sites and where habitats and features could be enhanced as part of any development. An interpretation to these maps is provided to aid the decision maker when reviewing each site.

The report also includes recommendations regarding monitoring and protecting of the biodiversity within the Coventry Green Belt areas.

1. INTRODUCTION

The Habitat Biodiversity Audit (HBA) Partnership for Warwickshire, Coventry and Solihull has been surveying and maintaining the Phase 1¹ habitat surveys for the Warwickshire sub-region since 1995. In addition to the Phase 1 surveys the HBA incorporates the Local Wildlife Sites Project (LWSP) which identifies surveys and processes the Local Wildlife Sites (LWS - formerly known as Sites of Importance for Nature Conservation – SINCs) inventory for Warwickshire, Coventry and Solihull.

Warwickshire County Council Ecological Services lead one of the six Defra Biodiversity Offsetting pilots (2012-2014) on behalf of all the Local Planning Authorities within Warwickshire, Coventry and Solihull (the sub-region). This pilot used the HBA and WSP data as the evidence base to delivery offsetting through a sub-regional Green Infrastructure Strategy. As a result of the pilot the HBA Phase 1 habitat survey data was scored according to a set of habitat criteria introduced by Defra and Natural England.

The Sub-regional Green Infrastructure Strategy also used the Phase 1 habitat data to model habitat connectivity for woodlands, grasslands and wetlands through a partnership with The University of York.

1.1. COVENTRY GREEN BELT STUDY OBJECTIVES

The primary objective of this study will be to update the Coventry City Council Green Belt Ecological Review as prepared by the HBA in 2008.

The Council is seeking an overarching assessment of the ecology and geodiversity of the Green Belt.

The study will include the following:

- Information on the occurrence of protected species and the location of sites subject to relevant designations such as Sites of Special Scientific Interest (SSSI), Local Nature Reserves (LNR), Local Wildlife Sites (LWS) and Local Geological Sites (LGS), as well as sites that may have the potential to achieve such designations.
- Where appropriate Phase 1 habitat target notes should also be included in the text.

¹ The Phase 1 habitat classification and associated field survey technique provides a relatively rapid system to record semi-natural vegetation and other wildlife habitats. (JNCC, 1990)

- Assess the current state of potential local wildlife sites (pLWS), and LWS in the study area against the Local Wildlife Assessment criteria, to ensure that are still appropriately designated.
- The Assessment will include recommendations for more detailed survey of sites that are considered to have ecological/geological value, together with recommendations regarding the future safeguarding, management and possible buffer areas,
- Identify designated sites or sites with potential for designation; or where sites have potential to be upgraded, i.e. for example, from a LWS to a LNR
- Identify areas of low sensitivity/low quality that could be most acceptable and useable for development
- Identify opportunities for offsetting identified inside the Coventry boundary

The text of the Green Belt Ecological Review Report will be accompanied by a series of maps showing:

1. Designated sites; including SSSIs, LWS, LNRS, LGS and ancient woodland
2. The sensitivity (distinctiveness) of the study area
3. Coventry and Warwickshire protected species including;
 - Veteran trees
 - Black poplar
 - Water Vole
 - Otter
 - White-clawed crayfish
 - Bats
 - Reptiles and amphibians
 - Rare plants
4. Habitat connectivity maps of the city for woodlands, hedgerows and grasslands. Wetlands i.e. Standing water can be done but require a different methodology.

2. COVENTRY GREEN BELT AREAS

The Coventry Green Belt Review 2008 (HBA/WBRC, 2008) identified 17 Green Belt areas, listed below in table 1. These areas identified in 2008 were used as the basis for the 2014 review as a way to compare changes that have occurred over the past six years.

The 2008 review consisted of a set of appendices including; phase 1 habitat maps, target notes, local wildlife sites citations and species lists. The 2014 Green Belt Review has taken a different approach to the assessment using instead of the Phase 1 maps, a set of maps that reinterprets the Phase 1 habitat survey by introducing habitat scoring based on the distinctiveness value of each land area in terms of biodiversity and wildlife interest. In addition to the biodiversity habitat scoring the Phase 1 habitat mapping has also been used to determine the ecological connectivity of the green belt areas and how they relate and contribute to the surrounding habitats.

Green Belt Maps 16 Eastern Green Belt and 17 Canley Corridor were identified in the 2008 Review as possible additions to the Coventry Green Belt, but are not part of the present Green Belt. They have been retained as areas of green corridor close to the City Centre with connectivity to nearby Green Belt Areas.

The 2014 habitat survey has become more detailed and refined than the earlier survey. A comparison of the 2008 habitats scored by distinctiveness shows an increase in the number of areas recorded as shown in Figure 1. The Phase 1 habitat scores are explained in section 4.

Figure 1 Habitat Distinctiveness Scores 2008 - 2014

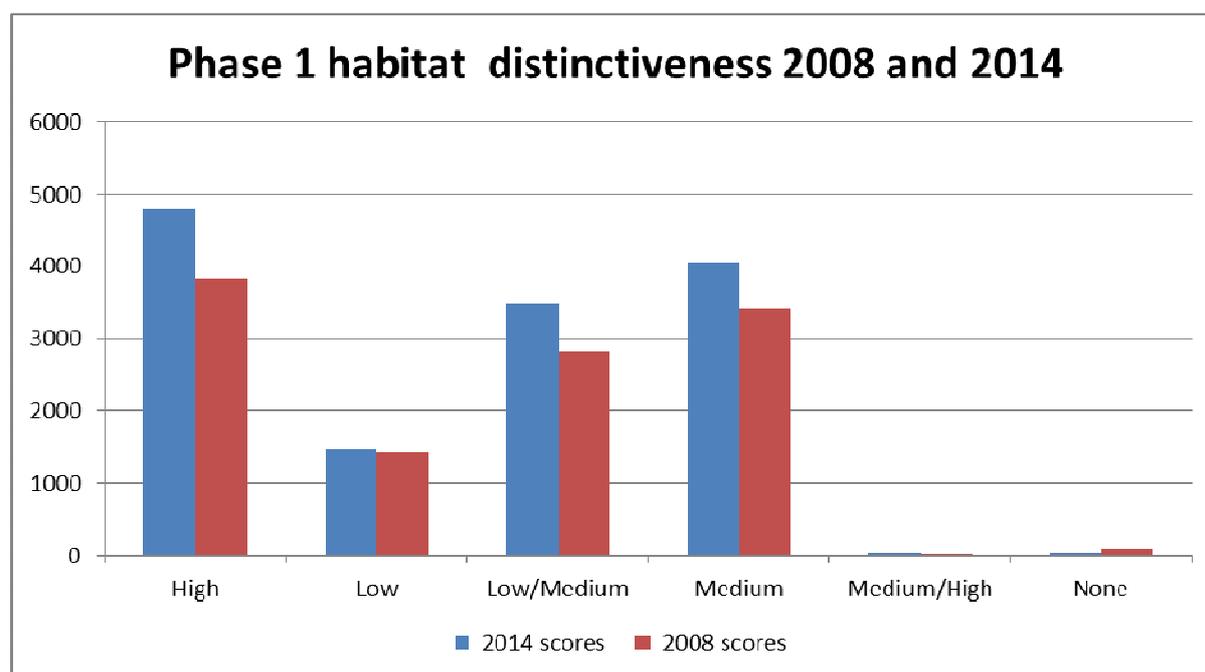
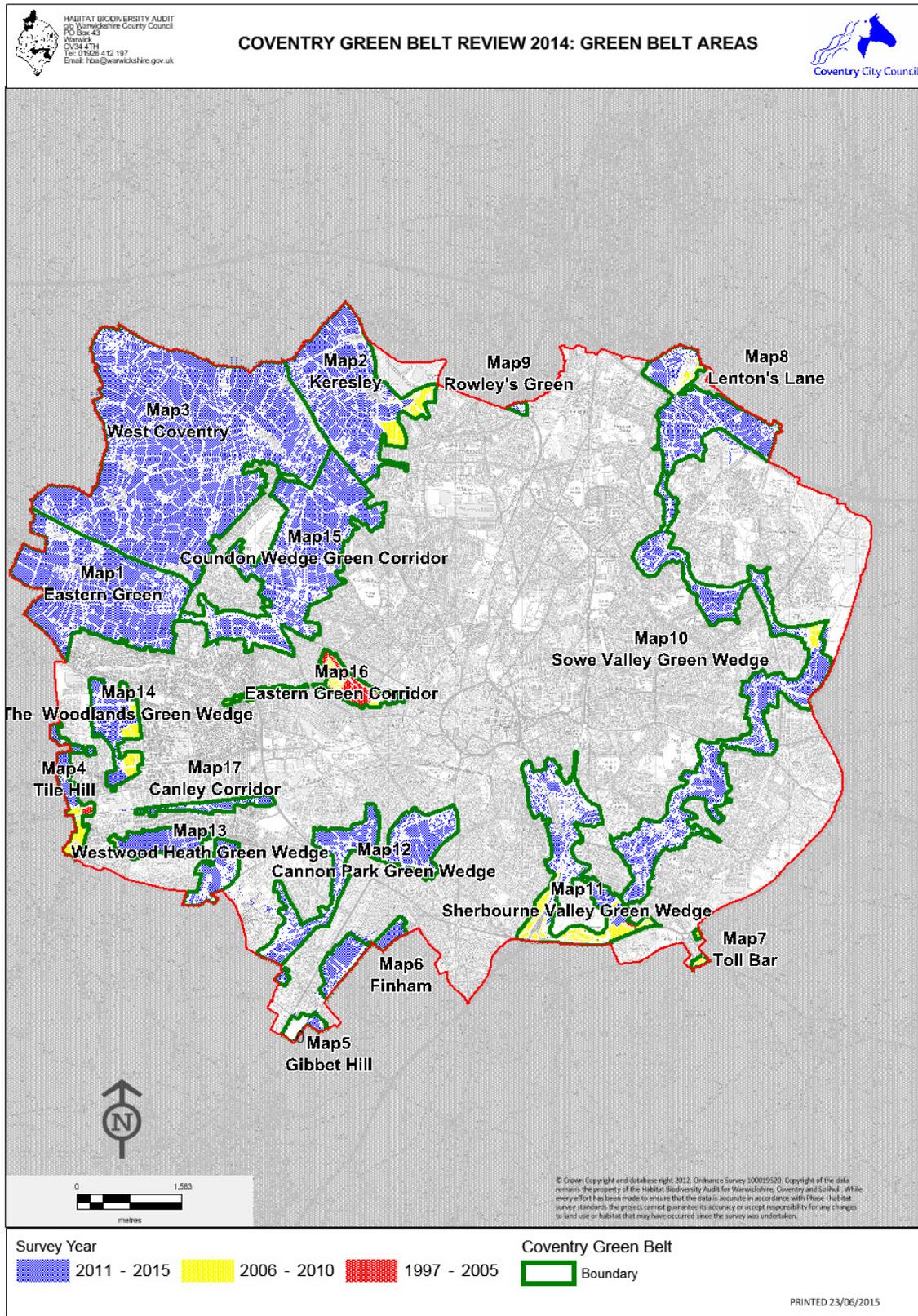


Table 1 Coventry Green Belt areas

Map	Name	Area (hectares)
1	Eastern Green	336.9
2	Keresley	277.27
3	West Coventry	921.26
4	Tile Hill	45.73
5	Gibbet Hill	18.74
6	Finham	45.28
7	Toll Bar	4.53
8	Lenton's Lane	167.69
9	Rowley's Green	4
10	Sowe Valley Green Wedge	348.32
11	Sherbourne Valley Green Wedge	199.51
12	Cannon Park Green Wedge	182.68
13	Westwood Heath Green Wedge	92.51
14	The Woodlands Green Wedge	74.89
15	Coundon Wedge Green Corridor	348.42
16	Eastern Green Corridor	50.76
17	Canley Corridor	25.49
	Total Area	3,118.49

Figure 2 Green Belt areas map



2.1. REPORT DESCRIPTIONS

Each individual site report is divided into the following headings:

- Area in hectares
- Area overview
- Key Features
- Recommendations
- Designated Sites
- Phase 1 Habitat Distinctiveness
- Target Notes
- Phase 1 Habitat Connectivity maps
- Protected Species maps

3. DESIGNATED SITES

The primary objective of nature conservation is to ensure that the national heritage of wild flora and fauna and geological and physiographic features remains as large and as diverse as possible, so that society may use and appreciate its value to the fullest extent (Nature Conservancy Council 1989). The protection and management of areas of importance for wild flora and fauna and their habitat is regarded as the cornerstone of British conservation policy. The principal statutory means of achieving this is by designation of sites for their conservation importance.

National Planning Policy Framework Section 11 -113 requires local planning authorities to: *set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks.*

A very small number of sites of nature conservation importance in Warwickshire, Coventry and Solihull receive statutory protection. Statutory sites in the Warwickshire sub-region comprise 13 Local Nature Reserves (LNR) and 57 Sites of Special Scientific Interest (SSSI), this figure including the part of the River Blythe SSSI which falls within the County, of these, Ensor's Pool is also a Special Areas of Conservation (SAC), reflecting its international importance. These sites cover 0.7 per cent of the Warwickshire sub region, as compared to the national figure of 6.8 percent. This puts more emphasis on the local importance of sites in conserving the biodiversity of Warwickshire.

3.1. SITES OF SPECIAL SCIENTIFIC INTEREST SSSI

The SSSI statutory designation has developed since 1949 as the suite of sites providing statutory protection for the best examples of the UK's flora, fauna, or geological or physiographical features. These sites are also used to underpin other national and international nature conservation designations. Most SSSIs are privately-owned or managed; others are owned or managed by public bodies or non-government organisations.

Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

Coventry has two SSSI's sites Tile Hill Wood and Herald Way Marsh.

3.2. LOCAL NATURE RESERVES LNRs

A Local Nature Reserve (LNR) is a protected area of land designated by a local authority because of its local special natural interest and, where possible educational and community value.

Local Nature Reserves are a statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949, and amended by Schedule 11(12) of the Natural Environment and Rural Communities Act 2006, The Schedule describes a nature reserve as:

- Land managed solely for a conservation purpose, or
- Land managed not only for conservation purpose but also for a recreational purpose, if the management of the land for recreational purpose does not compromise its management for the conservation purpose

Land is managed for a conservation purpose if it is managed for:

- Providing, under suitable conditions and control, special opportunities for the study of, and research into, matters relating to the fauna and flora of Great Britain and the physical condition in which they live, and for the study of geological and physiographical features of special interest in the area; or
- Preserving flora, fauna, or geological or physiographical features of special interest in the area for both these purposes.

LNRs can also be designated as local wildlife sites, local geological sites or SSSIs. In the case of LWS and LGS, LNR designation can provide a measure of statutory protection to a site.

Natural England makes the following recommendations:

- that they should be of high value locally for environmental education and/or research
- of high natural interest locally for the enjoyment of nature by the public
- of reasonable natural interest and of high value locally for enjoyment of nature by the public

Natural England specifically recommends that *“everyone should have an accessible greenspace of 2 ha within 300m of home; at least one accessible 20 ha site within 5*

km of home; at least one accessible 100 ha site within 5km of home; and at least one 500 ha site within 10 km of home. LNRs can contribute to these targets and the ANGSt standard of a minimum of 1ha of LNR per 1000 head of population. (Natural England, 2010)

Figure 3: Coventry LNR's

LNR NAME	UNIT AREA (ha)	GRID REF
Canley Ford Community Woodland	0.92	sp313769
Hearsall Common Woodland	8.04	sp308787
Herald Way Marsh	12.23	sp380769
Limbrick Wood	9.48	sp289786
Park Wood	20.73	sp283771
Pig Wood	5.66	sp281783
Plants Hill Wood	9.40	sp279781
Stoke Floods	7.78	sp374789
Stonebridge Meadows	7.67	sp348757
Ten Shilling Wood	4.87	sp291771
Tile Hill Wood	29.51	sp278789
Tocil Wood & Meadow	5.78	sp303755
Wainbody Wood & Stivichall Common, Kenilworth Road		
Spinney	1.20	sp322773
Willenhall Wood	9.89	sp370763
Wyken Slough	0.41	sp362835
Total Area	133.57	

3.3. NON-STATUTORY SITES: LOCAL WILDLIFE SITES

The few sites which have statutory designations because of their international or national interest represent the top of the hierarchy of protection. These sites are selected according to standardised criteria and procedures. Second tier, non-statutory sites, covering local nature conservation importance, are more difficult to classify as they have no legislative basis or standardised definition. Defra define Local Wildlife Sites as “*sites of substantive nature conservation value. Although they do not have any statutory status, many are equal in quality to the representative sample of sites that make up the series of statutory Sites of Special Scientific Interest (SSSIs)*” (Defra, 2009)².

In the 1980’s it was recognised that is nature was to survive within towns and cities it is essential that safeguards be provided within the planning process. These policies have provided the bedrock for effective conservation of locally important sites and have been central to the success of urban nature conservation programmes throughout Britain. Local Authorities including Coventry, have also designated some of the most notable sites as statutory Local Nature Reserves. Attempts have also been made to improve people’s access to nature. The idea that everyone living in an urban area should have access to a wildlife site within walking distance from home has gradually gained acceptance (Natural England, 2010). Another aspect of affecting wildlife habitats is the recognition that such habitats can have a crucial role in maintaining the ecological integrity of urban areas ‘*Planners who may have had little regard for the wildlife of value of urban river valleys and woodlands, are now producing detailed master plans of the ;same green infrastructure’ as a means of coping with the effects of climate change*’ (Goode, 2014 Ch.14 Planning for Nature.).

The Warwickshire, Coventry and Solihull Local Wildlife Sites Project in 2000 set out to formerly identify Sites of Importance for Nature Conservation (SINCs), now known as Local Wildlife Sites (LWS). The formal process for identifying, surveying and designating Local Wildlife Sites is set out in *The Green Book: Guidance for the Selection of Local Wildlife Sites in Warwickshire, Coventry and Solihull* (Habitat Biodiversity Audit, 2014).

Identifying Local Wildlife Sites

The Government recognises that our natural heritage is not confined to the various statutory designated sites but is found throughout the countryside and many urban areas. The Government also recognises that local authorities designate sites of local nature conservation value themselves and looks to them to take account of nature conservation interests in all their activities.

“Local planning authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geodiversity sites or

² [Defra Webpage](#)

landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites,²⁴ so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks” (para 113, NPPF,2012)

Local Wildlife Sites help buffer and connect natural areas, providing ecological networks and increasing resilience of biodiversity to pressure of land use and climate change (Lawton L.H., 2010). They contribute to the quality of life and the health and well-being of communities and provide important open space in urban areas.

Making Space for Nature (Lawton D.H., 2010) delivered to government in September 2011, asserts that Local Wildlife Sites are highly vulnerable to damage and loss, and recommended improving their protection and management, underlining that Local Sites are “*important to future ecological networks, because they not only provide wildlife refuges in their own right, but can act as stepping stones and corridors to link and protect nationally and internationally designated sites*”. (Figure 5) Building on this, recommendation 12 of the Review is that Local Authorities should take responsibility for the identification and monitoring of Local Wildlife Sites, and that their management must be improved.

The Government response to *Making Space for Nature*, published alongside the Natural Environment White Paper, (Defra, 2011), encouraged Local Site Partnerships to continue to implement Defra’s Local Sites guidance and play an increased role in identifying, protecting and managing Local Sites. The subsequent *England Biodiversity Strategy 2020* (Defra, 2011) restated that Government will encourage local authorities to take a more active and positive role in the management of Local Sites, including through reporting data on such sites in the Government’s new Single Data List.

Local Wildlife Sites in the Coventry Green Belt Area

Coventry City has at the end of 2014 65 designated local wildlife sites (LWS) of which 55 are in the Green Belt areas. All of Coventry’s greenbelt LNR’s have been designated on the basis of their local wildlife sites assessment. Tile Hill Wood is a SSSI, LNR and an LWS. Some of the first local wildlife sites designated in the Warwickshire sub-region was in Coventry dating back to the late 1990’s.

Today many of the local wildlife sites need condition assessments to confirm that they are in positive management and retain their biodiversity, in particular the grassland LWS. There still remain potential local wildlife sites to be surveyed and existing LWS to be considered for LNR status in order to give them statutory protection. Any loss of existing LWS is a concern and to date 3 sites have been lost in the green belt areas including SP28X7 Daddley’s Wood, SP37Z1 Sharman’s Tip and SP28W6 Hawkes End Wood. Wherever possible loss of sites should be

avoided, or where this is not possible, to consider replacement sites through offsetting, of which Warwickshire is one of the national pilot areas.

Figure 4: Coventry Green Belt LWS

Status	Number	Area (ha)
LWS	55	977.53
Potential sites	17	62
Rejected	7	167.83
Destroyed	3	3.21
Deferred	1	2.55
Total	80	1,213.11

3.3.1. NON-STATUTORY SITES: LOCAL GEOLOGICAL SITES

For many years, schemes to conserve wildlife sites not enjoying the statutory protection of Sites of Special Scientific Interest (SSSIs) have been operating successfully throughout Britain, but schemes to protect non-statutory geological and geomorphological sites are far less widespread. Those that do exist have much in common with their biological partners - sites are selected and managed by locally based groups, and safeguarded through local authority planning policies and the involvement of site owner(s).

Local Geological Sites (LGSs), formerly known as Regionally Important Geological Sites (RIGSs) are any geological or geomorphological sites, excluding SSSIs, in a county that are considered worthy of protection for their educational, research, historical or aesthetic importance. LGSs are analogous to non-statutory wildlife sites and are often referred to locally as their collective name Local Sites. They can include important teaching sites, wildlife trust reserves, Local Nature Reserves and a wide range of other sites. LGSs are not regarded as 'understudy' SSSIs, but as sites of regional importance in their own right.

Coventry has five local geological sites (LGS) of which Staircase Lane, Allesley Canley Brook, and part of Gibbett Hill Middle Quarry are in green belt areas

Figure 5: Coventry Local Geological Sites (LGS)

NAME	Area
Coventry Ring Road, Radford Road B4098	0.17
Gibbet Hill Middle Quarry	0.45
Claybrookes Marsh Spoil Tip	2.88
Canley Brook	3.39
Staircase Lane, Allesley	0.04
Total area	6.93

Warwickshire, Coventry and Solihull Local Biodiversity Action Plan (LBAP)

The Warwickshire, Coventry and Solihull Local Biodiversity Action Plan (LBAP) provide a local response to the UK Government's National Action Plans for threatened habitats and species. The LBAP contributes to national targets wherever these are relevant to the Warwickshire sub-region but also sets local targets.

The complete 2014 revision for the LBAP action plans for all local habitats can be found on the Warwickshire County Council Heritage and Culture web site: <http://heritage.warwickshire.gov.uk/ecology/lbap/>

Table 2 below shows the comparison of the national and local biodiversity actions plans for their Phase 1 habitat types

Table 2 LBAP HABITATS EQUIVALENT TO THE PHASE 1 HABITAT CODES

Habitats of national (N) and local (L) importance. UKBAP; Biodiversity Action Plan for Warwickshire, Coventry and Solihull)	Habitats identified in the Phase 1 survey
WOODLAND Ancient semi-natural woodland (N) Wood pasture and parkland (N) Orchards (N) Scrub and Carr (L)	WOODLAND Semi-natural and broadleaved (A111) Parkland and scattered trees (A3) Orchards (A5) Scattered Scrub (A22) Wet woodland (A6)
HEATHLAND Lowland heathland (N)	HEATHLAND Dry heath /acid grassland mosaic (D5)
GRASSLAND Lowland meadows (N) Lowland calcareous grassland (N) Lowland dry acid grassland (N) Floodplain grazing marsh (N)	GRASSLAND and MARSH Unimproved and semi-improved neutral grassland (B21/B22) Unimproved and semi-improved calcareous grassland (B31/B32) Unimproved and semi-improved acidic grassland (B11/B12) Marsh/marshy grassland (B5)
WETLAND Mesotrophic Lakes (N) Eutrophic standing waters (N) Ponds (N) Reedbed (N) Fen and Swamp (N) Rivers and streams (N) Canals (L)	WETLAND Standing water (G1) Standing water (G1) Swamp (F1) Inundation vegetation (F22) Running water (G2), Inundation vegetation (F22) Standing Water (G1, Inundation vegetation (F22))
FARMLAND Arable field margins (N) Hedgerows (N)	FARMLAND Set aside (J113) Hedgerows intact (J21) with trees (J23)

	Native species rich (J211) with trees (J231)
BUILT ENVIRONMENT Gardens, Parks and Churchyards (L) Parks and public open spaces (L) Roadside verges (L) Allotments (L) School grounds (L) Open mosaic on previously developed land (N) Disused industrial (L) Quarries and gravel pits (L)	BUILT ENVIRONMENT Introduced shrub (J14), Neutral Grassland (B22) Amenity grassland (J12) Allotments (J112) Ephemeral/short perennial (J13) Tall herb – ruderal (C31) Tall herb - non-ruderal (C32) Quarry (J21) Bare ground (J4)

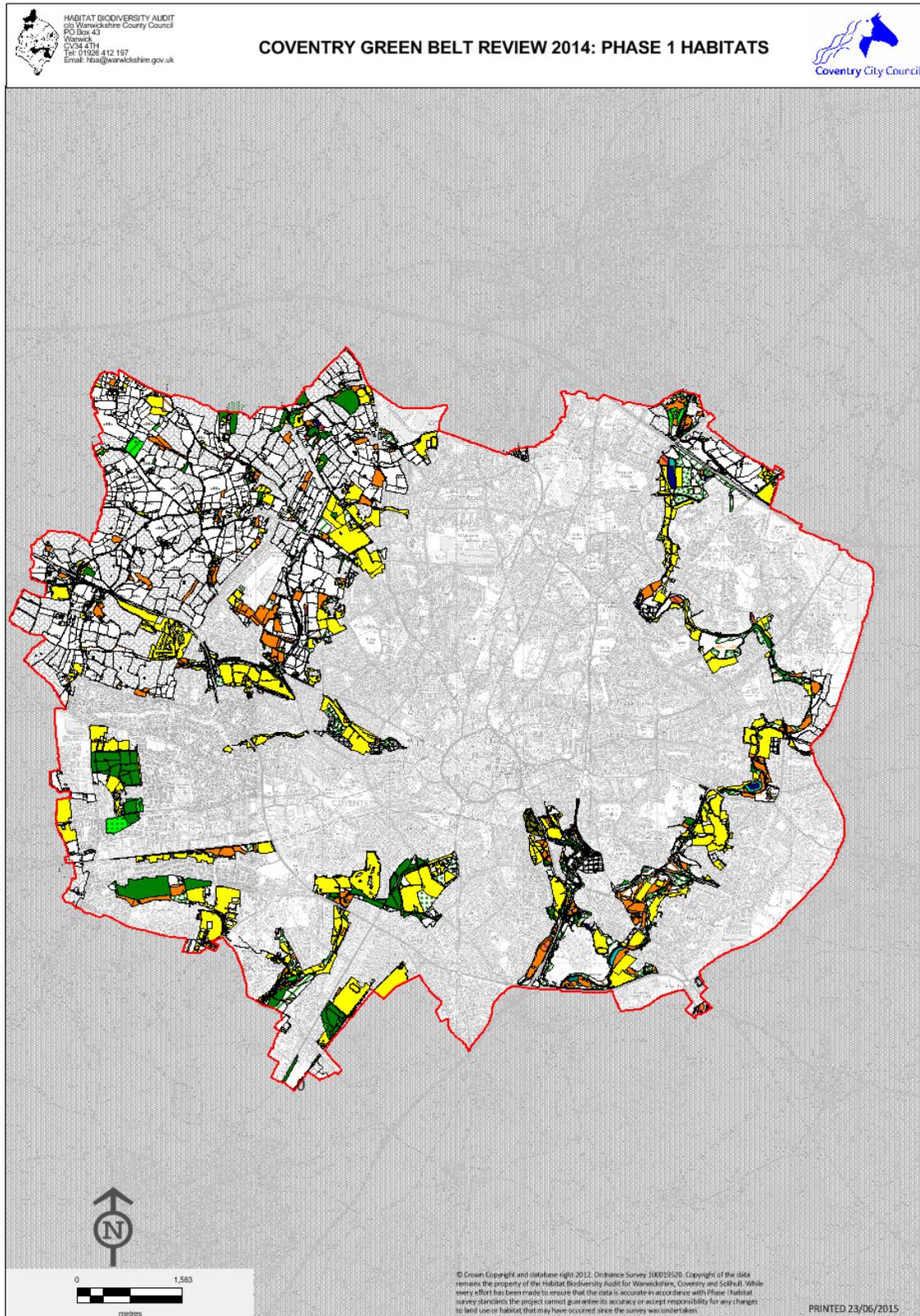
4. WARWICKSHIRE PHASE 1 HABITATS SURVEY

The national Phase 1 habitat survey is a well-established, general purpose survey devised to provide rapid mapping over wide areas of the British countryside. The methodology is set out in the “*Handbook for Phase 1 habitat survey: A technique for environmental audit*” (Nature Conservancy Council 1990, 2010 ed.). The handbook has been revised and reprinted with minor revisions to mainly take account of the introduction and wider use of Geographical Information System (GIS).

The first field surveys for the Warwickshire sub-region are recorded in the 2001 Phase 1 mapping survey including the complete field surveys for the Warwickshire sub-region between 1996 and 2000. In 2001 the completed surveys were digitised and recorded in the HBA’s GIS. The original Phase 1 survey was augmented by aerial survey interpretation from 1991 aerial imagery. Since the first survey was completed a mechanism has been established to update the Phase 1 survey on a regular basis and the original survey has become the baseline data from which all subsequent surveys are based.

The continuous revision of the Phase 1 objective was to update the Warwickshire sub-region every 5 years, subject to resources. In addition to the field survey revision, HBA has access to the latest aerial imagery for 2013 from aerial surveys commissioned by Warwickshire County Council. For a description of the Warwickshire Phase 1 habitat categories please refer to Figure 7 and Table 3 page 25. A guide to the Warwickshire Phase 1 survey is available on request from the HBA (Habitat Biodiversity Audit 2012).

Figure 6: Phase 1 habitat map of Coventry



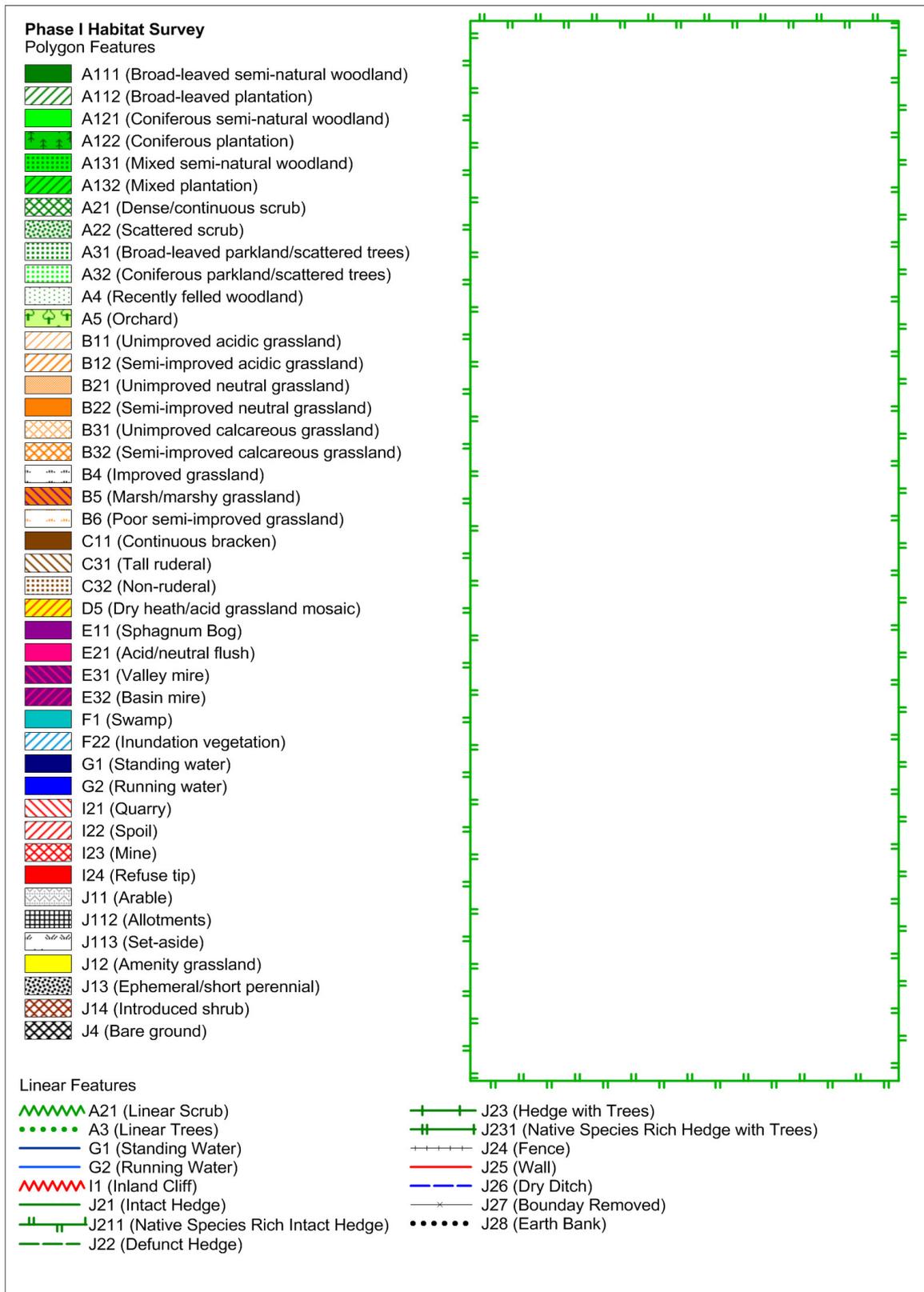


Figure 7 Phase 1 habitat key

Phase 1 Habitat Distinctiveness

The habitat distinctiveness categories and their associated scores have been taken from the Defra Biodiversity Offsetting Pilot in the UK National Ecosystem Assessment (UK NEA, 2011), Appendix 1. The scores have been interpreted as those that best match the Warwickshire sub-region Phase 1 habitat scheme (see technical sections 10.3 for the Phase 1 habitat distinctiveness area and linear features scores).

The habitat distinctiveness categories can also be interpreted as areas of habitat importance or sensitivity, and are a useful way of simplifying the 57 Phase 1 map categories. Distinctiveness also assigns a score to the habitats which are most bio-diverse and those that are not. The Phase 1 habitat categories alone do not determine biodiversity.

Each Phase 1 habitat type has been given a distinctiveness score ranging from 6 to 2; 6 - high distinctiveness, 5 – Moderate/High distinctiveness, 4 – moderate distinctiveness, 3 – Low/Moderate distinctiveness and 2 - low distinctiveness³.

High distinctiveness scores equate to areas of highest biodiversity, including all unimproved and ancient woodland habitats. High distinctiveness should incorporate statutory sites, Local Wildlife Sites and the Biodiversity Action Plan (BAP) habitats. The high distinctiveness category for linear habitats includes species-rich hedgerows.

Moderate distinctiveness scores are a mid-way assessment for areas that are either a transition from high to low or vice versa; or are of indeterminate biodiversity. Examples include scrubland, semi-improved grassland and tall ruderal⁴. Linear sites with moderate scores include intact hedgerows.

Low distinctiveness scores are areas of low biodiversity interest. These areas cover the majority of the sub-region, including for example agricultural farmland, amenity grassland and coniferous plantation woodland. Low linear scores are associated with defunct hedgerows, fences and dry ditches.

The distinctiveness categories can be further adapted and refined to best suit the Warwickshire sub-region habitats. For example scrubland can be sub-divided into open scattered scrub with a score of 5 to distinguish it from dense scrubland which

³ Defra identified a 6,4,2 range of distinctiveness, however a sub-regional expert peer group within the Defra Pilot that included Natural England agreed to create a 3 and 5 category for completeness.

⁴ Ruderal from the latin for rubble or rubbish refers to cleared areas that have become colonised by pioneer plant species, typical tall perennial or biennial dicotyledon plant species include Rosebay (*Chamerion angustifolium*), Common nettle (*Urtica dioica*) and Japanese Knotweed (*Fallopia japonica*).

may be invading semi-natural grassland. Habitats within SSSIs or Local Wildlife Sites could be given high scores to reflect their importance as part of the overall area. This may be a requirement for mosaic sites associated with former industrial land use. Distinctiveness scores are an intrinsic requirement for the proposed biodiversity off-setting schemes and will be a requirement for determining the value of habitats.

Figure 8: Coventry Green Belt Phase 1 habitat distinctiveness

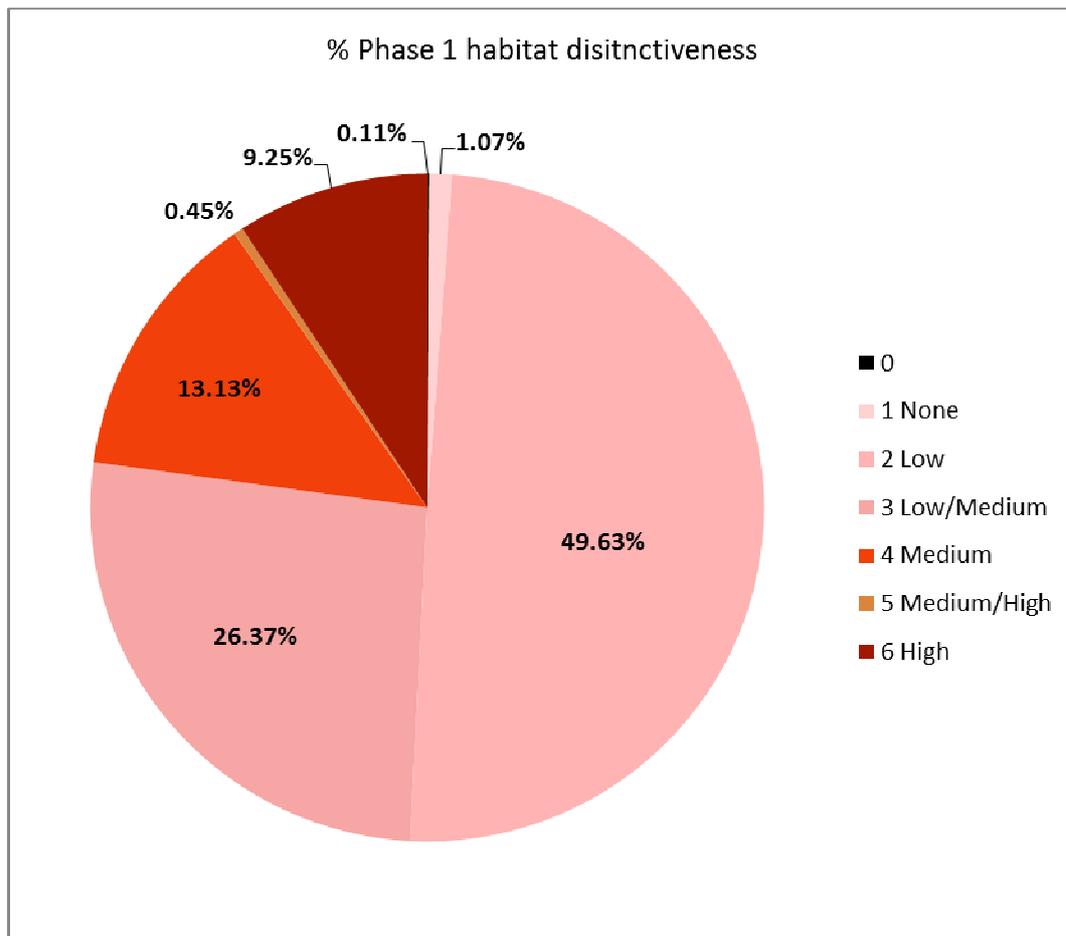


Figure 9: Phase 1 habitat distinctiveness for Coventry

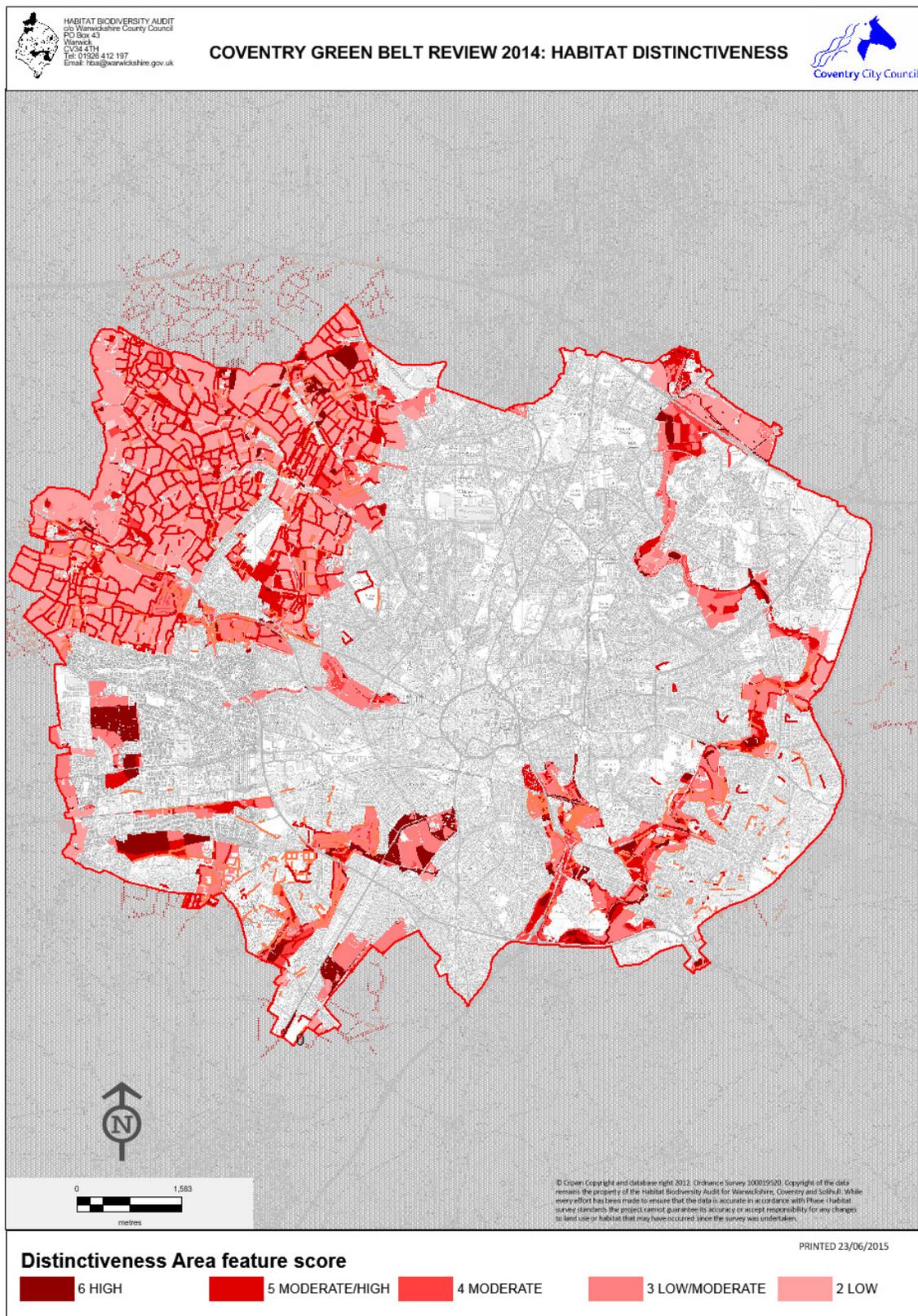


Table 3 Phase 1 habitat distinctiveness

ID	Phase 1 code	Habitat description	IHS Code*	Distinctiveness	Score
1	A111	Broad-leaved semi-natural woodland	WB3	High	6
2	A112	Broad-leaved plantation	WB3Z	Medium	4
3	A122	Coniferous plantation	WCZ	Low	2
4	A131	Mixed semi-natural woodland	WB1	Medium/High	5
5	A132		WB1	Low/Medium	3
6	A21	Dense continuous scrub	WB2	Low/Medium	3
7	A22	Scattered scrub	WB2	Medium	4
8	A31	Broad-leaved parkland/scattered trees	TS11	High	6
9	A32	Coniferous parkland/scattered trees	TS13	Medium/High	5
10	A4	Recently felled woodland		Low	2
11	A5	Orchard	CL31	High	6
12	B12	Semi-improved acidic grassland	GU0	High	6
13	B21	Unimproved neutral grassland	GN1	High	6
14	B22	Semi-improved neutral grassland	GU0	Medium	4
15	B31	Unimproved calcareous grassland	GC0	High	6
16	B32	Semi-improved calcareous grassland	GU0	High	6
17	B4	Improved grassland	G10	Low	2
18	B5	Marsh/marshy grassland	EM0	High	6
19	B6	Poor semi-improved grassland	GU0	Low/Medium	3
20	C31	Tall ruderal		Low/Medium	3
21	F1	Swamp	EM1	High	6
22	F22	Inundation vegetation	EM2	High	6
23	G1	Standing water	AP11	High	6
24	G2	Running water	AR1	High	6
25	I21	Quarry (active)	RE21	Low	2
26	I24	Refuse tip	RE24	Low	2
27	J11	Arable	CR2	Low	2
28	J112	Allotments	UA33	Low/Medium	3
29	J113	Set-aside (field margins)	CR61	Medium	4
30	J12	Amenity grassland	GL1	Low/Medium	3
31	J13	Ephemeral/short perennial		Low/Medium	3
32	J14	Introduced shrub		Low	2
33	J4	Bare ground		None	1
34	C11	Continuous bracken	BR0	Low	2
35	C32	Non-ruderal		Medium	4
36	B11	Unimproved acidic grassland	GA1	High	6
37	D5	Dry heath/acidic grassland mosaic	HE1/GA	High	6
38	E32	Basin Mire	EM3	High	6
39	A121	Coniferous semi-natural woodland	WCZ	Medium	6
40	E21	Acid/neutral flush	EM0	High	6
41	E11	Sphagnum Bog	EO0	High	6
42	I22	Spoil	RE22	Low	2

Table 4 Phase 1 linear feature distinctiveness

ID	Phase 1 code	Habitat description	IHS Code	Distinctiveness	Score
43	A21	Linear scrub		Medium	4
44	A3	Linear trees	LF1Z	Medium	4
45	G1	Standing water (wet ditches)	AC111	High	6
46	G2	Running water	AR1	High	6
47	I1	Inland cliff		Medium	4
48	J21	Intact hedge	LF11Z	High	6
49	J211	Native species rich intact hedge	LF111	High	6
50	J22	Defunct hedge	LF1Z	Low	2
52	J23	Hedge with trees	LF11Z	High	6
53	J231	Native species rich hedge with trees	LF111	High	6
54	J24	Fence	LF26	Low	2
55	J25	Wall	LF23	Low	2
56	J26	Dry ditch	LF24	Low	2
58	J28	Earth bank	LF22	Low	2
59	A113	Wet woodland	WB34	High	6
60	F21	Emergent vegetation	EM21	High	6

Note IHS Integrated Habitat Survey equivalent to the Phase 1 used by Defra to score habitats and adapted by WBRC/HBA

4.1. HABITAT CONNECTIVITY

The landscape habitat connectivity used as part of this ecological assessment has acquired the technical services from the Environment Department, University of York to calculate connectivity using the Incidence Function Model (IFM) (Nieminen, 2002) (Hanski, 2001 repr.) The model measures the distance between suitable habitats using a set dispersal distance of a study species. The habitat patches included both the Phase 1 polygons for semi-natural habitats and intact hedgerows recorded as linear features in the Phase 1.

The study used dispersal distances of 500m and 1000m around each of the habitat features. These two dispersal distances were applied to 3 groupings of broad habitat types:

- Semi-natural woodland including scrub and intact hedgerows
- Semi-natural grasslands and intact hedgerows
- Ponds and wetlands

The quality and level of detail afforded by the Phase I cover data allow the results to be used as measures of structural connectivity, where the physical connectedness of the landscape elements of habitat patches and linear features can be assessed.

For ease of interpretation 6 levels of connectivity have been illustrated on the connectivity maps. These being areas of zero connectivity followed by evenly distributed ranges greater than zero. The lower the area value the less connected it is; conversely the higher the value the greater connected the area is to suitable habitat. Figure 12 illustrates woodland connectivity. The same methodology has been applied to grasslands and ponds (wetlands).

5. INTERPRETATION

The Distinctiveness and Connectivity maps provide value evidence for promoting any mitigation and compensation for future development. They should be used to advice on layout designs of the development and where “offsetting” opportunities exist to promote the local and government objectives. More information is to be provided in the Sub-regional Green Infrastructure Strategy⁵. The Association of Local Government Ecologists (ALGE) and the Planning Portal have launched a web-based toolkit to advise applicants on ecological considerations⁶. At the time of writing this

⁵ [Warwickshire, Coventry and Solihull Green Infrastructure Strategy](#)

⁶ [Biodiversity Planning Toolkit](#)

site is still in development, but is valuable to all forms of residential and commercial development.

These mapping approaches are being used to identify sub-regional GI Biodiversity Assets and identify Strategic Areas for delivering the Biodiversity Strategy's aim to reconnect habitats throughout the sub-region.

Sub-regional GI Biodiversity Assets – are all qualifying woodland, grassland and wetland features that have a connective function or a high distinctiveness value.

Recommendation 1

The aim of the sub-regional GI Strategy is to safeguard and enhance all GI Biodiversity Assets.

Recommendation 2

The aim of the sub-regional GI Strategy is to fulfil two priorities for each of the woodland, grassland and wetland habitat categories:

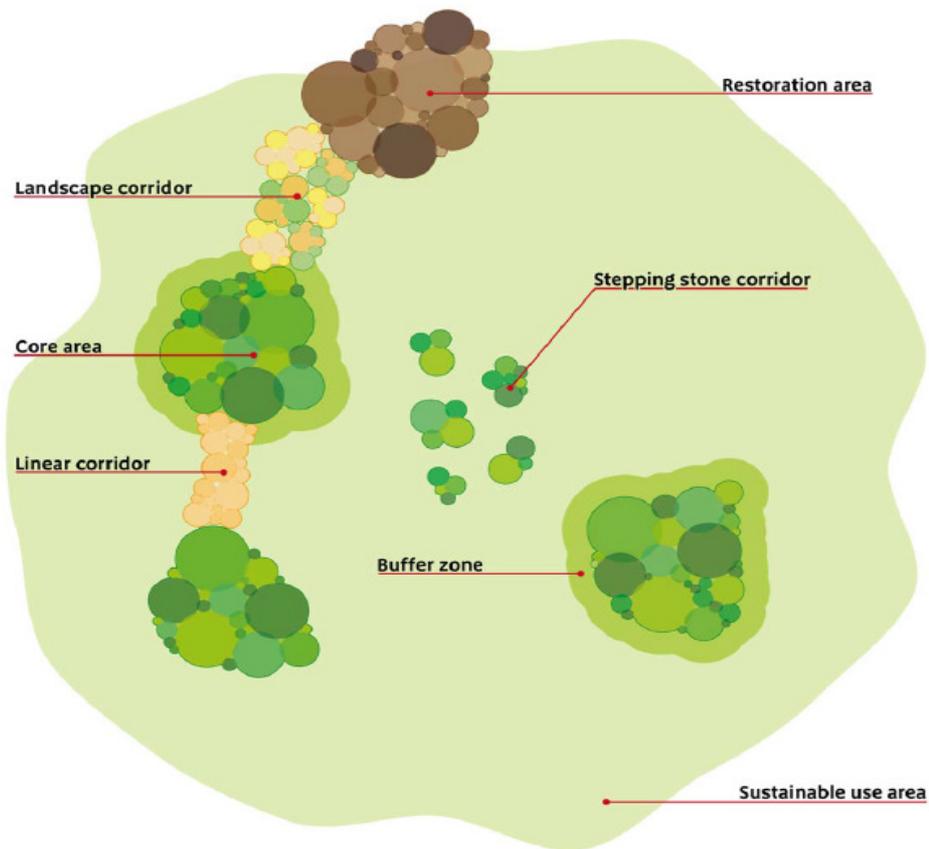
Priority 1) - Connect together individual sub-regional GI Biodiversity assets to form core areas.

Priority 2) – Connect the Core Areas together [where Priority 1 has been achieved] to form large functional clusters.

Recommendation 3

An additional aim is to create either new Core Areas large enough to function independently as an individual site or a functional cluster of larger and smaller sites where there is a distinct local need or deficiency in a habitat category.

Figure 10: the components of ecological networks - Lawton Report 2010 p.17



When applying these priorities to the Distinctiveness Maps for each settlement the aims would be to:

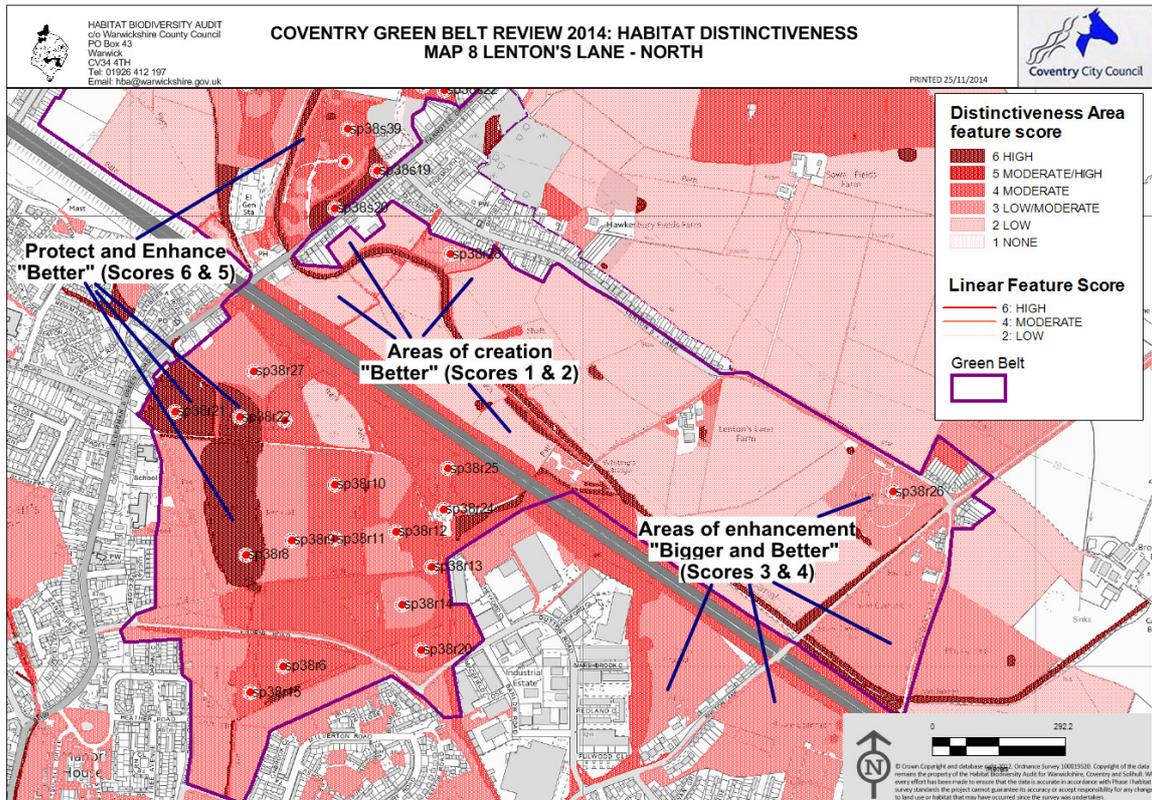
- A) Protect and Enhance those areas of High Distinctiveness
- B) Enlarge and Buffer these areas of High Distinctiveness
- C) Enhance areas of Moderate Distinctiveness

When applying these priorities to the Connectivity Maps for each settlement the aims would be to:

- A) Protect and Enhance the linear features and areas of High Distinctiveness
- B) Enhance areas of Moderate Distinctiveness
- C) Create or enhance new linear features to make continuous 'lines' of High and Moderate Distinctiveness that connect High and Moderate Distinctiveness areas together.

Figures 11 and 12 give examples of these aims of "Bigger, Better and Connected" (Lawton, 2011). Figure 12 only represents opportunities for woodland habitats, but the principles are the same for grassland and wetland habitat types.

Figure 11: Distinctiveness scoring indicating 'Bigger' and 'Better'



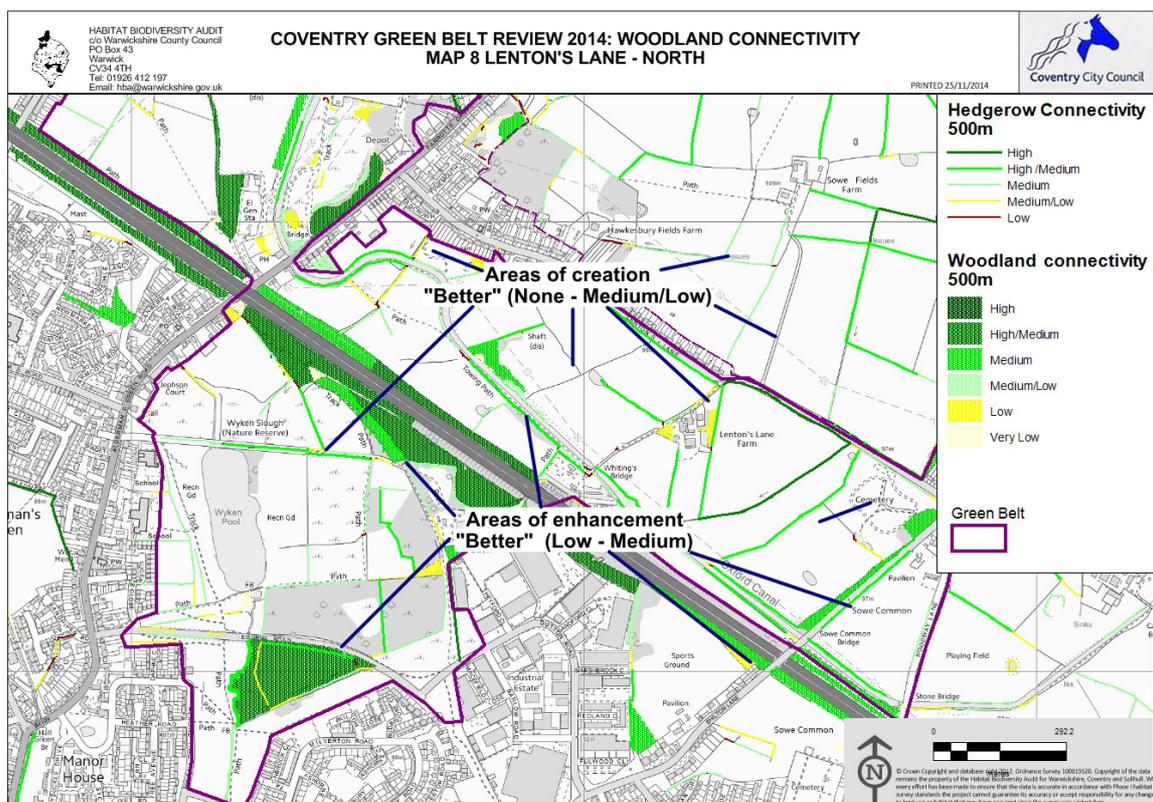
In the example above the distinctiveness scores are shown for Map 8 Lenton’s Lane where the dark red areas of high distinctiveness (5 and 6) are important areas that should be protected and enhanced. Moderate areas of distinctiveness (3 and 4) are areas to be enhanced with a view to raising their distinctiveness scores to the higher levels through appropriate management for example. Habitats with low scores (1 and 2) are areas of opportunity for creating new and better habitats they may also be areas identified for biodiversity offsetting. In simple terms High to Medium habitats should be protected and managed appropriately, habitats with moderate habitat scores can be improved or expanded, for example reducing mowing regimes on amenity grassland to create semi-improved grassland areas. Low value habitats can be turned into valuable into new wildlife areas, for example introducing broad-leaf plantations or creating wetland areas.

The connectivity mapping example Figure 12 illustrates where core areas of woodland shown as dark green are interconnected to nearby woods via the hedgerow network. The basic premise is that the larger the wood the greater it is connected to surrounding woods via the hedgerow network. The model in the study uses a 500 meter radius around a wood or hedgerow to search for nearby woods and hedgerows, which returns an accrued score for each wood or hedgerow it connects with. Where hedgerows and woods are removed or reduced in size their

connected scores will also be reduced. The converse is that if a wood is created or made larger than the greater will be the connectivity to surrounding woods or where hedgerows are restored then the same will apply. The model shows were to enhance woodlands and restore hedgerows in order to enhance connectivity. It can also be a way measuring improvements in biodiversity.

In this way connectivity allows species for example bats, hedgehogs, great crested newts and even plants to move across the landscape The model does not at the moment account for barriers to species movement it is at present a habitat connected model.

Figure 12: Woodland connectivity indicating 'Connected' and 'Better'



The Distinctiveness Maps and Connectivity maps are available to Coventry City Council, as a set of digital maps, to enable wider application of the above principles to ensure that habitats become connected, enabling species to flow through a regional landscape and therefore be more resilient to climate change or other influences on the environment

6. SPECIES RECORDS

Species information is based on existing records within the Warwickshire Biological Record Centre (WBRC). For this report EU and UK protected species, UK Biodiversity Action Plan, Local Biodiversity Action Plan (Warwickshire Wildlife Trust, 2014) species and rare and endangered species have been noted where records are held digitally. These records have been used with local knowledge to provide spatial interpretation for each site.

This interpretation is based on data and information available at the time of preparing this report. Please note that lack of records may well indicate that no survey work has yet been undertaken, and does not indicate that species are necessarily absent. Protected species may be using the site and surrounding area and appropriate survey work may be required to establish their presence and to inform mitigation measures to ensure that they are not impacted by any proposed works.

Combined species maps include the following list of protected species

- Veteran trees
- Black poplar
- Water Vole
- Otter
- White-clawed crayfish
- Bats
- Reptiles and amphibians
- Rare plants

7. MONITORING

The way sites have been evaluated in this report is unprecedented in the UK. However, the model is being promoted throughout the Warwickshire, Coventry and Solihull sub-region to ensure consistent benchmarking. It is recommended that the monitoring approach becomes consistent with neighbours in a meaningful way. To this affect it is recommended that the ecological interest within the Borough uses the following indicators:

7.1. NATIONAL INDICATORS:

Sites of Special Scientific Interest (SSSI) favourable status

Owner: Natural England

Description: Natural England measures the condition of SSSIs to assess the quality of their special habitats and species – the Special Features that make these sites important. However, site assessments also look at the management measures that have been put in place to help conserve Special Features or help their recovery if they have been damaged.

Single Data list 160-00: Biodiversity (Local Sites in positive management)

Owner: Warwickshire County Council

Description: Local Sites are sites designated locally for their substantive nature conservation importance, either for wildlife or geology. Sites in positive conservation management are defined as those sites which are being managed in order to conserve their nature conservation interest in the last five years (Defra, 2013).

7.2. LOCAL INDICATORS

Area or Local Sites that are in positive management

Owner: Wildlife Sites Partnership / Warwickshire County Council

Description: The area measurement of Single Data list 160-00 (See above). This could be represented as a hectare figure in its own right reported annually and as the percentage in context of the borough. This will illustrate the area as hectares that are sensitively managed within the borough.

Connectivity Index (to be evaluated)

Owner: Habitat Biodiversity Audit

Description: To work with University of York to formulate a connectivity score indicating how functional the borough is to enable species to move within and through the borough.

8. BIODIVERSITY OFFSETTING

Biodiversity Offsetting is considered as a mechanism to enact National Planning Policy Framework sustainable development principles involving “seeking positive improvements in the quality of the built, natural and historic environment, as well as in people’s quality of life”.

The biodiversity offsetting procedure requires the application of a set of calculations to specific areas of land agreed to by landowners in order to derive a value based on the ecological loss of that piece of land. The Warwickshire, Coventry and Solihull sub-regional green infrastructure strategy Annex A: Local Biodiversity Offsetting Strategy describes the procedure with reference to the distinctiveness scoring as follows:

Step 1- Calculate Habitat Compensation Score requires the developer to calculate a ‘Biodiversity Impact Score’ for the development. This is achieved by calculating how many ‘biodiversity unit’s will be lost as a result of their development. Stage 1 involves classifying all the habitats that will be impacted upon by the development within the site ownership boundary and scoring these habitats based on their distinctiveness and their condition score (Warwickshire County Council, 2013).

9. CONCLUSIONS

This report reviews the current state of the Coventry Green Belt areas since the last review was undertaken in 2008, and in line with the introduction of the National Planning Policy Guidelines, published in March 2012 with reference to Section 11: Conserving and enhancing the natural environment.

Since the last greenbelt review in 2008 the HBA has added additional information to the detailed Phase 1 habitat survey including habitat distinctiveness scoring and habitat connectivity. These new sets of attribute data make the original Phase 1 more applicable to planning interpretation.

By comparing the 2008 and the 2014 Phase 1 habitat survey distinctiveness scores the results shows that Coventry Green Belt areas have largely remained intact with the exception of the loss of three local wildlife sites.

The habitat distinctiveness scores distinguish between areas of high and low biodiversity value and is the first metric used for biodiversity offsetting. This report

does not recommend specific areas for biodiversity offsetting; the information does provide the latest survey information for calculating biodiversity offset values.

The second derived attribute from the Phase 1 habitat survey is the habitat connectivity also referred to as ecological networks. The emphasis on this report is on Coventry having connectivity with the wider countryside through its green belt areas, rather than isolating sites of importance for biodiversity and protecting them from surrounding development.

It is recommended that where ever possible Local Wildlife Sites and statutory sites be protected by green buffers and green corridors to connect them to other similar sites, these include for example the extensive semi-improved grasslands still remaining in the Coundon Wedge, the Ancient Woodlands connected by hedgerows and broadleaf plantations on the western edge of the city including West Coventry, The Woodlands Green Wedge and Keresley; and the river corridors along the Sherborne and Sowe in the east and Canley Brook (Westwood Heath Green Wedge and Cannon Park Green Wedge) in the south west.

Bibliography

- Defra. (1997). *The Hedgerows Regulations 1007 A guide to the Law and Good Practice*. London: HMSO.
- Defra. (2010). *UK Biodiversity Action Plan Priority Habitat Descriptions: Open Moosaic Habitats on Previously Developed Land*. Defra.
- Defra. (2012). *Biodiversity Offsetting Technical Paper*. London: HM Government.
- Ecological Services & Habitat Biodiversity Audit. (July 2012). Stratford-on-Avon District Council Ecological and Geological Study of Local Service Villages. Warwick: Warwickshire County Council.
- Ecological Services & Habitat Biodiversity Audit and WCC Landscape Architects. (November 2013). Warwick District Council Landscape Sensitivity and Ecological & Geological Study. Warwick: Warwickshire County Council.
- Goode, David (2014) *Nature in Towns and Cities*. London: William Collins. New Naturalist Library: A survey of British Natural History.
- Lawton L.H . (2010). *Making Spece for Nature: a review of England's wildlfe sites and ecological network*. London: Defra.
- HBA/WBRC. (2008). *Coventry Green Belt Ecological Review*. Warwick. Habitat Biodiversity Audit & Warwickshire Biological Records Centre
- Habitat Biodiversity Audit. (2012). *HBA Habitats Guide*. Warwick: HBA Warwickshire Coventry & Solihull.
- Habitat Biodiversity Audit. (2014). *The Green Book: Guidance for the Selection of Local Wildlife Sites in Warwickshire, Coventry and Solihull*. Warwick: HBA Local Wildlife Sites Project.
- Habitat Biodiversity Audit and WCC Ecological Services. (July 2012). *Ecological and Geological Study of Local Service Villages*. Warwick: Warwickshire County Council.
- Hanski, I. (2001 repr.). *Metapopulation Ecology*. Oxfröd: Oxford University Press.
- JNCC. (2010). *Hanbook for Phase 1 habitat survey: a technique for environmental audit*. Peterborough: JNCC.
- JNCC/Defra. (July 2010). *UK Biodiversity Action Plan Priority Habitat Descriptions - Open Mosaics on Previously Developed Land*. Defra/JNCC.
- Nieminen, M. a. (2002). Simple Connectivity Measures in Spatial Ecology. *Ecology* 83(4), 1131-145.
- Natural England (2010) *Nature Nearby: Accessible Natural Greenspace Guidance*. Natural England (www.naturalengland.org.uk/publications)

Trueman Ian, P. M. (2013). *Flora of Birmingham and the Black Country*. Newbury: Pisces Publications.

Warwickshire County Council (2013) Warwickshire, Coventry and Solihull Green Infrastructure Strategy Annex A - Biodiversity Offsetting Strategy
www.rugby.gov.uk/info/200297/development_strategy/1788/evidence/6

Warwickshire Wildlife Trust (2014) Local Biodiversity Action Partnership: The Species and Habitat Actions Plans www.warwickshirewildlifetrust.org.uk/LBAP