

## Stratford-on-Avon District Council

### Ecological and Geological Study of Local Service Villages

Produced by

WCC Ecological Services & Habitat Biodiversity Audit

July 2012



Habitat  
Biodiversity  
Audit



## **Contents**

INTRODUCTION .....	2
GENERAL PRINCIPLES .....	4
THE SERVICE VILLAGES SURVEY AREAS .....	6
METHODOLOGY .....	7
SETTLEMENT ECOLOGICAL & GEOLOGICAL ASSESSMENT .....	12
CONCLUSIONS .....	28
BIBLIOGRAPHY .....	33

## **Maps and Tables**

FIGURE 1 NATURAL ENVIRONMENT WHITE PAPER (2011) .....	5
Figure 2 STRATFORD DISTRICT CURRENCY MAP .....	7
Figure 3: SETTLEMENT SURVEY BOUNDARY .....	8
Figure 4: PHASE 1 HABITATS KEY .....	10
Figure 5: NUMBER OF SITES BY HABITAT .....	13
Figure 6: AREA BY HABITAT .....	14
Figure 7: PHASE 1 HABITATS MAP .....	14
Figure 8: PHASE 1 TARGET NOTES .....	16
Figure 9: DESIGNATED SITES .....	19
Figure 10: HIGH DISTINCTIVENESS .....	20
Figure 11: MODERATE DISTINCTIVENESS .....	21
Figure 12: LOW DISTINCTIVENESS .....	22
Figure 13: DISTINCTIVENESS MAP .....	23
Figure 14: SPECIES MAP .....	25
Figure 15: WOODLAND CONNECTIVITY .....	27
Figure 16 SETTLEMENTS RANKED BY LOW DISTINCTIVENESS .....	30
Figure 17 EXAMPLES OF "BIGGER AND BETTER" .....	32
Figure 18 EXAMPLES OF "BETTER AND CONNECTED" (WOODLAND) .....	33

## INTRODUCTION

Warwickshire County Council Ecological Services and The Habitat Biodiversity Audit (HBA) Partnership were commissioned by Stratford-on-Avon District Council to assess the biodiversity sensitivity of the fringes around 39 Local Service Villages identified in the draft Core Strategy.

Biodiversity is a collective term that covers the variety of life on earth. This variety of life is subjected to change from a combination of influences. Some of these are natural (e.g. floods and natural succession) and others are man-made (e.g. climate change, change of agricultural practices and land use). Therefore, the findings of this study are a snapshot in time and are liable to change.

This report aims to satisfy National Planning Policy Framework (NPPF) guidance that “adequate site investigation information [is] prepared by a competent person, is presented”. It also aims “to identify land where development would be inappropriate, for instance, because of its environmental or historic significance”; and will help guide future policies to “contain a clear strategy for enhancing the natural ... environment, and supporting Nature Improvement Areas (NIA) where they have been identified”. The Warwickshire, Coventry and Solihull NIA is in preparation after receiving ‘Priority Status’ by Government in April 2012.

This study is mindful of the NPPFs requirements that the planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;
- recognising the wider benefits of ecosystem services;
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government’s commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures

The findings are an evidence base “based on up-to-date information about the natural environment” (NPPF, 2012) for decision makers to use to inform spatial planning objectives that include an assessment of existing and potential components of ecological networks” (NPPF

2012). The evidence is presented in a format that can be viewed and interpreted at a District, Parish/Neighbourhood, Settlement and even a field-and-boundary level. The evidence is not only valuable for planning development growth, but also the creating, restoring and enhancing of biodiversity.

In this way the evidence provided in this report empowers communities to 'put the right habitat in the right place' to forward the aims and objectives in the Localism Act<sup>1</sup> (HMGovt, 2011), Natural Environment White Paper<sup>2</sup> (Defra, 2011), National Planning Policy Framework<sup>3</sup> (HMGovt, 2012), the emerging sub-regional Green Infrastructure Strategy<sup>4</sup> (CSWAPO, 2012), SDC Core Strategy and the SDC Green Infrastructure Study. The detail of these policy and strategic frameworks should be read in context with this study.

NPPF states: "If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused". It also suggests that "development proposals where the primary objective is to conserve or enhance biodiversity should be permitted"

This report is based on a methodology that can be repeated to monitor the ecological landscape using existing data. Therefore, it can be used to monitor decisions made through the SDC associated policies and other sub-regional influences. However, it is essential that the data used in this report is continually updated through the HBA and Wildlife Sites Project partnerships plus the species data from the Warwickshire Biological Record Centre (WBRC). It is also essential that this information is integrated into the planning process at the earliest opportunity.

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<sup>1</sup> [Localism Act](#) (2011)

<sup>2</sup> [Natural Environment White Paper](#) (2011)

<sup>3</sup> [National Planning Policy Framework](#) (2012)

<sup>4</sup> Sub-regional GI Strategy: Coventry, Solihull and Warwickshire Association of Planning Officers (CSWAPO) – in preparation

## GENERAL PRINCIPLES

This report has the following general principles:

- 1) It covers any development that has land-take. It does not distinguish between the type of development be it employment or residential.
- 2) It only covers direct impacts associated to spatial allocations of land-take. Off-site or associated works known as indirect impacts (e.g. off-site surface run-off, transport and utility routes) are not evaluated.
- 3) Species maps are 'alert maps' that indicate the potential for species to use relevant features within the shown area. These are based on known or previously recorded sighting of these species.
- 4) All development should apply the 'avoid, mitigate, compensate' hierarchy to understand the residual biodiversity loss. The generally accepted definitions are:

**Harm** – any impact, direct or indirect, that may have an adverse effect on a biodiversity interest.

**Avoid** – Ensuring that negative impacts do not occur as a result of planning decisions by, for example, locating development away from areas of ecological interest.

**Mitigate** – Measures to mitigate are ones taken which reduce negative impacts. Examples of mitigation measures include changes to project design, construction methods or the timing of work, enhancing or restoring other interests or areas on a site so its overall ecological value is retained or incorporating new biodiversity areas within the development proposals.

**Compensate** – Measures which are taken to make up for the loss or of, or permanent damage to, biodiversity. Where some harm to biodiversity is reduced through mitigation, compensation will represent the residual harm which cannot or may not be entirely mitigated. Compensation measures may be on or outside the development site.

- 5) All development should forward the aims of providing net gains contributing to the 'Making Space for Nature Report' (Lawton, 2010) that formed the government's 'Natural Environment White Paper'



(2011). Figure 1 gives an outline of this strategy under a slogan of “Bigger, Better and Connected”.

FIGURE 1 NATURAL ENVIRONMENT WHITE PAPER (2011)



## The Natural Choice: securing the value of nature

### Working at a 'landscape scale'

There is no single accepted definition of 'landscape scale'; rather, it is a term commonly used to refer to action that covers a large spatial scale, usually addressing a range of ecosystem processes, conservation objectives and land uses.

The 'right scale' might need to take account of the particular interest of those involved locally, aesthetic or cultural characteristics, natural features such as river catchment areas or particular habitats, or recognised areas such as the 159 National Character Areas.

Landscape scale conservation is characterised by the pursuit of multiple benefits across a defined area (e.g. water quality, biodiversity and access). The best examples also make links to wider economic and social priorities, where enhancing nature can provide benefits to the local economy and quality of life.

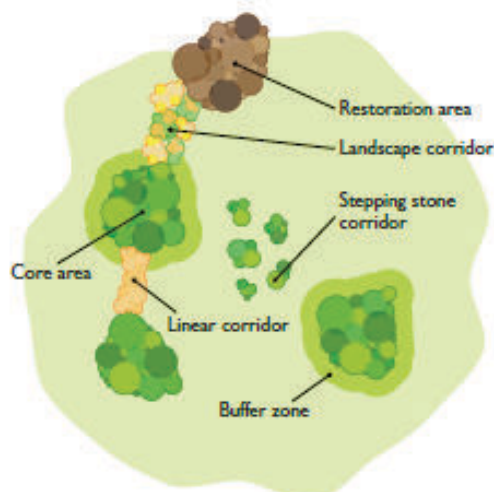
There are strong links between the landscape scale approach and an 'ecosystems approach', which encourages an integrated approach to land management, considering the costs and benefits of land use decisions, and pursuing those that minimise risks and maximise opportunities for people, for nature and for the economy.

**2.12 Making Space for Nature** set out a practical vision for addressing the fragmentation of our natural environment by restoring ecological networks across the country. The approach is based on five components, to be implemented at a landscape scale working with existing land uses and economic activities:

- **core areas of high nature conservation value** which contain rare or important habitats or ecosystem services. They include protected wildlife sites and other semi-natural areas of high ecological quality;
- **corridors and 'stepping stones'** enabling species to move between core areas. These can be made up of a number of small sites acting as 'stepping stones' or a mosaic of habitats that allows species to move and supports ecosystem functions;
- **restoration areas**, where strategies are put in place to create high-value areas (the 'core areas' of the future) so that ecological functions and wildlife can be restored;

- **buffer zones** that protect core areas, restoration areas and 'stepping stones' from adverse impacts in the wider environment; and
- **sustainable use areas**, focused on the sustainable use of natural resources and appropriate economic activities. Together with the maintenance of ecosystem services, they 'soften' the wider countryside, making it more permeable and less hostile to wildlife.

### The components of ecological networks



**2.13** A huge amount of work is already under way to restore nature at a landscape scale. The Wildlife Trusts' Living Landscapes, RSPB's Futurescapes, and the eight Integrated Biodiversity Delivery Area pilots are examples of this approach, as are many independent partnerships operating around the country. The England Biodiversity Group has drawn together the lessons learned from examples both in this country and overseas in the *ThinkBIG* report.<sup>22</sup> Published in tandem with this White Paper, *ThinkBIG* suggests ways in which local authorities, communities, businesses, landowners, farmers and government can help ecological restoration at a landscape scale.

## THE SERVICE VILLAGES SURVEY AREAS

### Geographical Context

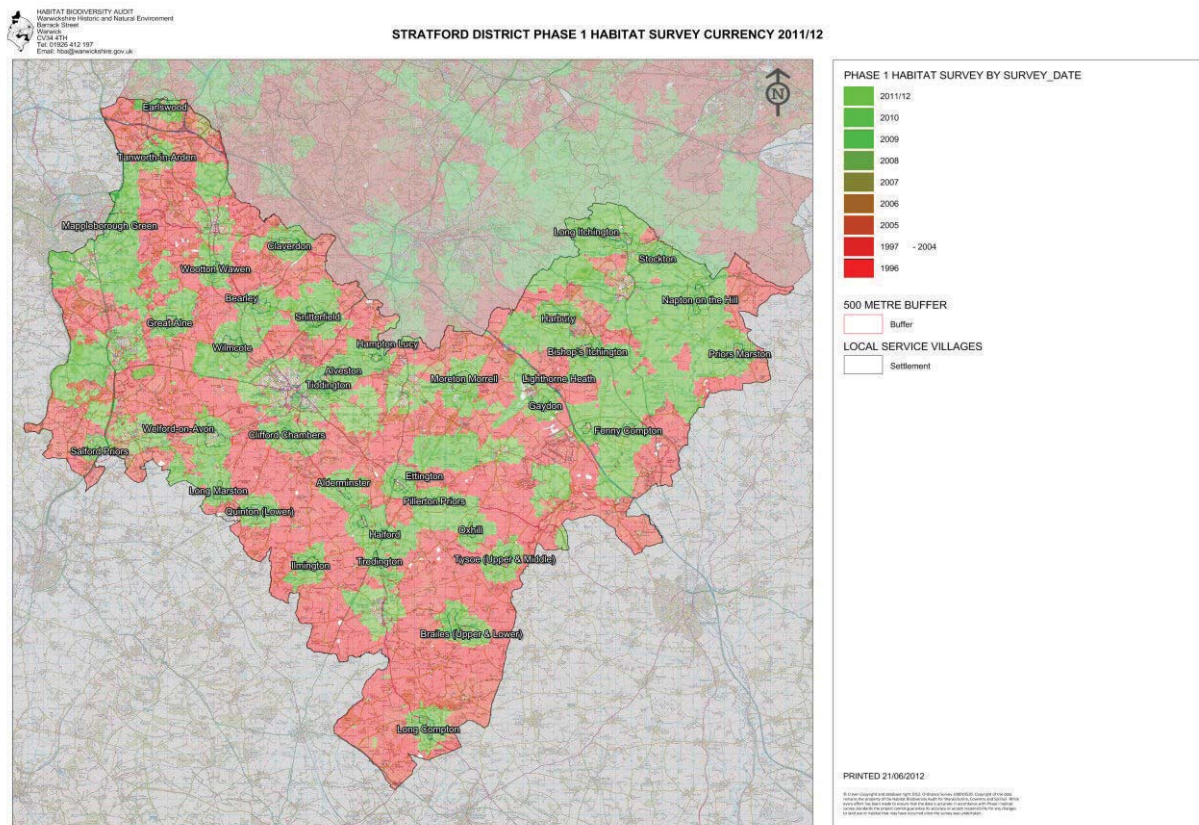
It was agreed with Stratford-on-Avon District Council that the extent of the survey around each service village should be within a radius of 500 metres from the geographical centre of each village. The settlements being:

Alderminster	Hampton Lucy	Pillerton Priors
Alveston	Harbury	Priors Marston
Bearley	Ilmington	Quinton (Lower)
Bishops Itchington	Lighthorne Heath	Salford Priors
Brailes (Upper & Lower)	Long Compton	Snitterfield
Claverdon	Long Itchington	Stockton
Clifford Chambers	Long Marston	Tanworth-in-Arden
Earlswood	Mappleborough-Green	Tiddington
Ettington	Moreton Morrell	Tredington
Fenny Compton	Napton-on-the-Hill	Tysoe (Upper & Middle)
Gaydon	Newbold-on-Stour	Welford-on-Avon
Great Alne	Northend	Wilmcote
Halford	Oxhill	Wootton Wawen

### Temporal Extent

The National Planning Policy Framework states “Each local planning authority should ensure that the Local Plan is based on adequate, up-to-date and relevant evidence”. It was agreed with SDC Officers that a 5 year currency value was the threshold for up-to-date data. Therefore, all habitats and boundaries within the geographic extent of each settlement that had not been surveyed within the last 4 years was to be re-surveyed.

**Figure 2 STRATFORD DISTRICT CURRENCY MAP**



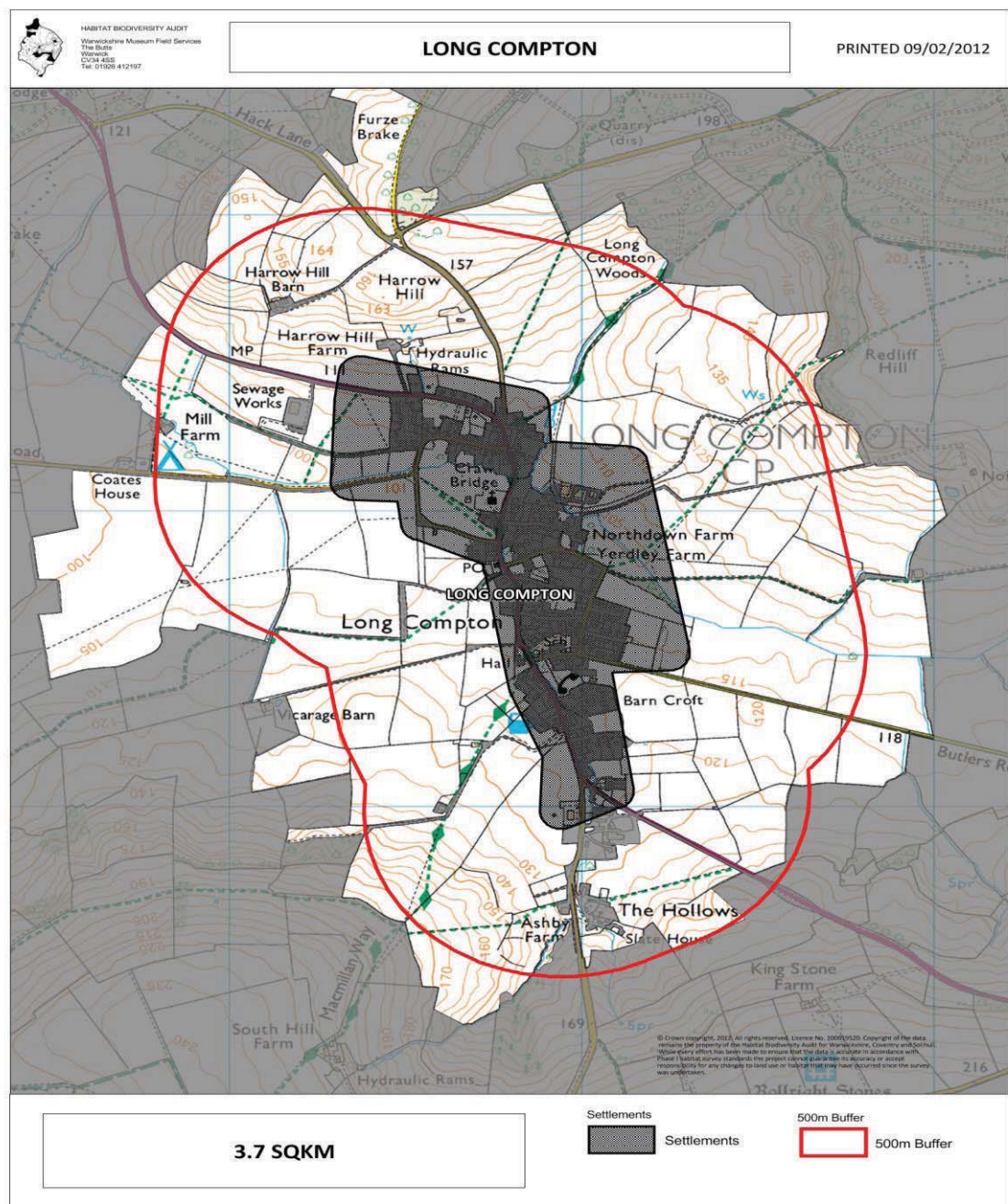


# METHODOLOGY

## Mapping Settlement Extent

The first stage of the study was to identify the study area boundaries for each settlement based on a 500 metre radius from the geographical centre of the settlement boundary. All site boundaries included within the 500 metre radius and boundaries intersected by the 500 metre buffer line were included in the survey.

Figure 3: SETTLEMENT SURVEY BOUNDARY



## Phase 1 Survey

In order to assess the habitats around the villages a detailed Phase 1 survey was undertaken. The Phase 1 survey is a national standard technique used for environmental audit as set out in the Handbook for Phase 1 habitat survey (JNCC, 2010). The habitats are mapped and coded as one of two geographical features – areas or polygons; and linear features. Areas include for example arable fields, ponds and stands of woodland. Linear features are generally field boundaries especially hedgerows.

The HBA uses a sub-set of Phase 1 categories which have been found useful in Warwickshire<sup>5</sup> (HBA, 2012). For example, category H (coastland) is omitted altogether for obvious reasons. Category A5 (Orchard) includes all orchards not just commercial as shown in the official Phase 1.

This survey was the first to incorporate the two new hedgerow categories; species rich and species rich with trees. Colour ranges for the HBA Phase 1 version have also been adapted for the Geographical Information System (GIS) digital maps.

For a list of the Phase 1 habitat types used for the Warwickshire sub-region please refer to Figure 1: HBA Phase 1 habitat key.

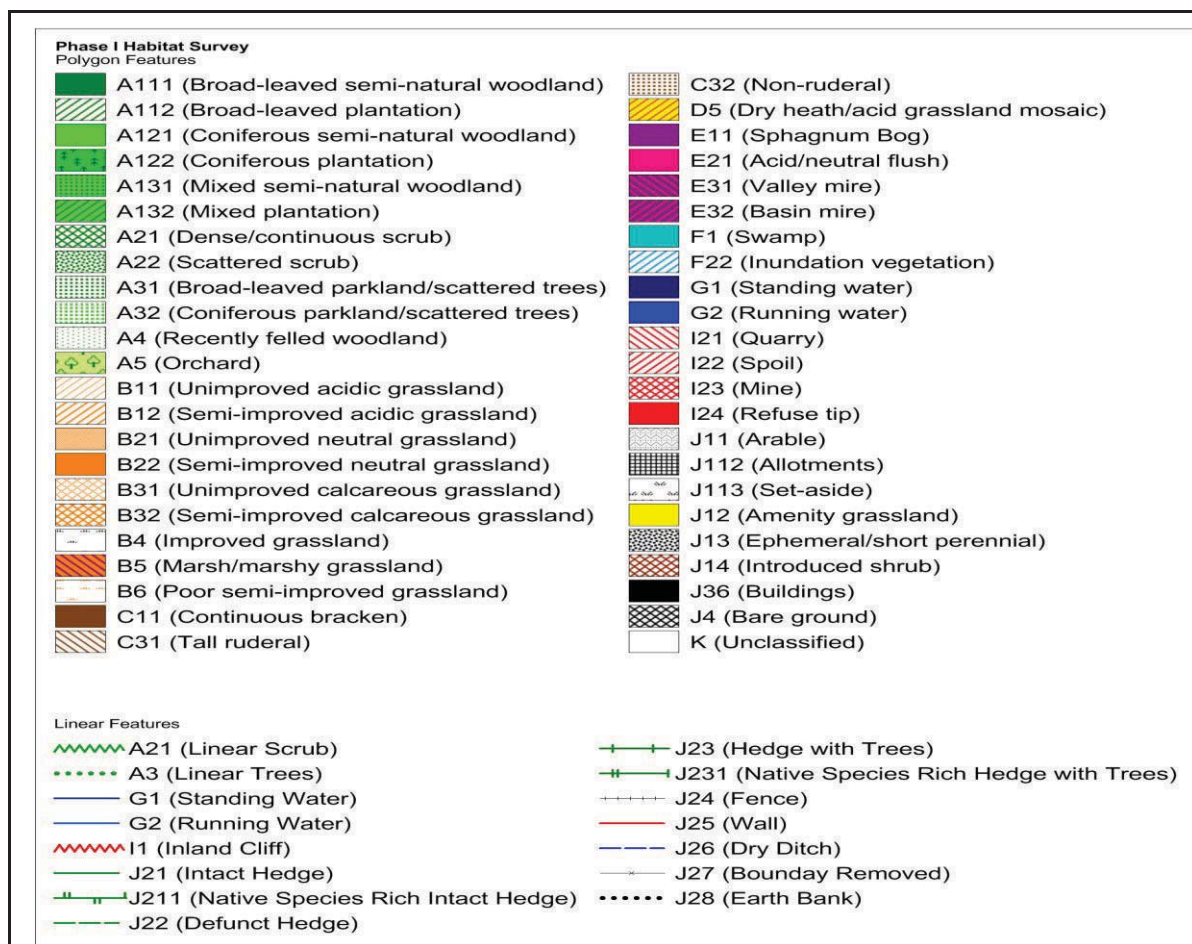
The field surveys were started at the end of March and completed by the beginning of June. As soon as the field surveys were completed they were returned to the HBA and digitized using MapInfo Professional GIS software.

Figure 1 shows the total extent of the survey area and the currency of the remaining Phase 1 survey for all of Stratford-on-Avon District.

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<sup>5</sup> See the Warwickshire, Coventry and Solihull HBA Habitats Guide for a complete description of Phase 1 survey adapted for Warwickshire.

**Figure 4: PHASE 1 HABITATS KEY**



## Phase 1 Target notes

Where areas are of particular interest they are targeted noted with a reference point and accompanying description. Target notes provide:

- Supplementary information on areas of interest including; species composition, structure and management
- Information on areas too small to map and on areas where habitat mapping is found to be difficult or doubtful (for example transitional or mixed habitats).
- Information on areas previously surveyed and requiring further survey.

It should be noted that although the Phase 1 is a rapid assessment of habitats and can be conducted throughout most of the year, the one group of habitats which can be difficult to determine in the spring are grasslands. Early to mid-summer are generally the best times to assess grasslands. Stratford District is noted for the extent of its grasslands and

in particular those associated with the Cotswold edge, calcareous grasslands.

The assessment of the grasslands in this study is based on the previous surveys and where possible over the 3 month period of the project reasonable grassland assessments were made. Target notes for particular grasslands will be noted with a recommendation for further survey during the summer.

### **Habitat Distinctiveness Scoring**

The distinctiveness scores have been derived from the UK National Ecosystem Assessment ((UK NEA, 2011) Appendix 1 distinctiveness categories. For this report this score is used to interpret areas of most ecologically or least ecologically sensitivity.

Each Phase 1 habitat type has been given a distinctiveness score ranging from; 3 - high distinctiveness, 2 – moderate distinctiveness and 1 - low distinctiveness. The scores have been adapted from the Defra Biodiversity Offsetting Technical Paper and associated documents<sup>6</sup>. The Defra scores are interpreted as those that best match the HBA Phase 1 habitat scheme as applied to Warwickshire.

High distinctiveness scores equate to Biodiversity Action Plan (BAP) habitats. They can be divided into three main categories; semi-improved woodlands and species rich hedgerows; semi-improved and unimproved grasslands and wetland habitats.

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.

Low distinctiveness score are areas of low biodiversity interest.

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<sup>6</sup> Biodiversity Offsetting: Coventry, Solihull and Warwickshire is one of the 6 national pilots that is testing the Offsetting metrics system between 2012 -2014. It is anticipated that the sub-regional pilot is to be delivered through the Sub-regional GI Strategy.



# Settlement Ecological & Geological Assessment

## Phase 1 Habitat Survey & Target Notes

The settlement Phase 1 habitat surveys identified 33 out of a possible 46 habitat types giving a total of 6,085 areas, covering 10,654 hectares.

Figures 5 & 6 Number of Sites by Habitat and Area by Habitat below illustrate the number of sites by habitat and the coverage in hectares to the log of base 10.

Figure 5 Number of Sites by Habitat illustrates the wide value ranges with 1,744 areas identified as improved grassland (B4) representing 29 percent of all sites, down to individual areas such as quarries (I21) and unimproved neutral grassland (B21).

The second largest number of habitats identified was amenity grassland (J22) with 844 areas or 14 percent of all areas, The number of areas identified as amenity grassland includes all mown road verges, sports grounds, village greens and schools with play areas.

Figure 6 shows the habitats by coverage in hectares with large arable fields (J11) covering 4,760 hectares or almost 44 percent of the total, followed by improved grassland (B4) with 3,802 hectares or 36 percent of total coverage. The combined total of arable and improved grassland makes up 80 percent of total land use illustrating the intensive nature of farming around the settlements.

Poor semi-improved grassland (B6) has 481 hectares or 4.5 percent of total area and is closely followed by amenity grassland (J12) with 465 hectares, 4 percent of total area.

The semi-improved grasslands (B12, B21, B22, B31, B32), which have the greater diversity of plant and animal species covers a total of 263 hectares or 2.5 percent of total area.

Figure 7 is an example of the Phase 1 habitat map for each settlement, Long Compton, showing the habitat categories for both the areas (polygons) and linear features which include field boundaries and water courses.

Figure 8 shows an example of the Target notes point reference with an accompanying unique reference number which refers to the accompanying target note describing a habitat feature including common



plant species, condition of the site and any other information that may be of use in understanding the habitat and its condition at this location.

**Figure 5: NUMBER OF SITES BY HABITAT**

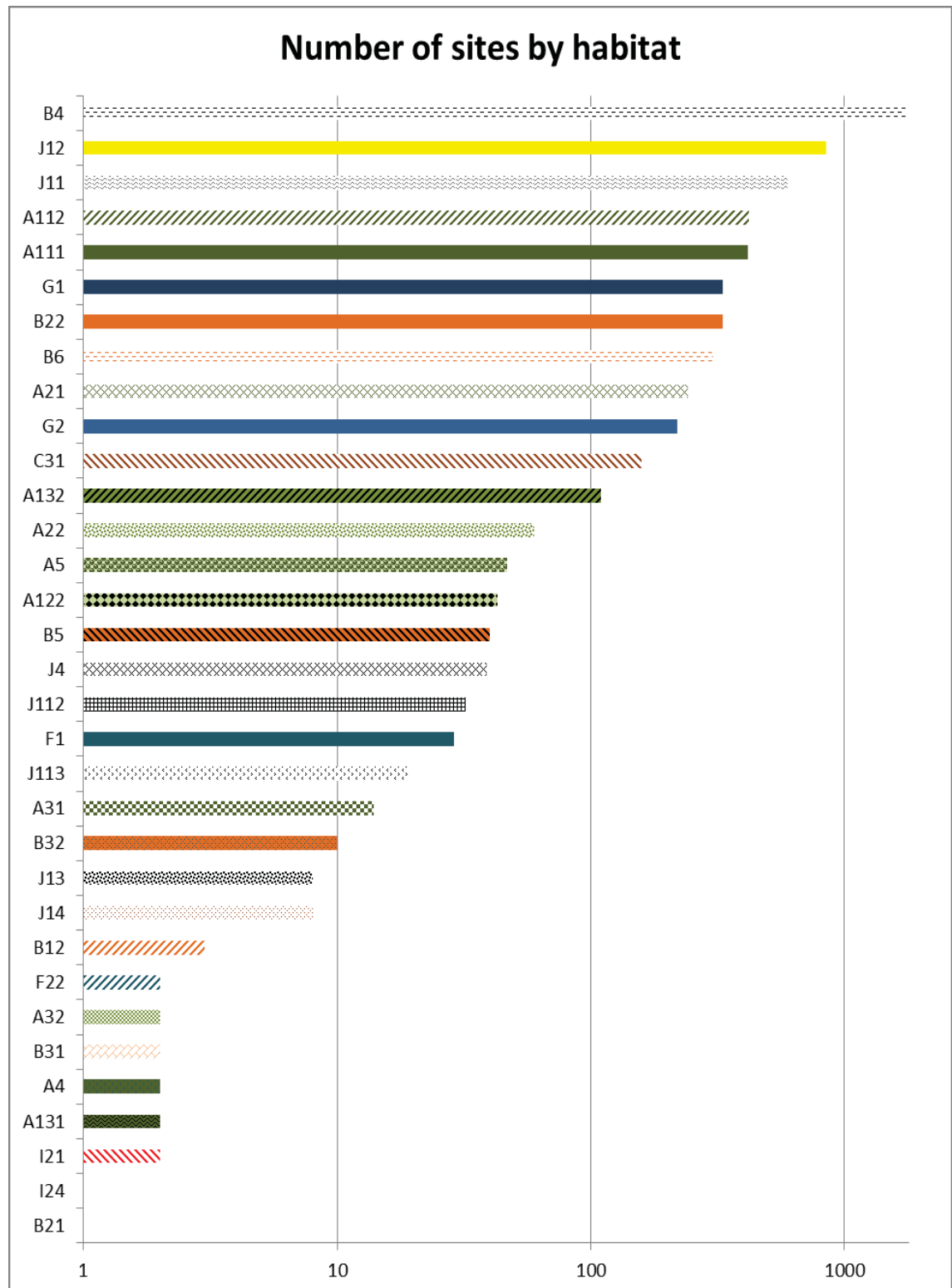


Figure 6: AREA BY HABITAT

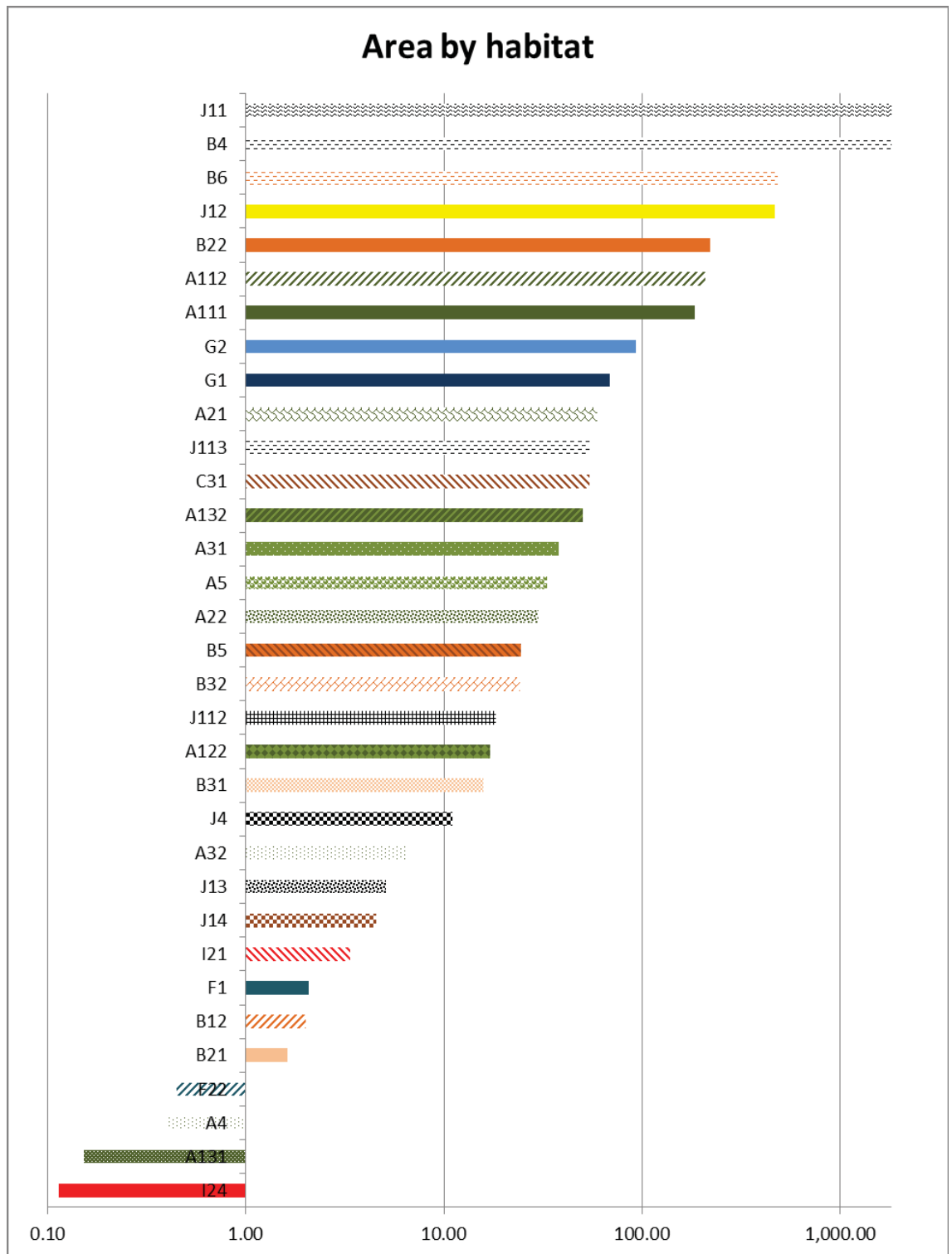


Figure 7: PHASE 1 HABITATS MAP

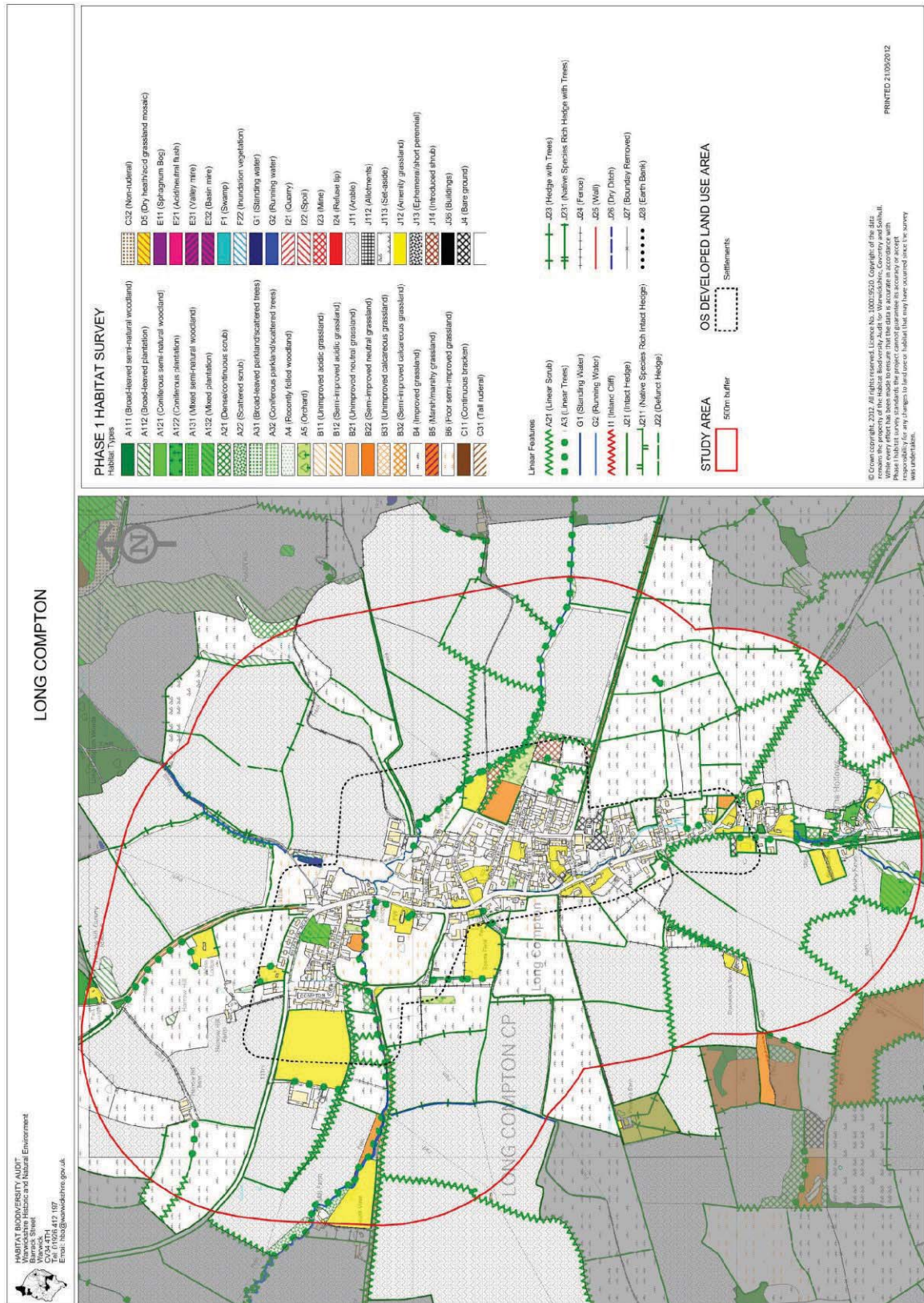
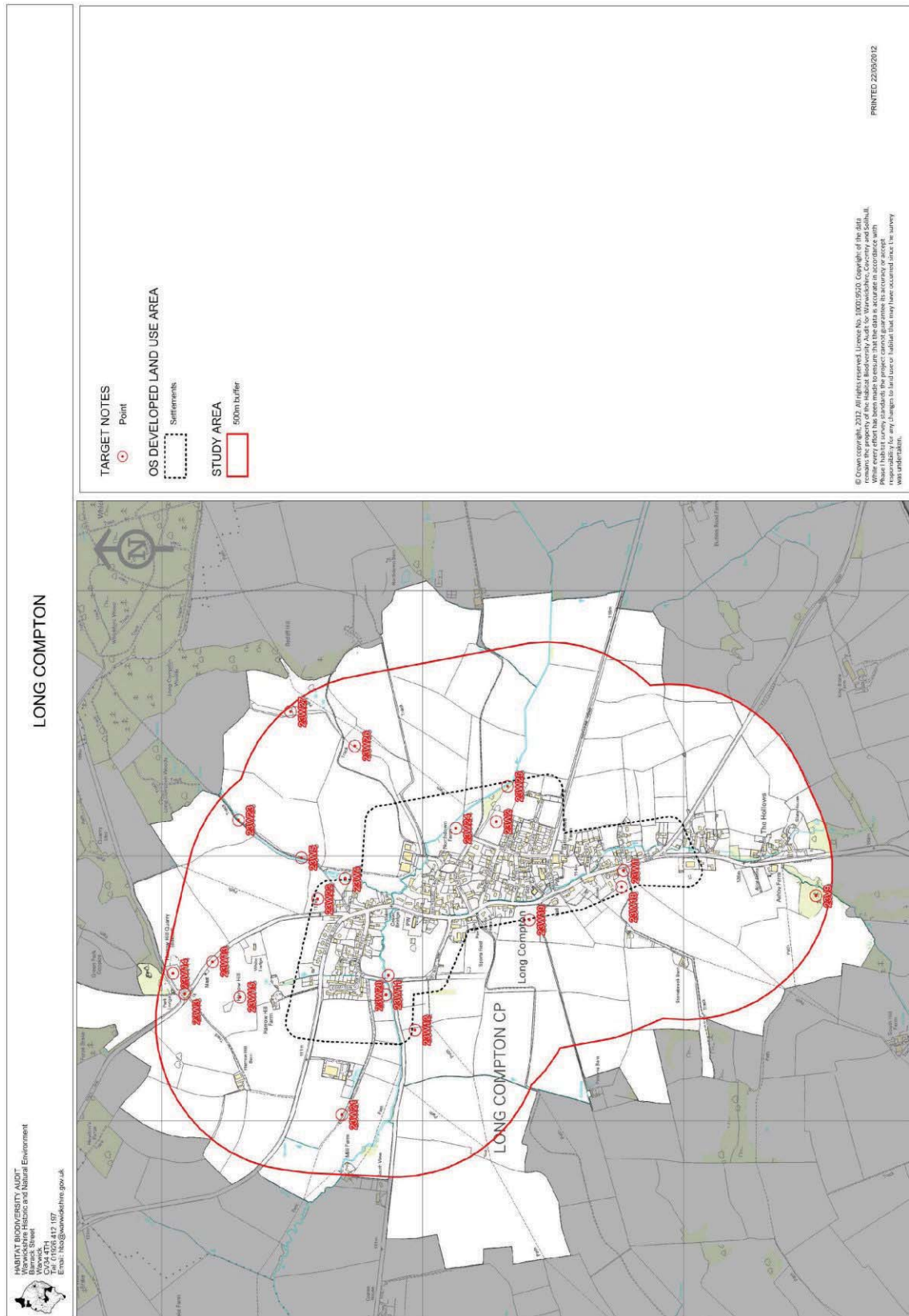




Figure 8: PHASE 1 TARGET NOTES



## Designated Sites

### Sites of Special Scientific Interest (SSSI)

Sites of Special Scientific Interest (SSSIs) are statutory designations notified under section 28 of the Wildlife and Countryside Act 1981.

Seven SSSIs were identified in the settlement areas including:

- Copmill Hill - Wilmcote
- Harbury Quarries – Bishop’s Itchington
- Harbury Railway Cutting – Harbury
- Napton Hill Quarry – Napton-on-the-Hill
- River Blythe – Earlswood
- Snitterfield and Bearley Bushes – Bearley
- Stockton Railway Cutting and Quarry – Stockton

### Ancient Woodland

Ancient woodland sites are where the land has been woodland continuously since accurate mapping began around the 1600s. Natural England’s Ancient Woodland inventory is the source for the ancient woodland areas shown on the map.

Eight areas of ancient woodland were found within the study areas including the Snitterfield and Bearley Bushes SSSI.

### Local Sites

Local Sites by definition are a network of defined areas that are selected and designated locally for their wildlife or geological importance. Together they form a network of our most valuable urban and rural areas for the natural environment. Local Sites are complimentary to statutory sites such as Sites of Special Scientific Interest (SSSI), and are afforded protection through the planning system, helping them to fulfill a crucial role in protecting our natural environment (Defra 2009)<sup>7</sup>.

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<sup>7</sup> Local Sites – Guidance on their identification, selection and management



- Local Wildlife Sites

The HBA manages the Wildlife Sites Project for the Warwickshire sub-region, which includes the identification, surveying and monitoring of designated sites (HBA/WSP 2011)<sup>8</sup>. The Phase 1 survey is used to check the current condition of existing local wildlife sites and to identify potential Local Wildlife Sites.

The settlement study found:

- 9 existing Local Wildlife Sites
- 93 potential Local Wildlife Sites
- 6 rejected sites
- 1 destroyed site

Local Wildlife Sites surveys were not included in the scope of this project, but the results of the study have been used to update the Local Wildlife Sites mapping database using the results of the Phase 1 surveying.

- Local Geological Sites

Five Local Geological Sites (LGS) were identified within the settlement boundaries including:

- Ettington Road Cutting, Ettington
- The Humpty Dumpty Field, Ilmington
- Weston Park Lodge Quarry, Long Compton
- Napton Hill Sandstone Doggers, Napton-on-the-Hill
- Burton Dassett Hills, Northend

### Local Nature Reserves (LNR)

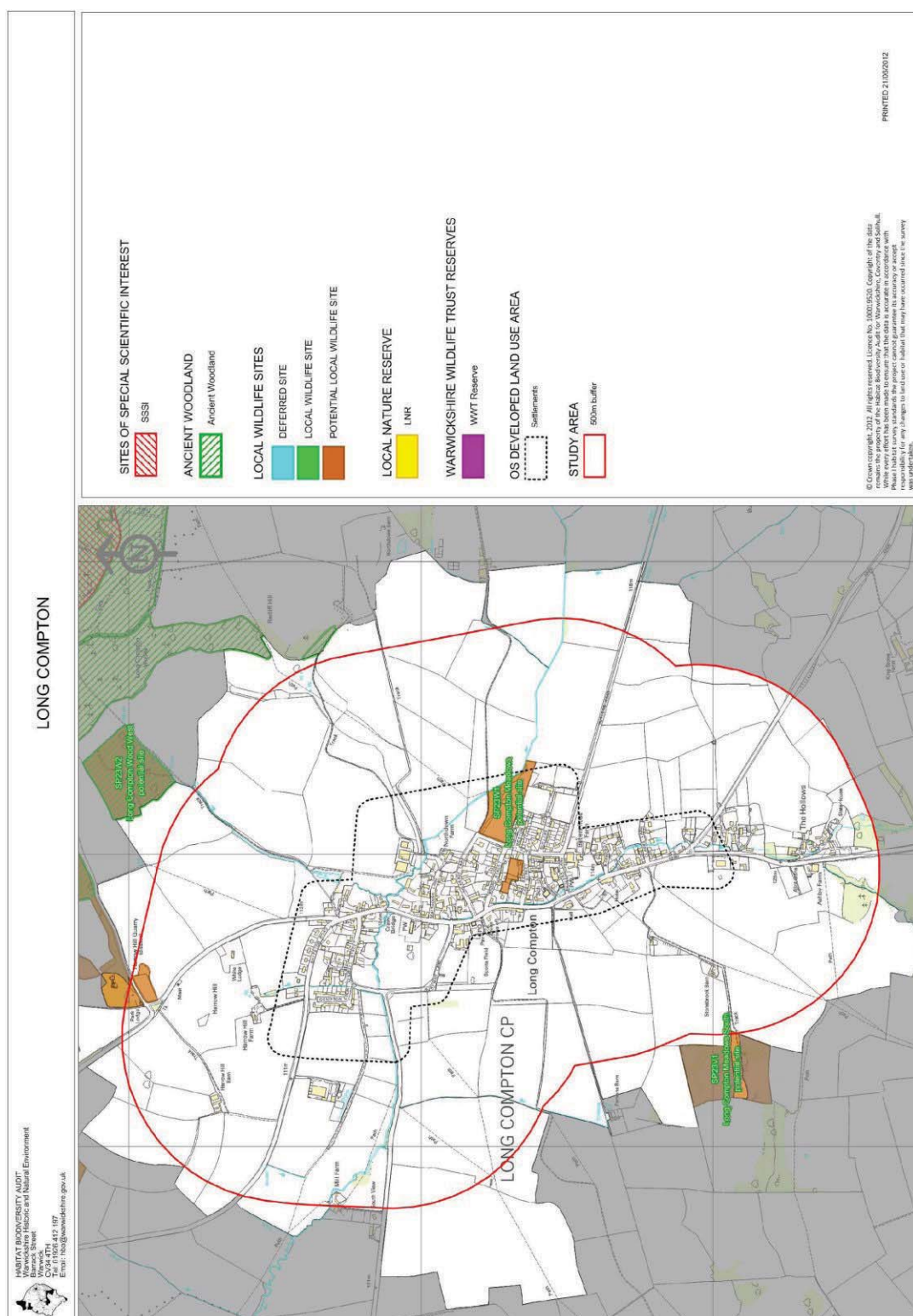
Local Nature Reserves (LNRs) are declared by local authorities under section 21 of the National Parks and Access to the Countryside Act

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<sup>8</sup> The Green Book – Guidance for the selection of Local Wildlife Sites in Warwickshire

1949. No Local Nature Reserves were within, or were intersected by the 500 metre settlement study boundary line.

### Figure 9: DESIGNATED SITES



## A. Habitat Distinctiveness Map

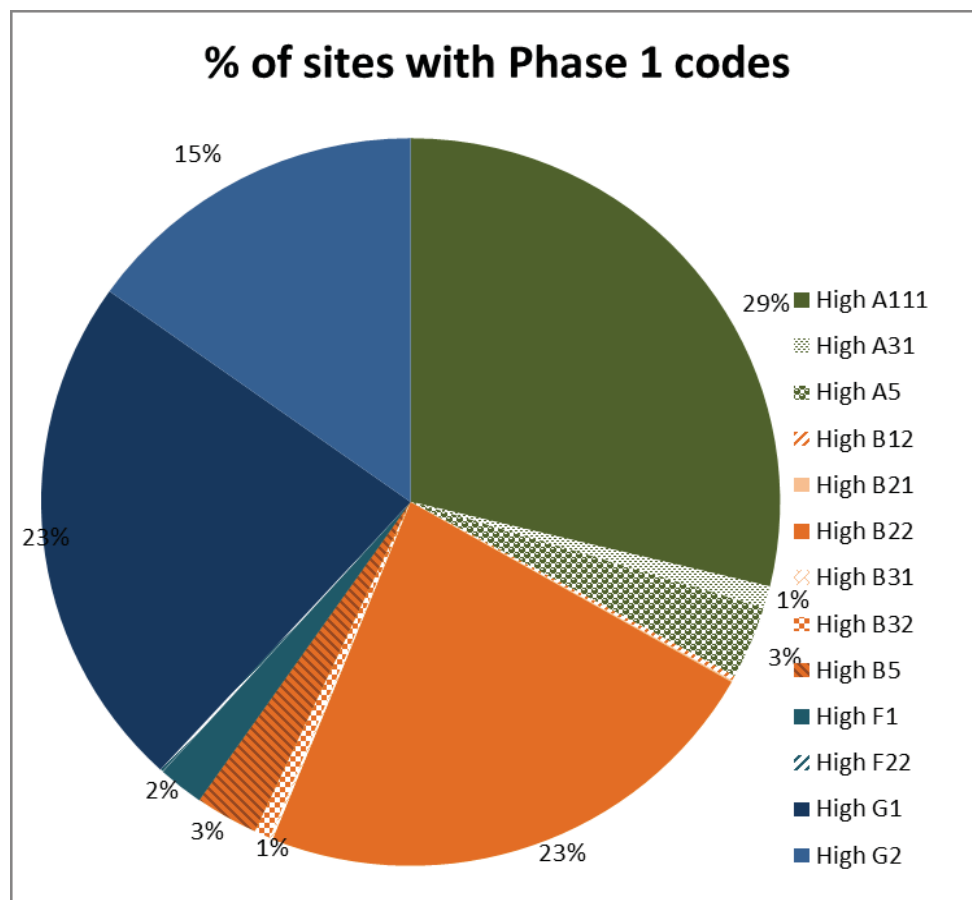
- High Distinctiveness

From the Phase 1 survey 15 habitat types were identified as having a high distinctiveness score of 3. In total 1,506 areas were classified as having a high distinctiveness covering a total of 747 hectares (7 per cent of total area surveyed).

The high distinctiveness habitats break down into three main categories; woodlands, including all the semi-natural deciduous woodland (A111) orchards (A5) and parklands (A31) with a combined percentage of 33 percent; the second category are the unimproved and semi-improved grasslands (B12 to B5) with 27 percent; and the third category are the wetland land habitats - including rivers and ponds (F1, F22, G1, G2) with 40 percent.

In addition to the habitat area distinctiveness two linear features, J211 Species rich hedgerows and J23 Species rich hedgerow with trees were given high distinctiveness scores.

**Figure 10: HIGH DISTINCTIVENESS**



- Moderate Distinctiveness

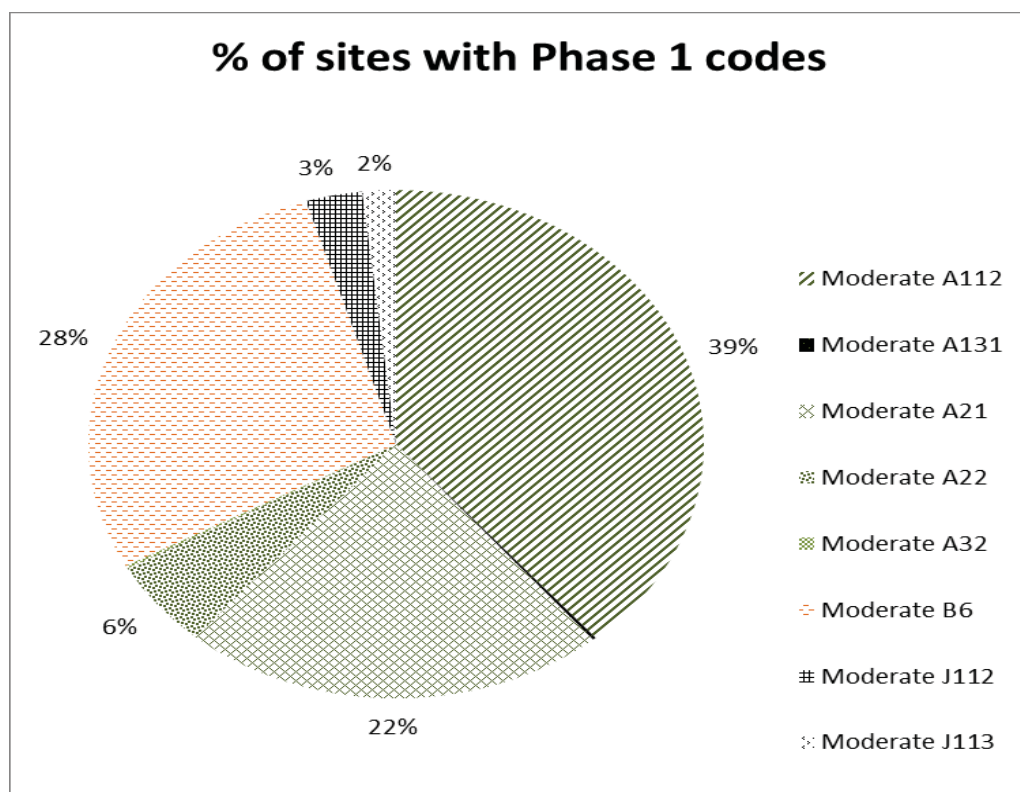
Moderate habitats are classified as indeterminate habitats, which can either be in transition from high to low distinctiveness, for example poor-semi improved grasslands which may, with suitable management, such as less intensive grazing, become semi-improved grassland with high distinctiveness or become improved grassland with low distinctiveness through over grazing or use of herbicides for. Mixed woodland or scrub woodland with proper management could improve into becoming semi-improved woodland with a high distinctiveness.

8 Phase 1 habitats came under this heading with a total of 1,759 sites identified covering 1,229 hectares (12 % of total area surveyed).

The Phase 1 category with the highest percentage moderate distinctiveness is mixed semi-natural woodland (A131), followed by poor semi-improved grassland (B6) with 28 per cent and dense continuous scrub (A21) with 22 percent.

For the linear features linear scrub (A21), Intact hedge (J21), linear trees (A3) and hedge with trees (J23) were given moderate scores.

**Figure 11: MODERATE DISTINCTIVENESS**



- Low Distinctiveness

The final category and by far the largest in terms of hectares and number of sites recorded is the low diversity score 1. In total 10 Phase 1 habitat were classified as being of low distinctiveness, which included 2,820 sites covering 8,678 hectares (81 per cent of total area surveyed).

Agricultural land including arable (J11) and improved grassland (B4), together accounted for 66 per cent low distinctiveness. Amenity grassland (J12) including sports fields and community areas accounted for 24 per cent. The remainder of the low distinctiveness sites includes spoiled ground, such as industrial sites, poor scrub and bare ground.

Linear features with low distinctiveness scores include defunct hedges (J22), fences (J24) and walls (J25).

**Figure 12: LOW DISTINCTIVENESS**

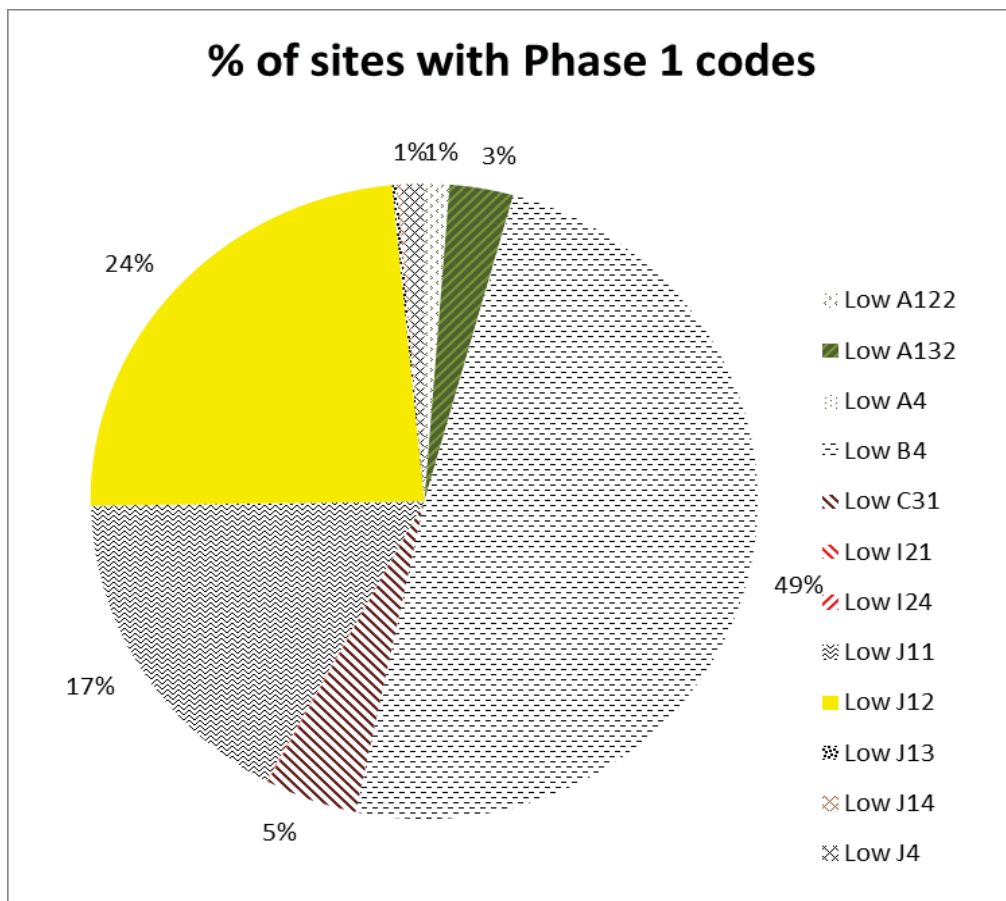
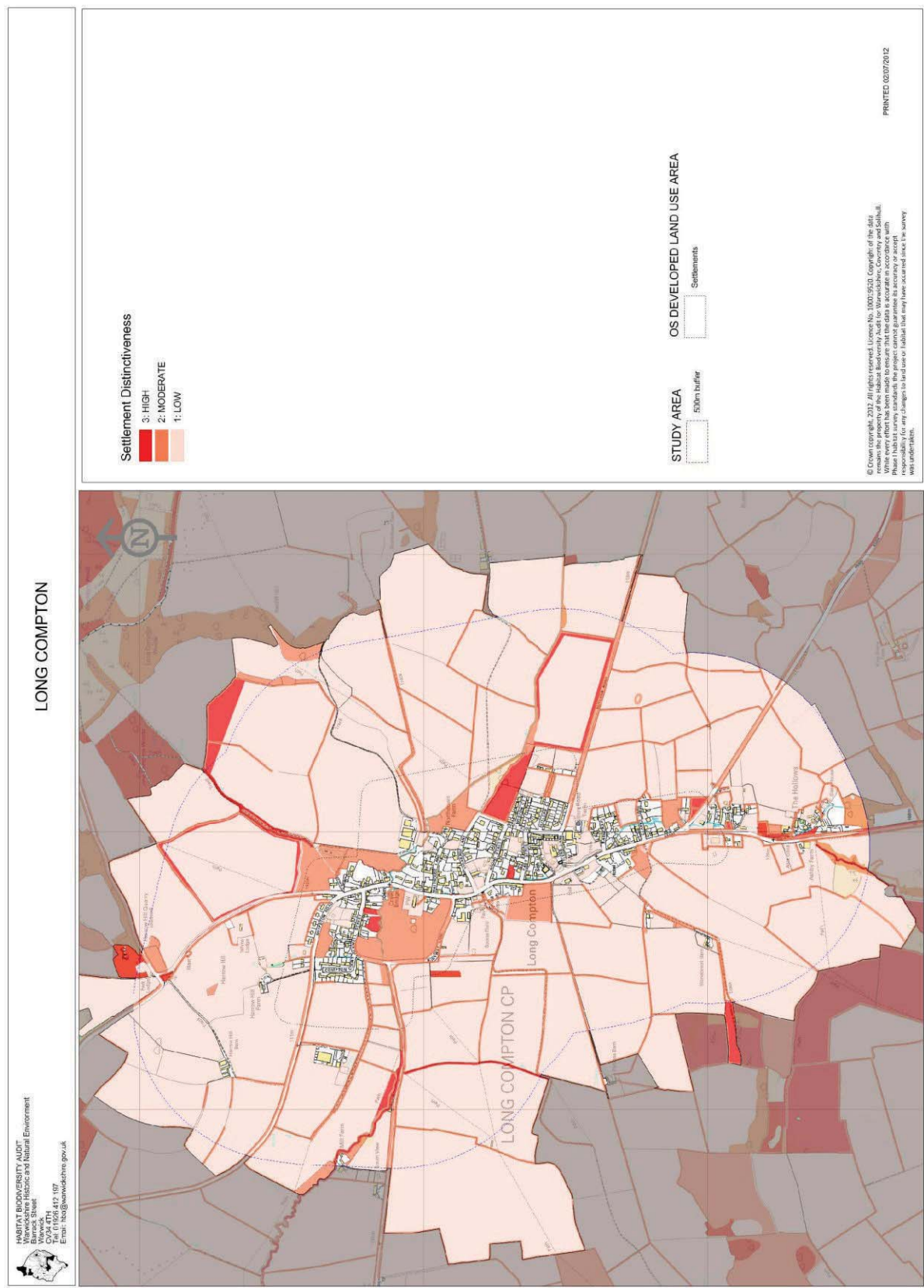




Figure 13: DISTINCTIVENESS MAP



## Geological Information

Geological Information has been provided using records from the online British Geological Survey public resource and data within the WCC Geological Localities Record Centre (GLRC)<sup>9</sup>. These records have been used with local knowledge to provide spatial interpretation for each settlement area. Geological SSSIs and Local Geological Sites have been covered in the previous Designated Sites section.

## Protected Species

The species map shows the recorded occurrence of important species for each settlement. The map is divided into three categories of species buffer zones including;

- 1 kilometer buffer zone for all species of bats
- A combined buffer zone for great crested newt, adder, grass snake or slow worm
- A combined buffer zone for water vole and white-clawed crayfish
- Individual species records for Black Poplar, Veteran Trees, and Rare Plants etc.

## Species Information

Species information is based on existing records within the Warwickshire Biological Record Centre<sup>10</sup> (WBRC). For this report EU and UK protected species, UK Biodiversity Action Plan, local Biodiversity Action Plan 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 settlement area.

This interpretation is based on data and information available at the time of preparing this report. Future detailed surveys and assessments may

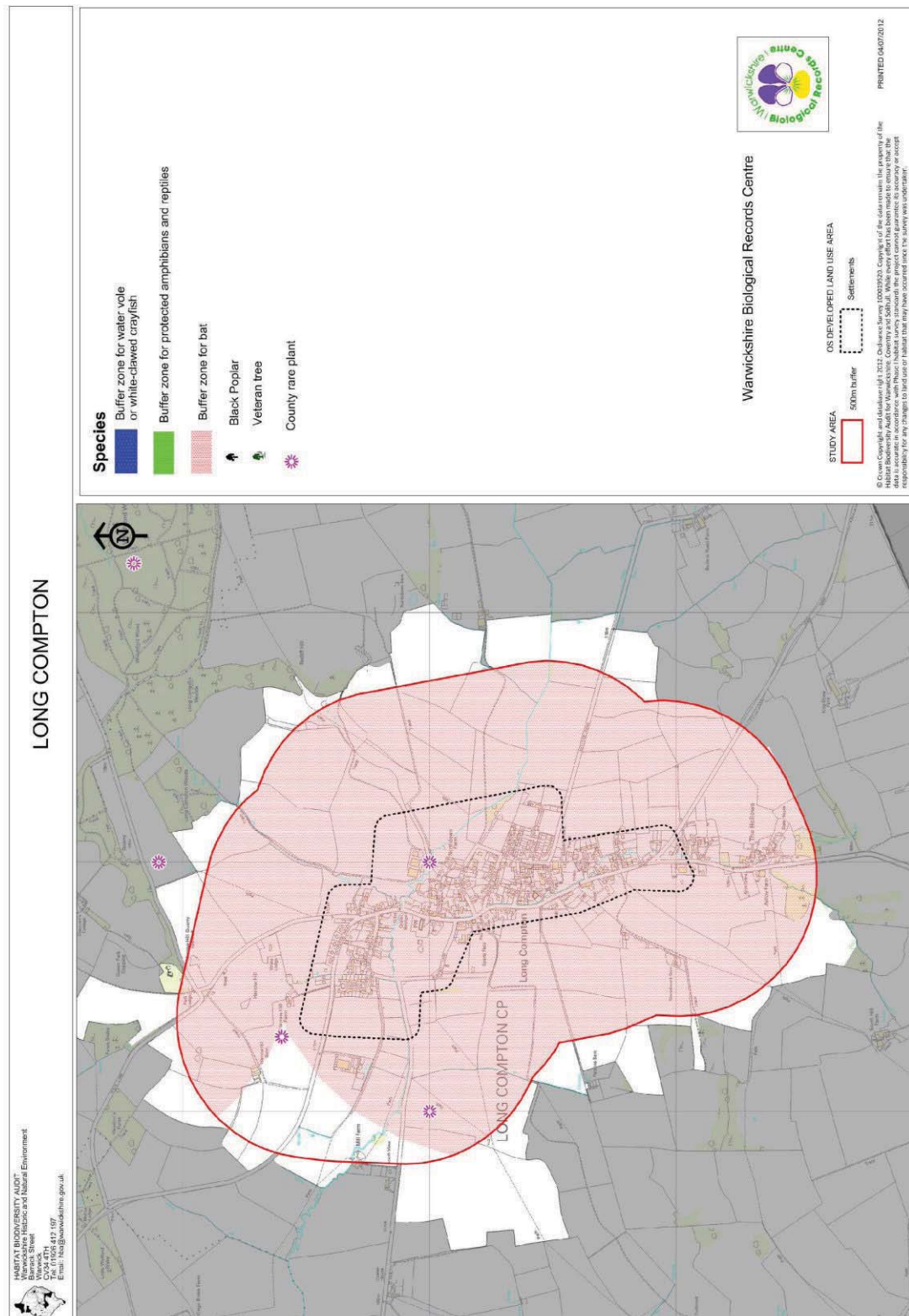
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<sup>9</sup> GLRC was established in the early 1990s as a repository for local data and information as part of the National Scheme for Geological Site Documentation.

<sup>10</sup> Warwickshire Biological Record Centre (WBRC) is the only repository of Ecological Data. It established in 1974 and holds over 3 million species records covering the majority of the taxonomic groups.

be necessary to determine current presence of any species and their population as part of any development.

**Figure 14: SPECIES MAP**



## **Landscape Ecology Connectivity**

Nature conservation is not restricted to sites. Features such as hedgerows play a vital role in connecting sites together, to ensure genetic exchange between populations (Habitats Directive 2010).

This study has acquired the technical services from the University of York to calculate connectivity using a scientific model (Molien & Neiminen, 2002). The model measures the distance between suitable habitats using a set dispersal distance of a study species. In this study patches included both polygons of Phase I cover types and hedgerows recorded as linear features in the Phase I survey data. Values of zero were used for the areas of unsuitable habitat and a value of one for suitable habitat.

In this study two dispersal distances of 500m and 1000m were employed. These two dispersal distances were applied to 3 groupings of broad habitat types:

- Woodland
- Grassland
- Ponds

These results have been illustrated in 6 connectivity maps.

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 16 illustrates woodland connectivity where, in this example only woodlands and hedgerows with a high to moderate distinctiveness value were used in the model. Plantations and coniferous woods with low distinctiveness score are not included. The same methodology has been applied to grasslands and ponds.

This methodology has been produced for specifically for this study and will be used as a basis within the Warwickshire, Coventry and Solihull Green Infrastructure Strategy. The categorisation and grouping of suitable habitat will be discussed during the strategy consultation period (2012). Therefore, future repeats of the mapping associated to this study



**Figure 15: WOODLAND CONNECTIVITY**





## CONCLUSIONS

The findings of this report have been expressed in a series of maps for each settlement. These have been supplied in individual 'layered pdf' maps. An instruction guide on how to use these files has been provided. These maps include:

- Study Area
- Phase 1
- Habitat Distinctiveness
- Local Sites (Geological and Wildlife)
- Connectivity

To complement these maps are a series of files for reference. These include individual maps and settlement associated target notes.

Each settlement also has a Settlement Profile providing data and information on the settlement to add context to the maps. The profile headings are:

- Designated Sites
- Key Target Notes
- Habitat Description
- Distinctiveness Phase 1 Habitats (table)
- Percentage Distinctiveness within settlement (pie chart)
- Geological Description
- Protected Species
- Recommendations for Further Survey

The findings have been presented in this manner to enable each settlement to consider where appropriate levels of growth could be placed. This evidence should be beneficial to all interested stakeholders.

### Distinctiveness Rankings

However, a guide to potential development that each settlement could absorb is to rank the habitat distinctiveness based on either the number of areas surveyed or the area in hectares. Figure 13 shows the settlements ranked by low distinctiveness as a percentage of area. Quinton is at the top of the low distinctiveness ranking because it has a total of 122 habitat areas covering a total of 316.44 hectares of which 95 (78 percent) are of low distinctiveness, covering 308.85 hectares (98 percent).

This can be compared to the average low distinctiveness for all the settlements. Where there are on average 156 habitat areas covering 273

hectares, of which 92 are low distinctiveness covering 233 hectares. In percentage terms this represents 59 percent of habitat areas and 85 percent of area in hectares respectively.

Based on the Percentage ranking by area, Quinton can be said to be 14 percentage points above average<sup>11</sup>. At the opposite end of the scale Lighthorne Heath has the lowest percentage ranking for low distinctiveness with 52.25 percent with 39 percentage points below the average.

Alveston and Snitterfield best conform to the average for low distinctiveness. The variation of each settlement in the rankings can be determined by looking at each settlement profile.

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<sup>11</sup> The Index is calculated by dividing the percentage of low distinctiveness by the total percentage and multiplied by 100. Any number above or below base 100 is a percentage point

FIGURE 16 SETTLEMENTS RANKED BY LOW DISTINCTIVENESS

Settlements	All habitats	All areas	Habitats	% Habitats	Areas	% Areas	Index
Quinton (Lower)	122	316.44	95	77.87	308.85	97.60	114
Long Marston	129	227.68	73	56.59	212.42	93.30	109
Clifford Chambers	130	211.98	92	70.77	197.44	93.14	109
Gaydon	77	276.80	43	55.84	256.89	92.81	109
Napton on the Hill	250	347.37	167	66.80	319.68	92.03	108
Long Compton	209	349.69	129	61.72	321.75	92.01	108
Tredington	125	290.89	67	53.60	267.18	91.85	108
Tysoe (Upper & Middle)	128	284.17	91	71.09	260.58	91.70	107
Fenny Compton	109	244.39	82	75.23	223.68	91.52	106
Alderminster	123	297.93	70	56.91	269.25	90.38	106
Tanworth-in-Arden	204	223.52	105	51.47	200.69	89.79	105
Long Itchington	181	305.11	95	52.49	272.06	89.17	105
Ettington	180	275.18	97	53.89	242.88	88.26	104
Claverdon	227	311.33	160	70.48	274.29	88.10	103
Harbury	182	303.05	133	73.08	266.90	88.07	103
Halford	129	200.70	59	45.74	176.23	87.81	103
Pillerton Priors	109	230.13	81	74.31	199.40	86.65	102
Priors Marston	171	312.83	70	40.94	270.96	86.62	102
Tiddington	183	314.34	121	66.12	270.99	86.21	101
Bearley	125	305.96	72	57.60	263.66	86.17	101
Alveston	126	243.90	79	62.70	207.87	85.23	100
Snitterfield	203	421.27	124	61.08	359.01	85.22	100
Bishop's Itchington	146	249.18	88	60.27	208.88	83.83	98
Moreton Morrell	160	246.31	95	59.38	206.17	83.70	98
Great Alne	152	300.53	92	60.53	250.01	83.19	98
Newbold-on-Stour	103	236.17	48	46.60	195.22	82.66	97
Wilmcote	205	346.92	110	53.66	284.24	81.93	96
Oxhill	127	237.40	71	55.91	192.98	81.29	95
Ilmington	157	246.06	89	56.69	198.67	80.74	95
Stockton	121	262.28	69	57.02	211.23	80.54	94
Welford-on-Avon	232	395.16	137	59.05	317.12	80.25	94
Salford Priors	97	134.66	57	58.76	106.51	79.10	94
Earlswood	243	236.40	129	53.09	185.99	78.68	92
Brailes (Upper & Lower)	304	523.68	163	53.62	411.41	78.56	92
Mappleborough Green	188	237.24	129	68.62	182.58	76.96	90
Northend	84	189.35	30	35.71	143.33	75.69	89
Hampton Lucy	95	216.95	46	48.42	161.03	74.22	87
Wootton Wawen	137	190.83	67	48.91	127.93	67.04	79
Lighthorne Heath	112	110.24	47	41.96	57.60	52.25	61
TOTALS	6,085	10,654	3,572	58.70	9,083.57	85.26	
AVERAGES	156	273	92		233		

## Mitigation and Compensation

The Distinctiveness and Connectivity maps provide value evidence for promoting any mitigation and compensation for future development. They should be used to advise on layout designs of the development and where “offsetting” opportunities exist to promote the local and government objectives outlined in Figure 1. More information will be provided in the emerging Sub-regional Green Infrastructure Strategy and SDC Green Infrastructure Strategy. The Association of Local Government Ecologists (ALGE) and the Planning Portal have launched a web-based toolkit to advise applicants on ecological considerations<sup>12</sup>. At the time of writing this site is still in development, but is valuable to all forms of residential and commercial development.

The Sub-regional Planning Authorities are piloting ‘Biodiversity Offsetting’ in partnership with Defra and Natural England. This is described as “conservation activities designed to deliver biodiversity benefits in compensation for losses, in a measurable way. We [Defra] think that biodiversity offsetting has the potential to deliver planning policy requirements for compensation for biodiversity loss in a more effective way” (Defra, 2011).

The proposed biodiversity recommendations of the Sub-regional Green Infrastructure Strategy are:

Recommendation 1: To fulfill two priorities for each of the woodland, grassland and wetland habitat categories:

Priority 1) - Connect together individual sub-regional GI Biodiversity assets within their core areas to form large functional clusters.

Priority 2) – Connect the Core Areas together [where Priority 1 has been achieved].

Recommendation 2: 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.

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

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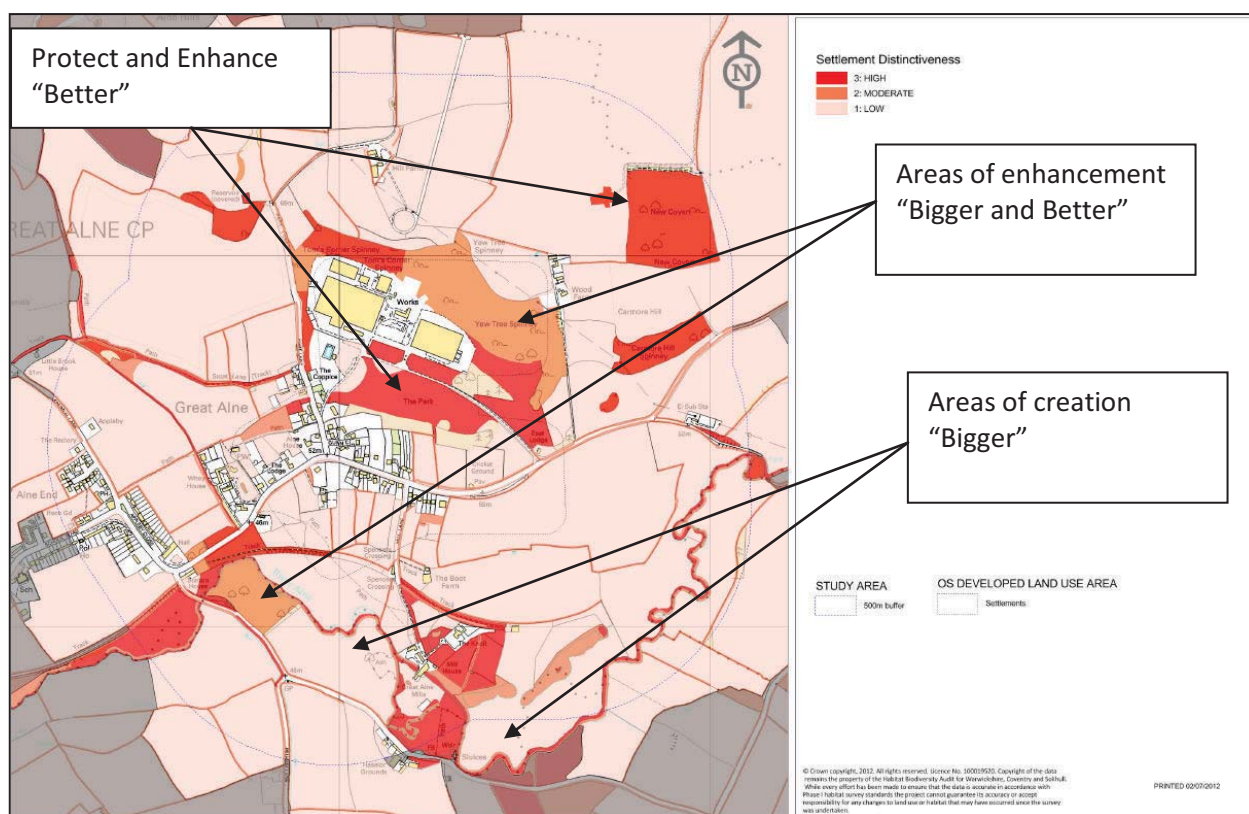
<sup>12</sup> [Biodiversity Planning Toolkit](#)

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 areas High and Moderate Distinctiveness areas together.

Figures 17 and 18 give examples of these aims of "Bigger, Better and Connected" (Lawton, 2011). Figure 18 only represents opportunities for woodland habitats, but the principles are the same for grassland and wetland habitat types.

**FIGURE 17 EXAMPLES OF "BIGGER AND BETTER"**



The Distinctiveness Maps and Connectivity maps are available to SDC 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.



**Woodland 1km Connectivity**

- HIGH: 2,000,000 to 20,000,000
- 500,000 to 2,000,000
- 100,000 to 500,000
- 50,000 to 100,000
- LOW: 1 to 50,000
- NO CONNECTIVITY 0 to 0

**STUDY AREA**  
500m buffer

**OS DEVELOPED LAND USE AREA**  
Settlements

**Areas of creation or enhancement "Connected"**

**Areas of enhancement "Better"**

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PRINTED 02/07/2012

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