Harborough District Council

Phase 1 Habitat Survey

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EXECUTIVE SUMMARY

Harborough District Council (HDC) is preparing a Local Development Framework (LDF) to replace the existing Harborough Local Plan. As part of this process, WYG Environment has been commissioned by HDC to undertake an ecological assessment of a number of potential development sites around Market Harborough, Lutterworth, Broughton Astley and the Leicester urban fringe area.

The assessment areas (AAs) were provided by HDC and are sites which have been submitted to the Council as part of the Strategic Housing Land Availability Assessment (SHLAA). These sites have been remotely assessed using aerial photographs supplied by HDC. Records of protected species and habitats within 2km of the potential development areas were obtained from the Local Records Centre, and from nationally available resources such as the Multi Agency Geographic Information for the Countryside (MAGIC) database and the National Biodiversity Network.

Ground-truthing has been undertaken where the GIS interpretation highlighted a requirement for further survey, either as a consequence of complex habitat features being present that could not be assessed remotely, or where interesting features were observed from the aerial photos, or records highlighted an ecologically valuable area.

The results of this analysis will contribute towards the evidence-base used to inform the preparation of documents that make up the Harborough District Council's Local Development Framework.

Key findings for each area can be summarised as:

The **Broughton Astley** assessment area is mainly comprised of arable fields with well managed hedgerows. Key features of importance to biodiversity were identified as the River Sence and associated brooks, the disused railway line and mature hedgerows and veteran trees to the north and south of the village around Primethorpe Meadows Local Wildlife Site and south of Old Mill Road. All these features provide important wildlife corridors, the River Sence supporting populations of protected species. A number of mature hedgerows to the southwest of the village are also considered to provide dispersal corridors and foraging routes for species such as bats, birds, reptiles and amphibians. All of these features should be retained through any development proposals.

The three Sites of Special Scientific Interest at Croft are within 2km of the survey area, and could potentially suffer from increased visitor pressure should any large residential or employment developments take place to the north of Broughton Astley.

There are three Local Wildlife Sites within the surveyed area, and a further six sites of Parish Level interest. Habitats considered likely to meet the LWS criteria comprise the water courses (River Sence, Stemborough Brook and Soar Brook), two sections of species-rich hedgerow and three mature trees.

Water voles, white-clawed crayfish, bats and badgers are known to occur within the area and have the potential to be directly impacted by any proposed development. Other notable species recorded within this survey area include kingfisher and mistletoe.

The **Lutterworth** assessment area contains a rich variety of habitats along the Bitteswell Brook including species-rich hedgerows, mature trees, marshy grassland and other neutral grassland. As well as providing a distinctive and sizeable wildlife corridor through the whole of the survey area, these features function as part of the wider floodplain of the Brook. Additional habitat for protected species and dispersal corridors are provided by the River Swift and a disused railway to the east of the town. The River Swift supports known populations of protected species, some of which are also likely to be present on Bitteswell Brook. The Bitteswell Brook corridor contains habitats likely to qualify for Local Wildlife Site designation, including species-rich hedgerows, mature trees and marshy grassland.

The assessment areas surrounding the town include a number of Parish Level designations along the main features of the survey area, the River, brook and disused railway. All of these are likely to provide important wildlife corridors.

Protected species records exist within the assessment areas for badgers, freshwater crayfish, bullhead and common redstart. Another notable species present is Hungarian brome, a grass with restricted distribution nationally and very few county records although it is not considered to be a native species.

The landscape surrounding **Market Harborough** is relatively featureless comprising mainly arable fields and well managed hedgerows with a few notable exceptions: The Rivers, railways and canals form corridors of woodland, running water, hedgerows and ruderal habitat into and

through the town. Evidence of otters was found on the River Swift and semi-improved grassland and brooks linked to this feature are likely to provide high quality connective habitat with biodiversity value. Other wildlife corridors include a number of mature hedgerows around Great Bowden.

There are no SSSIs within the Market Harborough assessment area; **Great Bowden Borrowpit SSSI** is within 2km of the survey area. Sections of the **Grand Union Canal** to the north of assessment area are designated as Local Wildlife Sites.

There are no Local Wildlife Sites within the Market Harborough survey area, only three sites that are currently classified as being of Parish Level importance: a grassland pasture, a roadside verge on the Leicester Road and the **River Welland** which runs immediately adjacent to assessment area. Of these Parish Level Sites, only the River Welland is considered likely to meet the LWS criteria through the presence of Red Data Book species. The section of the Grand Union Canal within the survey area has no former designation although it should be considered as a possible Local Wildlife Site as it has a range of emergent aquatic flora species. The one probable species-rich hedgerow recorded (along Braybrooke Road) is considered to be too fragmented to meet the LWS criteria. The other Parish Level Sites present have declined in habitat quality and are considered unlikely to meet the stricter LWS criteria.

Badgers, bats, reptiles and great crested newts have been recorded from within the Market Harborough assessment area, and evidence of both otter and badger was found during the current assessment.

A number of brooks and a disused railway line form connective habitat within the area surrounding **Scraptoft, Thurnby and Bushby**. Bushby Brook is of particular importance as it runs between semi-improved grassland areas and woodlands of known importance to protected species. A length of species-rich hedgerow has been identified along the A47, this currently being designated a Parish level Site. There are several other Parish Level Sites within the survey area although some were not accessible at the time of the survey and therefore their wildlife value could not be assessed.

There are no SSSIs within the survey area, or the 2km surrounding buffer. Scraptoft Local Nature Reserve is within the AA and supports a mosaic of unimproved grassland and scrub habitats. Green wedges run north and south and incorporate some of the AA.

This survey area already contains one Local Wildlife Site (Bushby Spinney) and a potential LWS within this survey area comprises the above mentioned species rich hedgerow, two veteran trees and a small area of herb-rich neutral grassland adjacent to Bushby Brook. Parish Level designations of Thurnby and Bushby Brook, a number of hedgelines and the disused railway line provide important corridors of habitat through the survey area, as do a number of mature hedges.

Evidence of badgers was found within this survey area and there are several trees with potential for roosting bats. LERC has provided records of a number of bat roosts and badger setts within, and in close proximity to the assessment area. A number of ponds are also present, and have potential to support amphibian populations. Great crested newts have been recorded approximately 1km to the southeast of Bushby. No invasive species were recorded from this survey area.

The **Urban Fringe** assessment area includes three discrete sites around Oadby and Great Glen. The majority of the survey area is comprised of large agricultural fields supporting arable or poor, semi-improved grassland. Mature hedgerows and small, sparse areas of plantation woodland intersect the fields.

The Kilby – Foxton Canal Site of Special Scientific Interest is within 2km of the sites to the southeast of Oadby, and any proposed development must not negatively impact the integrity of the canal corridor or its interest features such as a known roost of Daubenton's bats. Lucas Marsh Local Nature Reserve in Oadby is approximately 1km from the assessment area and is considered unlikely to be impacted by any works.

To the southeast of Oadby, the majority of the fields are either arable, improved, or species-poor semi-improved grassland. Hedgerows are well maintained and only support occasional mature trees. A feature of interest adjacent to the survey area is the plantation woodland at Glen Gorse which has formerly been designated as being of Parish Level importance and has records of protected species.

A habitat feature of interest within the wider area is the River Sence which runs to the west of Great Glen village and follows a natural winding route through the valley, often lined with mature trees and semi-improved meadows. Although the river corridor is not within the survey area, it runs within 50m

of the assessment area, on the far side of Stretton Road and is likely to provide an important wildlife corridor.

The surveyed areas have existing Local Wildlife Sites within close proximity although none are present within the survey area boundaries. The survey areas do however contain Parish Level Sites, one of which being a parish boundary hedgerow between Oadby and Wigston which is likely to meet the LWS criteria. Another three potential Local Wildlife Sites identified during the survey comprise a species-rich hedgerow adjacent to the above mentioned, plus two veteran trees and a section of the River Sence. This river extends to within 50m of the Great Glen survey area, following a natural course and is likely to support protected species and habitats.

None of the woodland areas are considered likely to meet the LWS criteria although they do have the potential to support protected species. Evidence of badgers was found within one of the survey areas, other notable species recorded including kingfisher and bullfinch. Further badger and bat records are dispersed throughout the wider area.

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FIGURES (SEE APPENDIX 2)

GLOSSARY

AA	Assessment Areas
BAP	Biodiversity Action Plan
DPD	Development Plan Document (Part of the LDF process)
GIS	Geographical Information System
HDC	Harborough District Council
HDC LA	Harborough District Council Landscape Assessment
LDF	Local Development Framework
LERC	Leicester Environmental Records Centre
LNR	Local Nature Reserve
LRWT	Leicestershire and Rutland Wildlife Trust
LWS	Local Wildlife Site
MAGIC	Multi-Agency Geographic Information for the Countryside
NBN	National Biodiversity Network
NNR	National Nature Reserve
RPR	Rare Plant Register
RSPB	The Royal Society for the Protection of Birds
RSS8	Regional Spatial Strategy for the East Midlands
SSSI	Site of Special Scientific Interest

1.0 INTRODUCTION & BRIEF

CONFIDENTIAL: The protected species maps within this report contain information regarding the location of known badger setts, bat roosts and details of other sensitive species which should not be included in any public dissemination of this report because of the risk of persecution of these species.

WYG Environment was commissioned by Harborough District Council (HDC) to undertake an ecological assessment of potential areas for development in proximity to existing urban settlements within the Harborough District. This survey will form part of the evidence base for the Local Development Framework and be used to inform the decisions about future development in Harborough.

Local Councils have a duty to consider biodiversity under the Natural Environment and Rural Communities (NERC) Act (2006), and to have regard for the safeguard of species protected under the Wildlife and Countryside Act 1981, the Conservation (Natural Habitats etc) Regulations 1994 and other species-specific legislation.

Planning Policy Statement 9 (PPS9) *Biodiversity and Geological Conservation* and the accompanying Government circulars (ODPM Circular 06/2005, DEFRA Circular 01/2005) and Good Practice Guide include requirements for development to deliver biodiversity enhancements as well as reducing, avoiding and compensating for adverse effects. They recommend that Local Authorities should maintain networks of natural habitats through protection from development, and the enhancement and repair of existing features.

Planning Policy Statement 12 *Local Spatial Planning* (PPS12) outlines the aims of the Local Development Framework to create 'a proactive, positive approach to managing development'. All Local Authorities are strongly encouraged to identify key spatial planning objectives for their area that take full account of spatial, economic, social and environmental issues. Consequently, there has been an increasing demand over the past couple of years for District level assessments to identify areas of greater importance to biodiversity.

Harborough is one of seven Leicestershire Districts and covers 238 square miles in the south of the county, spreading into Leicester City urban fringe at Bushby, Thurnby and Scraptoft. The majority of the District is predominantly rural and includes the market towns of Lutterworth and Market Harborough, and a number of large villages such as Broughton Astley, Great Glen and Kibworth.

The Regional Spatial Strategy for the East Midlands (RSS8) states that the region has probably lost more wildlife than any other region in the country, and these losses of habitat still continue today. The percentage area designated for nature conservation is among the lowest in the country and the majority of habitats such as hay meadows and floodplain habitats have already been lost.

The HDC Local Development Framework is currently emerging, and will replace the Local Plan, adopted in April 2001. The Core Strategy will include general policies for the District and the Core Strategy preferred options report (HDC 2006) contains options regarding these policies.

The Draft Vision for Harborough District, outlined in the Core Strategy preferred options report (HDC 2006) aims to '*respect the distinctive rural landscape rich in biodiversity and natural resources'*, and to not '*compromise the environment for future generations'*. This is encapsulated in the Draft Core Strategy Objective 5: '*To protect and enhance the District's distinctive rural landscape, historic settlement pattern, natural environment and biodiversity'.*

Given that progress on the production of the Core Strategy has been significantly delayed due to uncertainties surrounding the draft Regional Plan and the proposed eco-town to the south east of Leicester, the Council has recently consulted statutory bodies on the following updated documents:

- Sustainability Appraisal and Strategic Environmental Assessment of the Harborough LDF – Scoping Report Part 1: and
- Sustainability Appraisal of the Harborough District Council Core Strategy – Scoping Report Part 2.

One of the objectives identified in the Scoping Report is to 'protect, enhance and manage biodiversity and geodiversity' and the following are identified as key issues and challenges to be addressed through policy development:

- Lack of sites protected under European, national, regional and local designations,
- Vulnerability of brownfield biodiversity, and biodiversity along river corridors, and existing protected sites,
- Lack of and declining levels of woodland.

The aim of this assessment is to identify important habitats and areas of relatively high biodiversity value in the Assessment Areas around Broughton Astley, Lutterworth, Market Harborough, Scraptoft,

Thurnby, Bushby and the selected areas of urban fringe close to Great Glen and Oadby. One of the main purposes of this study is to identify habitat features that may function as wildlife corridors through the District, and should be conserved and enhanced wherever possible. We have also aimed to identify any additional sites within the assessment areas that may qualify for LWS status. The details of these sites will be provided to LRWT.

Each of the assessment areas will be described in a chapter, with accompanying maps for each area comprising:

a) Phase 1 Habitat map, obtained through GIS analysis and ground-truthing. Contains Target Notes (TNs) to provide detail on interesting, or small features.

b) Protected species map, using records obtained from LERC and NBN Gateway (CONFIDENTIAL – not for general release).

c) Designated sites, using records obtained from LERC and the MAGIC database.

d) Wildlife corridors and potential Local Wildlife Sites identified through this study are highlighted on the third map for each area. Areas considered likely to meet the criteria for LWSs are identified on the map and in the text as 'potential LWS 1 etc; wildlife corridors are referred to as wildlife corridor A etc.

See Figure 1: Overview of Assessment Areas in Harborough District

2.0 EXISTING INFORMATION

2.1 Aerial Photography

Leicestershire was photographed during 2006 by BlueSky International Ltd, funded by many of the Local Authorities. HDC supplied WYG Environment with copies of these photographs. This information has been used to map the location and habitat type of features such as fields, hedgerows, blocks of woodland and water courses and was also used to identify features of interest such as ponds and areas of grassland or woodland that were not obviously agriculturally improved.

2.2 Existing Records

Existing records for protected and notable species and habitats were obtained from Leicestershire Environmental Records Centre, and from internet sources such as MAGIC (Multi Agency Geographic Information for the Countryside) and the National Biodiversity Network Gateway (www.nbn.org.uk). The local planning documents listed below in paragraph 2.3.4 were also consulted.

It should be noted that an absence of records of a particular species from an area does not necessarily mean that the species is not present, rather a lack of recording data being available.

2.3 Background to Conservation Legislation & Policy

Key legislation of relevance to the assessment of ecology and nature conservation:

2.3.1 International Legislation

- The EC Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC): The Conservation (Natural Habitats, &c.) Regulations 1994 (amended 2007) represent the UK implementation of the Habitats & Species Directive (1992) issued by the European Community (EC). Internationally important sites such as Special Protection Areas and Special Areas of Conservation are designated under this legislation. None of these sites occur within Harborough District.

- The Convention on the Conservation of European Wildlife and Natural Habitats 1979 (the Bern Convention) carries an obligation to protect and conserve a wide range of flora and fauna (including their habitats).

- The EC Council Directive on the Conservation of Wild Birds (79/409/EEC) requires all member states to take measures to protect wild birds.

- The Convention on Conservation of Wetlands of International Importance 1972 (the Ramsar Convention) has the status of a legal treaty for the designation and protection of wetland habitats. There are no Ramsar sites within Harborough District.

- The Convention on the Conservation of Migratory Species of Wild Animals 1979 (the Bonn Convention) provides a global system offering protection for all threatened migratory species.

2.3.2 National Legislation

- The National Parks and Access to the Countryside Act 1949, is the mechanism under which Areas of Outstanding Natural Beauty (AONBs), National Parks and Local Nature Reserves are designated. There are no AONBs or National Parks in the Harborough District, but there are two Local Nature Reserves (LNRs) at North Kilworth and Scraptoft.

- The Wildlife and Countryside Act 1981 (WCA 1981) (as amended); is the primary legislation covering endangered or threatened species in England which sets out the framework for the designation and protection of Sites of Special Scientific Interest (SSSIs). Fourteen SSSI sites occur within Harborough District.

- The Protection of Badgers Act 1992 brings together all the legislation that is specific to badgers, with the exception of their inclusion on Schedule 6 of the Wildlife and Countryside Act 1981 (as amended), and ensures that this species is legally protected.

- The Hedgerows Regulations 1997 aim to protect hedgerows of importance from destruction. The Regulations only apply to hedgerows growing on or adjacent to certain land use categories. The hedgerow regulations are defined further below.

- The Countryside and Rights of Way (CROW) Act 2000 affords a greater level of protection to Sites of Special Scientific Interest (SSSIs), provides better management arrangements for Areas of Outstanding Natural Beauty (AONBs) and strengthens wildlife enforcement legislation. Section 74(2) of the Act requires the Secretary of State to list those habitats and

species of principal importance for the conservation of biodiversity in England, in accordance with the United Nations Convention of Biological Diversity 1992.

- The Natural Environment and Rural Communities (NERC) Act 2006 is designed to help achieve a rich and diverse natural environment and thriving rural communities through modernised and simplified arrangements for delivering Government Policy. Elements of the act most relevant to the current assessment include (i) extension of the CROW biodiversity duty to public bodies and statutory undertakers to ensure due regard to the conservation of biodiversity and (ii) modification of the CROW Act (2000) so that species listed under section 74 are now listed under section 41 of the NERC Act 2006. The habitats and species are therefore important for priority setting within the revised UK Biodiversity Action Plan (BAP) and future revisions of the Leicester, Leicestershire & Rutland BAPs.

2.3.3 National Planning Policy

National Planning Policy of relevance to nature conservation is embodied in Planning Policy Statement 9 (PPS9) – Biodiversity and Geological Conservation and the accompanying Government circulars (ODPM Circular 06/2005, DEFRA Circular 01/2005) and Good Practice Guide. This includes requirements for development to deliver biodiversity enhancement/gain as well as avoidance, reduction and compensation for adverse effects. Policy in relation to sustainable development is considered to be beyond the remit of this assessment.

2.3.4 Regional Strategies and Local Plans

Existing Regional Strategies and Local Plans of relevance to the current assessment include:

- The East Midlands Regional Spatial Strategy RSS8 (2005) and the emerging East Midlands Regional Plan (due to be adopted early 2009)
- East Midlands Regional Environmental Strategy (2006)
- Harborough District Local Plan (Adopted 2001)
- HDC Core Strategy Preferred Options (2006)
- Leicestershire County Council Sustainable Urban Extensions Sustainability Appraisal (2007)

- Harborough District Landscape Character Assessment (HD LCA; 2007).

2.3.5 Other Strategies and Initiatives

Other initiatives, plans, priorities and guidance for nature conservation at a national and local level that have informed the assessment include:

- The UK BAP (first published in 1994 and list of priority species and habitats revised in 2007)
- Leicester, Leicestershire and Rutland BAP (2002)
- UK Birds of Conservation Concern (RSPB et al, 2002)
- The Leicestershire and Rutland Rare Plant Register (2007)

2.4 Designated Sites in Harborough

Internationally important conservation site designations include Special Areas of Conservation, Special Protection Areas and Ramsar Sites. These designations are of limited relevance to the current assessment as the District does not contain any internationally designated sites for conservation, although the potential of any individual proposal in the future to impact on such sites outside the District should be given consideration. **There are 14 nationally important SSSIs within the District**, no National Nature Reserves (NNRs), **two locally important Local Nature Reserves (LNRs) and 207 Local Wildlife Sites (LWS).** Local Wildlife Sites are considered to be of County level importance for nature conservation.

2.4.1 Sites of Special Scientific Interest

SSSIs within 2km of the AAs, and thus with potential to be impacted by increases in visitor numbers include:

- **Misterton Marshes SSSI** adjacent to a tributary of the River Swift near Lutterworth. This site comprises one of the largest blocks of unimproved wetland habitat in the county. All units of this marsh are currently listed by Natural England as being in unfavourable condition, although one unit is currently recovering. The main reasons for the declining condition of the site are

believed to be inappropriate management of water levels and scrub encroachment causing the site to dry out.

- **Great Bowden Borrowpit SSSI** to the north of Market Harborough supports a tall fen community on base-poor soils, and is currently in favourable condition.

- Sections of the **Kilby – Foxton Canal** are designated to **SSSI** status, and run across the eastern part of the survey area. The site includes habitats and species characteristic of slow-flowing lowland rivers in the East Midlands. Interest features include a number of scarce pondweeds and bank side vegetation including lesser bulrush (*Typha angustifolia*), sweet-flag (*Acorus calamus*) and branched bur-reed (*Sparganium erectum*). According to the county Rare Plant Register (RPR), none of the rarer pondweeds have been recorded since the mid-1990s although this could reflect a lack of recording effort. This site is currently in unfavourable condition and declining due to high numbers of pleasure boats and siltation of the canal. Protected species in the area include a roost of Daubenton's bats (*Myotis daubentonii*) with the canal providing a valuable foraging and commuting route for this and other bat species.

PPS9 states that '*where a proposed development within or outside a SSSI is likely to have an adverse effect on a SSSI (either individually or in combination with other developments), planning permission should not normally be granted'.* The Core Strategy Issues and Options Report (HDC 2006) includes key issue 12: To *'protect and enhance the District's SSSIs'.*

2.4.2 Local Nature Reserves

Local Nature Reserves are declared by Local Authorities in consultation with Natural England under Sections 19 and 21 of the National Parks and Access to the Countryside Act (1949). LNRs are defined in the NPAC Act as being *'land managed for the purpose of providing . . . special opportunities for the study of . . . the flora and fauna of Great Britain and the physical conditions in which they live, and for the study of geological and physiographical features of special interest in the area; or of preserving flora, fauna, or geological and physiographical features of special interest; or for both of these purposes.'* PPS9 states that such sites '*have a fundamental role to play in meeting biodiversity targets, contributing to the quality of life and well being of the community, and in supporting research and education.* The same guidance goes on to explain that *'Criteria-based policies should be established in*

Local Development Documents against which proposals for any development on, or affecting, such sites will be judged'.

Two Local Nature Reserves are present within 2km of the Assessment Areas in Harborough:

- **Scraptoft LNR** historically used as a prisoner of war camp, but now supporting scrub, a mature hedgerow, trees, a pond and a ditch known as Scraptoft Brook.
- **Lucas Marsh LNR** lies within Oadby and Wigston Borough and was formed following historic excavation of building materials, and now includes reedbeds, ponds, scrub, scattered trees and a mature hedge. Damselflies and kingfishers (*Alcedo atthis*) breed in this area which is part of the larger Brock's Hill Country Park.

2.4.3 Local Wildlife Sites

Local Wildlife Sites (LWS) are a national initiative that is replacing the former three-tier system of County, District and Parish Level sites across England. The replacement LWS system is designed to provide national conformity and to provide a more robust system that stands up to legal challenge, giving a more easily understood basis for site selection that can be readily defended at public inquiries.

The Local Wildlife Site criteria are drawn up in accordance with national guidelines and were recommended by Collis & Tyldesley (1993, *Natural Assets - non statutory Sites of Importance for Nature Conservation.* Local Government Nature Conservation Initiative, Winchester) as adopted by virtually all other counties.

The LWS system is based on National Guidelines but has some degree of flexibility reflecting scarcity of some habitats in some counties, for example for heathland in Leicestershire where the threshold for LWS qualification may be lower than for counties where heathland is more widespread such as Dorset. These differences between counties have been drawn up by a panel of local experts who often have decades of experience in wildlife conservation in their respective fields.

Local Wildlife Sites are a non-statutory designation and do not receive the same level of legal protection enjoyed by SSSIs but under PPS9 there is a strong presumption against development which would affect these sites. There is also no onus on landowners carrying out management of LWS in maintaining them in favourable condition. This should not be seen as a devaluation of LWS, which are often just as diverse as a SSSI, more so in some cases.

The former three-tier system of County, District and Parish Level sites can be construed as being subjective and some sites were designated on the basis of a single rare plant species that has since disappeared from their localities, some of which were later proved to have been planted. They were thus open to legal challenge if their qualifying species died out. Assessments were made on the respective importance of flora and faunal communities under the old system which did not always reflect the scarcity of some habitats, for example all woodland areas over 5ha were automatically designated as at least Parish Level importance in Leicestershire from 1979 when the three-tier system was introduced. This took no account of whether the woodland was ancient and semi-natural or was a more recent plantation, often being composed largely of species that are not native in Leicestershire.

The new stricter criteria for LWS place an emphasis on floral communities with lists of qualifying species for each habitat where a certain number of these "indicator" species have to be present for LWS designation. These qualifying species lists have been drawn up through consultation with the county botanical recorder and other local experts and accurately reflect the scarcity of certain species and floral associations and these are considered characteristic of "good quality" habitats.

There are LWS criteria for faunal groups also, for example a lake may not qualify for LWS under floral criteria although it may support a notable wintering population of waterbirds (ducks, swans and grebes) representing a significant percentage of these species' wintering populations in the county. The same lake may also have a significant breeding population of amphibians; qualifying features under this criterion include a count of 50 clumps of common frog spawn or over 100 common toads counted.

Secondary criteria also exist and these are used to include for example areas of dense scrub around a grassland site. The scrub may not necessarily be species-rich but provides nesting and foraging opportunities for birds, including species of high conservation concern and may also provide terrestrial habitat for amphibians if the scrub surrounds a pond.

The presence of Red Data Book species is also an LWS criterion and includes those listed in the various Leicestershire and Rutland Red Data Books and the Leicester, Leicestershire and Rutland Biodiversity Action Plan Inventory of Key Species.

Sites already qualifying as SSSIs are not designated as LWS. Designated habitats include ancient woodland, species-rich hedgerows, wet woodland, wet grassland, reedbed, unimproved and semi-improved grassland (mainly neutral), ponds and major water courses traversing the District. A number

of potential Ancient Woodland LWS have been identified from the English Nature Ancient Woodland Inventory, but most of these areas are not yet designated for ownership reasons (*Pers Comm.* Neill Talbot, LRWT).

In accordance with the LWS criteria, sites are deemed necessary for re-survey after a set period of time; ten years for hedgerows, woodlands, water courses and veteran trees and five years for grassland sites. This re-surveying is necessary due to the speed of habitat change that can especially affect grassland sites through inappropriate management regimes or neglect.

Within this study we have aimed to identify any additional sites within the assessment areas that may qualify for LWS status. The locations of these sites will be provided to LRWT.

2.4.4 Biodiversity Action Plan Habitats

UK Biodiversity Action Plan (BAP) habitats likely to occur within Harborough District include: broad-leaved woodland, lowland meadow, wet woodland and ancient or species-rich hedgerows, although criteria regarding size and quality need to be applied. Information regarding locations of known ancient woodland can be gathered from the MAGIC interactive website.

Leicestershire BAP habitats likely to occur in Harborough include: Broad-leaved woodland, eutrophic standing water (ponds, lakes and canals), fast-flowing streams, field margins, floodplain wetland, hedgerows, lowland wood pasture and parkland, mature trees, mesotrophic lakes, neutral grassland, reedbeds, roadside verges, rocks and built structures, springs and flushes, urban habitat and wet woodland. Again size and quality criteria apply.

2.4.5 Wildlife Corridors

Green networks were defined by Barker (1997) as "*natural, or permanently vegetated, physically connected spaces situated in areas otherwise built up or used for intensive agriculture, industrial purposes or other intrusive human activities. They may include land to which there is no general access, such as private gardens and estates*." Features such as these can be used as corridors to allow species to travel between rural and urban areas. Narrow strips of habitat may be vulnerable to edge effects, and consequently the wider the corridor can be, the better for many species.

Retention and enhancement of an integrated complex of wildlife corridors at the local and landscape scale is essential to allow species dispersal, particularly as climate change is already affecting the population and range of many UK species. PPS9 states that '*networks of natural habitat can link sites of biodiversity importance and provide routes or stepping stones for migration, dispersal and genetic exchange of species in the wider environment. Local authorities should aim to maintain networks by avoiding or repairing the fragmentation and isolation of natural habitats through policies in plans. Such networks should be protected from development, and, where possible, strengthened by or integrated within it*'.

Consequently, one of the main purposes of this study is to identify habitat features that may function as wildlife corridors through the District, and should be conserved and enhanced wherever possible.

2.5 Protected and Notable Species

Harborough currently supports, and has the potential to support a number of species protected under the European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC), The Conservation (Natural Habitats, &c.) Regulations 1994 (amended 2007) represent the UK implementation of this Directive. Species protected under this legislation include water vole (*Arvicola terrestris*), otter (*Lutra lutra*), great crested newt (*Triturus cristatus*) and all bat species occurring in the UK. Other species protected under UK legislation include badgers (*Meles meles*) and reptiles such as slow worms and grass snakes. Reference to protected species that may be subject to persecution are confidential, and as such are minimal within the text, although location are given on Figures X(b), which are not for general circulation.

Species listed on the National BAP that may be found in Harborough include brown hare (*Lepus europaeus*), hedgehog (*Erinaceous europeaus*), song thrush (*Turdus philmelos*), bullfinch (*Pyrrhula pyrrhula*) and linnet (*Carduelis cannabina*).

Leicestershire BAP species that may be found within the District include black poplar (*Populus nigra subsp. betulifolia*), grizzled skipper (*Pyrgus malvae*), common redstart (*Phoenicurus phoenicurus*), and sand martin (*Riparia riparia*). Several county-rare plant species are known to occur in Harborough but none were found during the limited time available for surveys.

2.5.1 Table of protected species recorded in southern Leicestershire (LERC).

Taxon Common Name	Taxon Latin Name	Wildlife and Countryside Act 1981	UK Biodiversity Action Plan list (UK BAP)	Bern Convention	Bonn Convention	Habitats and Species Directive	Red listing based on 2001 IUCN guidelines	Red data categories - birds (not based on IUCN criteria)	Birds Directive	Other
Sky Lark	*Alauda arvensis*							✓	✓	
Slow-worm	*Anguis fragilis*	✓	✓							
European Water Vole	*Arvicola terrestris*	✓	✓							
Freshwater Crayfish	*Austropotamobius pallipes*	✓	✓							
Great Yellow Bumble Bee	*Bombus distinguendus*		✓							Nationally notable
Common Buzzard	*Buteo buteo*				✓					
Common Linnet	*Carduelis cannabina*		✓	✓				✓		
Chiroptera	*Chiroptera*									
Spined Loach	*Cobitis taenia*		✓			✓				
Corn Bunting	*Emberiza calandra*		✓					✓		
Reed Bunting	*Emberiza schoeniclus*		✓	✓				✓		
Bluebell	*Hyacinthoides non-scripta*	✓					✓			
Brown Hare	*Lepus europaeus*		✓							
European Otter	*Lutra lutra*	✓	✓	✓		✓				
Badger	*Meles meles*									Protection of badgers act 1992
Spotted Flycatcher	*Muscicapa striata*		✓	✓	✓			✓		
Daubenton's Bat	*Myotis daubentonii*	✓		✓	✓	✓				
Whiskered Bat	*Myotis mystacinus*	✓		✓	✓	✓				
Natterer's Bat	*Myotis nattereri*	✓		✓	✓	✓				
Grass Snake	*Natrix natrix*	✓	✓							
Noctule Bat	*Nyctalus noctula*	✓	✓	✓	✓	✓				
Tree Sparrow	*Passer montanus*		✓					✓		
Grey Partridge	*Perdix perdix*		✓					✓	✓	
Common Redstart	*Phoenicurus phoenicurus*			✓				✓		
Common Pipistrelle	*Pipistrellus pipistrellus*	✓		✓	✓	✓				
Soprano Pipistrelle	*Pipistrellus pygmaeus*		✓							
Brown Long-eared Bat	*Plecotus auritus*	✓	✓	✓	✓	✓				
Grass-wrack Pondweed	*Potamogeton compressus*		✓				✓			Nationally notable
Grizzled Skipper	*Pyrgus malvae*		✓							
Bullfinch	*Pyrrhula pyrrhula*		✓					✓		
Sand Martin	*Riparia riparia*			✓				✓		
European Turtle Dove	*Streptopelia turtur*		✓					✓	✓	
Great Crested Newt	*Triturus cristatus*	✓	✓	✓		✓				
Song Thrush	*Turdus philomelos*		✓					✓	✓	
Common Lizard	*Zootoca vivipara*	✓	✓							

3.0 METHODOLOGIES

3.1 Survey Areas

The Assessment Areas (AAs) were provided by HDC and largely comprise agricultural land in proximity to the Principal Urban Area of Leicester, and adjacent to the market towns of Market Harborough and Lutterworth and the village of Broughton Astley. The area for which ecological mapping and assessment was undertaken comprised these sites only, while a 2km buffer zone around each of the AAs was examined for local species records and designated sites.

3.2 Desk-based GIS Study

GIS analysis of the areas identified by Harborough DC was undertaken making use of base maps and aerial photographs provided by Harborough DC, and information from the Leicestershire Environmental Records Centre regarding designated sites and protected species. Other information sources used include MAGIC, NBN Gateway, local planning documents and green wedge management strategies, and the Local BAP Action Plan, together with the consultant ecologists' local knowledge.

The Institute for Terrestrial Ecology began using the interpretation of aerial photography at a landscape scale, with accompanying ground-truthing during the Countryside Surveys in 1978, a programme for assessing habitat changes and land use at a national scale. While at the scale of individual sites, Phase 1 Habitat survey techniques (Joint Nature Conservation Committee, 2007) tend to use key indicator species and percentage cover as a means of grouping habitats, which cannot be determined from aerial photographs.

The JNCC Handbook for Phase 1 Survey (2007) states that although aerial photography is no substitute for fieldwork, it can greatly increase the speed and facility with which field survey is carried out. The methodology used in the current study is a combination of aerial interpretation using ArcGIS 9.3., existing information regarding species records and designated sites, and targeted ground-truthing of areas likely to be more biodiverse, or that are hard to distinguish from the aerial photographs.

It is possible to assess the broader landscape using Phase 1 nomenclature with the proviso that habitat sub-categories may have to be standardised e.g. all woodland is considered to be broad-leaved, mixed or coniferous plantation, and grassland is usually recorded as semi-improved neutral grassland, unless

sowing patterns are obvious, or other data (such as Local Wildlife Site criteria, or historical data) points to a different habitat type. This broad scale habitat classification is based on the vegetation visible, with clues also gained from land form and surrounding habitats.

Limitations of aerial interpretation are that smaller patches of habitat will be overlooked, there are limited opportunities to obtain data regarding the presence of individual species, and that there is an amount of subjectivity within the interpretation. To reduce these limitations and increase the reliability of the habitat maps produced, ground-truthing was carried out of selected areas, and existing data was incorporated. JNCC (2007) strongly recommends that if remote sensing techniques are used, ground truth exercises are carried out to check the accuracy of interpretation.

The results of the broad-scale desk-based analysis highlighted areas of potentially valuable habitat for further assessment. Site visits were made to areas requiring ground-truthing and further detailed assessment. The methodology for the Extended Phase 1 Habitat Surveys is described in the remainder of this section.

3.2.1 Protected and notable species

Protected and notable species records were trawled, with detailed assessment excluding records greater than 10 years old. Accuracy of species records is usually to within 100 meters, so records have been displayed as occupying a 100m square. The protected species layer must be considered **CONFIDENTIAL** and not for dissemination to the public as the information it contains relates to sensitive species, including those at risk from persecution.

A number of otter records are displayed on the protected species layer, however these all are considered to apply to routine monitoring sites rather than actual records, so they have been largely excluded from the analysis.

3.2.2 The urban area

AAs within the urban area that appeared to comprise of buildings and hard standing were not ecologically assessed as limited information could be gathered remotely, and a Phase 1 survey was considered unlikely to reveal habitats of importance to nature conservation. Sites currently supporting buildings or trees may have potential for birds to nest, or bats to roost within the existing features, while reptiles, amphibians and invertebrates may be present in other brownfield sites.

3.3 Extended Phase 1 Vegetation and Habitat Survey

Following interpretation of the aerial images and existing data, Phase 1 Surveys were undertaken on the ground at a number of locations.

Ground-truthing is required for a number of reasons:

1. To determine the accuracy of the aerial interpretation methodology (sites were randomly selected);
2. If sites were believed to support: Species-rich or unimproved grassland; Semi-natural woodland; Species-rich hedgerows; Wetland habitats (e.g. marshy grassland, watercourses and waterbodies);
3. If sites or habitats provided important connectivity, for example, between a river and an area of known nature conservation importance or a tall hedgerow connecting trees suitable as bat roosts with foraging habitat.
4. If an area contained habitats that were difficult to interpret from aerial photographs, or were of too small a size to identify (e.g. habitat mosaics).

Where Phase 1 Surveys were undertaken, the methodology was in accordance with the standard published Phase 1 Survey methodology (JNCC, 2007) to individual field level, recording all boundary types and identifying habitats and features of substantive biodiversity and nature conservation value, especially UK priority habitats. The resulting maps are provided in the Figure Xa for each survey area. In accordance with the published methodology, the survey did not record all plant species, but sufficient to allow habitat type to be confirmed and to identify areas and features of substantive value.

The survey comprised an 'Extended Phase 1 Survey' through the recording of evidence of protected and/or notable species of flora and fauna and recording of habitats suitable for such species where possible. Groups considered included higher and lower plants, mammals, birds, amphibians, reptiles and invertebrates and the survey recorded evidence of species and/or habitats likely to support populations or assemblages of substantive biodiversity and nature conservation value, particularly priority species.

Changes made to the habitat maps following ground-truthing included:

- Re-classification of habitat due to changes since aerial photographs were taken
- Refining of habitat classification e.g. from semi-improved grassland to herb-rich grassland

- The identification of species-rich hedgerows
- Inclusion of small scale features of biodiversity value e.g. trees suitable for roosting bats, or small areas of marshy grassland
- The generation of new species records

The survey identified significant habitats, species and other features which are priority habitats or species which may act to support or function as habitats, wildlife corridors or stepping stones within the wider landscape and particularly those which may support priority species. Where necessary these features were target noted to indicate accurate location and included:

- Supplementary information on sites, features and species of interest, particularly priority habitats and species;
- Information on sites too small to map and where habitat types are complex or doubtful (e.g. transitional and mixed habitats);
- Information on sites requiring further survey to assess conservation interest.

Target notes are used to give a brief account of particular areas of interest and provide information additional to that displayed by the Phase 1 habitat codes on the maps.

Habitats and features to be target-noted comprise species-rich hedgerows, veteran trees (see sections below), semi-improved grassland containing indicator species of less improved swards (for example: black knapweed (*Centaurea nigra*), ox-eye daisy (*Leucanthemum vulgare*) and meadow saxifrage (*Saxifraga granulata*) and other habitats or features likely to support protected and other notable species (see below).

3.3.1 Hedgerows

Although hedgerow surveys were beyond the scope of the survey, and species-rich features could not be identified through GIS analysis, the ground-truthing included the recording of locations of species-rich/ancient hedgerows where they were encountered. A species-rich hedgerow is defined in the UK Biodiversity Action Plan as having 5 or more native woody species on average in a 30 metre length.

These hedgerows were not specifically surveyed in accordance with the Defra (2007) 'Hedgerow Survey Handbook' as this was not part of the brief. Woody species were recorded in all hedgerows considered

to be species-rich and the numbers of such species were counted both in the hedgerow as a whole and in a single random 30-m section. For the purposes of this survey, and as defined by Defra (2007), woody species do not include climbers such as bramble (*Rubus* spp.) species but do include roses (*Rosa* spp.).

In the overwhelming majority of cases within the surveyed areas in Harborough District, hedgerows surrounding intensively managed agricultural land were assessed as being Enclosure Act hedgerows and thus likely to be relatively species-poor. The majority of these enclosure act hedgerows were probably planted during the period 1740 to 1860 and often used a single fast-growing species such as blackthorn (*Prunus spinosa*) or hawthorn (*Crataegus monogyna*). As it can take some considerable time for woody species to colonise hedgerows, few associated species were recorded or expected with bird-sown species such as elder and roses often being the only other species found. The ground flora of these hedgerows was dominated by nutrient-demanding ruderal species such as stinging nettles and docks, which reflect the presumably high fertiliser input on adjacent arable fields.

By contrast, the species-rich hedgerows contained several mature trees, including relatively slow-growing species such as field maple (*Acer campestre*) and pedunculate oak (*Quercus robur*). The ground-flora of some of these hedgerows contained ancient woodland indicator species such as dog's-mercury (*Mercurialis perennis*).

Hedgerows that have been allowed to grow tall and bushy have been highlighted as potential wildlife corridors, with particular importance to foraging and commuting bats. These hedgerows may contain mature or veteran trees assessed as having some bat roost potential as defined by the Bat Conservation Trust (2007) guidelines, or may be considered to connect potential roost sites with good quality foraging habitat allowing bats access to foraging resources in the wider landscape.

3.3.2 Veteran Trees

Veteran trees are defined by Defra as those which 'are or look old relative to others of the same species' and by Natural England as 'a tree that is of interest biologically, culturally or aesthetically because of its age, size or condition'. The LWS selection criteria for mature trees were used to determine which trees were likely to fall within this category.

The majority of Harborough District has not been surveyed for veteran trees and little information is available regarding their locations. There are thus likely to be un-recorded veteran trees within some of

the proposed development areas. Generally, individual veteran trees have not been designated as LWS except where they contribute to habitats that meet the LWS criteria for additional reasons (e.g. along water courses or within species-rich hedgerows). Locations of veteran trees have been mapped where they have been encountered during surveys although no further survey work has been carried out other than to list the species as this is beyond the scope of the report. Such trees often provide roosting features for bats, nesting opportunities for birds, and support numerous invertebrates and occasionally other plant species too.

3.3.3 Other Notable Habitats & Features

Habitats and features assessed as likely to support protected or otherwise notable species were recorded and target noted. These species included bats, badger, water vole, white-clawed crayfish, and great-crested newt and species on the local BAP.

Various habitats are more likely to support specific protected species, for example

Habitat	**Species potentially present**
Arable fields	Farmland birds, plants of arable margins, brown hare are also likely to present but have not been recorded by LERC within, or close to the Assessment Areas. Allotments may support reptiles, birds, amphibians, invertebrates
Grassland	Notable plants, reptiles, amphibians and invertebrates, particularly butterflies and moths
Tall ruderal	Invertebrates, reptiles, amphibians, nesting birds. Harvest mice may also be present, although no records have been obtained from LERC. They are a BAP species in some counties, although not Leicestershire
Hedgerows	Bats, badgers, birds, reptiles, amphibians, invertebrates
Woodland	Bats, badgers, birds, invertebrates, fungi
Scrub	Badgers, invertebrates, reptiles, birds, harvest mice
Rivers and brooks	Otters, water vole, birds, white clawed crayfish, bullhead, brook lamprey, aquatic invertebrates
Ponds	Great crested newts, birds, water vole, red data book aquatic beetles and other aquatic invertebrates

3.3.4 Invasive species

Invasive plant species were recorded where found, especially Japanese knotweed (*Fallopia japonica*) and Himalayan balsam (*Impatiens glandulifera*). Specific surveys for all of these species were outside the scope of this survey but evidence was recorded where it was found.

3.4 Limitations

The aim of this document is to provide a broad scale ecological assessment of various potential development sites within the District using GIS analysis of existing data and aerial photography (from 2006). Ground-truthing was undertaken for the purposes of this report in selected areas where clarification of habitat classification was determined to be particularly important following the initial GIS interpretation. Consequently, small areas of important habitat, evidence of protected species or rare botanical components are likely to have been overlooked outside the areas where field surveys took place. The GIS assessment should be viewed as a broad scale risk assessment tool and a guide to recommend areas requiring further survey rather than a description of ecological features within the area.

The field surveys were conducted in September and October 2008 towards the end of the plant growing season, so some of the early flowering species (especially woodland species) could have been missed, however, assessment of woodland quality (ancient or secondary) could be made from the suite of plant species that were present. The compilation of full species-lists for each habitat was outside the scope of this survey.

Features of particular wildlife value were target noted, for example trees assessed as of moderate or high bat roost potential. Locally notable plant and bird species were also target noted. These target notes are shown on the relevant Figures.

The survey work in the first instance was restricted to areas visible from public rights of way apart from occasional instances where the land owner allowed a closer inspection of their land.

4.0 BROUGHTON ASTLEY

Figure 2a Broughton Astley: Phase 1 Habitat Survey

Figure 2b Broughton Astley: Protected Species Records (Confidential)

Figure 2c Broughton Astley: Designated sites

Figure 2d Broughton Astley: Wildlife Corridors & Potential Local Wildlife Sites

4.1 Overview & Summary Data

The Upper Soar Landscape Area is characterised by pasture and arable agriculture with very little woodland and scattered hedgerows (HD LCA). The area surrounding Broughton Astley is representative of this description, being dominated by large fields of arable crops or improved grassland although slightly less hilly than the surrounding areas. Some of the fields adjacent to the Broughton Astley Brook, to the south of Old Mill Road were generally smaller than the majority and probably represent ancient field patterns. Some tall hedgerows remained although there had been very limited hedgerow removal in the past. More occasional habitat types include standing water, broad-leaved semi-natural woodland, poor semi-improved neutral grassland, tall ruderal, scrub and mixed plantation woodland.

Outside the Broughton Astley Brook corridor, the majority of the hedgerows were considered to be intensively managed (either regularly trimmed or flailed), particularly those bordering arable fields. Those hedgerows bordering roads and railways tended to be more mature, with some well established hedgerows with mature trees occurring to the south west of the village.

Broughton Astley Brook runs into the village at this point, and out again to the north to run along the western edge of Primethorpe Meadows. The Phase 1 Habitat Map 2a details the features described below.

4.2 General Habitat Descriptions

Broad-leaved Semi-natural Woodland

There is very little woodland in the survey area around Broughton Astley, with a narrow band along the railway line which crosses the southeast of the survey area, and narrow bands along the River and roads to the north of the village (wildlife corridors 1, 2 & 4 respectively). Species noted were common and included ash (*Fraxinus excelsior*), hawthorn (*Crataegus monogyna*), alder (*Alnus glutinosa*) and willow species (*Salix* spp.), particularly along the River Sence.

Plantation Woodland

A narrow band of plantation woodland occurred on the east side of Broughton Way on the western fringe of Primethorpe Meadows LWS, along the river corridor. This woodland was of even-age and dominated by field maple with some ash and pedunculate oak. The ground flora was species-poor and dominated by stinging nettles with scattered red campion (*Silene dioica*). Willow species (*Salix spp.*) and common whitebeam (*Sorbus aria*) had been planted alongside the fence to the south of the main woodland block and extended down to the cross roads with Cosby Road.

Scrub

Small areas of scrub have been noted occasionally in field corners towards the north of the survey area, these being dominated by mature blackthorn.

Amenity Grassland

Two small areas of amenity grassland are being considered as AAs within the urban area of Broughton Astley. These are unlikely to have much value for protected species, but may provide a haven for a number of common birds and invertebrates. Green spaces within urban areas are also considered important for residents and the local community, please see the English Nature Accessible Natural Green Space Standards (2003).

Arable

Approximately half of the survey area is currently under intensive agricultural management with well managed hedgerows.

Improved grassland

Another frequent habitat type within the survey area is improved grassland, particularly to the east and west of the village. These fields were dominated by perennial rye-grass (*Lolium perenne*) and crested dog's-tail (*Cynosurus cristatus*) with few herbs. Those herbs that were present were generally ruderal species such as creeping thistle and dock species (*Rumex*). These fields are grazed by livestock, mainly cattle.

Poor Semi-improved Neutral Grassland

This habitat was very infrequently recorded within this survey area, with two small fields adjacent to Cosby Road, to the north east of Broughton Astley. No direct access to these fields was possible although they did not appear bright green as did the agriculturally improved fields and appeared to contain a slightly higher diversity of herbs although no species characteristic of unimproved swards were visible.

Semi-improved Neutral Grassland

There were two separate fields of this habitat within the surveyed area, both of which have been designated as LWSs:

Primethorpe Meadows LWS is located to the east of Broughton Way and comprises a single field, bisected by a shallow ditch that is probably only seasonally wet. The field had been subject to intensive grazing prior to the survey and it was not possible to determine which herb species were present. The grassland had a varied sward however, in marked contrast to the improved grassland fields which appeared uniform bright green. Tufted hair-grass (*Deschampsia caespitosa*) was present, demarcating the shallow wet ditch.

Broughton Astley Grassland LWS is located on the opposite side of Broughton Way to the above site and was grazed by horses at the time of the survey. As with the above site, the sward appeared varied although three herb species associated with less improved swards were recorded comprising wild carrot (*Daucus carota*), red clover (*Trifolium pratense*) and meadow buttercup (*Ranunculus acris*).

Tall Ruderal

Tall ruderal vegetation occurred in two fields to the south of the village, where it formed an intimate mosaic with coarse semi-improved grassland. The tall ruderal vegetation was composed of large

patches of creeping thistle (*Cirsium arvense*), stinging nettles and broad-leaved dock (*Rumex obtusifolius*). The coarse grassland was composed of false oat-grass (*Arrhenatherum elatius*), Yorkshire-fog (*Holcus lanatus*) and cock's-foot (*Dactylis glomerata*). There were several small areas where fine-leaved grass species predominated, these areas being composed of common bent (*Agrostis capillaris*) and common sorrel (*Rumex acetosa*) was also present in these areas.

Tall ruderal vegetation was also present in smaller patches within improved grassland and arable fields throughout the surveyed area although the majority of these areas were too small to map.

The exception was a patch of ruderals alongside hawthorn scrub to the south east of Rectory Way, this field containing a footpath that extended through the ruderal vegetation. Stinging nettles and creeping thistle predominated in this area.

Species-rich Hedgerows

Two species-rich hedgerows were recorded in the ground-truthed areas; these are labelled as H1 and H2 on Figure 2a, and potential wildlife sites D & E on Figure 2d.

Hedgerow H1 (potential wildlife site D) bisected Broughton Astley Grassland LWS from north east to south west was approximately 5m in height, being free-growing at the time of the survey and hence of value as a foraging and commuting corridor for bats. This hedgerow was not directly accessible although woody species were identified from Broughton Way using binoculars. Native woody species recorded comprised hawthorn, ash, pedunculate oak, field maple, blackthorn, crab apple (*Malus sylvestris*) and dog rose (*Rosa canina*). This gave a total of seven locally native woody species along its total length although it was not possible to assess how many species were present in any given 30m stretch as per the LWS and DEFRA guidelines.

Hedgerow H2 (potential wildlife site E) was present within the network of smaller fields to the south west of the village as shown on Figure 2a. This hedgerow was approximately 5m in height, being free-growing at the time of the survey. A random 30m section was sampled, yielding six native woody species, comprising hawthorn, field maple, wych elm (*Ulmus glabra*), dog rose, blackthorn and elder (*Sambucus nigra*).

Both these hedgerows probably meet the LWS criteria for species-rich hedgerows. These hedgerows have been highlighted as potential wildlife corridors and are likely to be of particular importance to bats, providing sheltered foraging and commuting routes.

Species-poor Hedgerows

The majority of the remaining hedgerows within the survey area are considered to be well maintained and species-poor and dominated by hawthorn.

Trees

Many hedgerows in the survey area include mature trees, and a number of isolated trees were also noted to the south of the survey area.

A total of eight mature trees were identified within this survey area and these have been target noted (see Figure 2a). Of these trees, five were assessed as having at least moderate bat roost potential. Three of them were also considered likely to meet the LWS criteria for veteran trees although their trunk girths were not measured (potential LWSs F, G & H).

A series of mature willow pollards were located within an intensively managed hedgerow to the south west of the village. These were composed of crack willows (*Salix fragilis*) and white willows (*Salix alba*), some of which were beginning to split apart.

A mature black poplar hybrid (*Populus* x *canadensis*) close to the southern fringe of Broughton Astley (south of Old Mill Road) supported three clumps of mistletoe (*Viscum album*). This plant has a localised distribution in Leicestershire, being most frequent in the western half of the county where it is present in only five 10km squares (plus another five in Rutland). See target note TN5 on Figure 2a.

Wetland – Running Water

A dominant feature crossing the survey area is the River which flows across the village through, and adjacent to a number of the AAs. The Stemborough Brook runs northwards into the village, through a network of channels to the south of Old Mill Road. As it travels through the village it becomes the Broughton Brook, feeding into the River Sence. Other smaller streams and brooks are likely to be present but were not picked up through the GIS analysis.

The brook flowing along the south-western fringe of Broughton Astley was generally heavily shaded within the areas that were surveyed in the field. This shading was due to garden hedgerows at the northern end and by a tall hedgerow at the southern end that was composed of native species. This part of the brook had a moderate flow over a gravel substrate with some larger rocks. Aquatic mosses were identified (dominated by *Fontinalis antipyretica*) along with scattered clumps of fool's water-cress (*Apium nodiflorum*) and pendulous sedge (*Carex pendula*). The latter however may have been planted. The banks were composed of earth and stones and were of moderate gradient, being up to 0.8m in height. A kingfisher was heard along this section of the brook (see target note TN11).

A section of this brook flowed into the River Sence alongside the species rich hedgerow H2 (potential LWS E). This section of the brook had a fast flow in a much reduced channel, flowing over a gravel substrate with some larger stones.

The main water course to the west of this had a fast flow at the time of the survey over a substrate that contained gravel stretches. A gravel sediment bar was present under a footbridge at the northern end. The banks varied in height up to 1m and were either vertical or of steep gradient, being composed of earth with some stones. Marginal vegetation was dominated by great willowherb (*Epilobium hirsutum*) with some reed canary-grass (*Phalaris arundinacea*), yellow iris (*Iris pseudacorus*) and water-chickweed (*Myosoton aquaticum*).

Wetland – Standing Water

There is a large lake within the wider survey area to the south of the village, and another pond has been noted within the AA to the west of Frolesworth Road Cemetery. There is potential for there to be other smaller ponds within the area that could not be determined through GIS analysis and targeted ground-truthing.

A small area of standing water is present in the southern section of the disused railway line supporting species such as fool's watercress (*Apium nodiflorum*) and duckweed (*Lemna* spp.).

Invasive Species

No invasive species were recorded within the survey area during the ground-truthing.

Target Notes

TN1 A mature pedunculate oak assessed as having moderate potential for roosting bats

TN2 A mature ash tree, possibly meeting the LWS criteria as a veteran tree due to large trunk girth possibly in excess of 3m (potential LWS F)

TN3 A mature pedunculate oak tree, assessed as of moderate bat roost potential

TN4 A mature pedunculate oak tree, assessed as of moderate bat roost potential

TN5 A black poplar hybrid with three clumps of mistletoe, one clump estimated as more than 1m across

TN6 A veteran crack willow tree likely to meet the LWS criteria due to a large trunk girth. This tree was assessed as at least moderate bat roost potential (potential LWS G)

TN7 A large mature ash tree, possibly meeting the LWS criteria for a veteran tree (see potential LWS H)

TN8 A little owl (*Athene noctua*) calling from a dense hedgerow

TN9 A male bullfinch (*Pyrrhula pyrrhula*) in a species-rich hedgerow

TN10 A mature ash tree, assessed as of moderate bat roost potential

TN11 A kingfisher (*Alcedo atthis*) heard calling along the brook

TN12 A brick building with missing slates and ventilation holes, providing significant bat roost potential and possibly a suitable breeding site for barn owls (*Tyto alba*)

TN13 A mature ash tree assessed as of moderate bat roost potential

TN14 A mature ash tree assessed as of moderate to high bat roost potential

4.3 Notable Habitats and Features

The overwhelming majority of the survey area was composed of intensively managed habitats comprising agricultural land of relatively low ecological value and improved grassland with well managed hedgerows. Two meadows designated as LWS are present at the northern end of the survey area (Primethorpe Meadows and Broughton Astley Grassland).

The survey area and village of Broughton Astley are dissected by the River Sence, Broughton Astley Brook and a disused railway line. Some more mature and less managed hedgerows occur around the brooks that feed into the River Sence. These include two sections of hedgerow that meet the LWS criteria; one of which is within Broughton Astley Grassland LWS and is probably included within the designated area (potential LWS D).

Habitats that are likely to support protected species were also recorded and these included seven trees and one building assessed as having high or moderate bat roost potential (see target note section and Figure 2a). Other habitats comprised ponds with potential for breeding amphibians (including great crested newt) and woodland and scrub areas likely to have badger setts. These are discussed further in the protected species section below.

4.3.1 Priority Habitats

Habitats which are considered to qualify within the category of priority habitats as defined by the UK BAP and also currently listed as Habitats of Principal Importance under s74 of the Countryside and Rights of Way Act 2000 in the Broughton Astley survey area comprised:

Species-rich hedgerows – two species-rich hedgerows were located within the survey area. These have been labelled H1 and H2 on Figure 2a, and potential LWSs D & E on Figure 2d.

Field margins and mature trees – these are included on the Leicestershire BAP habitat list and are highly likely to occur across the survey area; however the level of assessment used was not sufficient to adequately identify and map the field margins. A minimum of eight mature trees were recorded within this survey area, three of which were considered likely to meet the LWS criteria for veteran trees on trunk girths.

4.3.2 Revised UK BAP List

The revised list of UK BAP Priority Habitats widens the scope for some habitat types and additional habitat types within the surveyed area include the following:

Ponds – any ponds within the survey area may qualify as priority habitat as defined by the UK BAP, due to the possible presence of scarce or notable species (especially great crested newt).

Hedgerows – the scope for hedgerows has been widened and now includes all hedgerows with 80% or more cover of native tree/shrub species. This could include a number of hedgerows within the survey area, particularly to the south around the brooks.

Rivers – the increased scope for rivers has not been defined at the time of writing although this type is likely to include all natural or near natural running waters. This would include the River Sence and the brooks feeding into it.

4.4 Designated Sites

There are no statutorily designated sites within the survey area boundaries; however there are three SSSIs within 2 km comprising the cluster of **Croft and Huncote Quarry**, **Croft Hill** and **Croft Pasture**. These features, and other designated sites are shown on Figure 2c.

The SSSIs are not within Harborough District, but in the adjacent District of Blaby. However, as they are within 2km of potential development surrounding Broughton Astley, they have potential to be indirectly affected through increases in visitor pressure.

Croft Hill supports a nationally rare type of herb-rich grassland of a predominantly southern distribution and which is rare in the Midlands. The nutrient poor soil derived from the granitic soil has produced open grassland of acidic character, supporting short grasses such as sheep's fescue (*Festuca ovina*), common bent (*Agrostis capillaris*) and crested hair-grass (*Koeleria macrantha*). Ephemeral, spring-growing annual plants are a feature of this site, including several species on the county Rare Plant Register (RPR), such as upright chickweed (*Moenchia erecta*) and small mouse-ear (*Cerastium semidecandrum*). Mosses and lichens are characteristic of open areas where rocks are close to the surface and these include several notable species. This site is currently in "favourable" condition as defined by Natural England (NE).

Croft Pasture SSSI is also a Leicestershire and Rutland Wildlife Trust nature reserve, which includes acidic mixed grassland which is unusual in Leicestershire. The thin turf has developed on sandy soils associated with outcrops of igneous syenite. A total of 15 plant species on the county RPR have been recorded on the site, including annual knawel (*Scleranthus annuus*) at its only known location in the county. Other RPR species include hoary cinquefoil (*Potentilla argentea*), upright chickweed, subterranean clover (*Trifolium subterraneum*), slender trefoil (*Trifolium micranthum*), wild onion (*Allium vineale*), wild clary (*Salvia verbenaca*) and bird's-foot (*Ornithopus perpusillus*). Additional interest is

provided by the River Soar which flows through the site, this section having escaped the engineering works that took place over the majority of its length during the 1970s. This section of river is moderately fast flowing, possessing characteristic marginal vegetation, which includes the RPR listed river water-dropwort (*Oenanthe fluviatilis*). There are records of water voles and a locally notable dragonfly assemblage.

Any significant residential or employment developments to the north of Broughton Astley would need to carefully address any potential increases in visitor pressure that could negatively impact upon the condition of publicly accessible areas within these SSSIs. Appropriate alternative areas of publicly accessible green space should be included within any development in proximity to these designated sites.

Primethorpe Meadows and **Broughton Astley Grassland Local Wildlife sites** are within the assessment area around the village and are recorded as consisting of mesotrophic grassland. Due to the date of the survey (September and October) and also the lack of direct access to these areas, full assessments against the LWS criteria were not possible.

The River Sence LWS is in the centre of the village and immediately adjacent to an AA currently supporting amenity grassland. This feature is known to support populations of water vole and native freshwater crayfish. This feature is highlighted on Figure 2d as 'A'.

Other potentially valuable features within or immediately adjacent to the AAs that have been formerly designated as having Parish, or District level importance comprise:

- The disused railway line to the north and south of the survey area. This feature runs between the AAs, but is not included within them. Only the northern section of this feature is designated as an LWS;
- Road verges along Broughton Way, just inside the AA;
- A ridge and furrow grazed pasture, currently supporting improved grassland, although access to this feature was limited, so this was determined from a distance;
- A section of Stemborough Brook to the south of the village;
- Some hedgerows, nearby but not within the AA;
- A disused claypit adjacent to the AA to the south of Broughton Astley.

Local Wildlife Sites within the wider search area include:

- Areas of willow, ponds, grasslands;
- Sections of the Ashby Magna track and embankment;
- Dunton Bassett Grassland & Quarry;
- Leire Marsh leading into Stemborough Brook;
- Jubilee Walk, and;
- The Goat Field

There are numerous Parish and District level designations in the wider area including sections of the River Soar.

4.5 Wildlife Corridors

There are a number of wildlife corridors that cross the Broughton Astley survey area and AAs. These are listed in the table below and illustrated on Figure 2d:

Number	Feature	Location	Description & Function
1	Disused railway	Southeast of Broughton Astley, bordered by AAs on both sides	The railway now supports broad-leaved woodland and creates a well vegetated green corridor through the AAs and urban area of Broughton Astley. The designation of the northern section of this feature as a Local Wildlife Site reflects its importance locally. Features such as this are likely to support protected species such as badgers and bats, and potentially great crested newts in the water body to the south. It has potential to act as a dispersal corridor for these species and many others.
2	River Sence	Crossing the central part of the village, bordered by AAs on both sides	The watercourse and associated habitats are known to support protected and BAP species (water vole and freshwater crayfish), and are likely to support others. They will also provide an important dispersal corridor for wildlife leading through the village and beyond. Likely to be of importance to bats for foraging and commuting.
3	Brooks to south: Stemborough / Soar Brook	To the south of the survey area, within AA.	The brooks run to either side of a number of AAs to the south of the village. They, and the mature hedgerows associated with them are likely to provide a network of ecological corridors through the grassland. The brooks may have potential value for water vole and freshwater crayfish, especially as there are records from the wider area, and will also act as a dispersal route for other species such as bats.

4	Mature hedgerows	North of the village, within AA.	The area around Primethorpe Meadows, north of Broughton Way has a well established double hedgeline running north and some planted tree lines running parallel to this. Corridors of this width are likely to be of value to species such as bats amphibians and badgers, particularly given their connections to the wider landscape through the River corridor and the presence of a known bat roost in the north of the village.

The landscape within this survey area has been largely fragmented over time as hedgerows have been removed to create larger fields and the intensive management regimes to which the majority of the remaining hedgerows are subjected. There are thus few possibilities for species, particularly bats, (but many others including other mammals, amphibians, reptiles and invertebrates) to move across this survey area, and the identified wildlife corridors should be protected and retained wherever possible.

4.6 Protected and Notable Species

There are a number of protected species records from the Broughton Astley survey area shown on Figure 2b (confidential). Badgers are widespread throughout the landscape, and known setts are located in the southeast of the survey area.

Freshwater crayfish and water vole have been recorded from the River Sence where it flows through the village, and from the brooks and River Soar in the wider area. Consequently potential impacts on these two protected species should be considered with any development that may directly or indirectly affect a water course in the area.

Bat records are dispersed throughout the wider area, with a known roost within the village itself, close to the AAs to the north of the survey area. A total of seven trees with moderate to high potential for roosting bats have been identified during the ground-truthing of this area. These are target noted on Fig 2a.

Notable bird species previously recorded from the area include tree sparrows (*Passer montanus*) and spotted flycatchers (*Muscicapa striata*), with a Leicestershire BAP species, the common redstart recorded from approximately 3km to the southwest of the survey area. Although this is likely to apply to a migrating individual as the record is from April, this species has bred in the county in the past although there have apparently been no confirmed breeding records since 2005.

Notable bird species recorded during the current survey included a kingfisher from Broughton Astley Brook and both bullfinch and little owl from the adjacent hedgerows. Anecdotal evidence from a local resident suggests that kingfishers are regularly present along the brook, at least outside the breeding season.

4.7 Recommendations for Further Investigation

Further surveys of all brooks / streams and rivers within and adjacent to the AAs are recommended prior to any development with potential to impact these features to determine the status of water vole and white clawed crayfish.

Any development within the surrounds of Broughton Astley would be likely to have potential to impact upon badgers given the high number of records for this species from the area. Pre-development badger surveys would be likely to be required to inform suitable mitigation, this is particularly pertinent to the southeast of the site where known setts occur.

Primethorpe Meadows and Broughton Astley LWSs are within the AA. A full assessment of these two areas was not possible due to the timing of the survey and both are subject to fairly intensive grazing pressure. There was nothing to suggest any significant change in status of either site. Broughton Astley Grasslands contains a species rich hedgerow, and there is a presumption against development of areas such as these.

All of the ponds within the survey area have the potential to support breeding amphibians (including great crested newts). Pre-development amphibian surveys would be recommended for any areas of suitable terrestrial habitat within 500m of any of these features (including seasonally wet ponds).

4.7.1 Potential Wildlife Sites

Areas which are considered to merit further investigation with regard to Local Wildlife Site criteria are shown in Figure 2d and listed in the table below:

Letter	Feature	Description & Function
A	River Sence	Water course containing qualifying features for LWS, providing suitable habitat for native white-clawed crayfish and water vole, both county Red Data Book species. Parts of the feature are already designated.
B	Stemborough Brook	Water course containing qualifying features for LWS, providing suitable habitat for native white-clawed crayfish and water vole

C	Soar Brook	Water course containing qualifying features for LWS, providing suitable habitat for native white-clawed crayfish and water vole
D	Hedgerow H1	Species-rich hedgerow within Broughton Astley Grassland LWS and probably forms part of this designated site.
E	Hedgerow H2	Appears to meet the LWS criteria on species assemblage and supporting features and is located to the south west of the village.
F	Mature Tree TN2	Mature ash tree, possibly meeting the LWS criteria as a veteran tree due to large trunk girth (possibly in excess of 3m)
G	Mature Tree TN6	Veteran crack willow tree likely to meet the LWS criteria due to a large trunk girth. This tree was assessed as at least moderate bat roost potential
H	Mature Tree TN7	Large mature ash tree, possibly meeting the LWS criteria for a veteran tree
	Ponds	All of the ponds within the survey area could support breeding populations of great crested newts. If they are proved to be present, these ponds would then meet the LWS criteria (presence of Red Data Book species).

4.7.2 Wildlife Corridor Management

Water vole and white-clawed crayfish surveys of all brooks and streams within the survey area may inform future management priorities.

Enhancement of broadleaf woodland areas will increase the suitability of the habitat for a number of protected and key species including the common redstart, although there have been no recent records of breeding redstarts in Harborough.

4.8 Summary of Key Ecological Resources

- **Two relatively large Local Wildlife Sites are present within the AAs surrounding Broughton Astley namely: Primethorpe Meadows and Broughton Astley Grassland. There is a presumption against development that could adversely affect LWSs**

- **The River Sence LWS is in the centre of the village, and immediately adjacent to a small AA. The River is known to support water vole and white-clawed crayfish. The northern section of the disused railway line is also designated as a LWS, and although this feature is excluded from the AA, it is immediately adjacent to the AA north of Cottage Lane.**

- **There are no SSSIs within the survey area, but Croft Hill, Meadow and Quarry SSSIs are approximately 2km to the north of the survey area and could potentially be impacted by increased visitor pressure from additional residential developments within Broughton Astley.**

- **Many of the ponds, hedgerows, streams, brooks and sections of river and woodland in the area should be considered as having the potential to meet the LWS criteria as qualifying features have been found. Details of locations of these sites have been provided to LRWT. This is particularly pertinent given the relative paucity of ecological features of this type within the Broughton Astley area.**

- **The disused railway, river, brooks and mature hedgerows form important wildlife corridors through the mainly arable landscape and should be conserved and enhanced whenever possible.**

5.0 LUTTERWORTH

Figure 3a Lutterworth: Phase 1 Habitat Survey

Figure 3b Lutterworth: Protected Species Records (Confidential)

Figure 3c Lutterworth: Designated sites

Figure 3d Lutterworth: Wildlife Corridors and Potential Local Wildlife Sites

5.1 Overview & Summary Data

The AAs surround the town of Lutterworth and are extremely varied, supporting a number of different habitat types with no one type predominating. The fields are a mixture of arable, improved grassland, semi-improved and species-poor semi-improved grassland, with some amenity grassland, scattered scrub, tall ruderal and mixed plantation woodland. Running water strongly influences the ecological functionality of the wider landscape in the form of a small brook (Bitteswell Brook) running up the western edge of the town, and the River Swift crossing the south-eastern corner and under the motorway. A particularly interesting feature is an area of marsh found adjacent to the brook in a field of improved grassland off Brookfield Way. The Lutterworth Lowlands Landscape Character Area tends to lack significant tree cover, comprising of rolling pastures divided by mature hedgerows (Harborough District LCA). The area around Lutterworth is relatively characteristic of the wider landscape with a lack of trees, excepting a few mature specimens within the hedgerows, and a couple of small areas of mixed plantation woodland in the Lutterworth Country Park and to the southeast of the town. These areas are shown on the Phase 1 Habitat Figure 3a

5.2 General Habitat Descriptions

Broad-leaved Plantation Woodland

Areas of mixed plantation woodland are found within the designed landscape of the Country Park and alongside the M1. Smaller areas occur elsewhere within the survey area.

Arable

The majority of the fields in the survey area to the north, south and east of the town are currently under intensive agriculture with well managed hedgerows. Allotments within the existing urban area have been identified as arable land on Figure 3a.

Marsh / Marshy grassland

This habitat within Lutterworth is restricted to a damp area in an otherwise improved field of grassland. This patch supports species such as soft rush (*Juncus effusus*), branched bur-reed (*Sparganium erectum*), water figwort (*Scrophularia auriculata*), great burnet (*Sanguisorba officinalis*), willowherb (*Epilobium Spp.*), hairy sedge (*Carex hirta*) and marsh horsetail (*Equisetum palustre*). This area could conceivably meet the LWS criteria as it would exceed the size threshold, and currently has Parish Level designation (potential LWS A).

Poor Semi-improved Neutral Grassland

This habitat type was mapped as present in the series of smaller fields to the north west of the town although no direct access to these areas was possible. All of these fields are grazed by livestock.

This habitat was also present in a small flood defence basin to the west of Bill Crane Way. Herbs present included self-heal (*Prunella vulgaris*) and common ragwort, present as leaf rosettes. No wetland flora had developed and this area is considered to be only infrequently inundated.

Semi-improved Neutral Grassland

This habitat is found in the meadows bordering the brook to the west of Lutterworth, many of which are currently designated to Parish Level. Species present included black knapweed (*Centaurea nigra*), meadow buttercup (*Ranunculus acris*), self-heal, yarrow (*Achillea millefolium*), sorrel (*Rumex acetosa*), common cat's ear (*Hypochoeris radicata*) and grasses such as common bent (*Agrostis capillaris*). Some of the grassland in the area was slightly wetter and included small areas of sedges and rushes.

Two small patches of relic herb-rich grassland were recorded on the top of the embankment of the disused railway line at the eastern end of the survey area, designated to Parish Level. Both areas were becoming encroached upon by the surrounding scrub and brambles and are probably only kept open by grazing rabbits and the passage of people on the footpath. Species recorded comprised common bent, false oat-grass, cock's-foot, black knapweed and perforate St.John's-wort (*Hypericum perforatum*).

Two separate clumps of Hungarian brome (*Bromus inermis* ssp *inermis*) were recorded in the southernmost of the open patches. This species is very scarce in Britain and has been found in 14 sites in the county, this being an apparently new locality (TN6). However, it is not considered to be a native species and as such is excluded from the Rare Plant Register.

Amenity Grassland

Two small areas of amenity grassland have been identified to the northwest of the town and to the south. A larger area is found in the publicly accessible space in Lutterworth Country Park.

Tall Ruderal

Tall ruderal vegetation occurs in mainly small areas surrounding the town, the exception to this is large field dominated by such species to the north of Bilton Way.

Dense Scrub

The railway embankment has become covered in dense scrub, dominated by hawthorn with frequent goat willow (*Salix caprea*) with a dense understorey of brambles. Occasional ash trees and dog rose bushes were also present. The herb layer was species-poor and contained scattered red campion and stinging nettles. Wild hop (*Humulus lupulus*) was also recorded.

Notable birds recorded on this site comprised willow tit (*Parus montanus*) and bullfinch; these have been target noted (TN5 & TN7). Both species have been highlighted as being of high conservation concern by the RSPB and are on their Red List.

Standing Water

Three large ponds have been identified during GIS analysis to the west of Lutterworth, one of which is within the Country Park and there are likely to be many other others in and surrounding the area. Aquatic and fringe species noted during ground-truthing of the pond within the Country Park included broad-leaved pond weed (*Potamogeton natans*), Bulrush (*Typha latifolia*), water mint (*Mentha aquatica*), water-soldier (*Stratiotes aloides*), fringed water-lily (*Nymphoides peltata*) and white water-lily (*Nymphaea alba*). The latter three species have probably been deliberately planted; water-soldier and fringed water-lily are not considered native species in Leicestershire although they do have native

populations elsewhere in Britain. The alien red bistort (*Persicaria amplexicaulis*) was also recorded and has also probably been planted.

Wetland – Running Water

The River Swift runs across the south-eastern corner of Lutterworth and passes through two of the assessment areas, both of which comprise semi-improved grassland with some scattered scrub. Arable land borders the River to the west of the A428.

Only small sections of the River Swift were visible due to lack of access onto the land bordering the river. The banks could be seen from the A428 Bridge, where they were of moderate slope up to 1.5m in height. The substrate was composed of gravel and small stones with some submerged tree roots. Alder, sycamore and a cultivated willow species (*Salix* x *chrysocoma*) bordered the river west of the A428, whereas sycamore and tall hawthorn bushes were abundant on the east side.

The shallow brook running to the west of Lutterworth forms the western boundary for a large number of AAs and is labelled as potential LWS D on Figure 2d. For much of its route it is tree lined and forms a prominent corridor through the landscape. Ash and sycamore appeared to be the dominant tree species although there were a few pedunculate oak trees and a mature crack willow (target noted as it appeared suitable as a bat roost - TN2).

This brook was heavily shaded by overhanging trees and shrubs, the trees being replaced by a tall hedgerow to the north of the flood defence area. The brook has become heavily choked by great willowherb and stinging nettle with some reed canary-grass. Only short sections of bank were visible and these areas had shallow slopes of up to 0.5m, some areas having light cattle poaching.

Hedgerows

The majority of the hedgerows in the survey area appear to be well managed and are not likely to qualify as species-rich. The ground-truthing of the areas adjacent to Brookfield Way did not highlight any species-rich hedgerows; however the GIS analysis has highlighted a complex of mature hedgerows containing trees around the village of Bitteswell to the north of this, these areas not being accessible at the time of the survey. These hedgerows in particular have potential to meet the hedgerow LWS criteria and further survey is recommended.

The hedgerow bordering the brook (north of the flood defence area) included guelder rose (*Viburnum opulus*), hazel, field maple, wych elm and blackthorn. This hedgerow continued northwards outside the surveyed area. This hedgerow has the potential to meet the LWS criteria on species assemblage and supporting features such as the brook and mature trees. This has been labelled as potential LWS E on Figure 3d.

Trees

Many hedgerows were noted to include mature trees, and a number of scattered trees also occur, largely to the south of the town. Many of these appear to be sizeable and the ground-truthing revealed three mature trees of at least moderate bat roost potential (TN 2, 3 & 4 - see target note section below). One of these trees, plus a multi-stemmed ash tree may meet the LWS criteria for veteran trees (G & F on Figure 3d).

Invasive Species

No invasive species were recorded within the survey area.

Target Notes

The target notes are shown on Plan 3a

TN1 A multi-stemmed ash tree that has been coppiced in the past, this tree has a trunk girth large enough to meet the LWS criteria if measured at the base (potential LWS F)

TN2 A mature ash tree assessed as moderate bat roost potential

TN3 A large, dead ash tree assessed as high bat roost potential

TN4 A mature crack willow that is splitting apart, assessed as high bat roost potential. This tree could meet the LWS criteria as a veteran tree due to the large trunk girth (potential LWS G)

TN5 A bullfinch present in the dense scrub of the railway embankment

TN6 Two clumps of Hungarian brome grass within relic grassland

TN7 A willow tit present in dense scrub

TN8 Species-rich marshy grassland to the west of Brookfield Way, likely to meet LWS criteria (potential LWS B).

5.3 Notable Habitats and Features

Arable land was relatively infrequent within this survey area, with quite a few fields supporting semi-improved and poor semi-improved grassland. The patch of marshy grassland to the west of Brookfield Way was particularly species-rich and is likely to meet the LWS criteria (A on Figure 3d).

Hedgerows surrounding Bitteswell to the northwest of the survey area appear to be well established but further ground-truthing is required to determine their species-richness.

Both the main waterways in the area are at least partly covered by Parish and District Level designations. Both waterways are considered to be highly suitable for water vole and other protected and notable species.

The pond in Lutterworth Country Park has high potential for supporting great crested newt populations, and this is likely to be the case with other standing water bodies in the area.

5.3.1 Priority Habitats

There may be species-rich hedgerows within the area that could qualify within the category of priority habitats as defined by the UK BAP and also currently listed as Habitats of Principal Importance under s74 of the Countryside and Rights of Way Act 2000. Further survey of these hedgerows and assessment against the LWS criteria and the Hedgerows Regulations (1994) criteria would be recommended prior to any development taking place.

The marshy grassland may also qualify as a priority habitat under Lowland Meadow, as also could the potentially herb-rich grassland to the east (potential LWSs A & B).

5.3.2 Revised UK BAP List

The revised list of UK BAP Priority Habitats widens the scope for some habitat types and additional habitat types within the surveyed area include the following:

The scope for **Hedgerows** has been widened and now includes all hedgerows with 80% or more cover of native tree/shrub species. This would include the majority of the hedgerows within the survey area, including those that are intensively managed.

The increased scope for **Rivers** has not been defined at the time of writing although this type is likely to include all natural or near natural running waters. This would include both the River Swift and Bitteswell Brook.

5.4 Designated Sites

Please refer to Figure 3c. There are no designated sites within the AAs surrounding Lutterworth.

Misterton Marshes SSSI is adjacent to a tributary of the River Swift within 1km of the proposed sites to the west of the town, comprising one of the largest blocks of unimproved wetland habitat in the county. All units of the marsh are currently listed by Natural England as being in unfavourable condition, although one unit is currently recovering. The main reasons for the declining condition of the site are believed to be inappropriate management of water levels and scrub encroachment causing the site to dry out. Any developments within the River Swift catchment would need to avoid negatively impacting the quality or quantity of water reaching this designated feature.

Some ancient and semi-natural woodland exists at **Shawell Wood**, approximately 1.5km south of Lutterworth; this area is also designated as a LWS.

There are currently no Local Wildlife Sites within the AAs surrounding Lutterworth, although they do include a number of areas that were previously designated at Parish Level. They mainly comprise marshy grassland and semi-improved grassland along the brook to the west of the town. The brook itself is also designated at Parish Level. The marsh bordering the brook highlighted by the ground-truthing surveys as likely to meet LWS criteria (discussed above in section 5.3, and shown on Figure 3d as A)) is currently only of Parish Level designation. The stream itself and adjacent meadows currently form a natural corridor for species dispersal and allow natural flow regimes.

Part of the disused railway line along the eastern side of the town is designated to Parish Level and falls within the AA, currently supporting dense scrub with relic areas of grassland. A further area of Parish Level importance is marshland and semi-improved grassland to the north of the River Swift in the southeast corner of the town.

A number of LWS are found in the surrounding area outside the AAs, and include meadows, trees and road verges. Numerous other sites are recorded as being of Parish or District level and include features

such as the River Swift, the stream to the south of the town, and some areas of unimproved grassland, reed bed and wet flush.

5.5 Wildlife Corridors

The River Swift, brook, disused railway line and mature hedgerows are all likely to act as important wildlife corridors through the area. These and other corridors are listed below and shown on Figure 3d:

Number	Feature	Location	Description & Function
1.	River Swift	Southeast corner of Lutterworth, within AA	The watercourse and associated habitats are known to support protected and BAP species, and are likely to support others. They will also provide an important dispersal corridor for wildlife leading to the Misterton Marshes beyond. Likely to be of importance to bats and birds for foraging and commuting.
2.	Bitteswell Brook	West of Lutterworth, within AA	The brook runs along the western boundary of approximately half of the AAs in this area forming a wide corridor of valuable associated habitats such as trees, marshes and semi-improved grassland. The brook itself has high potential to support water vole and will act as a commuting and foraging route for bats.
3.	Dismantled Railway	East of Lutterworth, within AA	The disused railway runs through a number of AAs to the east of the town. The dense scrub within this feature is likely to provide a valuable corridor between the urban area and the M1. The importance of the northern section of the railway has been highlighted with a Parish Level designation. Likely to act as a foraging and commuting route for bats, potential to support badgers.
4.	Mature hedgerows	Bitteswell, within AA	Field size decreases in this part of the survey area and a network of mature hedgerows and trees forms a dense cluster of potential wildlife corridors and habitat for breeding birds.

5.6 Protected and Notable Species

Please refer to Figure 3b (confidential). The wider area contains many badger records, only one of which is within the AA. Bats appear to be under recorded in the area, with only one record from 1km south of the town. An interesting record for common redstart exists from 1.5km north of the Lutterworth AAs, a species on the county BAP list. As this record is from April it is likely to be attributable to a migrant passing though.

Bullhead fish (*Cottus gobio*) have been recorded from the River Swift as have freshwater crayfish (*Austropotamobius pallipes*). Both main waterways in the area are considered to have high potential value for water vole, while the pond in Lutterworth Country Park is likely to support amphibians such as great crested newts. Any ponds in the area are potentially suitable habitat for this species.

Notable bird species such as bullfinch (*Pyrrhula pyrrhula*), goldfinch (*Carduelis carduelis*), starling (*Sturnus vulgaris*), green woodpecker (*Picus viridis*), dunnock (*Prunella modularis*), song thrush (*Turdus philomelos*), common kestrel (*Falco tinnunculus*) and tree sparrow (*Passer montanus*) have previously been noted from the wider Lutterworth area. Bullfinch and willow tit were recorded during the surveys.

5.7 Recommendations for Further Investigation

The limited length of the River Swift that was visible contains stretches of gravel substrate, this being a LWS qualifying feature. The river is also considered likely to support county Red Data Book species such as water vole and native white-clawed crayfish. Further survey work would confirm the probable LWS status of the River Swift and determine presence of protected species.

The brook did not appear to contain any LWS qualifying features although it could also support county Red Data Book species. Should these species be confirmed from the brook, it would then qualify for LWS status. Further survey work would confirm or refute this.

One potentially species-rich hedgerow was recorded during the survey, bordering the brook to the north of Lutterworth Road (potential LWS E). This hedgerow contained at least five locally native woody species and there may be others.

Some of the hedgerows particularly in the northwest of the survey area may also qualify as species-rich although these were not accessible at the time of the survey. Further work is recommended to determine their value in terms of LWS hedgerow criteria and value for faunal species such as bats, with mature trees forming potential roost sites.

The dense scrub on the disused railway is likely to support badgers and a survey for the presence of this species would be particularly recommended prior to any development in the area, especially as good quality foraging habitat is present directly adjacent on the east side.

Allotments may provide suitable habitat for birds, reptiles, amphibians and invertebrates, and this habitat type is on the local BAP for some counties, but not in Leicestershire. Allotments provide green space within the urban environment, important for the well being of the human population, and containing a patchwork of habitats for wildlife that change in space and time (English Nature 2003).

5.7.1 Potential Wildlife Sites

Areas which are considered to merit further investigation with regard to Local Wildlife Site criteria in Lutterworth are highlighted in Figure 3d with details provided in the table below:

Letter	Feature	Description & Function
A	Marshy grassland adjacent to Brook	Currently holds Parish Level designation, however, a however a brief assessment of the site indicates that a sufficient number of plants that meet the LWS criteria for wet grassland / lowland meadow are present and that the size of the area exceeds the threshold for designation.
B	Grass field	The adjacent grass field to the east also contains LWS qualifying species and the two areas complement each other. Other areas of Parish Level grassland alongside the brook may also meet the LWS criteria although they did not appear to be particularly species-rich during this broad-scale assessment.
C	River Swift	Contains qualifying features to meet LWS criteria.
D	Bitteswell Brook to west of Lutterworth	Could meet the LWS criteria for rivers and streams although further survey work would be required to identify qualifying features and Red Data Book and other protected species. Could feasibly meet the LWS criteria through the presence of county RDB species.
E	Hedgerows	Some of the mature hedgerows to the northwest of the town could be species-rich and meet the LWS criteria. The hedgerow alongside the northern end of the brook is the most likely to meet the LWS criteria, further survey work would confirm this.
F	Multi-stemmed ash tree TN 1	A multi-stemmed ash tree that has been coppiced in the past, this tree has a trunk girth large enough to meet the LWS criteria if measured at the base.
G	Veteran crack willow TN 4	A mature crack willow that is splitting apart, assessed as high bat roost potential. This tree could meet the LWS criteria as a veteran tree due to the large trunk girth.

It is considered that the areas of relic grassland on top of the disused railway embankment are now too small to be considered as potential LWS as they probably fall below the size threshold due to extensive invasion by scrub. They are also likely to have diminished in species-richness from the same cause.

These areas could however be resurrected through scrub removal. Disturbance of the soil surface could stimulate buried seed to germinate.

5.7.2 Wildlife Corridor Management

Water vole and white-clawed crayfish surveys of the brook and River Swift prior to any potential development are likely to be required to inform planning decisions, mitigation and to inform future management priorities.

A badger survey of the disused railway embankment would confirm or refute the likely importance of this area for badgers, and would be recommended prior to any potential development in the wider area.

5.8 Summary of Key Ecological Resources

- **There are no SSSIs or LWS within the AAs surrounding Lutterworth, although there are a number of sites identified as being of Parish Level interest along the brook, River Swift and dismantled railway. An area of marshy grassland / lowland meadow, adjacent semi-improved grassland, a couple of veteran trees, and the waterways within these sites are considered likely to qualify under the LWS criteria.**
- **Misterton Marsh SSSI is within 1km of the AAs to the east of the town and is linked to the AAs via the River Swift.**
- **A cluster of mature hedgerows in the northwest of the survey area could potentially be species-rich and require further survey against the LWS criteria.**
- **Any of the ponds within the survey area may meet the LWS criteria should they be proved to support breeding populations of amphibians (including great-crested newt).**
- **Badger records are numerous throughout the wider area and a common redstart has been recorded approximately 1.5km to the north of the town.**
- **The River Swift, Bitteswell Brook, and the disused railway line form key wildlife corridors around Sympathetic management of these features and corridors could enhance their value for species dispersal within and beyond the surveyed area.**

6.0 MARKET HARBOROUGH

Figure 4a Market Harborough: Phase 1 Habitat Survey (shown on maps 1-4 – North west, North east, South east and South west).

Figure 4b Market Harborough: Protected Species Records (Confidential)

Figure 4c Market Harborough: Designated sites

Figure 4d Market Harborough: Wildlife Corridors & Potential Local Wildlife Sites

6.1 Overview & Summary Data

Market Harborough is in southern Leicestershire, and is the largest of the areas currently being considered by HDC. The AAs surround the existing town and Great Bowden to the northeast, with a number of small grassland units within the town also put forward for assessment. Much of the land to the west of the town is arable with widely spaced species-poor, defunct hedgelines and isolated ponds. The northern part of the survey area has a more traditional field boundary system with some mature hedges and smaller fields of improved and semi-improved grassland. The AAs surrounding Great Bowden to the northeast of the survey area incorporate even smaller areas, some of which are currently amenity grassland. Land to the west of the town is mainly arable and improved grassland with poor hedges and large field sizes. Please refer to Figure 4a.

Key wildlife corridors into and around the survey area include; the railway, River Welland, River Jordan, Grand Union Canal and a disused railway line as highlighted on Figure 4d.

6.2 General Habitat Descriptions

Mixed Plantation Woodland

Broad bands of mixed plantation woodland are found in some of the AAs to the north of the town, around Great Bowden and to the east of the River Jordan in the southeast corner of the survey area.

The woodland blocks near Great Bowden included areas composed of black poplar hybrids (*Populus* x *canadensis*), European larch (*Larix decidua*) and silver birch (*Betula pendula*).

Broad-leaved Plantation Woodland

Plantation woodland is present in the green spaces forming AAs within the urban area. These areas have not been surveyed in detail but most contain a mixture of locally native and non-native species.

Broad-leaved Semi-natural Woodland

There are two areas of scattered broad-leaved semi-natural woodland in the survey area; the largest of these adjoins the brook to the west of the Grand Union Canal. This woodland was dominated by mature ash trees with some pedunculate oak and sycamore. Scattered beech trees had presumably been planted in the past. There was a well developed shrub layer dominated by hawthorn and elder with some field maple. The ground flora was rather sparse but included scattered clumps of stinging nettles, great willowherb and one small clump of wood small-reed (*Calamagrostis epigejos*).

Evidence of badgers was found approximately half-way along this woodland belt, comprising two recently active holes and one in partial use that has become blocked with fallen leaves and minor dead branches. A fresh latrine was found alongside the footpath, towards the northern end of the woodland. Both these features have been target noted (TN4 & TN5) and are shown on the protected species map Figure 3b as the location should be considered confidential. Foraging activity was recorded within the strip of grassland on the east side of the woodland although it was considered that the majority of this had been caused by rabbits.

The other section of semi-natural woodland occurred within an oval of land between Leicester Road (B6047) and a lay-by to the south. This woodland contained ash, crack willow, field maple and hawthorn with a ground flora composed of ruderal species plus red campion.

Both these woodland areas are considered to be of secondary origin as no ancient woodland indicator species were recorded.

Coniferous Woodland

A row of mature Scots pines (*Pinus sylvestris*) lines the southern side of Braybrooke Road at the southern end of the AA, south of Market Harborough.

Dense Scrub

Occasional small areas of scrub occur in field corners throughout the survey area. A small AA within the urban area to the southeast of the town is completely covered by this habitat. There was a large band

of dense scrub at the western end of the railway corridor in the Little Bowden area of the town, this merging into a tall hedgerow on the north side of the railway line. Locations like this in the urban area may possibly support species such as reptiles, amphibians, badgers and invertebrates. Slow-worms (*Anguis fragilis*) and amphibians have been previously recorded in this area of the town; they are also likely to be present along the railway corridor.

Improved Grassland

Improved grassland occurs mainly to the east and north of Market Harborough in fields of varying sizes.

Poor Semi-improved Grassland

Occurring mainly in the north of the survey area, especially around the village of Great Bowden where the fields tended to be smaller than elsewhere within the surveyed area.

This habitat type is also present to the east of Great Bowden, and in a much larger area containing the junction between the River Welland and the brook joining from the east; just to the west of the A6.

In all areas, crested dog's-tail and perennial rye-grass appeared to be dominant and there were few herbs, those identified being ruderal species such as creeping thistle and dock species. These fields are grazed by livestock involving both cattle and sheep.

A section of Parish Level verge is located on the north side of Leicester Road (B6047) on the northwest of the town, immediately to the west of the lay-by on the south side. No species information is available regarding previous records on this verge although it is now composed of coarse grass species and is becoming encroached upon by hawthorn scrub. False oat-grass and cock's-foot were the dominant species; herbs present were generally ruderal species such as cow parsley, common ragwort and broad-leaved dock. Non-ruderal species recorded were limited although yarrow and common vetch (*Vicia sativa*) were present. Parts of this verge have become superficially damaged by vehicles and storage of materials from past road works, although this was not thought to be of any great significance due to the species-poor nature of the verge. The verge can be seen as TN9 on Figure 4a, and is shown on Figure 4c as a Parish Level site.

Röesel's bush-crickets (*Metrioptera roeselii*) were present in quantity on this verge. This is a relatively new species for Leicestershire, with the first county record as recently as 2004 although they are now widespread throughout the county as far north as Kegworth, having colonised from Northamptonshire.

Arable

Arable fields with gappy hedgerows, considered likely to be species-poor dominate the western part of the survey area. An area thought to be a market garden to the southeast of the survey area is classified as arable land, as are allotments within the existing urban area.

Amenity Grassland

This habitat was recorded in small areas throughout the urban environment and over some larger areas in the surrounding AAs; these include areas of public open space used for informal recreation.

Wetland – Running Water

The River Jordan runs northwards into the survey area from the south, and joins the River Welland running through the survey area from west to east. A small brook also joins the River Welland from east of the survey area near to the A6.

The River Jordan could not be directly accessed and it was surveyed using binoculars from Braybrooke Road. The banks and substrate could not be seen although large sections appeared to be dominated by great willowherb and stinging nettles. This section of the river had an adjacent tall hedgerow, approximately 4m in height and dominated by hawthorn with scattered ash trees.

The River Welland flows through the eastern edge of the AA to the west of the B4304 and the A6, with a small (un-named) brook flowing into the river south of Dingley Road. Only two short sections of bank were visible on either side of the road bridge where the river flowed beneath Dingley Road. The river was approximately 2m in width with steep or vertical earth banks up to 1.5m in height. The substrate was composed of mud with some submerged rocks and a few larger rocks to the south of the road bridge projecting above the water surface. A fresh otter spraint was seen on one of these rocks – see target note TN3 on Figure 4a.

Emergent vegetation appeared to be scattered throughout the visible sections, being composed of stinging nettles and reed canary-grass. Scattered hawthorn bushes were present on both banks, to the north and south of the road.

The Grand Union Canal forms a substantial corridor out of the town and up the western side of the urban area adjacent to a small brook with well developed hedgelines and mature trees. The canal has largely artificial banks composed of metal pilings although mud banks of varying size have formed very locally away from areas regularly used for mooring boats. There is a relatively rich, though scattered emergent vegetation community around the loop to the west of the town, species recorded comprising branched bur-reed (*Sparganium erectum*), reed sweet-grass (*Glyceria maxima*), pendulous sedge, lesser pond-sedge (*Carex acutiformis*), yellow iris, meadowsweet, gipsywort (*Lycopus europaeus*) and great willowherb. Ruderal species were also present and included stinging nettles, curled dock and a hybrid dock (*Rumex x pratensis*), the latter being a partially fertile hybrid between curled dock and broad-leaved dock. Several moorhens (*Gallinula chloropus*) were seen, including fledged juveniles.

The canal is subject to some degree of disturbance from boats which may limit the submerged aquatic vegetation likely to be present. Several locally rare pondweeds (*Potamogeton*) are present in the Grand Union Canal and are listed in the Rare Plant Register although all of these are more than 2km away from the surveyed area and have not been recorded since the 1990s.

Other small brooks and wet ditches are likely to occur within the survey area, but could not be resolved using the broad GIS assessment. None were recorded within the ground-truthed areas.

Wetland – Standing Water

A number of ponds of various sizes have been identified within and surrounding the survey area. As there are records of great crested newts within the wider area, the potential for these amphibians to breed in any of these waterbodies, and other smaller ponds (not identified under the broad assessment) should be considered.

Only one water body was visible during the ground-truthing, this was considered to be a fishing lake to the south of Braybrooke Road. It was surrounded by willow scrub with some willow trees on a small island. Emergent vegetation was visible through binoculars from the road, species identified comprising great willowherb, reed sweet-grass, common reed (*Phragmites australis*), hard rush and common club-rush (*Schoenoplectus lacustris*).

Tall Ruderal

There is one large field of tall ruderal vegetation between the A6 and the A4304, this area being dominated by great willowherb, stinging nettles, docks and thistles. There is the possibility that amphibians could occur in this area and grass snakes may also be present as the foraging habitat appeared suitable.

A Parish Level field adjacent to the west bank of the Grand Union Canal has apparently been unmanaged for some years and now contains a mosaic of coarse grasses and ruderal species. Given the nature of the habitat, it is considered unlikely that this area would now meet the LWS criteria.

Hedgerows

The majority of the hedgerows within the AAs are considered likely to be species-poor, and many are defunct, or intensively managed. However, there are occasional mature and dense hedgerows scattered throughout the sites, with rather more of these occurring to the north of the survey area in the vicinity of Great Bowden. All of these hedgerows, (although some were tall and bushy) were considered to be species-poor and dominated by either hawthorn or blackthorn. These tall hedgerows were considered to provide good quality bat foraging and commuting routes and formed a network linking the assessment areas with the surrounding landscape. Some sections of intensively managed hedgerows (regularly trimmed to 1.5m) interrupted some of these tall hedgerows which would limit their value to commuting bats.

Tall hedgerows with mature trees adjoined Braybrooke Road at the southern end of the AA, south of Market Harborough. The tall hedgerow on the north side of the railway line merged into an area of dense scrub at the western end.

A section of species-rich hedgerow on the north side of Braybrooke Road separated the road from the railway line although this hedgerow has become rather gappy. This hedge is labelled as wildlife corridor 18 on Figure 4d. A 30m section was sampled, yielding six locally native species plus two naturalised species: sycamore and wild plum (*Prunus domestica*). Neither of these species are considered when determining LWS status. The native species within this section comprised Midland hawthorn (*Crataegus laevigata*), hawthorn, ash, blackthorn, pedunculate oak and dog rose. The ground flora was dominated by dense ivy with some red campion and hedge woundwort.

The opposite hedgerow on the south side of the road was trimmed to approximately 1.5m and dominated by hawthorn although there were mature elm trees at regular intervals, the majority of these being either dead or dying of Dutch elm disease. Apparently healthy suckers were growing from the root stocks of these trees although these were of relatively low height at the time of the survey. As so many of these trees were decaying, there is a distinct possibility that potential bat roosts occur in these trees although none were identified within the AA area.

Trees

Specific surveys for veteran trees were not carried out within the Market Harborough area as this was not part of the brief although trees thought likely to meet the LWS criteria were recorded and mapped where seen. In the event only one potential veteran tree was recorded, comprising a pedunculate oak tree in the hedgerow forming the south boundary to Braybrooke Road, at the western end – see target note TN6.

Five mature trees were identified that were assessed as of at least moderate bat roost potential and these have been target noted (see TN1, 2, 6, 7 and 8 on Figure 4a).

A line of mature beech trees had been planted to the west of the Grand Union Canal although all of these were assessed as of low bat roost potential.

Target Notes

TN1 A mature ash tree assessed as of high bat roost potential

TN2 Another mature ash tree assessed as of high bat roost potential

TN3 A fresh otter spraint on an exposed rock in the River Welland, west of the Dingley Road bridge

TN4 A fresh badger latrine on the edge of the woodland (Confidential, location shown on Figure 4b)

TN5 A badger sett comprising two recently active holes and one in partial use (Confidential, location shown on Figure 4b)

TN6 A possible veteran pedunculate oak tree

TN7 A mature ash tree assessed as high bat roost potential due to several old woodpecker nest holes

TN8 Two mature ash trees assessed as moderate bat roost potential

TN9 Röesel's bush cricket on parish level grass verge

6.3 Notable Habitats and Features

Much of the surveyed area was composed either of intensively managed agricultural land, improved grassland and poor semi-improved grassland, mainly of relatively low ecological value. One active badger sett was recorded during the survey and the woodlands and mature hedgerows across the area could potentially support more.

Five mature trees were recorded that have at least moderate potential for roosting bats, other trees with such potential could be present to the north of Great Bowden as this area could not be accessed during the survey.

All of the ponds within and adjacent to the surveyed area could support breeding amphibians, including the possibility of great crested newts.

A fresh otter spraint was recorded on a rock in the River Welland (TN3), indicating at least casual use of the river system.

6.3.1 Priority Habitats

Habitats which are considered to qualify within the category of priority habitats as defined by the UK BAP and also currently listed as Habitats of Principal Importance under s74 of the Countryside and Rights of Way Act 2000 in the Market Harborough survey area comprised:

- One hedgerow with the potential to be species-rich on the north side of Braybrooke Road to the south east of Market Harborough (wildlife corridor 18 on Figure 4d);
- at least eight ponds with potential to support breeding amphibians including great crested newts, these are shown on Figure 4a.

All of the grassland within this survey area was assessed as species-poor, including a short section of Parish Level verge. None of these areas are considered at all likely to fall within the definition of Lowland Meadow due to species-poor assemblages.

6.3.2 Revised UK BAP List

The revised list of UK BAP Priority Habitats widens the scope for some habitat types and additional habitat types within the Market Harborough area include the following:

Any of the **Ponds** could qualify.

The scope for **Hedgerows** has been widened and now includes all hedgerows with 80% or more cover of native tree/shrub species. This could potentially include the majority of the hedgerows within the survey area.

The increased scope for **Rivers** has not been defined at the time of writing although this type is likely to include all natural or near natural running waters. This would include the River Welland, River Jordan and two brooks within the survey area. The Grand Union Canal could also potentially be included within this category.

Field Margins are on the local BAP list and are likely to occur throughout the survey area, although there are no records of notable arable margin plants according to the Rare Plant Register.

6.4 Designated Sites

Please refer to Figure 4c. There are no designated sites within the AAs surrounding Market Harborough, although **Great Bowden Borrowpit SSSI** is within 2km of the AAs. The Borrowpit supports a tall fen community on base-poor soils, currently in favourable condition. As this is not a site with public access, indirect impacts of development within the AA due to increases in visitor numbers are not considered likely, however potential effects of development on water quality or quantity should be carefully examined.

There are very few Local Wildlife Sites within the survey area and 2km buffer zone; these comprise sections of the **Grand Union Canal** to the north west of the town and two individual veteran ash trees to the west of the survey area.

Within the AA there are a number of sites formerly designated as being of Parish Level importance shown on Figure 4c. These include two ponds to the east of the survey area, adjacent to the AAs; a neglected grassland, previously of Parish Level importance within the AA, and a roadside verge alongside the Leicester Road (TN9).

The **River Welland** has previously held Parish Level importance, but has not yet been reassessed under the LWS criteria. The Regional Spatial Strategy identifies the Strategic River Corridor of the Welland as being important at a Regional level. The route of the river and adjacent riparian vegetation is likely to provide a valuable dispersal corridor for wildlife (including protected species), and its preservation and enhancement is also likely to be essential for floodplain retention and catchment management.

6.5 Protected and Notable Species

Please refer to Figure 4b (confidential). There are relatively few badger records in the AAs around Market Harborough, but two are known from within the AAs; one to the east of the railway line, and one near Leicester Lane. Although badgers are legally protected and are a material consideration in the planning process, this species is not considered to be of high conservation value. One active sett was identified during the survey and others could be present.

Bat records are distributed throughout the urban area and surrounding AAs, with four known roosts within the search area. Three of these are located within, or immediately adjacent to AAs:

- Near Manor Road, Great Bowden;
- Nether Green, Great Bowden, and;
- in the urban area around Leicester Road.

There are a number of reptile records for the urban fringe of the town, a small cluster of which are in the AA between the railway and River Welland where these features leave the town heading north.

Great crested newt records are spread through the urban area, and given the high number of ponds, particularly within and around the AAs to the west of the town, this European Protected Species should be considered within any proposed developments.

Great Bowden Borrowpit SSSI supports a number of notable species such as Kneiff's hook-moss (*Drepanocladus aduncus*). Notable bird species recorded in the area include green woodpecker (*Picus viridis*), starling, grey wagtail, blackcap (*Sylvia atricapilla*), kestrel, common linnet (*Carduelis cannabina*), common bullfinch and kingfisher (*Alcedo atthis*) from the River Welland and Grand Union Canal.

6.6 Wildlife Corridors

The Market Harborough survey area is much larger than those around the other urban sections. Consequently, a large number of likely wildlife corridors have been identified below, and are shown on Figure 4d. Key linear features leading in and out of the town supporting mature trees, shrubs and other boundary habitats include the River Welland, River Jordan, Grand Union Canal, the railway and a disused railway.

Number	Feature	Location	Description & Function
1.	River Jordan	Southeast of the town, directly adjacent to AAs	The watercourse and associated habitats have potential to support a number of BAP species, and to provide a dispersal corridor for many other species. Likely to be used by bats for foraging and commuting and potentially by kingfishers.
2.	Hedgerows	Southeast part of the survey area, within the AA	Linking the River Jordan to a large pond. Ponds and watercourses attract bat species such as Daubenton's bat (*Myotis daubentonii*), and the hedgerows provide features for the bats to navigate along.
3.	Track to east of A504	Southeast of the town, adjacent to AAs	Track with sparse hedge line; this feature gains importance as there are so few features leading across the large arable fields.
4.	Semi-natural broad-leaved Woodland & hedgerow	South of the town, adjacent to AAs	Linear section of woodland adjacent to small AA in urban surrounds. Lack of connecting habitat, but also has value as relict corridor in relatively featureless landscape.
5.	Series of hedges, some double around market garden	Southwest part of the survey area, within the AA	Good connectivity to River corridor and disused railway line. Some of the few mature, intact hedges in the locality.
6.	River Welland (West)	Southwest of the town, adjacent to the AA	River and bordering vegetation create a very important wildlife corridor connecting the survey area to the wider landscape. Likely to be of value to bats, birds, amphibians, reptiles and invertebrates, and potentially to protected species such as water voles. May not be directly impacted by any development in the surrounding AAs, but potential increases in disturbance and lighting should be considered. Records of kingfisher and slow worm (*Anguis fragilis*) have been obtained from the River.

7.	Disused Railway	Southwest of the town, within 200m of AAs	Both the dismantled railway and the adjacent hedgerows form a valuable corridor with good connectivity to the River Welland. Likely to be of particular value to species such as bats, invertebrates, reptiles, birds and amphibians.
8.	Grand Union Canal	West of the town, adjacent to AAs	The canal and accompanying habitats (emergent vegetation, grassy banks, hedgerows, and rough grassland) are likely to be of value to those species listed above and kingfisher, aquatic invertebrates and water vole. This sizeable corridor is considered to be extremely valuable, and any potential impacts due to lighting or disturbance should be minimised.
9.	Brook to west of canal	Western part of town, within AA	The brook and adjacent hedgerows form a sizeable, mature feature in the ecological landscape. They are well connected to the canal and other hedgerows leading out into the arable fields. Likely to be important for dispersal of many species, particularly water vole and bats.
10.	Track to northwest of 'The Woodlands'	Western part of survey area, within AA	Track with sparse hedge line; this feature gains importance as there are so few features leading across the large arable fields. There are a number of isolated ponds in this area of the AAs and any hedgelines will increase species' ability to disperse to these features for foraging or breeding (e.g. bats and amphibians).
11.	Hedgeline to the north of Davies Close	Northwest part of survey area, within AA	Mature, less managed hedgeline; again this feature gains importance as there are so few sizeable hedges in the area. Well connected to the canal and other hedgelines. Likely to be of importance to breeding birds and for dispersal of many species.
12.	Hedgerows and trees around Leicester Lane	Northern part of survey area, adjacent to AAs	Mature trees and hedgelines with good connectivity to other features and hedgerows. Likely to be of importance particularly to breeding birds, bats and badgers (there is a known sett in the area) and for dispersal of many species.
13.	Hedgerow complex north of 'The Ridgeway'	Northern part of map, within AA	Again, these mature hedgerows are increasingly important given the relative lack of sizeable linear features in the surrounding landscape. A series of smaller fields occur in this area and the ecological value is considered likely to be higher than the surrounding large arable fields.
14.	Railway (North)	North of the town, adjacent to AAs	The mature vegetation lining the railway is likely to provide a dispersal corridor for bats and birds while the adjacent habitats, likely to be mosaics of grassland and tall ruderal will offer dispersal routes and suitable habitat for badgers, invertebrates, reptiles, and other species. A number of grass snake (*Natrix natrix*) and badger records have been

			received from this area.
15.	Great Bowden Hedgerows	Northeast of Market Harborough, adjacent to AAs	The mature trees along the Welham Road will provide a valuable dispersal corridor for bats and birds, particularly as there are known bat roosts (pipistrelle *Pipistrellus pipistrellus* and brown long-eared *Plecotus auritus*) in close proximity to the tree line.
16.	River Welland & brook (East)	Northeast of the town, adjacent to AAs	The River and bordering vegetation create a very important wildlife corridor connecting the survey area to the wider landscape. Likely to be of value to bats, birds, amphibians, reptiles and invertebrates, and potentially to protected species such as water voles. There is a AA in semi-improved grassland adjacent to the River and brook. Potential impacts on the River corridor would be likely to require careful assessment and extensive mitigation if development were to take place in this AA.
17.	Hedge to east of Lodge Farm	Eastern part of map, adjacent to AAs	Hedgeline is relatively more intact than surrounding hedges and has more connectivity to features such as Dingley Warren woods (to the east) than other hedgelines in the area.
18.	Railway (south)	Southeast of the town, adjacent to AAs	The mature vegetation lining the railway is likely to provide a dispersal corridor for bats and birds while the adjacent habitats, likely to be mosaics of grassland and tall ruderal will offer dispersal routes and suitable habitat for badgers, invertebrates, reptiles, and other species.

A number of well established and broad hedgerows, especially those containing mature trees have been highlighted on Figure 4d. They are not all listed above as the reasons for their inclusion are all similar. There is a notable network of these hedgerows to the west of Great Bowden. Sizeable hedgerows are increasingly important in the landscape surrounding the town as the field sizes are large and many do not have intact, continuous hedgelines surrounding them. Hedgerows with good connectivity to features such as woodland, rivers, foraging areas or other substantial hedgerows are likely to be important for the dispersal of species such as bats, badgers, amphibians, reptiles and invertebrates, and to provide nesting, foraging and shelter for a number of BAP bird species.

6.7 Recommendations for Further Investigation

All of the Parish Level sites were surveyed although assessment of these against the LWS criteria was not part of the brief. Assessments on habitat quality of these areas were made however and judgements were made on their likelihood to meet the LWS criteria.

The majority of the hedgerows within the survey area were assessed as being species-poor although one has the potential to be species-rich, this being located on the north side of Braybrooke Road to the south of the railway line (identified as wildlife corridor 18 on Figure 4d). However, the area to the north of Great Bowden was not accessible during the survey and further hedgerow survey is recommended in this area, prior to any potential development.

All of the grassland on accessible land was considered to be at best semi-improved and none were thought likely to be species-rich. This includes the two areas of former Parish Level importance as both have become invaded by ruderal species and coarse grasses through lack of management. Without a considerable amount of sensitive management, neither of these grassland areas are thought likely to recover their former condition within a realistic timescale.

A fresh otter spraint was recorded on the River Welland (at TN3, Figure 4a) and further survey work for both otters and water voles is recommended on this river and the tributary to the east prior to any potential developments within these areas.

The Grand Union Canal (wildlife corridor 8) has artificial banks within the survey area although mud banks have built up adjacent to these in places not used by boats for mooring. It is considered possible that water voles could be using these areas and further survey work is recommended if there is potential for this feature to be affected directly, or indirectly in the future. The canal also has a species-rich (although somewhat scattered) marginal flora containing qualifying species for LWS designation.

There are a number of known badger setts in the survey area; any development in proximity to these locations would require surveys and mitigation for these species.

Great crested newts have been recorded in the Market Harborough survey area, and the habitat supports large numbers of ponds. Many of the AAs will fall within 500m of potential breeding ponds, and thus further surveys are likely to be required for this species prior to any major development.

Allotments may provide suitable habitat for birds, reptiles, amphibians and invertebrates, through a patchwork of habitats that change over time. This habitat type is on the local BAP for some counties, but not Leicestershire, and provides green space within the urban environment, important for the well being of the human population (English Nature 2003).

Reptile surveys are recommended for AAs including a mosaic of grassland habitats and basking sites, for example the two urban AAs supporting tall ruderal vegetation and scrub, should they be impacted by any future development. There are also records of reptiles from the areas around the railways. Grass snakes are considered likely to be using the water courses and static water bodies for foraging on at least a casual basis.

Habitats such as these and other brownfield sites within the urban area are also likely to provide suitable food plants and appropriate conditions for a number of notable invertebrates. Detailed ecological assessment of such sites may be recommended in pre-development ecology surveys.

6.7.1 Potential Wildlife Sites

Areas which are considered to merit further investigation with regard to Local Wildlife Site criteria are listed in the table below and illustrated on Figure 4d.

Letter	Feature	Description & Function
A	River Welland	Would qualify as an LWS on the presence of a county Red Data Book species
B	Grand Union Canal	Supports populations (if somewhat scattered) of four LWS qualifying emergent vegetation species although others are considered likely to be present. The LWS qualifying threshold is five species from a list that includes various sedges and other common species that may have been overlooked due to the timing of the survey
	Water courses	All of the water courses within the survey area could conceivably meet the LWS criteria for streams and rivers. Further assessment against the LWS criteria is recommended in the future.
	Ponds	All of the ponds within the survey area would meet the LWS criteria should great crested newts be confirmed as present
	Intact hedgerows	There are a number of mature hedgerows within the survey area that could not be accessed during the survey (many are highlighted as wildlife corridors), that may be species rich. Three 30m sections of each hedgerow should be sampled to give average numbers of native woody species and these should be assessed against the LWS criteria.

The section of potentially species-rich hedgerow alongside Braybrooke Road (potential wildlife corridor 18) has become fragmented and cannot now be classified as being continuous. This hedgerow is considered unlikely to meet the LWS criteria for this reason as qualifying hedgerows have to be continuous.

Both areas of Parish Level grassland were assessed as being species-poor; no LWS qualifying species were recorded from either of them. The habitats formed by these areas have now become so degraded that the continued presence of any such species is considered unlikely.

6.7.2 Wildlife Corridor Management

Water vole and protected species surveys of the Rivers, brooks and Grand Union Canal would be useful to inform future management priorities, and would be recommended prior to any future development with potential to impact these features.

Before development is considered adjacent to any of the wildlife corridors mentioned above, it is recommended that an extended Phase 1 Habitats and Protected Species survey is undertaken to determine the likely presence and level of use of the habitat by protected and notable species, especially badgers, bats, amphibians and reptiles.

6.8 Summary of Key Ecological Resources

There are no SSSIs within the Market Harborough AAs. There is one SSSI within 2km of the survey area at Great Bowden Borrowpit. Sections of the Grand Union Canal to the north of AAs are designated as a LWS although the section of canal west of Market Harborough is outside the designated area. Two veteran ash trees to the west of the survey area at Orchard House are designated as LWS.

The River Welland runs through the survey area and immediately adjacent to AAs. Parts of the River corridor are considered to be of Parish Level importance. Two further sites of Parish Level importance are included within AAs surrounding Market Harborough, comprising a grassland pasture and a roadside verge on the Leicester Road. These two sites have now become degraded however.

There are no other designated sites within 2km of the surveyed area.

A number of locations were identified within the surveyed area that may meet the LWS criteria and against which assessment is recommended, they are also likely to provide important wildlife corridors. These include all the main waterways, hedgerows that may be species-rich, particularly surrounding Great Bowden village, and any ponds found to support breeding great crested newts. The designation of these sites as LWS (assuming they meet the criteria) would contribute to and enhance the wildlife value and connectivity of the landscape while sympathetic management could facilitate the enhanced dispersal of species (including protected species) between sites and beyond the surveyed area.

Protected species records within the AAs include 2 badger setts, 3 bat roosts and records of great crested newts, grass snake and slow worm.

The presence of invasive species within the survey area has not been assessed although none were recorded during the surveys. The railway corridor is considered the most likely to have invasive species although these areas could not be accessed for health and safety reasons.

7.0 SCRAPTOFT, THURNBY AND BUSHBY

Figure 5a Scraptoft, Thurnby & Bushby:
Phase 1 Habitat Survey

Figure 5b Scraptoft, Thurnby & Bushby: Protected Species Records (Confidential)

Figure 5c Scraptoft, Thurnby & Bushby: Designated Sites

Figure 5d Scraptoft, Thurnby & Bushby: Wildlife Corridors & Potential Local Wildlife Sites

7.1 Overview & Summary Data

The AAs comprise mainly arable fields forming the eastern boundary of Scraptoft, Thurnby and Bushby villages. Scattered trees and mature hedgerows are sparse within the landscape, and there are a few plantation woodlands as is characteristic for the High Leicestershire Landscape Character Area. Two probable areas of ancient woodland are located outside but in proximity to the southern AA, on the south side of Covert Lane. A meadow of herb-rich neutral grassland is located between these two woodland areas.

Green wedges extend from the north of Scraptoft, incorporating Scraptoft Local Nature Reserve, and southwards from Thurnby towards Oadby (shown on Figure 5c). A number of the AAs are within the designated Green Wedges. There are ten Parish Level sites within the surveyed area and several others, plus one Local Wildlife Site within 2km.

The Miles Piece is a Leicestershire and Rutland Wildlife Trust reserve, located approximately 2km to the north east of the survey area. This site comprises a spring-fed marsh, herb-rich grassland and hawthorn scrub. Barkby Brook flows through the site.

The majority of the surveyed area comprises intensively cultivated agricultural land largely arable with some improved and poor semi-improved grassland in the areas adjacent to the urban villages, some of these showing strong ridge and furrow patterns. There are two relatively large blocks of mature plantation woodland (broad-leaved and mixed), two small blocks of plantation mixed woodland adjacent to the A47 east of Bushby and a number of mature hedgerows. Dense scrub now occupies the majority of the disused railway line at the eastern end. Habitats identified are illustrated on Figure 5a.

7.2 General Habitat Descriptions

Semi-natural Broad-leaved Woodland

There are relatively large areas of semi-natural broad-leaved woodland at Bushby Spinney and to the north of Covert Lane. Bushby Spinney has been designated an LWS (illustrated on Figure 5c), this site being composed of mature ash woodland with some field maple and a well developed shrub layer composed of blackthorn and hawthorn. A close inspection of this woodland was not possible at the time of the survey.

The woodland north of Covert Lane is called The Mount and is considered to be secondary woodland with substantial additional planting. Sycamore appeared to be dominant with frequent ash, wych elm and pedunculate oak. Horse chestnut (*Aesculus hippocastanum*) and Scots pine were occasional constituents. This woodland is in private ownership although part of the ground flora could be seen from Covert Lane. Bramble and ivy dominated large areas of the wood floor with occasional clumps of ground-ivy on the southern wood edge at least. The woodland has been identified as a wildlife corridor '1', shown on Figure 5d).

Semi-natural woodland also occurs as a linear feature alongside Thurnby Brook (wildlife corridor 4), this being dominated by mature ash and pedunculate oak with some large white willows. Scattered hawthorn bushes were also present. A sparrowhawk (*Accipiter nisus*) was seen hunting along the wood edge, whilst a buzzard circled high overhead. Redwings (*Turdus iliacus*) and fieldfares (*Turdus pilaris*) were also seen eating hawthorn berries.

A small block of semi-natural woodland also occurs to the south of the Parish Level ridge and furrow field (see Figure 5c), south of Bushby. This was composed of ash and crack willow trees and was fenced from the field by a post and wire fence. A close inspection of the ground flora was not possible through lack of access.

Coniferous Plantation

This habitat type is found in the very south-eastern corner of the survey area in three separate areas. These plantations are unlikely to be of particular value for biodiversity, but may provide habitat for species such as bats and badgers. No access was possible to these areas at the time of the survey.

Mixed Plantation

This woodland type was present as two small, linear blocks on the south side of the A47, close to the eastern fringe of Bushby. Both blocks were composed of ash and Scots pine of even age structure with an understorey of blackthorn and young field maple. The ground flora of both blocks was limited to clumps of stinging nettles with some bramble; however dog's mercury was present in quantity in the eastern block, where there was also a rabbit warren.

Scrub

Areas of scrub were found within the mosaic of habitats in the Scraptoft Local Nature Reserve (see Figure 5c), and in the parcel of land to the west of Hamilton Lane.

Dense scrub now occupies the majority of the disused railway line to the east of the survey area (wildlife corridor 5), this being dominated by mature hawthorn with scattered ash trees and straggly elder bushes. The ground flora was extremely limited and restricted to patches of stinging nettles and ground-ivy. A fresh badger latrine was located near the footpath on the edge of the scrub – see target note TN1.

An old brick railway bridge carrying the footpath over the cutting has become extensively covered in ivy. This was assessed as of moderate bat roost potential – see target note TN2.

Arable

Many of the fields surrounding the existing built-up area currently support arable crops, and a market garden within the urban area has also been identified as this habitat type.

Improved Grassland

This grassland type dominated the non-arable agricultural land within the survey area, particularly around the edges of the existing villages. Improved grassland was also recorded during ground-truthing in the Scraptoft Nature Reserve (see Figure 5c), which had recently been heavily grazed, and also contained large areas of scrub beneath the trees.

Several of the fields between the A47 and Bushby Spinney had also been agriculturally improved being dominated by crested dog's-tail and perennial rye-grass with few herbs. These fields were grazed by

sheep at the time of the survey and several had very prominent ridge and furrow features. A large oblong field with this feature is located to the south of Home Farm, where tufted hair-grass was present in the furrows, indicating seasonal water-logging.

Poor Semi-improved Grassland

This habitat was only noted in a few of the smaller fields within the survey area, particularly to the south of Thurnby and north of Scraptoft.

This included a marshy area at the northern end of a rectangular field, previously designated at Parish Level (adjacent to potential LWS B on Figure 5d). This field was surveyed from a distance using binoculars, the marshy area appearing to be dominated by rushes. No flowering plants were visible due to the distance and late date of the survey. This area is very small and may fall below the size threshold for LWS designation even if sufficient qualifying species are present.

Semi-improved Neutral Grassland

Only one small area of this habitat type was determined during ground-truthing, to the south of the survey area adjacent to Bushby Brook (see potential LWS D). Its position close to the waterway, and relatively close to Buttercup Meadow of Parish Level importance may slightly enhance its potential value. This area had been previously surveyed by the author in 2004 as part of another project, when great burnet was noted as a prominent feature of this meadow. This is a characteristic species of less improved swards and the meadow is considered highly likely to meet the LWS criteria. Further survey work including assessment against the LWS criteria is recommended. This area has been target noted (see TN10 on Figure 5a).

Buttercup Meadow and another Parish Level site (Pasture – horse-grazed) could not be accessed during the present survey although it is considered possible that both these features could meet the LWS criteria. Further survey work in both areas (shown on Figure 5c) is recommended.

Amenity Grassland

Two areas of amenity grassland were highlighted during ground-truthing, one forms part of the golf course adjacent to Scraptoft Nature Reserve, and the other is playing fields to the north of Covert Lane, just to the east of the woodland of The Mount.

Wetland – Running Water

A dominant feature in the wider ecological landscape is the Thurnby Brook (wildlife corridor 4 on Figure 5d) running west from the centre of the survey area. Along much of its route it is bordered by mature trees and hedgerows. Only a short section of the brook substrate was visible from the footpath at the time of the survey, when there was a very low water flow. This section has shallow to moderately sloping earth banks up to 0.5m in height and a stony substrate. No marginal vegetation was visible in the vicinity of the footpath crossing.

A short section of Bushby Brook (wildlife corridor 6) cuts across the south of the survey area to the south of Main Street, flowing along the southern boundary. This brook was not accessed during the survey.

A small brook flowing through the woodland of The Mount and along the south side of the Local Nature Reserve was dry at the time of the survey (wildlife corridor 2). The banks were of shallow gradient where visible and composed of earth and stones. It was heavily shaded by an adjacent hawthorn hedgerow.

Wetland – Standing Water

A number of ponds have been highlighted during the GIS analysis in proximity to the AAs with particularly large waterbodies at Scraptoft Hall and Lakeside Court.

Cultivated Land

The eastern edge of the survey area is dominated by arable fields, under intensive cultivation at the time of the survey.

Hedgerows

There is potential for some of the hedgerows within the survey area to be species-rich, particularly those that support mature trees, or are adjacent to features such as the brooks or disused railway lines, however, these would require further survey to determine their species richness and likelihood of LWS designation.

Three hedgerows within this survey area and one just outside it have been designated at Parish Level. Not all of these hedgerows were accessible at the time of the survey and consequently could not be surveyed in detail.

This included the hedgerow alongside Bushby Brook to the west of Bushby Spinney LWS. This hedgerow was viewed through binoculars from the footpath to the north. Mature ash, crack and white willow trees were visible, the remainder of the hedgerow appearing to be composed of blackthorn and hawthorn.

Another section of hedgerow on the north side of the disused railway line could not be accessed during the survey.

The Parish Level hedgerow alongside Thurnby Brook was visible from the footpath to the east, being composed of hawthorn with several pedunculate oak, ash, white willow and crack willow trees. Four yellowhammers (*Emberiza citronella*) were seen in this hedgerow on the day of the survey, and foraging in the adjacent arable field margin.

The fourth Parish Level hedgerow was located immediately adjacent to the survey area boundary on the north side of the A47 (Winkdale Hill) and opposite a block of plantation mixed woodland. This hedgerow had been trimmed to approximately 1.5m, the species-rich section extending beyond the original Parish Level designation to the west. This hedgerow is labelled as potential LWS A on Figure 5d.

A random 30m section of this hedgerow was sampled, yielding a total of six native woody species, comprising blackthorn, field maple, hazel, hawthorn, elder and ash. Dog rose was present outside this 30m stretch. Climbers were represented by ivy, bramble and black bryony (*Tamus communis*). The ground flora contained abundant dog's-mercury, besides false oat-grass, cock's-foot, stinging nettle and hedge woundwort.

Trees

Many of the hedgerows contained mature trees although only seven were assessed as having bat roost potential. Two trees, comprising an ash and a white willow were considered likely to meet the LWS criteria as veteran trees. These were all in the Bushby area and have been target noted (TN4 & TN6 see below).

Individual trees had been planted around the playing fields to the north of Covert Lane, these comprising horse chestnut and various cultivated maple and cherry species. All of these trees were of relative young age and were all assessed as low bat roost potential.

Tall Ruderal

Small areas of tall ruderal were noted in field corners and along field edges throughout the survey areas although these were too small in area to map accurately.

Invasive Species

No invasive species were recorded within the survey area.

Target Notes

TN1 A badger latrine on the fringe of the dense scrub

TN2 A farm access bridge over the disused railway that was covered in ivy – assessed as moderate bat roost potential

TN3 A flock of four yellowhammers foraging in an arable field margin

TN4 A potential veteran white willow tree with a trunk girth estimated as more than 4m. This tree was assessed as of moderate to high bat roost potential

TN5 Two decaying mature ash trees assessed as of high bat roost potential

TN6 A mature ash tree assessed as of high bat roost potential

TN7 A mature ash tree, probably meeting the LWS criteria as a veteran tree and assessed as of high bat roost potential

TN8 A large decaying ash stump approximately 3m in height and assessed as of high bat roost potential

TN9 A mature ash tree assessed as of high bat roost potential

TN10 A small meadow at the bottom of a slope and adjacent to a brook that is known to contain a large population of great burnet and hence could meet the LWS criteria.

7.3 Notable Habitats and Features

The majority of the surveyed area comprised intensively managed agricultural land of relatively low ecological value. Notable habitats and features recorded were: a potentially species-rich hedgerow; areas of semi-natural woodland; potential veteran trees, water courses and lowland meadow comprising semi-improved herb-rich grassland (TN10). The ridge and furrow fields are considered to have significant landscape value despite being agriculturally improved.

Habitats that are likely to support protected species were also recorded and these included trees and a bridge assessed as having high or moderate potential for roosting bats, wetlands suitable for breeding amphibians (including great-crested newt) and woodland and scrub areas likely to have badger setts. The farmland is also of value to declining bird species of high conservation concern, the hedgerows and dense scrub providing breeding opportunities adjacent to good quality foraging habitat.

7.3.1 Priority Habitats

Habitats which are considered to qualify within the category of priority habitats as defined by the UK BAP and also currently listed as Habitats of Principal Importance under s74 of the Countryside and Rights of Way Act 2000 in the area comprised:

- A number of sections of potentially **species-rich hedgerow**; designated as being of Parish Level importance, one of which probably meeting the LWS criteria;
- **Broad-leaved semi-natural woodland** at Bushby Spinney, and to the north of Covert Lane;
- **Lowland Meadow** adjacent to a brook and west of Bushby Spinney containing an unusually dense concentration of great burnet (TN10).

All of the remaining grasslands within the survey area were assessed as being agriculturally improved and none of these are considered likely to fall within the definition of Lowland Meadow due to species-poor assemblages.

7.3.2 Revised UK BAP List

The revised list of UK BAP Priority Habitats widens the scope for some habitat types and adds new habitat types. Within the survey area, this includes the following:

- Three **Ponds** though these may not qualify as priority habitats as defined by the UKBAP, due to a lack of scarce or notable species or high quality habitat types within these waterbodies.

- The scope for **Hedgerows** has been widened so that the Hedgerow priority habitat type UK BAP now includes all hedgerows with 80% or more cover of any native tree/shrub species. This is likely to include the majority of hedgerows within the study area.

- The scope for **Rivers** has also been increased and though definitions have not been finalised, this type is likely to include all natural and near-natural running waters. This would include both Thurnby and Bushby Brook.

7.4 Designated Sites

Designated sites are shown on Figure 5c. There are no SSSIs within the survey area, or within the wider area to 2km, but **Scraptoft Local Nature Reserve** is within the AA. This LNR was historically used as a prisoner of war camp, but now contains scrub, a mature hedgerow, trees, a pond and a ditch known as Scraptoft Brook; the latter has Parish Level status. Some of the grassland within the site has been described as unimproved in the management plan (Leicester City Council 2005), however ground-truthing revealed heavily grazed grassland and any determination of species-richness was not possible at the time of survey. The Nature Reserve and surrounding area are designated as a Green Wedge under the Harborough District Local Plan. There is a strong presumption against built development within Green Wedges to ensure that the land remains open and green, and that settlements do not merge into one another. Additionally an area that is used as public open space has added value for the community and for health and wellbeing (English Nature 2003).

Bushby Spinney LWS is within the AA to the South East of Bushby; this forms the main area of woodland in the Parish and provides habitat for species such as badgers and great crested newts. The majority of the remainder of the wooded habitat in the Parish is an area of semi-natural broad-leaved woodland around 'The Mount' to the north of Covert Lane which has also previously been designated to Parish Level importance. Although all of this area of woodland is not included within the AA, the larger southern section of this feature is within the AA.

Another area of grassland approximately 0.5km outside and to the north of the survey area has been designated an LWS. This grassland contained many plants associated with unimproved swards including locally frequent great burnet (*Sanguisorba officinalis*). There was a small field pond in the north west

corner with aquatic vegetation including Canadian waterweed (*Elodia canadensis*). This field was flanked on three sides by mature ash woodland, designated at Parish Level (Scraptoft Gorse and Square Spinney). This woodland contained mature hazel coppice stools and locally frequent dog's-mercury and is considered likely to be ancient semi-natural woodland (see Figure 5c).

An area of marshy grassland has previously been designated as Parish value, and although the majority of this field is included within the AAs, the potentially ecologically valuable northern section of the field does not fall within the proposed area (see Figure 5c). Further liaison is recommended with the Leicestershire Environmental Records Centre and the Leicestershire and Rutland Wildlife Trust to determine the precise nature of the site.

The Parish Plan states that any sites listed as being ecologically significant at a District or Parish Level (but not necessarily designated as LWS) should be protected from damage and development. A number of historic hedgerows, meadows and ridge and furrow grassland are included within the AAs and are displayed on Figure 5a. These Parish Level sites are unlikely to have been surveyed recently and most of the accessible sites would not stand up to assessment against the stricter criteria required for LWS designation.

Much of the land identified for potential development to the southwest of Thurnby is within a Green Wedge which leads south towards Oadby; again these areas can be seen on Figure 5a.

7.5 Protected and Notable Species

There are numerous badger records within the AAs, many of which relate to known setts, shown on Figure 5b (confidential). These setts should be considered within any planning application with reference to the Protection of Badgers Act, but are not considered to be of conservation importance given the large number of records in the area and the relatively common status of this species.

A fresh latrine was found in the vicinity of the disused railway corridor although no setts were visible from the footpath. It is considered highly likely that badger setts would be present somewhere in this large area of dense scrub, especially as the adjacent land provides good quality foraging habitat.

There is a known bat roost in the north of Scraptoft (*Pipistrellus spp.*), and another at Hollies Way (species unknown). Mature trees and hedgerows in the vicinity of these roosts are highly likely to be used by the bats as dispersal routes to foraging grounds and other roost sites. Both water courses and

the areas of linear woodland and scrub are also of importance in this regard. Seven trees and a bridge were identified as having bat roost potential during the survey although these were all clustered into a relatively small area south of Bushby.

None of the significant woodland areas within the survey area could be directly accessed and it is considered possible that further trees with bat roost potential may exist.

Water vole records have been obtained for the lake in the grounds of Scraptoft Hall College, which although outside the AA is within 100m of some of the proposed sites to the north of Scraptoft. Both Bushby and Thurnby Brooks have the potential to support water voles, although the small un-named brook to the south of the LNR is only seasonally wet and is consequently of lesser value to this species.

Notable species previously recorded for the wider area include golden plover (*Pluvialis apricaria*), goldfinch, starling and green woodpeckers. The farmland has potential to support farmland birds of high conservation concern with the tall hedgerows and areas of dense scrub on the former railway line providing nesting opportunities.

7.6 Wildlife Corridors

Seven wildlife corridors were identified within the surveyed area and these are detailed in the table below and illustrated on Figure 5d:

Number	Feature	Location	Description & Function
1.	Semi-natural broad-leaved Woodland	North east of Scraptoft, within AA	Linear section of woodland including 'The Mount' and linking several mature hedgerows, including one bordering Covert Lane and likely to be used by commuting bats particularly given the presence of a known bat roost nearby. Part of this woodland has Parish Level importance for nature conservation.
2.	Scraptoft Brook and hedge	North of Scraptoft, within AA	Mature hedge leading westwards from the woodland at 'The Mount' and running along the edges of the Local Nature Reserve.
3.	Hedgerow	North east of Scraptoft, adjacent to AA	Bordering Covert Lane. Likely to be an important commuting route for bats given the proximity of a known roost and connectivity to suitable surrounding habitats.
4.	Thurnby Brook	Central area, passes through AAs.	The brook and hedgerow have designation as being of Parish Level importance. Together they will form an important corridor to facilitate dispersal and provide habitat for bats and

			aquatic species.
5.	Dismantled Railway	Central area, passes through AAs	Both the dismantled railway and the adjacent hedgerow form a valuable corridor through the residential area of Bushby. This has been highlighted as being of value at Parish Level. The presence of nearby known bat roosts reinforces its importance as a wildlife dispersal route.
6.	Bushby Brook	South Thurnby, passes through AAs	The watercourse and associated habitats are likely to support a number of BAP species, and provide a dispersal corridor for many other species. Buttercup Meadow on the far side of the brook carries a Parish Level designation.
7.	Bushby Spinney & Hedgeline along watercourse.	Southeast Bushby, within AA	Both the spinney and the hedgeline along the brook are classified as being of Parish Level importance. Together they form a continuous corridor linking a number of mature hedgerows and plantations. One of a number of small plantation copses in the area. Likely to be of value to species such as bats and badgers.

7.7 Recommendations for Further Investigation

Habitat assessments of the Parish Level wildlife sites within the AAs, including an assessment of their likelihood to meet the LWS criteria were carried out. One field of what is probably herb-rich neutral grassland was identified through previous knowledge and this does not have any designation. This field is considered highly likely to meet the LWS criteria – see target note TN10.

Not all of these sites could be accessed during the survey, although of the eight Parish Level sites that were accessible, only a hedgerow outside but immediately adjacent to the surveyed area is thought at all likely to meet the LWS criteria. Buttercup Meadow, the horse grazed pasture and a section of disused railway line were the three Parish Level sites to which no access was possible during the survey (see Figure 5c).

All of the woodland and scrub areas have the potential to support badger setts especially as there is suitable foraging habitat adjacent to them and there are numerous previous badger records for the area. Further badger survey work is recommended for all woodland and scrub areas prior to any development taking place, together with wider badger surveys to determine the current condition of the known setts.

There are water vole records in the area and any development with potential to affect either of the Brooks should incorporate surveys and appropriate mitigation for this species and others found in the riparian habitat.

All ponds have the potential to support breeding amphibians (including the possibility of great crested newt, although there is currently only one record within 2km of the proposed sites). Further amphibian survey work is recommended, as the ponds are connected to suitable terrestrial habitat and to the wider landscape by dispersal corridors along hedgerows.

A number of bat roosts are known from the survey area and as highlighted above many of the mature hedgerows are likely to be important to commuting and foraging bats. Further survey work is recommended to determine the level of use of these features, and the species that use them. A total of seven mature trees and one bridge were identified as having potential for roosting bats although both of the significant areas of woodland could not be surveyed due to lack of access. Additional surveys are recommended to highlight any further trees or structures with potential for roosting bats.

7.7.1 Potential Local Wildlife Sites

Areas which are considered to merit further investigation with regard to Local Wildlife Site Criteria are listed in the table below and displayed on Figure 5d:

- All the features highlighted as being of Parish Level importance that could not be surveyed;

Letter	Feature	Description & Function
A	Species-rich hedgerow	On the north side of the A47 directly adjacent to the survey area
B	Veteran tree TN4	A potential veteran white willow tree with a trunk girth estimated as more than 4m. This tree was assessed as of moderate to high bat roost potential
C	Veteran tree TN7	A mature ash tree, probably meeting the LWS criteria as a veteran tree and assessed as of high bat roost potential
D	Herb-rich neutral grassland (TN10)	A small field adjacent to a brook (target note TN10) which is probably herb-rich neutral grassland
		All the ponds within the survey area have the potential to support breeding amphibians including the possibility of great crested newts

All of the features highlighted as being of Parish Level importance that could not be surveyed during the current survey would be recommended for further assessment against the LWS criteria.

7.7.2 Wildlife Corridor Management

- Water vole and white-clawed crayfish surveys along both Bushby and Thurnby Brooks within the Parish may inform future management priorities, and would be recommended prior to any future development or change of land use in the area.

- Management of the Scraptoft Nature Reserve would be recommended to control scrub beneath the trees and restore herb species to the grassland. It may be appropriate to consider grazing with goats, although public access to the site may make this difficult.

7.8 Summary of Key Ecological Resources

There are no SSSIs within the survey area, or the 2km surrounding buffer. Scraptoft Local Nature Reserve is within the AA supporting a mosaic of unimproved grassland and scrub habitats. There are a number of sites designated at Parish Level Importance, and sites with potential to meet the LWS criteria have been identified on Figure 5d.

Both Thurnby and Bushby Brook and the disused railway line provide important wildlife corridors through the survey area, as do a number of mature hedges. The semi-natural broad-leaved woodland at Bushby Spinney & The Mount also create corridors of habitat through the landscape and provide habitat for badgers, bats and great crested newts.

LERC has provided records of a number of bat roosts, great crested newts and badger setts within, and in close proximity to the AA.

8.0 URBAN FRINGE

Figure 6a Urban Fringe: Phase 1 Habitat Survey

Figure 6b Urban Fringe: Protected Species Records (Confidential)

Figure 6c Urban Fringe: Designated sites

Figure 6d Urban Fringe: Wildlife Corridors & Potential Local Wildlife Sites

8.1 Overview & Summary Data

Please refer to Figure 6a. The landscape in the area surrounding Great Glen is dominated by the contrast between the urban areas of Oadby and Wigston, and the rural agricultural valleys around Great Glen village. The survey areas are characteristic of the High Leicestershire Landscape Character Area with large arable fields and well managed hedgerows supporting occasional mature trees. The majority of the hedgerows are believed to be species-poor, and intensively managed. A dominant ecological feature in the wider area is the corridor of the River Sence running to the west of Great Glen.

The Urban fringe AAs can be split into three discrete sections:

To the North of Oadby

There are occasional patches of plantation woodland within the wider area, one of which is included within the AA to the north of Oadby. Given the lack of features in the surrounding large arable fields, this plantation and the connecting hedges and seasonal streams leading to it are likely to be important wildlife corridors for species such as bats and badgers. The remainder of the habitat comprises arable fields with well managed hedgerows and small clumps of plantation woodland which could potentially include ponds.

To the southeast of Oadby

The majority of the fields in this area are considered to be arable or improved, or species-poor semi-improved grassland. Hedgerows are well maintained and only support occasional mature trees. A feature of interest adjacent to the survey area is the plantation woodland at Glen Gorse which has formerly been designated as being of Parish Level importance.

To the north of Great Glen

A habitat feature of interest within the wider area is the River Sence which runs to the west of Great Glen village and follows a natural meandering route through the valley, often lined with mature trees and semi-improved meadows. Although the river corridor is not within the survey area, it runs within 50m of the AA, on the far side of Stretton Road.

The survey area itself bears signs of once supporting a ridge and furrow agricultural system, however any biological interest within this habitat has long since disappeared and ground-truthing revealed that the fields involved now support a species-poor semi-improved grassland / tall ruderal mosaic. The hedgelines are considered to be well managed and not species-rich.

8.2 General Habitat Descriptions

Plantation Broad-leaved Woodland

It is considered that there is no longer any semi-natural woodland remaining within this survey area as both areas have been substantially altered by planting of non-native species. Both woodland areas have been previously designated at Parish Level.

The small block of mature plantation woodland on the south side of Gartree Road in the AA north of Oadby is dominated by ash and common lime with some Scots pine. There were several mature pedunculate oaks on the northern edge which are probably relics of semi-natural woodland that may have been there in the past. The shrub layer was sparse and composed of young ash saplings. The ground flora was species-poor, with large areas dominated by bramble thickets and other areas by dense trailing mats of ivy. Other ground flora species recorded comprised wood false brome (*Brachypodium sylvaticum*), male fern (*Dryopteris felix-mas*), wood avens, bittersweet (*Solanum dulcamara*), stinging nettle, red campion and a hybrid campion (*Silene* x *hampeana*). The stream along the southern edge of this wood was dry at the time of the survey and only a vague outline of the watercourse was visible. A pool of stagnant water was visible adjacent to the road however.

An old badger sett was recorded in this woodland comprising at least three holes that have become blocked with dead leaves and other debris. The spoil mounds have become vegetated and there is no indication that this sett has been in recent use. This has been target noted – see TN1 below and on Figure 6a.

A block of woodland adjacent to the housing estate incorporating Pipistrelle Way, known as Glen Gorse has also been radically altered in the past by the planting of hybrid black poplars. There were a few mature ash trees around the wood fringes, possibly relating to relics of former woodland at this site. Other tree species recorded comprised sapling pedunculate oaks and field maples and wych elms of varying ages. The mature specimens of the latter appeared to be infected with Dutch elm disease and some were practically dead. The ground flora was dominated by a dense thicket of bramble making this wood all but impenetrable. This indicates that the wood had been clear-felled in the past prior to planting of the poplars. Other ground flora species were restricted to the wood edges and included hairy brome (*Bromus ramosus*), wood false brome, wood meadow-grass (*Poa nemoralis*), hedge woundwort, male fern, wood avens and herb-Robert (*Geranium robertianum*). Several grey squirrels (*Sciurus carolinensis*) were seen in this wood.

Mixed Plantation Woodland

Small clumps of mixed plantation are distributed throughout the AA to the north of Oadby. These were not visited during ground-truthing and could potentially house features of interest such as badger setts, bat roosts, or ponds suitable for great crested newts.

Hedgerows

Two hedgerows were identified as being species-rich, these including one previously designated at Parish Level.

Hedgerow H1 is located to the west of the plantation woodland on the south side of Gartree Road in the AA north of Oadby and has no previous designation. This hedgerow is approximately 3m in height and was free-growing at the time of the survey. Blackthorn was the dominant species, other native woody species present comprising hazel, guelder rose, hawthorn, field maple, ash, elder and pedunculate oak. The latter included a potential veteran specimen at the western end – see target note TN2. Two non-native species were also recorded comprising wild plum and snowberry (*Symphoricarpos albus*). There was an adjacent dry ditch on the road side, this having become choked with vegetation, dominated by stinging nettles. Other ground flora species recorded comprised male fern, wood dock (*Rumex sanguineus*), cow parsley and ground-ivy.

Hedgerow H2 directly adjoins H1 and forms the boundary between Harborough and Oadby and Wigston. No direct access to this hedgerow was possible although it was viewed from the road using

binoculars. It was approximately 4m in height and dense, being dominated by blackthorn. Hawthorn, field maple, ash, pedunculate oak and dog rose were also present. Had access been possible to this hedgerow, it is considered that other native species would also have been recorded.

The hedgerow along the southern boundary of Glen Gorse Golf Course LWS (see Figure 6c) forms part of this designated site. This hedge is approximately 6m in height and up to 4m in width in places. No single species appeared to dominate; native woody species recorded comprised ash, field maple, hawthorn, wych elm, purging buckthorn (*Rhamnus catharticus*), dog rose, blackthorn, crab apple, elder and dogwood. Climbers were represented by bramble, ivy and hedge bindweed. The ground flora included hedge woundwort, wood false brome, red campion and herb-Robert.

All of the remaining hedgerows within the survey area were considered to be species-poor, including the hedgerow alongside the track leading south west from Glen Gorse. This hedgerow was approximately 4m in height and dominated by blackthorn with frequent dogwood and wych elm.

There is potential for at least some of the other hedgerows outside the ground-truthed areas to be species-rich, particularly those that support mature trees, however, these would require further survey to determine whether they would meet the LWS criteria.

Trees

Away from the woodland areas, the hedgerows contained several mature trees; some being on land that could not be accessed at the time of the survey.

Three mature trees were recorded, two of them being assessed as having at least moderate bat roost potential. These have all been target noted and are shown on Figure 6a, see target note section below.

A large mature pedunculate oak tree at the eastern end of hedgerow H1 could feasibly meet the LWS criteria as a veteran tree on trunk girth measurement. This tree significantly enhances the wildlife value of the species rich hedgerow that contains this tree – see target note TN2.

A mature ash tree in the eastern hedgerow of Stretton Road, near the northern edge of Great Glen was assessed as of high bat roost potential due to holes in hollow and damaged major limbs – see target note TN3.

A mature ash tree in a hedgerow adjacent to a mobile phone mast close to the southern fringe of Glen Gorse Golf Course was assessed as moderate bat roost potential due to cracks and holes in dropped branch scars – see target note TN6.

Cultivated Land

Arable fields form the main habitat type within the AA to the north of Oadby, although large, they contain a number of discrete woodland patches, some of which include mature trees, although the presence of non-native species cannot be ruled out.

Improved Grassland

The majority of the AA to the southeast of Oadby is comprised of improved grassland fields bordered by well managed hedgerows.

Poor Semi-improved Grassland

This habitat was only noted in a few of the smaller fields within the AA to the southeast of Oadby.

Semi-improved Neutral Grassland

This habitat type is present on Glen Gorse Golf Course LWS on the southern fringe of Oadby.

The verges of the relatively new A6 by-pass, especially the round-about and re-aligned verges contained several species that at first glance indicated herb-rich grassland although it is considered that these were deliberately sown. Species recorded included musk mallow (*Malva moschata*) and fodder burnet (*Sanguisorba minor* spp *muricata*).These areas do not fall within the definition of lowland meadow (road verge) as they are purely artificial. They would also not meet the LWS criteria for this reason.

Tall Ruderal

Tall ruderal vegetation was noted in the field forming the bulk of the AA north of Great Glen. GIS analysis had highlighted these fields as being potentially valuable as they appeared to contain ridge and furrow features. These features were indeed present during the site visit, but were damaged, and the vegetation supported was at best a mosaic of semi-improved grassland and tall ruderal species. No

species indicative of less improved swards were recorded and these areas are considered unlikely to meet the LWS criteria.

Amenity Grassland

A small area of amenity grassland was highlighted during ground-truthing in the corner of the AA to the north of Great Glen.

Wetland – Running Water

Although not within an AA, one of the main ecological features in the wider landscape is the River Sence, running to the west of Great Glen.

Only a short section of this river was visible from Stretton Road at the point where a small brook entered the river from the east. The River Sence was approximately 2.5m in width with moderately sloped earth banks up to 45º and varying in height up to 1.5m. There was a sluggish flow over a muddy substrate; sections of the river had become partially obstructed by fallen dead wood.

There is also a smaller stream which runs through the woodland adjacent to Gartree Road in the section of the AA to the north of Oadby (highlighted as wildlife corridor 2 in Figure 6d) although this was dry at the time of the survey and is considered to be only wet for short periods following heavy rain.

Invasive Species

No invasive species were recorded within the survey area.

Target Notes

TN1 An old badger sett within plantation woodland containing three holes, where the spoil mounds have become vegetated by ivy;

TN2 A large mature pedunculate oak tree, possibly meeting the LWS criteria for a veteran tree;

TN3 A large mature ash tree on the east side of Stretton Road that was assessed as of high bat roost potential, potentially qualifying as a veteran tree;

TN4 A bullfinch in scrub alongside the River Sence;

TN5 A kingfisher heard calling from the River Sence;

TN6 A large mature ash tree in the eastern hedgerow adjacent to a mobile phone mast, assessed as of moderate bat roost potential.

8.3 Notable Habitats and Features

Notable habitats include the areas of broad-leaved semi-natural plantation woodland within the AA north of Oadby, and to the north of the AA to the southeast of Oadby. Some of the hedgerows may potentially be species-rich, and any ponds within the survey area may also qualify as notable habitats.

8.3.1 Priority Habitats

Habitats which are considered to qualify within the category of priority habitats as defined by the revised UK BAP list and also currently listed as Habitats of Principal Importance (under s74 of the Countryside and Rights of Way Act 2000) in the Urban Fringe survey area comprised:

- **Lowland Mixed Deciduous Woodland** includes both areas of plantation woodland within the survey area comprising Glen Gorse and the plantation on the south side of Gartree Road. Both areas were previously designated as being of Parish Level importance although neither is considered likely to meet the LWS criteria.

- **Species-rich Hedgerows** includes hedgerows H1 and H2 on the south side of Gartree Road, one of which was previously designated at Parish Level. Both these hedgerows probably meet the LWS criteria on species assemblage and supporting features.

- **Lowland Meadow** would include the herb-rich grassland forming Glen Gorse Golf Course LWS.

The remaining areas of semi-improved grassland within the survey areas would not fall within the definition of Lowland Meadow due to species-poor assemblages. The verges of the A6 and London Road roundabout have been deliberately sown and therefore would not qualify as being species-rich.

8.3.2 Revised UK BAP List

The revised list of UKBAP Priority Habitats widens the scope for some habitat types and adds new habitat types. Within the Urban Fringe AAs, this includes the following:

- The scope for **Hedgerows** has been widened so that the Hedgerow priority habitat type UK BAP now includes all hedgerows with 80% or more cover of any native tree/shrub species. This could potentially include the majority of hedgerows within the study area.

- The scope for **Rivers** has also been increased and though definitions have not been finalised, this type is likely to include all natural and near-natural running waters. This would include the River Sence running to the west of Great Glen within 50m of the AA to the north of the village. The stream running through the plantation woodland to the north of Oadby was dry at the time of the survey and is probably only wet in exceptional circumstances and for short periods after heavy rain.

8.4 Designated Sites

To the North of Oadby

A mixed plantation woodland of Parish Level importance is located within the AA to the north of Oadby as shown on Figure 6c. This site contains a badger sett with no evidence of recent use as the spoil mounds have become vegetated. Badgers are mobile animals however and future re-occupation of this sett cannot be ruled out.

To the southeast of Oadby

Kilby – Foxton Canal SSSI is 1.5–2km from the AAs to the southeast of Oadby. This site is currently in unfavourable condition and declining due to high numbers of pleasure boats and siltation of the canal. The site includes habitats and species characteristic of slow-flowing lowland rivers in the East Midlands. Notable features include a number of scarce pondweeds listed on the county Rare Plants Register and bank side vegetation including lesser bulrush (*Typha angustifolia*), sweet-flag (*Acorus calamus*) and branched bur-reed (*Sparganium erectum*). According to the county Rare Plant Register (RPR), none of the rarer pondweeds have been recorded since the mid-1990s. This could be attributable to declining habitat quality or could merely reflect a reduction in recording effort. Lesser bulrush (*Typha angustifolia*) is recorded on the RPR as one of only ten extant sites in the County up to 2007 although others have been recorded since this last review of the RPR.

Protected species in the area include a roost of Daubenton's bats (*Myotis daubentonii*) at Fleckney. Although this is more than 5km away from any of the AAs, the canal will provide a valuable foraging and commuting route for this and other bat species, which regularly forage several kilometres away

from their roosting sites. Appropriate mitigation will be required if any developments have the potential to impact upon the quality of the SSSI and its suitability for bat use. The zone of influence of any development where bats may potentially be affected should be widened for species such as these that routinely travel large distances from the roost and require habitat linkages at a wider landscape scale.

Only one LNR is present within 2 km of the AAs, **Lucas Marsh LNR** in Oadby is approximately 1km from the AAs southeast of Oadby. The marsh was formed following historic excavation of building materials, and now includes reedbeds, ponds, scrub, scattered trees and a mature hedge. Damselflies and kingfishers (*Alcedo atthis*) now breed in this area which is part of the larger Brock's Hill Country Park.

There is only one Local Wildlife Site in close proximity to the AAs; Glen Gorse Golf Course to the southwest of the sites, habitats and species of note include herb-rich grassland, a hedgerow and ponds and the golf course also supports native black poplars (a local BAP species) and great crested newts.

To the north of the site an adjacent piece of plantation woodland also know as Glen Gorse is classified as being of Parish Level importance, and contains a track designated to the same level.

To the north of Great Glen

The River Sence runs close to the AA and is considered to be of Parish Level importance although it may meet the LWS criteria on a range of physical features of substantive nature conservation importance such as eroding earth cliffs and riffle and pool systems.

8.5 Protected and Notable Species

To the North of Oadby

There are no previous records of protected or notable species within or immediately adjacent to the AA as illustrated on Figure 6b (Confidential). Small clumps of plantation woodland could potentially include ponds with potential to support great crested newts. Badgers and bats are also likely to make use of this habitat, with numerous records for these species from the wider area surrounding the AA.

To the southeast of Oadby

There is a previous record of a badger sett adjacent to the London Road within the AA. Reptiles and great crested newts have also been recorded from the wider area.

To the north of Great Glen

There are no previous records of protected or notable species within or immediately adjacent to the AA, but the River Sence, less than 50m to the west of the site is known to support water vole and there are numerous badger records from the wider area.

8.6 Wildlife Corridors

Three wildlife corridors were identified within and adjacent to the surveyed area and these are detailed in the table below and illustrated on Figure 6d:

Letter	Feature	Location	Description & Function
1	Hedgerow	North of Oadby, western edge of AA	Previously considered to be of Parish Level importance. One of the few hedgerows in the area. Likely to be of importance for wildlife dispersal, particularly commuting bats.
2	Mixed plantation woodland	North of Oadby, within AA.	Previously considered to be of Parish Level importance. One of a number of small plantation copses in the area. Likely to be of value to species such as bats and badgers. Together with the adjacent section of the plantation woodland to the southeast, and the ditch running though (dry at the time of survey), this feature is likely to form part of a substantial wildlife corridor between plantations and areas of less well managed habitat towards the airfield.
3	River Sence	North of Great Glen, within 50m of AA	The river corridor runs to the west of the AA on the far side of Stretton Road. The river itself is known to support water vole, and the corridor is likely to be of value for species dispersal.

8.7 Recommendations for Further Investigation

To the North of Oadby

The mixed plantation woodland within the site has significant potential for badger setts particularly as it forms part of a network of plantations and some less managed habitats towards the airfield. The small plantation on the south side of Gartree Road has an old badger sett although the spoil mounds have

become vegetated and there is no indication that this sett has been in recent use. This does indicate however that badgers are in this area and further badger survey work is recommended.

The stream running through the woodland was dry at the time of the survey and no definable bank features could be discerned at the time of the survey. It is considered that this stream is only wet under exceptional circumstances e.g. following sustained heavy rain. For these reasons, it is considered unlikely to support notable or protected species.

The clumps of plantation woodland in the arable field could potentially have ponds that would not have been visible during the survey. Should this be the case, great crested newt surveys would be recommended to determine the likely presence or absence of this species and to inform appropriate mitigation prior to any works taking place.

Two sections of hedgerow at the western edge of the site have been identified as being species-rich, one of which has been previously designated at Parish Level. It is considered highly likely that both would meet the LWS criteria, one containing a potential veteran tree. Formal assessment against the Hedgerow Regulations and the LWS criteria (for both hedgerows and veteran tree) are recommended.

To the southeast of Oadby

Areas of plantation woodland within and adjacent to the AA have potential to support badgers, and a known sett is located along London Road. Badger surveys are recommended to determine the level of use of these areas by this species.

To the north of Great Glen

Should any proposed development be likely to indirectly impact the River Sence corridor, its water quality and protected species and habitats associated with this feature should be considered. This water course could meet the LWS criteria on physical features and / or presence of Red Data Book species.

8.7.1 Potential Wildlife Sites

The species-rich hedgerows within the area are considered to merit further investigation with regard to Local Wildlife Site Criteria as are a number of features detailed in the table below and illustrated on Figure 6d.

Letter	Feature	Description & Function
A	River Sence	Could meet the LWS criteria on a range of physical features, the presence of Red Data Book species such as water voles are also an LWS qualifying feature.
B	Veteran tree TN 2 & species-rich hedgerow	A large mature pedunculate oak tree at the eastern end of hedgerow H1 could feasibly meet the LWS criteria as a veteran tree on trunk girth measurement. This tree significantly enhances the wildlife value of the species rich hedgerow that contains this tree – see target note TN2.
C	Veteran tree TN 3	A large mature ash tree on the east side of Stretton Road that was assessed as of high bat roost potential, potentially qualifying as a veteran tree.
D	Species-rich hedgerow	Currently designated to Parish Level importance.

The hedgerow along the southern fringe of Glen Gorse Golf Course LWS appears to be already incorporated into the designated site.

None of the woodland areas within this survey area are thought at all likely to meet the LWS criteria due to substantial alteration through planting of non-native species.

8.7.2 Wildlife Corridor Management

Water vole, otter and white-clawed crayfish surveys along the River Sence may inform future management priorities, especially as the habitat is known to support water vole.

8.8 Summary of Key Ecological Resources

Kilby – Foxton Canal SSSI is within 2km of the sites to the southeast of Oadby. This feature is known to support an important roost of Daubenton's bats which will use the wider landscape for many kilometres surrounding the roost. Any proposed development and the associated increase in light pollution in the area must not negatively impact the integrity of the canal corridor or its interest features.

The AAs do not contain any designated habitats, although the hedgerow and plantation to the north of Oadby is considered to be of Parish Level importance and is likely to support protected species such as badgers and great crested newts. The AA to the southeast of Oadby is adjacent to Glen Gorse Golf Course LWS and Glen Gorse plantation woodland, likely to be of Parish Level importance, and reptiles may be present in the wider area.

The River Sence of Parish Level importance runs to the west of Great Glen, and forms an important wildlife corridor. Sympathetic management of this site would ensure that it continues to function as such and to allow species dispersal within and beyond the surveyed area. This is increasingly important as species and habitats respond to climate change.

9.0 SUMMARY

9.1 Broughton Astley

The three SSSIs at Croft are within 2km of the survey area, and could potentially suffer from increased visitor pressure should any large residential or employment developments take place to the north of Broughton Astley.

There are three Local Wildlife Sites within the surveyed area, and a further six sites of Parish Level interest.

The disused railway line, river and brooks are likely to provide important wildlife corridors across the survey area, which should be retained through any development proposals. A number of mature hedgerows to the southwest of the village are also considered to provide dispersal corridors and foraging routes for species such as bats, birds, reptiles and amphibians.

Water voles, white-clawed crayfish, bats and badgers are known to occur within the survey area and have the potential to be directly impacted by any proposed development.

9.2 Lutterworth

The AAs surrounding the town include a number of Parish Level designations along the main features of the survey area, the River, brook and disused railway. All of these are likely to provide important wildlife corridors.

Badgers, freshwater crayfish, bullhead and common redstart have been recorded within the AA.

A number of mature hedgerows may be species-rich and could potentially meet the LWS criteria.

9.3 Market Harborough

There are no SSSIs within the Market Harborough AAs, **Great Bowden Borrowpit SSSI** is within 2km of the survey area. Sections of the **Grand Union Canal** to the north of AAs are designated as Local Wildlife Sites.

There are no LWSs within the Market Harborough AAs, only three sites that are currently classified as being of Parish Level importance: a grassland pasture, a roadside verge on the Leicester Road and the **River Welland** which runs immediately adjacent to AAs.

A number of wildlife corridors have been identified through the survey area, those of particular importance are the rivers, canal and railways.

Five protected species have been recorded from within the Market Harborough AAs.

9.4 Scraptoft, Thurnby and Bushby

There are no SSSIs within the survey area, or the 2km surrounding buffer. Scraptoft Local Nature Reserve is within the AA and supports a mosaic of unimproved grassland and scrub habitats. Green wedges run north and south and incorporate some of the AA.

Parish Level designations of Thurnby and Bushby Brook, a number of hedgelines and the disused railway line provide important corridors of habitat through the survey area, as do a number of mature hedges.

LERC has provided records of a number of bat roosts and badger setts within, and in close proximity to the AA. A number of ponds are also present, and have potential to support amphibian populations. Great crested newts have been recorded approximately 1km to the southeast of Bushby. No invasive species were recorded from this survey area.

9.5 Urban Fringe

The majority of the area is comprised of large agricultural fields supporting arable or poor, semi-improved grassland. Mature hedgerows and small, sparse areas of plantation woodland intersect the fields. Badger and bat records are dispersed throughout the wider area. Kilby – Foxton Canal SSSI is within 2km of the sites to the southeast of Oadby, and any proposed development must not negatively impact the integrity of the canal corridor or its interest features such as the roost of Daubenton's bats. Lucas Marsh LNR in Oadby is approximately 1km from the AAs and is considered unlikely to be impacted by any works.

To the North of Oadby

The AA includes an area of plantation woodland, determined to be of Parish Level importance for nature conservation, and a mature hedgerow, also of Parish importance and likely to provide an important wildlife corridor.

To the southeast of Oadby

The majority of the fields in this area are considered to be arable or improved, or species-poor semi-improved grassland. Hedgerows are well maintained and only support occasional mature trees. A feature of interest adjacent to the survey area is the plantation woodland at Glen Gorse which has formerly been designated as being of Parish Level importance. There is a recorded badger sett in the central part of this area.

To the north of Great Glen

A habitat feature of interest within the wider area is the River Sence which runs to the west of Great Glen village and follows a natural winding route through the valley, often lined with mature trees and semi-improved meadows. Although the river corridor is not within the survey area, it runs within 50m of the AA, on the far side of Stretton Road and is likely to provide an important wildlife corridor.

No invasive species were recorded from this survey area.

9.6 Summary Table

The summary table below denotes the designated sites, protected species and BAP habitats associated with each of the survey areas.

	Broughton Astley	Lutterworth	Market Harborough	Scraptoft	Urban Fringe - Oadby North	Urban Fringe - Oadby Southeast	Urban Fringe - Great Glen
Designated Sites							
SSSIs within 2 km	3	1	1	-	-	1	-
LNRs within proposed development area	-	-	-	1	-	1	-
Number of LWSs within proposed development area	2	-	-	1	-	-	-
Number of LWSs in close proximity to PDA	1	4	3	3	-	1	-
Number of Parish / District level sites within PDA	6	13	3	9	2	-	-
Number of Wildlife Corridors Identified	4	4	18	7	2	-	1
Number of Potential Local Wildlife Sites Identified (exculding ponds)	8	7	2 (+ ponds & hedgerows)	4	1	-	2
UK BAP Priority Habs							
Broadleaved / Ancient woodland	-	-	-	-	-	-	-
Lowland Meadow	-	✓	-	✓	-	-	-
Wet woodland	-	-	-	-	-	-	-
Ancient or species rich hedgerows	✓	✓	✓	✓	✓	-	-
Leicestershire BAP habitats							
Broadleaved woodland	✓	✓	-	✓	-	-	-
Eutrophic standing water (minimum number of ponds - likely to be more)	1	3	8 + Canal	3	Possibly	-	-
Fast-flowing streams	✓	✓	✓	✓	✓	-	✓
Field margins	Beyond resolution of analysis						
Floodplain wetland	-	-	-	-	-	-	-
Hedgerows	✓	✓	✓	✓	-	✓	-
Lowland wood pasture and parkland							
Mature trees	✓	✓	✓	✓	✓	-	✓
Mesotrophic Lakes	-	-	-	-	-	-	-
Neutral grassland	✓	✓	-	✓	-	-	-
Reedbeds	-	-	-	-	-	-	-
Roadside verges	Beyond resolution of analysis						
Rocks & built structures	None of particular interest recorded						
Springs & flushes	-	-	-	-	-	-	-
Urban habitat	None of particular interest recorded						
Wet woodland	-	-	-	-	-	-	-
Protected Species							
Badger	✓	✓	✓	✓		✓	
Bats	✓		✓	✓		✓	
Water vole	✓			✓		✓	
White-clawed crayfish	✓	✓				✓	
Great Crested Newt			✓				
Slow worm			✓				
Grass snake			✓				
Local BAP species							
Common redstart (*Phoenicurus phoenicurus*)	✓	✓					

The survey areas are very different in size and thus cannot be compared directly. However, key features of ecological interest identified during the assessment, and thus recommended for retention and enhancement in the future can be summarised as;

	Key Ecological Features
Broughton Astley	• Broad leaved woodland along disused railway (Wildlife Corridor (wc)1) • River Sence & associated brooks, support protected species & provide wildlife corridors (wc 2 & 3) • Mature hedgerows & veteran trees to the south of Old Mill Road & around Primethorpe Meadows
Lutterworth	• River Swift supports protected species and forms a wildlife corridor (wc 1) • Bitteswell Brook and associated habitats to the west of town. Likely to support protected species and habitats likely to qualify for LWS designation including species rich hedgerows, mature trees and marshy grassland (wc 2 & potential LWSs A, B, D, E & G) • Disused railway to the east of the town forming a wildlife corridor (WC 3)
Market Harborough	The majority of the landscape surrounding Market Harborough is relatively featureless, making the areas listed below of even higher importance to maintain a network of habitats around the town. • Rivers, railway, disused railway and canal form wildlife corridors into and around the urban area, together with a number of mature hedgerows around Great Bowden and other features • Potential LWS 'A' has evidence of otter and is considered to contain of habitats of higher relative importance to nature conservation
Scraptoft	• Features such as the brooks and disused railway line support protected species and form wildlife corridors across the landscape. • Bushby Brook is of particular importance as it forms a habitat link between habitats such as neutral grassland and broad leaved woodland at Bushby Spinney. • Scraptoft Brook similarly links protected areas at Scraptoft Nature Reserve and woodlands around the mount in an area with known bat roosts. • Surveys are recommended to inform management of Scraptoft LNR. • A section of species rich hedgerow along the A47 is likely to qualify as a LWS
Urban Fringe - Oadby North	• Hedgerow running north is likely to be species rich and creates a link with the woodland & seasonal stream to the north of site • Other areas of woodland within the arable field may support protected species
Urban Fringe - Oadby Southeast	• Badgers are likely to be present in the assessment area • Glen Gorse hedgerow is present to the north of the assessment area
Urban Fringe - Great Glen	• The River Sence follows a natural course in proximity to the assessment area, and is likely to support protected species • A veteran tree with bat roost potential exists within the assessment area

9.7 Further survey required

As has been detailed in the report further surveys would be required on the following features where they are likely to be directly or indirectly impacted by proposed development;

- Any sites designated as being important for nature conservation at a local level to determine their current status, particularly with regard to LWS criteria.
- Any mature hedgerows likely to be species rich, or to create important dispersal corridors, particularly with reference to bats and breeding birds.
- Any ponds or seasonally damp areas which could provide potential breeding habitat for great crested newts.
- Any mature woodland which may be notable habitat or provide suitable habitat for species such as bats, birds and badgers.
- All brooks and rivers, particularly for protected and notable species (e.g. water vole, otter, white-clawed crayfish, and kingfisher).

9.8 Proposed areas for enhancement

Potential areas for enhancement should generally include sites such as;

- Sites designated (or previously designated) as being important for nature conservation at a local level and a buffer zone surrounding them.
- All features highlighted as wildlife corridors, including: rivers, brooks, canals, mature hedgerows and railway lines.
- Retention of connecting features within any areas taken forward for development, with enhancement and buffering and creation of additional connecting habitat.
- Appropriate management of the few areas of broad-leaf woodland within the District.

10.0 GENERAL RECOMMENDATIONS

10.1 Designated sites

Sites designated as being of importance for wildlife at a local or national level should be maintained and enhanced within any proposed development area. Potential impacts upon Sites of Special Scientific Interest, even at a distance from the development should be considered carefully, for example changes in water level or increased visitor pressure could negatively impact upon these nationally important sites. It is recommended that the potentially qualifying features should be assessed to determine their suitability for designation as Local Wildlife Sites. A summarised list of potentially qualifying areas identified during this study has been provided to Leicestershire & Rutland Wildlife Trust.

10.2 Wildlife Corridors

Although many of the assessment areas in Harborough District currently support intensive agriculture, there are also many features likely to be of importance to the ecological functionality of the landscape. These include rivers, streams, woodland, hedgerows, field margins and ponds, many of which will qualify as local or UK BAP Habitats under the revised criteria and may also meet requirements for Local Wildlife Site designation. A broad recommendation is that complex habitats and linear features such as these should be surveyed in detail prior to any change in land use that has potential to impact on them to inform management and enhancement. These landscape scale features should be retained within any development and suitably buffered from direct and indirect impacts (such as increases in lighting or disturbance). Where high ecological value is determined, careful consideration should be used in determining an appropriate level of stand-off for any development.

There is no specified standard size, or type of corridor prescribed, but a mixture of habitat types, at a range of scales, with appropriate buffering. Planning comments from Natural England have suggested that green corridors for incorporation within large developments should generally be at least 500m (0.5km) long and be a minimum of 25m wide consisting of green habitat (i.e. excluding hard surfacing, close mown amenity grass etc.), However, any retention and enhancement of features should be considered potentially beneficial to diversity.

There are many simple and inexpensive measures that can be incorporated into final designs that will benefit local biodiversity. To maximise the habitat potential of development sites in the future the following suggested measures could be adopted:

- Ponds and wetland areas would increase habitat diversity and should be incorporated into landscaped areas if space allows.

- Areas of landscaping and ornamental beds around buildings could be planted with native trees, shrubs and wildflowers in preference to purely ornamental species to provide additional feeding and nesting opportunities. Suitable species would include those found in the local area and listed in this document, particularly if they are sourced as seeds or cuttings of local provenance. Trees and shrubs found locally include oak, elder, hawthorn, honeysuckle, dog rose, bramble and ivy which are important to insects, bats and birds. Native flowering species of value to invertebrates include knapweed (*Centaurea nigra*), cranesbill's (*Geranium spp.*), bird's-foot trefoil (*Lotus corniculatus*), ox-eye daisy (*Leucanthemum vulgare*), garlic mustard (*Alliaria petiolata*) and any clovers, which are of particular value to bumblebees (*Bombus* spp.). Damper habitats can support other butterfly food plants including meadow sweet (*Filipendula ulmaria*) and lady's smock (*Cardamine pratensis*). Retention and inclusion of areas supporting nettles and grasses such as Yorkshire fog (*Holcus lanatus*) and false brome (*Brachypodium sylvaticum*) will also be of value to biodiversity. Where habitat creation is required, rather than retention, locally sourced seeds and plants can be obtained from companies such as Naturescape (www.naturescape.co.uk), and information can be found on specific websites including the Bat Conservation Trust (http://www.bats.org.uk/) and Butterfly Conservation (http://www.butterfly-conservation.org/).

10.3 Protected Species

Protected and notable species such as bats, badgers, great crested newts and BAP species are likely to occur throughout the survey area, and should be considered wherever suitable habitat is present. Any structures or trees to be removed or demolished should be assessed prior to their removal to determine their potential value to roosting bats and nesting birds.

Further species specific surveys have been recommended at a number of sites. Requirements for surveys such as these may be identified following any standard ecological investigation of a potential development site. Ideally ecology surveys should take place as early in the process as possible, allowing any recommended retention or enhancement of features to be incorporated into the design whenever possible. Where our broad scale analysis has identified habitats potentially suitable for protected species, this information can be used in the first instance to allow a consideration of the potential presence of these species to inform comparisons between potential areas for development,

as well as a guide to further pre-development surveys. The presence of protected species is a material consideration in the planning process as is stated in paragraph 99 of the Office of the Deputy Prime Minister Circular 06/2005:

'It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted.'

10.3.1 Badger

Badgers and their setts are protected under the *Protection of Badgers Act 1992*, which makes it illegal for any person to kill, injure or take a badger. It is also an offence to destroy, damage or obstruct a badger's sett, or to disturb animals whilst within a sett. In addition, the likelihood of disturbing a badger sett, or adversely affecting badgers' foraging territory or links between them, or significantly increasing the likelihood of road casualties amongst badger populations, are capable of being material considerations in planning decisions (PPS 9, ODPM, 2005).

Badgers are often associated with woodland, hedgerows or scrub, but setts can also be found in other locations, within fields, gardens, road and rail verges, even within the urban environment. Development within 30m of any sett entrance could cause disturbance to badgers, and result in an offence being committed. Development activities which would otherwise cause an offence under current legislation, such as sett disturbance, or sett closure may in some cases be permitted under licence from the relevant statutory authority, which in this case is Natural England. Licences are usually only valid between July and November of any year inclusive, and will require surveys to determine the level of activity of the sett and inform the licence decision. Licences would not be granted during the badger breeding season, which extends between December and June in any given year.

Though territorial ranges and foraging grounds are not explicitly protected under The Protection of Badgers Act 1992, deprivation of feeding resources from badgers may be deemed to be a cruel act. It is therefore good practice to ensure that where development is proposed in proximity to badger setts,

adequate access to foraging grounds is maintained to ensure the viability of the affected social group of badgers.

10.3.2 Bat

All species of British bats and their roosts are fully protected under Schedule 5 of the *Wildlife & Countryside Act 1981* (as amended). Additional protection is offered under Schedule 2 of the *Conservation (Natural Habitats,* &c.*) Regulations 1994* (as amended) which defines "*European protected species of animals*". Under currently accepted interpretations of these two items of legislation, as outlined in the Bat Workers' Manual (2004), a bat roost is '*any structure or place which any wild animal* [bat] *… uses for shelter or protection*.'

Bats may roost in existing buildings, even relatively recent constructions, churches and trees during the active season, while winter hibernation roosts may be in other features such as mines, caves and buildings, or roost sites with slightly different characteristics. Further guidance is available in the Bat Conservation Trust guidelines, but any planning application requiring work to, or removal of buildings or mature trees is likely to require an ecological survey to determine the potential for roosting bats to be using the structure.

Paragraph 14 of *Planning Policy Statement 9: Biodiversity and Geological Conservation* (2005) states that '*Development proposals provide many opportunities for building-in beneficial biodiversity or geological features as part of good design. When considering proposals, local planning authorities should maximise such opportunities in and around developments, using planning obligations where appropriate.*' Therefore, where developments requiring planning permission may affect protected species, such as foraging or commuting bats, it is preferable that an appropriate mitigation strategy is produced to ensure bats are protected from the adverse effects of development and options to negate the impact should be considered.

Recommendations for minimising disturbance to bats using corridors such as mature hedgerows, rivers, canals and woodland edges for foraging and commuting include ensuring that the requirement for external and street lighting within new developments be considered. Where impact upon bat commuting routes are possible, measures should be put in place to reduce light spillage, such as minimal and directional lighting where necessary to avoid light spillage and fitting light hoods/shields to

direct the light below the horizontal plane, at an angle <70°. The lighting of or alongside watercourses should be prevented in order to avoid disturbance to commuting or foraging bats.

Design proposals may be enhanced by the addition of measures to protect and encourage foraging and commuting bats. Simple and inexpensive measures could be included within the final design, such as placing bat boxes or bricks at appropriate locations and incorporating night-flowering and scented flowers and shrubs to attract insects and retain some foraging opportunities for bats.

10.3.3 Water vole

Water voles now receive full protection under the *Wildlife and Countryside Act 1981* (as amended). This protection makes it illegal to deliberately kill, injure or disturb water voles and to destroy or disturb burrows occupied by water voles. Any developments with potential to impact a water course through changes to water quality or quantity, bank structure or levels of disturbance should consider the potential presence of this species. Surveys should take place for 50-100m up and down stream of any potential development and good practice guidelines would dictate an appropriate stand off is retained between any future development and existing streams and rivers, normally a minimum buffer zone of 5-10m, but the Environment Agency & Natural England should be consulted.

10.3.4 Otter

The otter and its breeding and resting places are protected under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and Schedule 2 of the *Conservation (Natural Habitats, &c.) Regulations 1994* (as amended). The European sub-species is listed as globally threatened on the IUCN/WCMC RDL, and is identified within the Leicestershire and Rutland Biodiversity Action Plan.

Otter distribution has been steadily increasing since the first national otter survey in 1977, and the Trent Catchment area in which this area of Leicestershire lies has shown some of the largest increases in positive records throughout the country (Crawford, 2003). Otter monitoring sites have not been routinely included within the species records as there is no indication as to whether evidence of otters was found or not.

The potential presence of otters should be considered wherever development is proposed adjacent to rivers, canals or sizeable brooks, or where the construction of bridges, tunnels or culverts will be required. Should otters be proven to be present, a licence may be required from Natural England to

allow works to proceed, and measures should be taken to conserve and enhance water quality, foraging habitat, potential holt locations and dispersal corridors of importance to this species, and to reduce the risk of traffic collisions. The risks of sediment or pollution releases during construction, and within the final design should be reduced and controlled according to best practice recommendations.

Indirect impacts on riparian mammals may occur due to increased human disturbance and potential changes in light levels along the riverbank. This can be minimised through retention of a buffer zone between any development and river corridors, and the consideration of appropriate planting and landscaping to discourage human access to river banks and waterways.

10.3.5 Reptiles

All British reptiles receive protection under the Wildlife and Countryside Act 1981 (as amended). The four more common species of reptile; the common lizard, the grass snake, the slow worm and the adder (*Vipera berus*) receive protection from Section 9(1) and all of Section 9(5) of the Wildlife and Countryside Act, 1981 (as amended), which makes it an offence to intentionally kill or injure an animal or for the animal to be sold or traded in any way. It is therefore a criminal offence to undertake major works on site that may result in the death or injury of a native reptile species where these species are known to be present.

In addition to the above, the two rare species of British reptile, the smooth snake (*Coronella austriaca*) and the sand lizard (*Lacerta agilis*) are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended) and under Annexe IV of the Conservation of Natural Habitats and of Wild Fauna and Flora Directive, 1992 ('the Habitats Directive') as a European protected species. Furthermore, the Countryside and Rights of Way Act, 2000 (Schedule 12, paragraph 5) has amended Section 9(4) of the 1981 Act to include the term 'reckless'. Consequently, it is an offence to intentionally kill, injure or take smooth snakes or sand lizards as well as intentionally or recklessly damage, destruct or obstruct the access to the place of shelter or disturb the animal while it is occupying it. These species are therefore fully protected under Section 9 of the 1981 Act and under Regulation 39 of the Conservation (Natural Habitats etc.) Regulations, 1994 that transposes the Habitats Directive into UK law. However, it is highly unlikely that these two species would be found in Leicestershire.

Reptiles may be found in many habitats where suitable features exist for them to find food, bask in the sun and hibernate, for example along field edges, hedgerows, in scattered scrub and rough grassland. Within the urban area they may be found along railway lines, and are often revealed at brown field sites where hard surfaces are present for basking, some vegetation has recolonised, and refugia are provided by features such as discarded metal or building materials.

Habitats with potential to support reptiles require surveying to inform planning decisions. Should reptiles be found to be present, it will be necessary to find means to avoid killing these species, and under PPS9 it would also be expected that an appropriate area of habitat can be retained and enhanced, or created to support any reptiles affected by the proposed development.

10.3.6 Great Crested Newt

The great crested newt is listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) which makes it an offence to:

- Intentionally or recklessly kill, injure or take a great crested newt;
- Possess or control any live or dead specimen or anything derived from a great crested newt;
- Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection by a great crested newt;
- Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place which it uses for that purpose.

The great crested newt is afforded additional protection under the *Conservation (Natural Habitats* &c.*) Regulations 1994* (as amended) which applies to all life stages.

Great crested newts breed in water bodies during the spring and then disperse to suitable terrestrial habitat to forage and hibernate for the remainder of the year. In practice, it is recommended that all ponds within 500m of a proposed development are assessed to determine their potential to support this species. Breeding pond surveys may be required in March – June to assess presence or absence of this species, while surveys involving trapping of adults in suitable terrestrial habitat can be undertaken in the late summer and autumn, although these are a lot more labour intensive. Should great crested newts be considered likely to be present within a proposed development area, a suitable mitigation strategy will be required to conserve, or create appropriate new habitat to support and enhance the population, and individual great crested newts to be trapped out of the development site.

10.3.7 White Clawed Crayfish

White-clawed crayfish are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) in respect of taking from the wild and sale, and are listed on the Leicestershire and Rutland Biodiversity Action Plan. Precautions should be taken with any construction close to water to avoid contaminating the water course with sediment or pollutants, and surveys to determine the likely presence of this species may be required to inform planning decisions, appropriate mitigation and timing of works. Care should also be taken not to spread crayfish plague, which is carried by non-native species which do not suffer any effects but are capable of transferring the plague to the native species. Precautions include disinfecting all equipment prior to entering any water course where native species are suspected.

10.3.8 Invertebrates

A number of invertebrate species are protected by European and UK legislation including those listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and the *Conservation (Natural Habitats, &c.) Regulations 1994*. As a result, some species are protected from some or all of the following (amongst others): (i) killing, injuring or taking; (ii) possession or control; (iii) damage to, destruction of or obstruction of access to any places used for shelter or protection; and (iv) disturbance while using such a structure. Following a review in 2007 of species listed on the UK Biodiversity Action Plan (BAP), there has been a significant increase in the number of invertebrates included. The current UK BAP now lists 411 invertebrate species.

Should the potential presence of protected invertebrate species be identified through initial ecology assessments, further surveys may be required to determine species and populations present, and to inform planning decisions and potential mitigation options. General recommendations for enhancing developments for invertebrate species include spaces within designs to allow a mosaic of habitat types to persist and provide refuge islands of habitat for invertebrates within the urban landscape, and an innovative and interesting option may be to consider the incorporation of green roofs within the final development. Green roofs designed for biodiversity can, if well-designed, offer a number of sustainability benefits not only for wildlife, but also for the building's occupants. Apart from providing valuable habitat for invertebrate and bird species in an otherwise relatively hostile environment, green roofs can also reduce the energy use of a building by keeping it cool in the summer and warm in the

winter; reduce the peak run-off from rain storms (as part of a Sustainable Urban Drainage System); and re-use in-situ unwanted soil and rubble that would otherwise be sent to landfill.

Conservation and enhancement for invertebrate species is likely to provide a solid foundation for the protection of other species and habitats through the provision of food sources, both the animals themselves and the food plants they require, and through the retention of a mosaic of habitat types.

10.3.9 Other protected species

Dormice (*Muscardinus avellanarius*) can be found sparsely distributed across southern England and Wales, however, there are few records in the Midlands area, and none have been recorded in the areas of interest to this study. Therefore no further consideration is given to the potential presence of this species. However, the measures outlined throughout the document to retain wildlife corridors, in particular species-rich hedgerows and broad-leaved woodland could be beneficial in any future changes in distribution of this species, or altered range due to climate change.

Breeding birds: Under the *Wildlife and Countryside Act 1981* (as amended), all birds are protected from disturbance whilst nesting. Many habitats such as hedgerows, woodlands, rough grassland and existing buildings can provide potential nesting sites for a variety of bird species. Should development be likely to impact upon nesting birds, demolition should be scheduled to take place outside the bird breeding season (generally recognised as March to September inclusive in any given year), and should any protected bird species or BAP species be likely to present, additional surveys are likely to be required to inform appropriate mitigation and compensation in the form of retaining suitable habitat, or creating additional breeding and foraging habitat.

10.4 Habitat / botanical surveys and recommendations

Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) lists all of the legally protected vascular plants, mosses, liverworts, stoneworts and fungi. These are protected under Section 13 from intentional picking, uprooting or destruction of plants, selling, offering for sale, possessing or transporting for the purpose of sale, any plant (live or dead, part or derivative) on Schedule 8 or advertising for buying or selling such things. It is considered unlikely that any of these Schedule 8 species would be present in Harborough.

The Botanical Society of the British Isles in conjunction with Leicestershire and Rutland Wildlife Trust have produced a Rare Plants Register (Jeeves. M, 2007) which is updated every few years. For the purposes of this Register, the term "plants" include ferns and horsetails although stoneworts, mosses and liverworts are excluded. This register includes all plant species considered nationally rare or nationally scarce by Stewart, Pearman and Preston (Scarce plants in Britain, JNCC 1994) and all those considered "rare" in Leicestershire and Rutland (three or fewer localities) and those considered "scarce" in the two counties (four to ten localities). Only those species considered native to the county are included.

Several species listed on the Rare Plant Register occur in Harborough although the vast majority of these are in existing nature reserves, SSSIs or Local Wildlife Sites. Some pondweed species recorded from the Grand Union Canal are on the Rare Plant Register although they have not been recorded for several years and are at least 2km away from the areas included within the survey.

Searches for these plant species were outside the scope of the present survey although assessments of habitats were made to support such species. In practice, no habitats fell into this category.

Habitats considered likely to meet the Local Wildlife Site criteria were surveyed to record dominant species and were mapped although a full assessment against the LWS criteria was not part of the brief. Such habitats recorded within the survey areas included species-rich hedgerows, wet woodland, herb-rich neutral and wet grassland (meadows and road verges), water courses and ponds. Veteran trees considered likely to meet the LWS criteria were also recorded and their localities mapped although again, full determination against the LWS criteria was outside the project brief. For all sites considered likely to meet the LWS criteria, further surveys are recommended.

Evidence of invasive plant species was also recorded where found although a full invasive species search of all survey areas was outside the scope of the survey. No invasive species were recorded in Harborough.

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APPENDIX 1: PHASE 1 HABITAT CODES

Taken from: Joint Nature Conservation Committee (JNCC) (2003). Handbook for Phase 1 habitat survey – a technique for environmental audit. JNCC: Peterborough.

A Woodland and scrub

1 Woodland
- 1 Broad-leaved
  - 1 Semi-natural — Green
  - 2 Plantation — Green
- 2 Coniferous
  - 1 Semi-natural — True green
  - 2 Plantation — True green
- 3 Mixed
  - 1 Semi-natural — Green over true green
  - 2 Plantation — Green and true green

2 Scrub
- 1 Dense/continuous — Green
- 2 Scattered — Green

3 Parkland/scattered trees
- *1 Broad-leaved — Green
- *2 Coniferous — True green
- *3 Mixed — Green and true green

4 Recently-felled woodland
- *1 Broad-leaved — Green
- *2 Coniferous — True green
- *3 Mixed — Green and true green

B Grassland and marsh

1 Acid grassland
- 1 Unimproved — Orange
- 2 Semi-improved — Orange

2 Neutral grassland
- 1 Unimproved — Orange
- 2 Semi-improved — Orange

3 Calcareous grassland
- 1 Unimproved — Orange
- 2 Semi-improved — Orange

4 Improved grassland — No colour

5 Marsh/marshy grassland — Purple over orange

***6 Poor semi-improved grassland** (optional) — No colour

C Tall herb and fern

1 Bracken
- 1 Continuous — Terra cotta
- 2 Scattered — Terra cotta

2 Upland species-rich ledges — Terra cotta + target note

3 Other
- 1 Tall ruderal — Terra cotta
- 2 Non-ruderal — Terra cotta

D Heathland

1 Dry dwarf shrub heath
- 1 Acid — Yellow ochre
- 2 Basic — Yellow ochre

2 Wet dwarf shrub heath — Purple over yellow ochre

3 Lichen/bryophyte heath — Yellow ochre

4 Montane heath/dwarf herb — Yellow ochre

5 Dry heath/acid grassland mosaic — Orange over yellow ochre

6 Wet heath/acid grassland mosaic — Purple and orange over yellow ochre

E Mire

1 Bog

***6 Sphagnum bog**
- *1 Blanket bog — Purple
- *2 Raised bog — Purple
- *7 Wet modified bog — Purple
- *8 Dry modified bog — Purple

2 Flush and spring
- 1 Acid/neutral flush — Magenta
- 2 Basic flush — Magenta
- 3 Bryophyte-dominated spring — Target note

***3 Fen** — Magenta over purple

Optional codings:
- Basic — Magenta over purple
- *1 Valley mire — Magenta over purple
- *2 Basin mire — Magenta over purple
- *3 Flood-plain mire — Magenta over purple

***4 Bare peat** — Purple

F Swamp, marginal and inundation

1 Swamp — Sky blue

2 Marginal and inundation
- 1 Marginal vegetation — Sky blue + target note
- 2 Inundation vegetation — Sky blue

G Open water

1 Standing water — Indigo blue

Optional codings:

1 Eutrophic	E	Indigo blue
2 Mesotrophic	M	Indigo blue
3 Oligotrophic	O	Indigo blue
4 Dystrophic	D	Indigo blue
5 Marl	C	Indigo blue
6 Brackish (*includes saline lagoons)	B	Indigo blue

2 Running water — Indigo blue

Optional codings:

1 Eutrophic	E
2 Mesotrophic	M
3 Oligotrophic	O
*4 Dystrophic	D
*5 Marl/tufa	C
*6 Brackish	B

H Coastland

1 Intertidal

1 Mud/sand
2 Shingle/cobbles
3 Boulders/rocks
— Ordnance Survey symbols

Codings for intertidal:

*1 Zostera beds	Zo
*2 Green algal beds	Ga
*3 Brown algal beds	Ba

2 Saltmarsh

3 Saltmarsh/dune interface	Pink + target note
4 Scattered plants	Pink
*6 Dense continuous	Pink

3 Shingle above high tide mark
4 Boulders/rocks above high tide mark
— Ordnance Survey symbols

5 Strandline vegetation — Target note

6 Sand dune

4 Dune slack	Indigo blue over flesh
5 Dune grassland	Orange over flesh
6 Dune heath	Yellow ochre over flesh
7 Dune scrub	Green over flesh
*8 Open dune	Flesh

8 Maritime cliff and slope

1 Hard cliff	Scarlet red
2 Soft cliff	Scarlet red
*3 Crevice/ledge vegetation	Target note
*4 Coastal grassland	C Orange
*5 Coastal heathland	C Yellow ochre

I Rock exposure and waste

1 Natural

1 Inland cliff

1 Acid/neutral —  Scarlet red

2 Basic —  Scarlet red

2 Scree

1 Acid/neutral —  Scarlet red

2 Basic —  Scarlet red

3 Limestone pavement —  Scarlet red

4 Other exposure

1 Acid/neutral —  Scarlet red

2 Basic —  Scarlet red

5 Cave —  Scarlet red

2 Artificial

1 Quarry —  Scarlet red

2 Spoil —  Scarlet red

3 Mine —  Scarlet red

*4 Refuse-tip —  Scarlet red

J Miscellaneous

1 Cultivated/disturbed land

*1 Arable —  No colour

*2 Amenity grassland —  Canary yellow

*3 Ephemeral/short perennial —  Black

*4 Introduced shrub —  Terra cotta

2 Boundaries (mapping optional)

1 Intact hedge

*1 Native species-rich —  Green

*2 Species-poor — Green

2 Defunct hedge

*1 Native species-rich — Green

*2 Species-poor — Green

3 Hedge and trees

*1 Native species-rich —  Green

*2 Species-poor —  Green

4 Fence —  Black

5 Wall — Scarlet red

6 Dry ditch — Indigo blue

*7 Boundary removed —  Black

*8 Earth bank — Black

3 Built-up areas

4 Caravan site —  Black

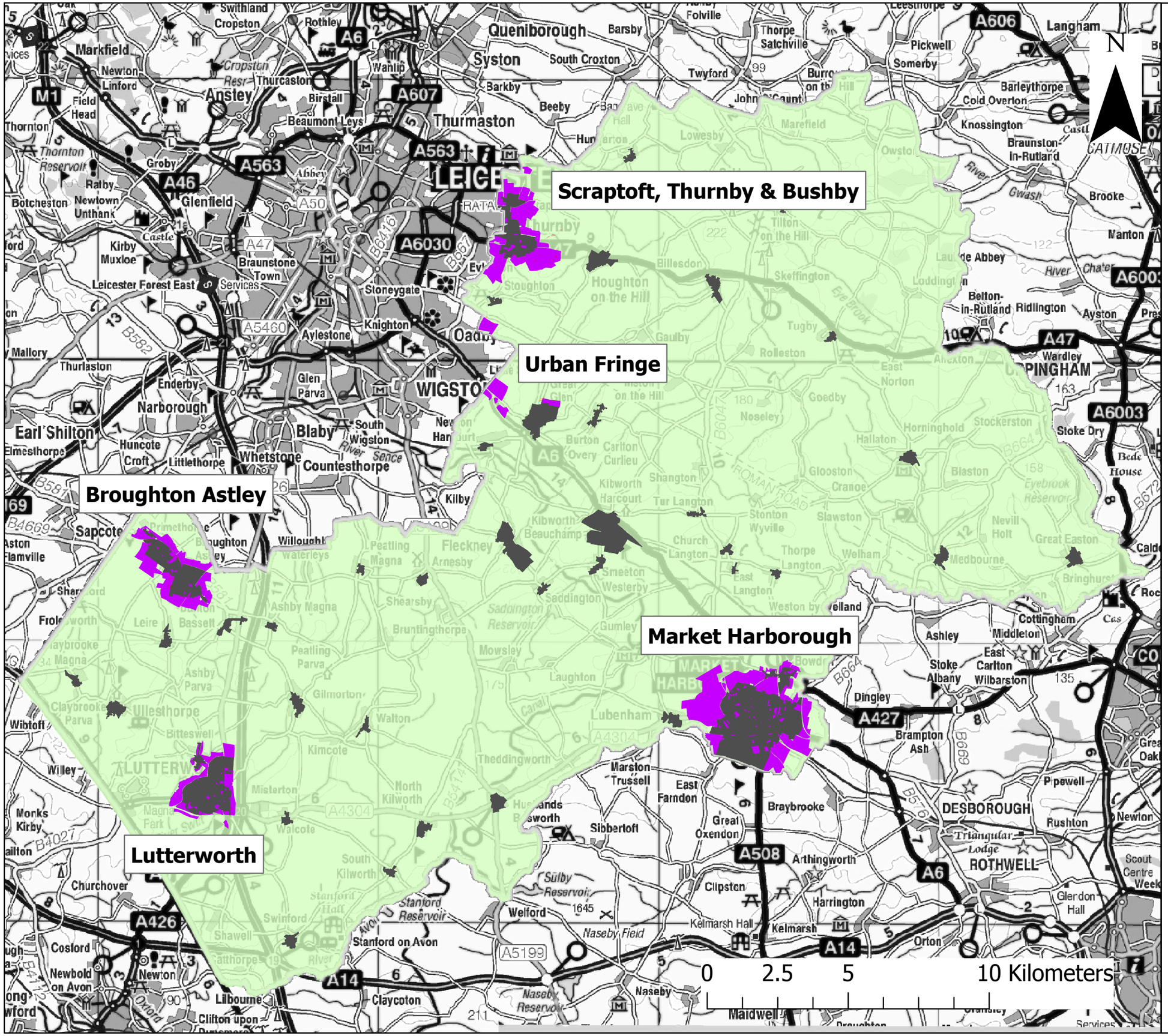
*5 Sea wall (artificial material) —  Black

*6 Buildings —  Black

4 Bare ground —  Black

5 Other habitat —  Black + target note

APPENDIX 2: FIGURES



Legend

- Harborough District
- Urban Areas
- Assessment Areas

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Harborough District Council

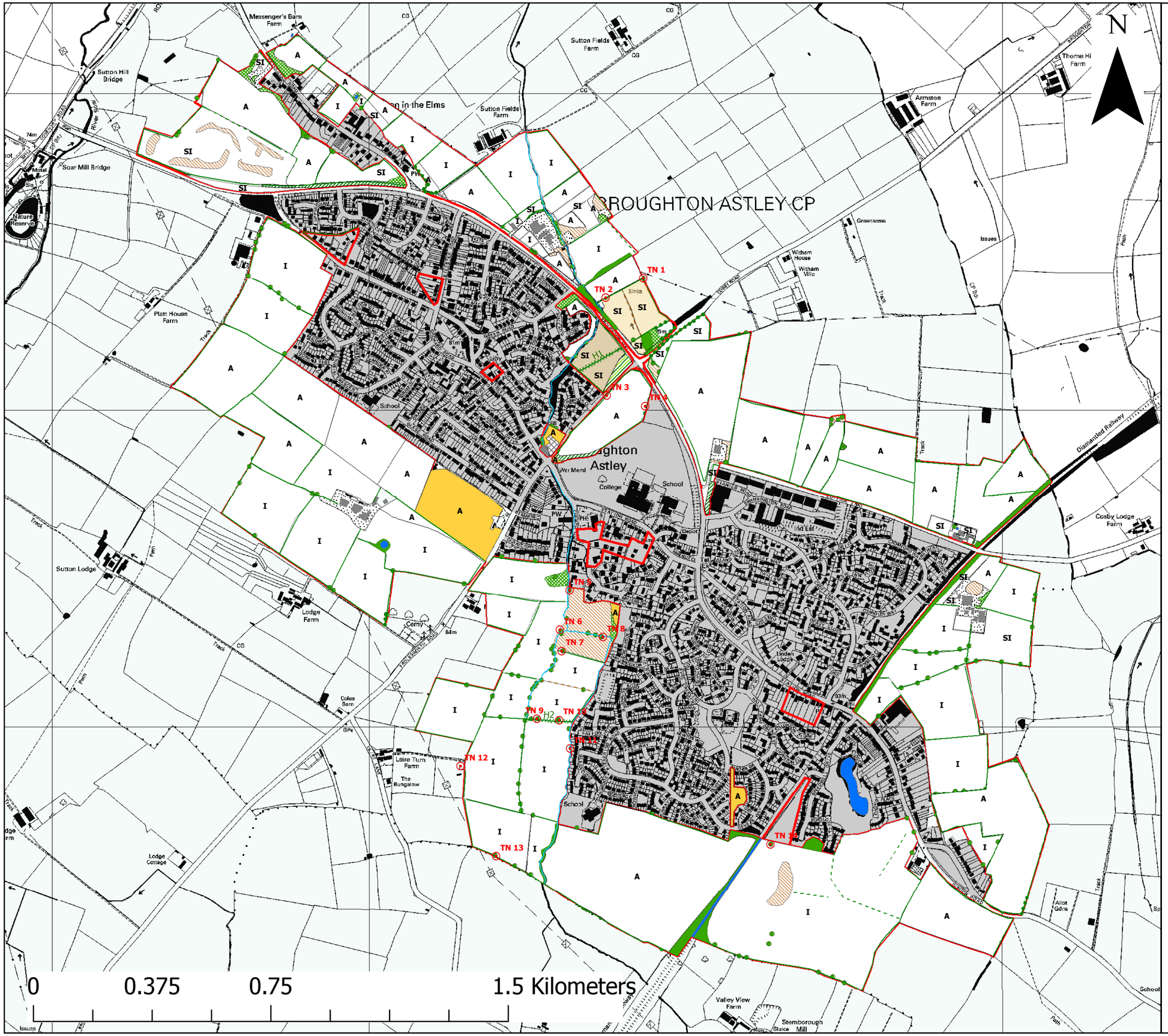
Drawing Title:

Figure 1
Overview of Assessment Areas in Harborough District

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
- Boundary_Removed
- Introduced_Shrub
- Car_Park
- Buildings
- Bare_Ground
- A — Arable
- A — Amenity_Grassland
- Running_Water
- Standing_Water
- Inundation_Vegetation
- Coniferous_Trees
- Scrub
- Mature_Trees
- Line_of_Trees
- Scattered_Scrub
- Mixed_Semi_natural_Woodland
- Mixed_Plantation
- Mixed_Parkland
- Dense_Continuous_Scrub
- Coniferous_Semi_natural_Woodland
- Coniferous_Plantation
- Coniferous_Parkland
- Broad_leaved_Semi_natural_Woodland
- Broad_leaved_Plantation
- Broad_leaved_Parkland
- Marshy_Grassland
- SI — Semi_improved_Neutral_Grassland
- SI — Poor_semi_improved_Neutral_Grassland
- I — Improved_Grassland
- Tall_Ruderal
- Scattered Bracken
- Continuous_Bracken
- Survey Areas
- Existing urban area

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Harborough District Council

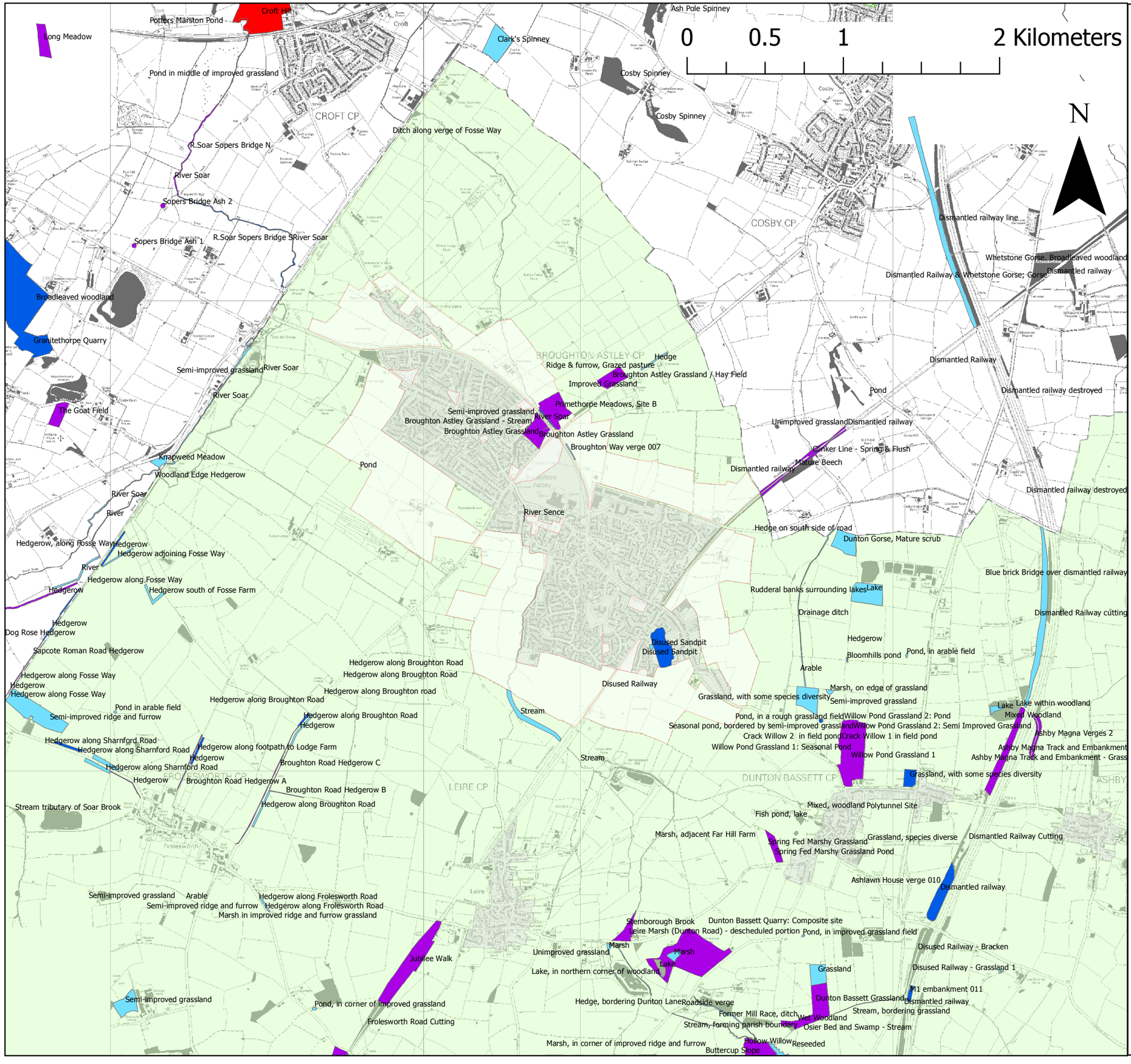
Drawing Title:

Figure 2a
Broughton Astley
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- SSSI
- LWS
- District Level Site
- Parish Level Site
- Local Nature Reserve
- Green Wedge
- Survey Areas
- Existing urban area
- Harborough District

INFORMATION REGARDING DESIGNATED SITES OBTAINED FROM LEICESTER ENVIRONMENTAL RECORDS CENTRE

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Harborough District Council

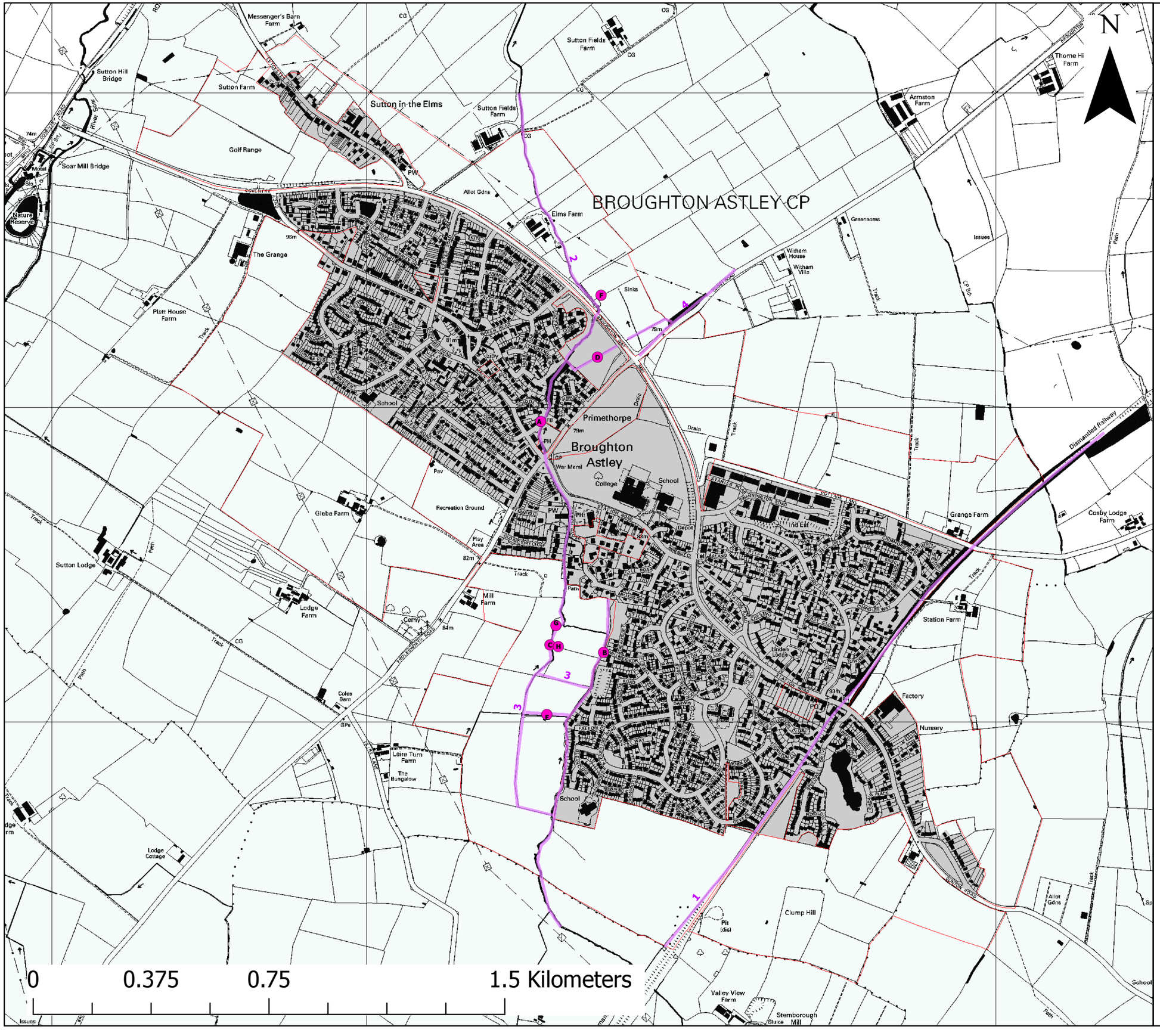
Drawing Title:

Figure 2c
Broughton Astley
Designated Sites

Drawn using:	Drawn by:	Date:	Checked By:	Date:	Approved By:	Date:
ArcGIS 9.3	DW	25/11/08	TK	25/11/08	RD	02/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	Harborough Designated Sites	3

Base map provided by Harborough District Council



Legend

- Potential Local Wildlife Site
- Wildlife Corridor
- Survey Areas
- Existing urban area
- Harborough District

	Wildlife Corridors
1	Disused railway
2	River Sence
3	Brooks to south: Stemborough / Soar Brook
4	Mature hedgerows

	Potential LWSs
A	River Sence
B	Stemborough Brook
C	Soar Brook
D	Hedgerow H1
E	Hedgerow H2
F	Mature Tree TN2
G	Mature Tree TN6
H	Mature Tree TN7

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Harborough District Council

Drawing Title:

Figure 2d
Broughton Astley
Wildlife Corridors & Potential Local Wildlife Sites

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council

Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
- Boundary_Removed
- Introduced_Shrub
- Car_Park
- Buildings
- Bare_Ground
- Arable
- Amenity_Grassland
- Running_Water
- Standing_Water
- Inundation_Vegetation
- Coniferous_Trees
- Scrub
- Mature_Trees
- Line_of_Trees
- Scattered_Scrub
- Mixed_Semi_natural_Woodland
- Mixed_Plantation
- Mixed_Parkland
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- Broad_leaved_Plantation
- Broad_leaved_Parkland
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- Improved_Grassland
- Tall_Ruderal
- Scattered_Bracken
- Continuous_Bracken
- Survey Areas
- Existing urban area

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Harborough District Council

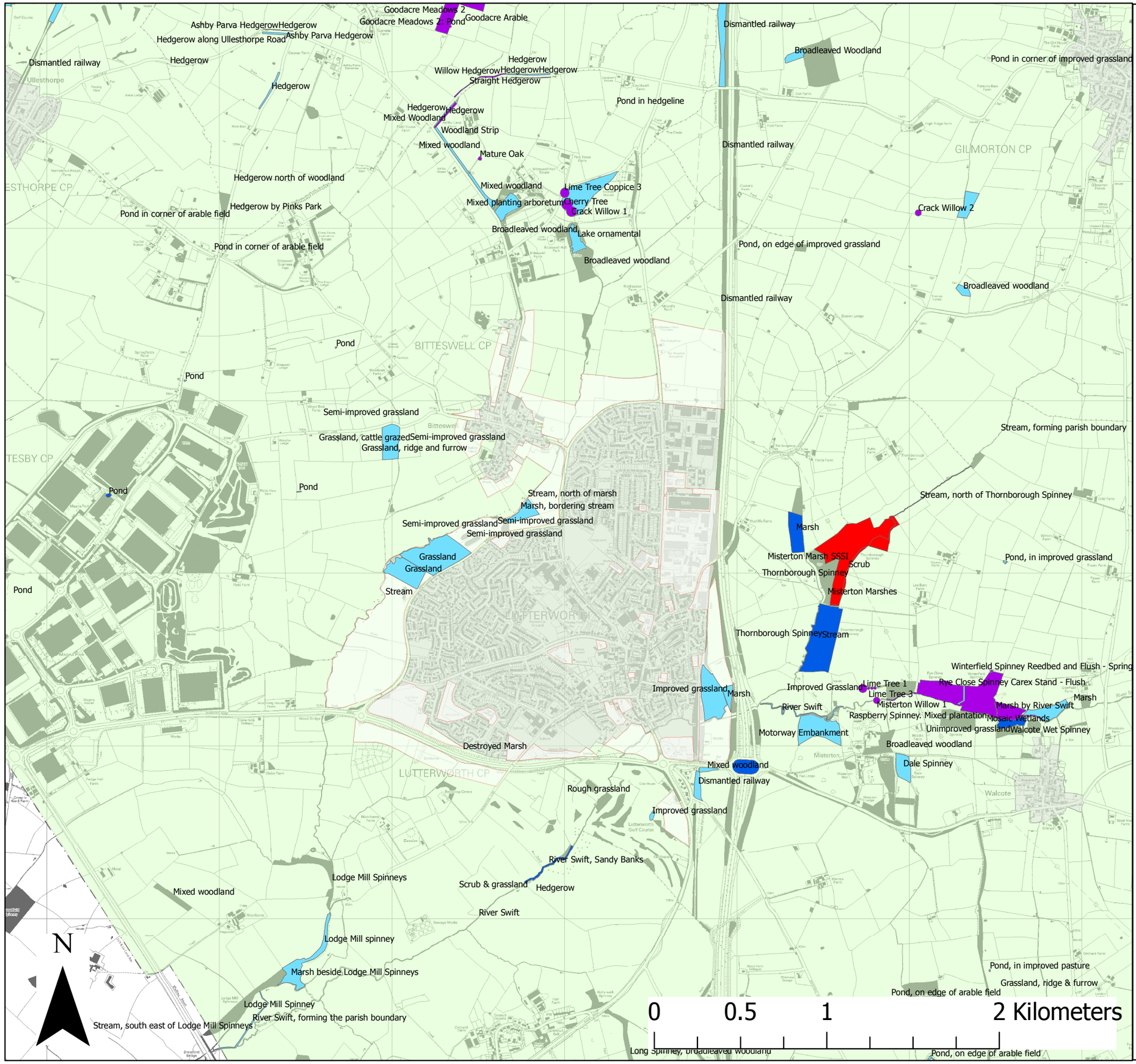
Drawing Title:

Figure 3a
Lutterworth
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- SSSI
- LWS
- District Level Site
- Parish Level Site
- Local Nature Reserve
- Green Wedge
- Survey Areas
- Existing urban area
- Harborough District

INFORMATION REGARDING DESIGNATED SITES OBTAINED FROM LEICESTER ENVIRONMENTAL RECORDS CENTRE

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Harborough District Council

Drawing Title:

Figure 3c
Lutterworth
Designated Sites

Drawn using:	Drawn by:	Date:	Checked By:	Date:	Approved By:	Date:
ArcGIS 9.3	DW	25/11/08	TK	25/11/08	RD	02/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	Harborough Designated Sites	3

Base map provided by Harborough District Council

Legend

- Potential Local Wildlife Site
- Wildlife Corridor
- Survey Areas
- Existing urban area
- Harborough District

	Wildlife Corridors
1.	River Swift
2.	Bitteswell Brook
3.	Dismantled Railway
4.	Mature hedgerows

	Potential LWSs
A	Marshy grassland adjacent to Brook
B	Grass field
C	River Swift
D	Bitteswell Brook to west of Lutterworth
E	Hedgerows
F	Multi-stemmed ash tree TN 1
G	Veteran crack willow TN 4

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Harborough District Council

Drawing Title:

Figure 3d
Lutterworth
Wildlife Corridors & Potential Local Wildlife Sites

Drawn by: Date:	Checked By: Date:	Approved By: Date:
DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council

0 0.375 0.75 1.5 Kilometers

N

Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
- Boundary_Removed
- Introduced_Shrub
- Car_Park
- Buildings
- Bare_Ground
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- Continuous_Bracken
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- Existing urban area

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Project

Harborough District Council

Drawing Title:

Figure 4a (1)
Market Harborough - North west
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council

0 0.35 0.7 1.4 Kilometers

N

TN 2

TN 3

MARKET HARBOROUGH

Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
- Boundary_Removed
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Harborough District Council

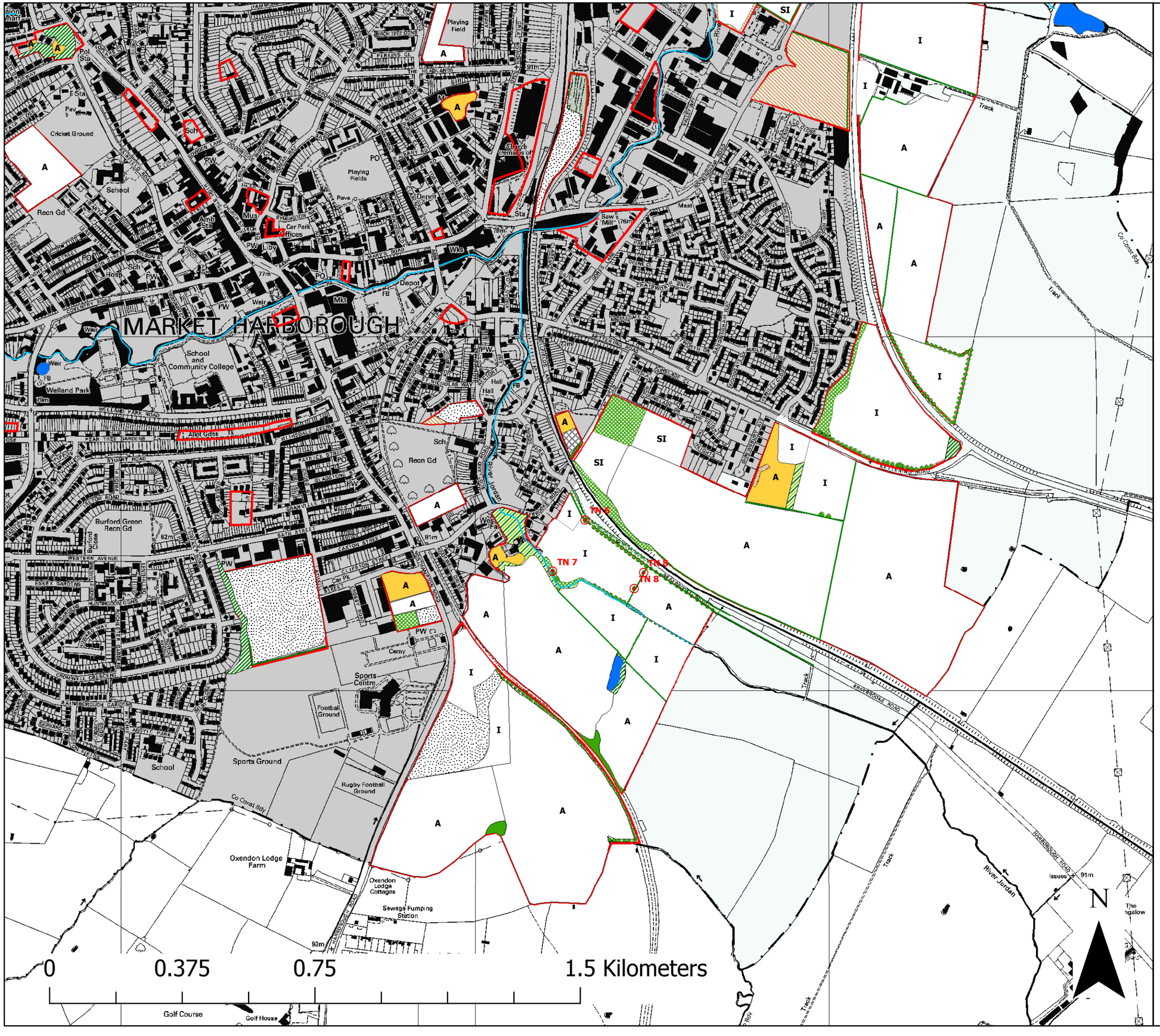
Drawing Title:

Figure 4a (2)
Market Harborough - North east
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
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- Coniferous_Trees
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- Survey Areas
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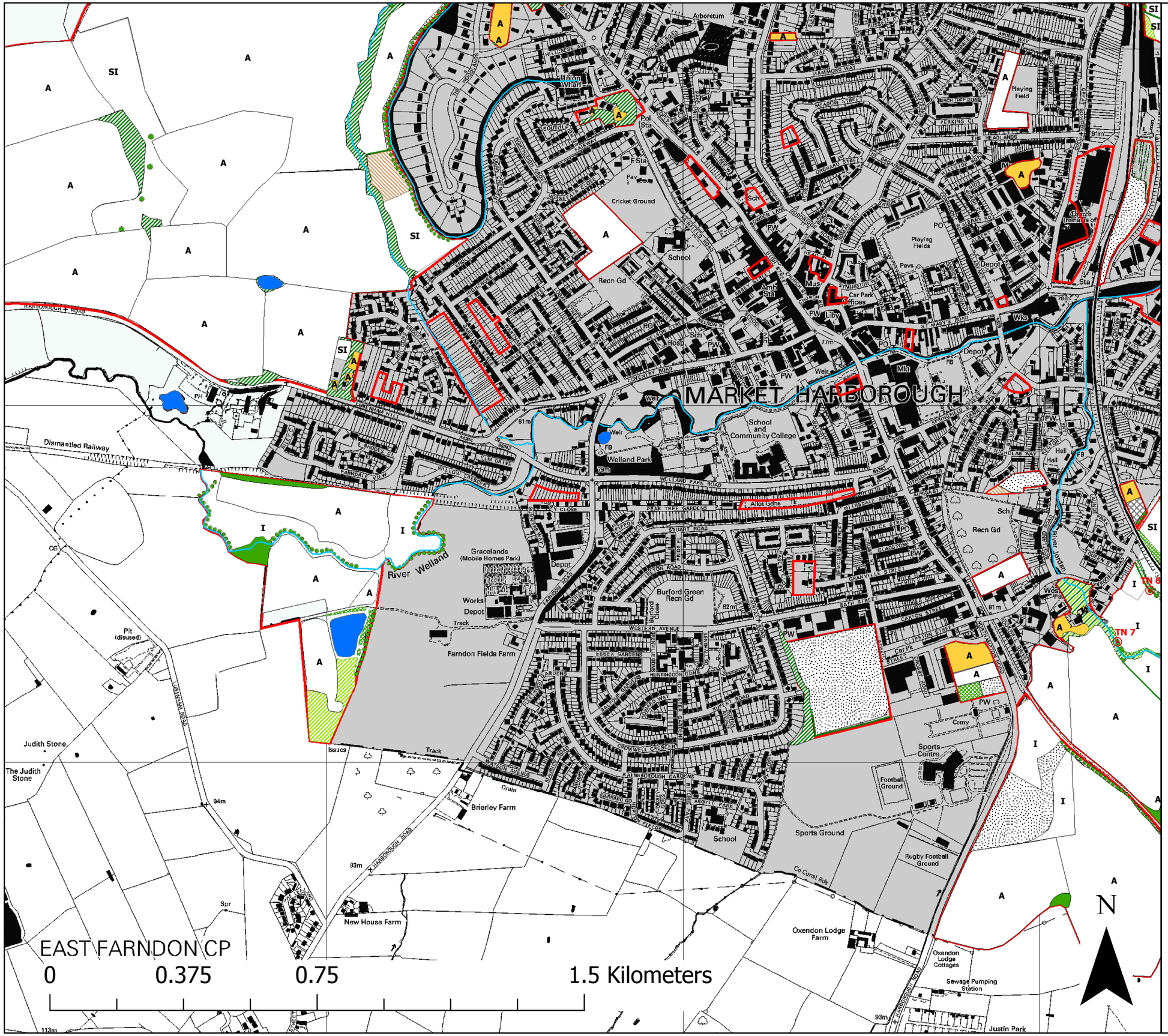
Drawing Title:

Figure 4a (3)
Market Harborough - South east
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
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- Defunct_Native_Species_Rich_Hedge
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Harborough District Council

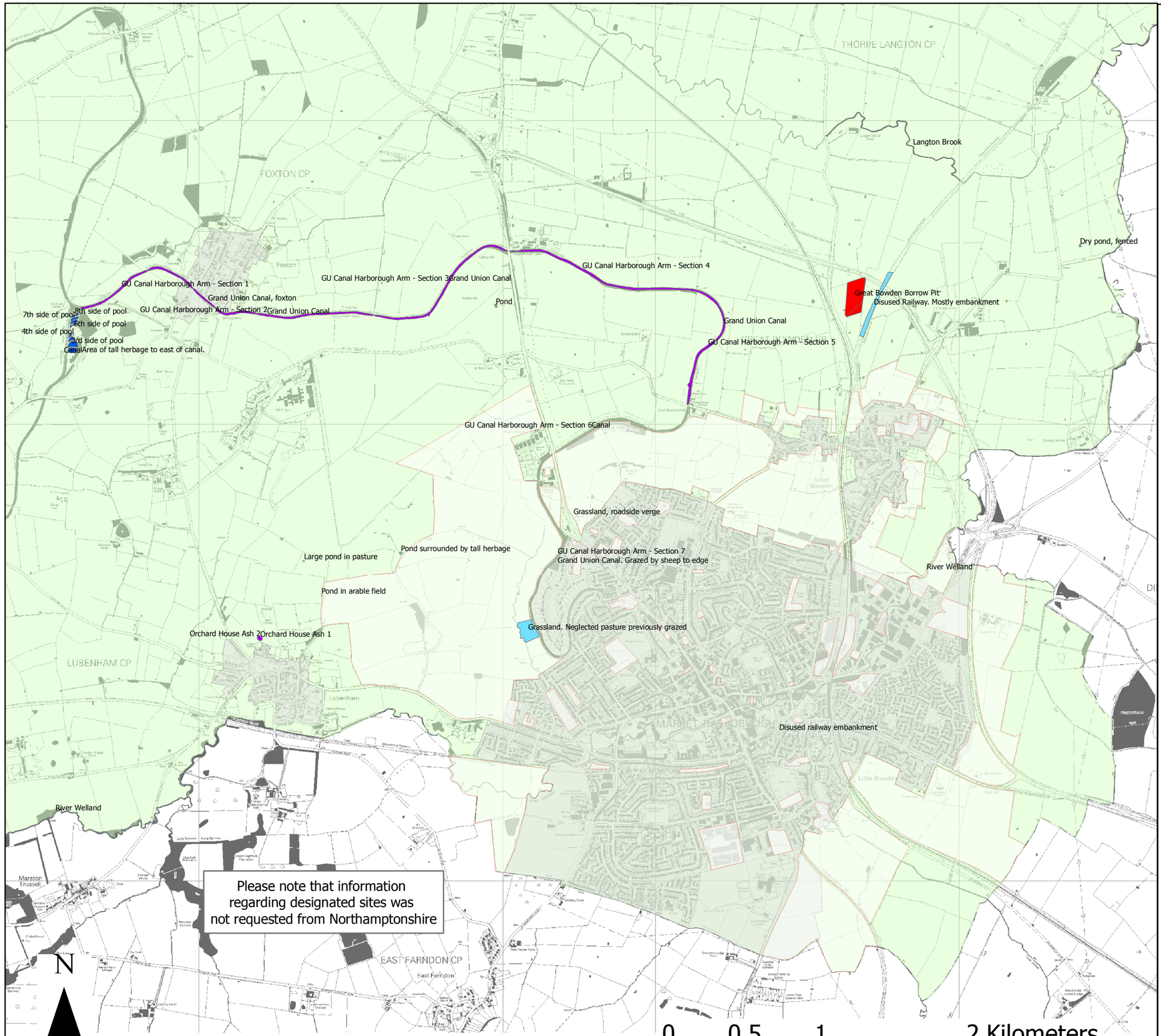
Drawing Title:

Figure 4a (4)
Market Harborough - South west
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- SSSI
- LWS
- District Level Site
- Parish Level Site
- Local Nature Reserve
- Green Wedge
- Survey Areas
- Existing urban area
- Harborough District

INFORMATION REGARDING DESIGNATED SITES OBTAINED FROM LEICESTER ENVIRONMENTAL RECORDS CENTRE

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Project

Harborough District Council

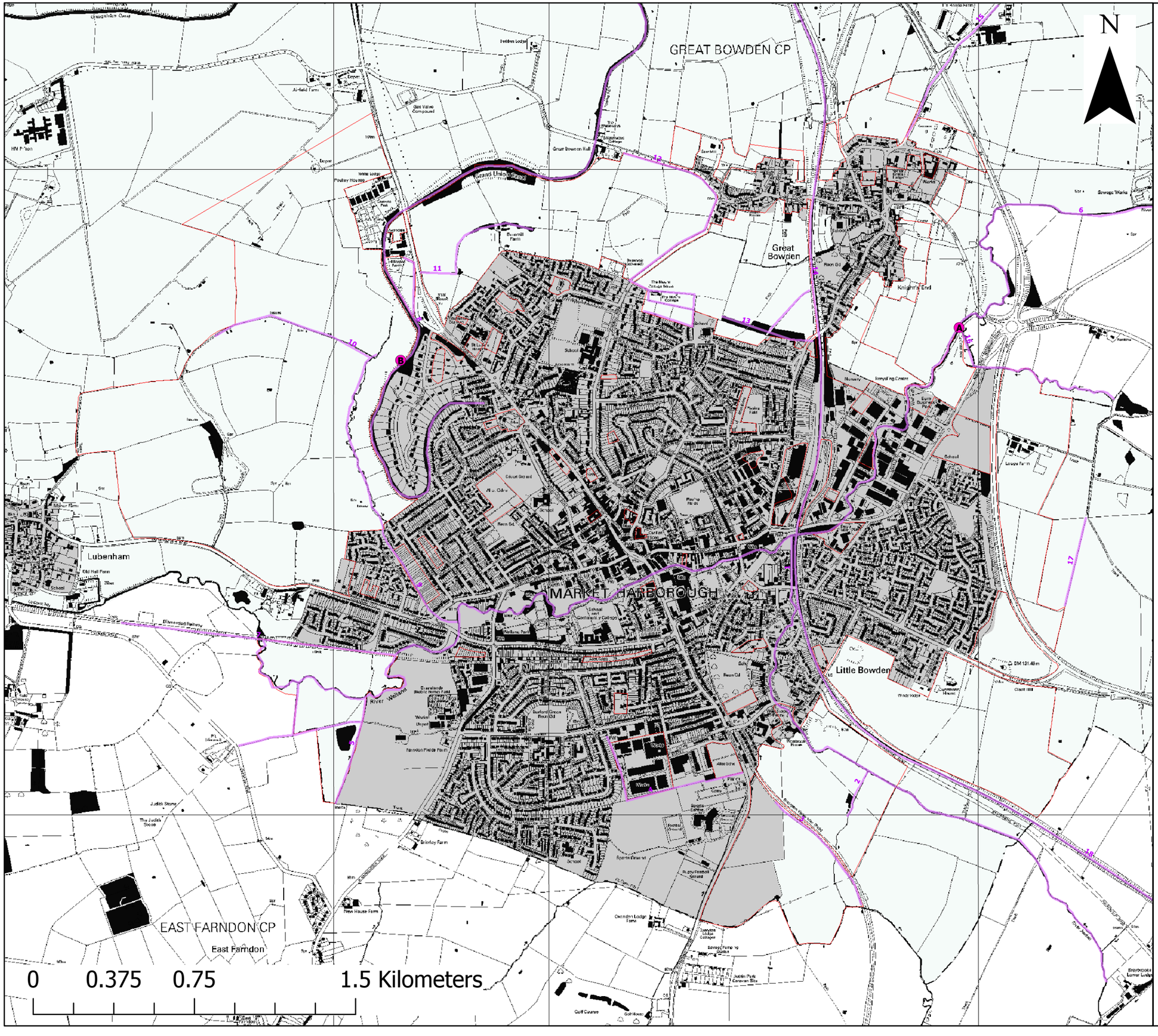
Drawing Title:

Figure 4c
Market Harborough
Designated Sites

Drawn using:	Drawn by:	Date:	Checked By:	Date:	Approved By:	Date:
ArcGIS 9.3	DW	25/11/08	TK	25/11/08	RD	02/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	Harborough Designated Sites	3

Base map provided by Harborough District Council



N

Legend

- Potential Local Wildlife Site
- Wildlife Corridor
- Survey Areas
- Existing urban area
- Harborough District

	Wildlife Corridors
1.	River Jordan
2.	Hedgerows
3.	Track to east of A504
4.	Semi-natural broad-leaved Woodland & hedgerow
5.	Series of hedges, some double around market garden
6.	River Welland (West)
7.	Disused Railway
8.	Grand Union Canal
9.	Brook to west of canal
10.	Track to northwest of 'The Woodlands'
11.	Hedgeline to the north of Davies Close
12.	Hedgerows and trees around Leicester Lane
13.	Hedgerow complex north of 'The Ridgeway'
14.	Railway (North)
15.	Great Bowden Hedgerows
16.	River Welland & brook (East)
17.	Hedge to east of Lodge Farm
18.	Railway (south)

	Potential LWSs
A	River Welland
B	Grand Union Canal

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Harborough District Council

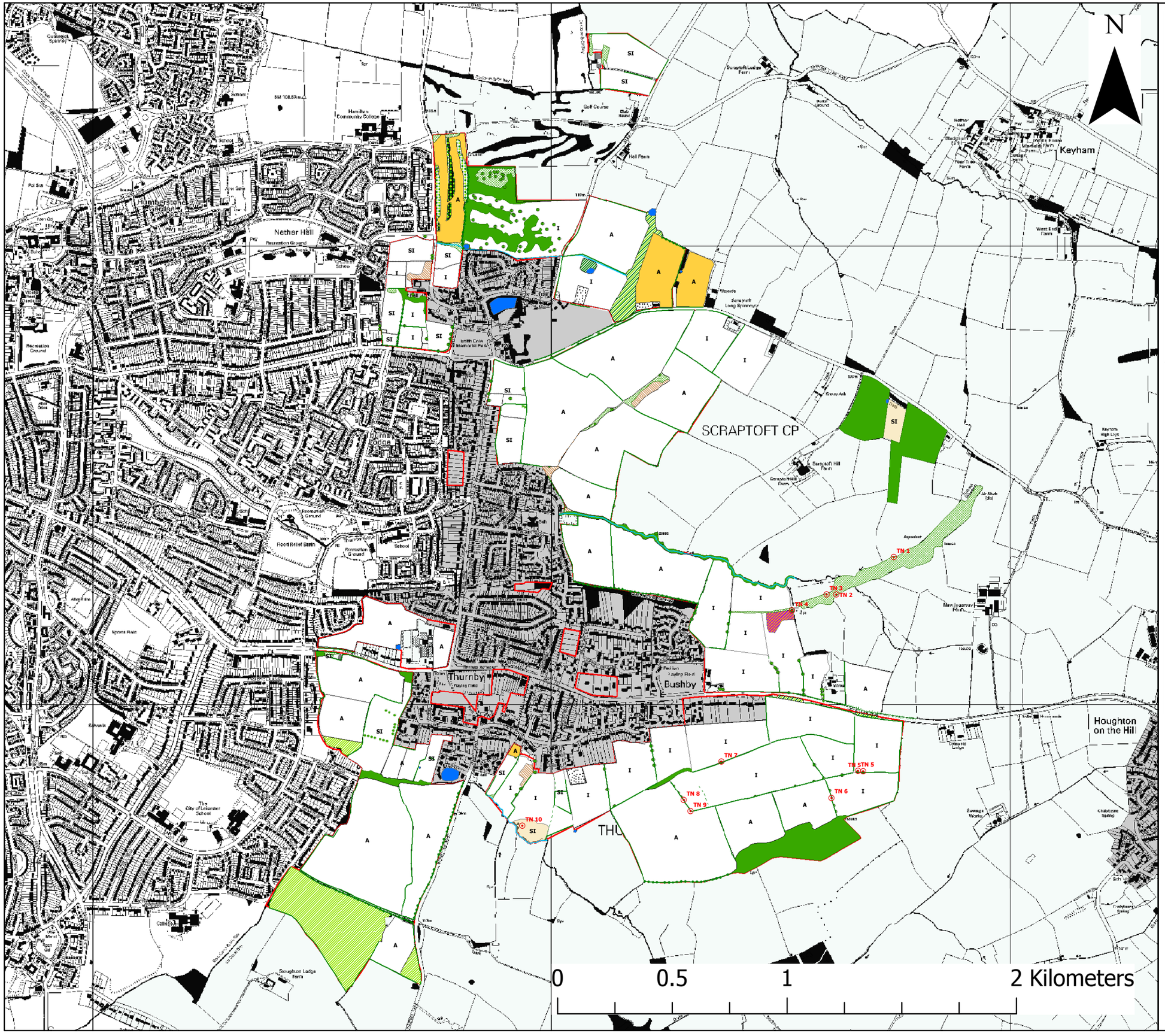
Drawing Title:

Figure 4d
Market Harborough
Wildlife Corridors & Potential Local Wildlife Sites

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 25/11/08	RD 26/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
- Boundary_Removed
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- Car_Park
- Buildings
- Bare_Ground
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- A — Amenity_Grassland
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- Broad_leaved_Plantation
- Broad_leaved_Parkland
- Marshy_Grassland
- SI — Semi_improved_Neutral_Grassland
- SI — Poor_semi_improved_Neutral_Grassland
- I — Improved_Grassland
- Tall_Ruderal
- Scattered Bracken
- Continuous_Bracken
- Survey Areas
- Existing urban area

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Harborough District Council

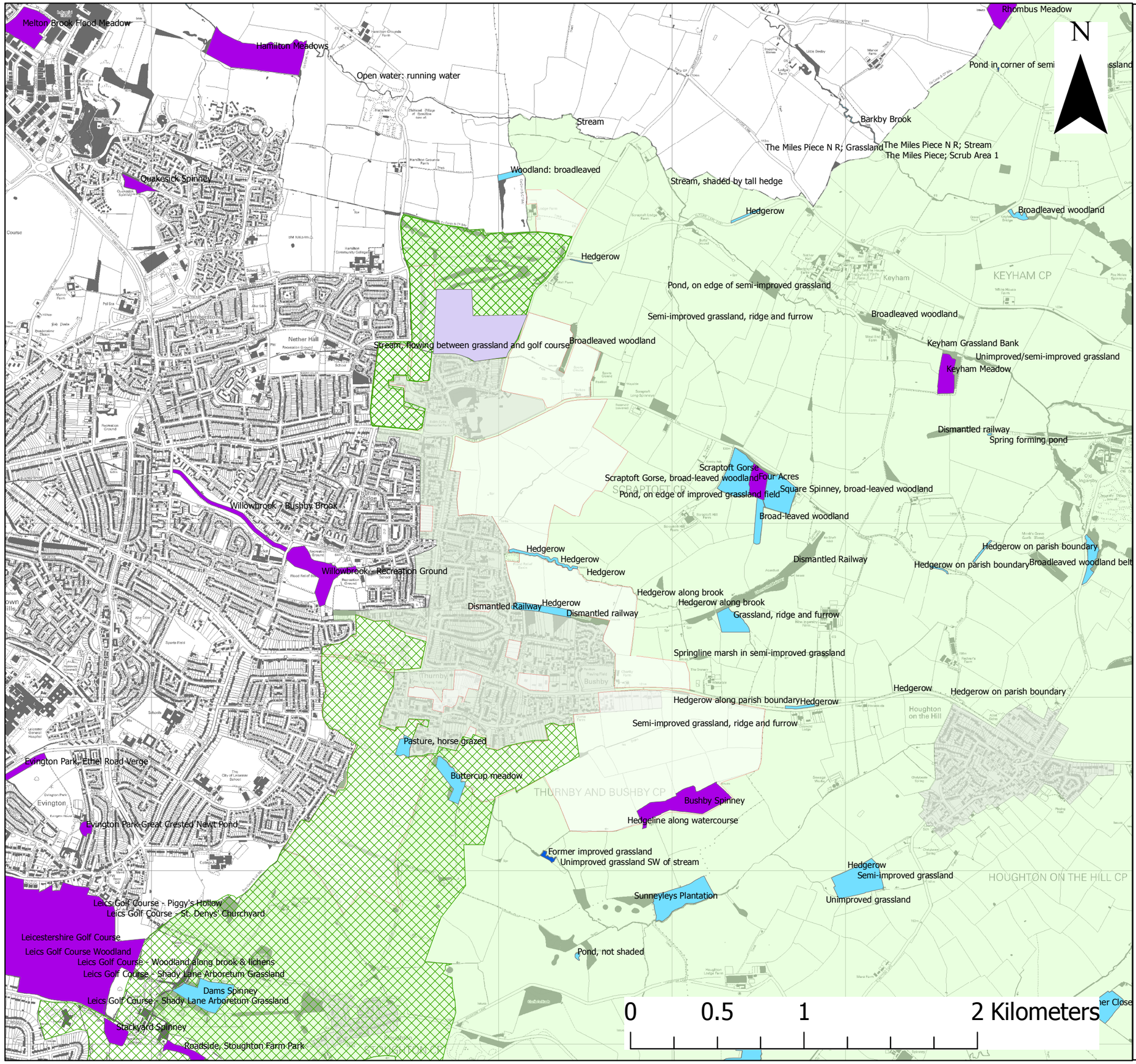
Drawing Title:

Figure 5a
Scraptoft, Thurnby and Bushby
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 11/12/08	RD 11/12/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- SSSI
- LWS
- District Level Site
- Parish Level Site
- Local Nature Reserve
- Green Wedge
- Survey Areas
- Existing urban area
- Harborough District

INFORMATION REGARDING DESIGNATED SITES OBTAINED FROM LEICESTER ENVIRONMENTAL RECORDS CENTRE

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Project

Harborough District Council

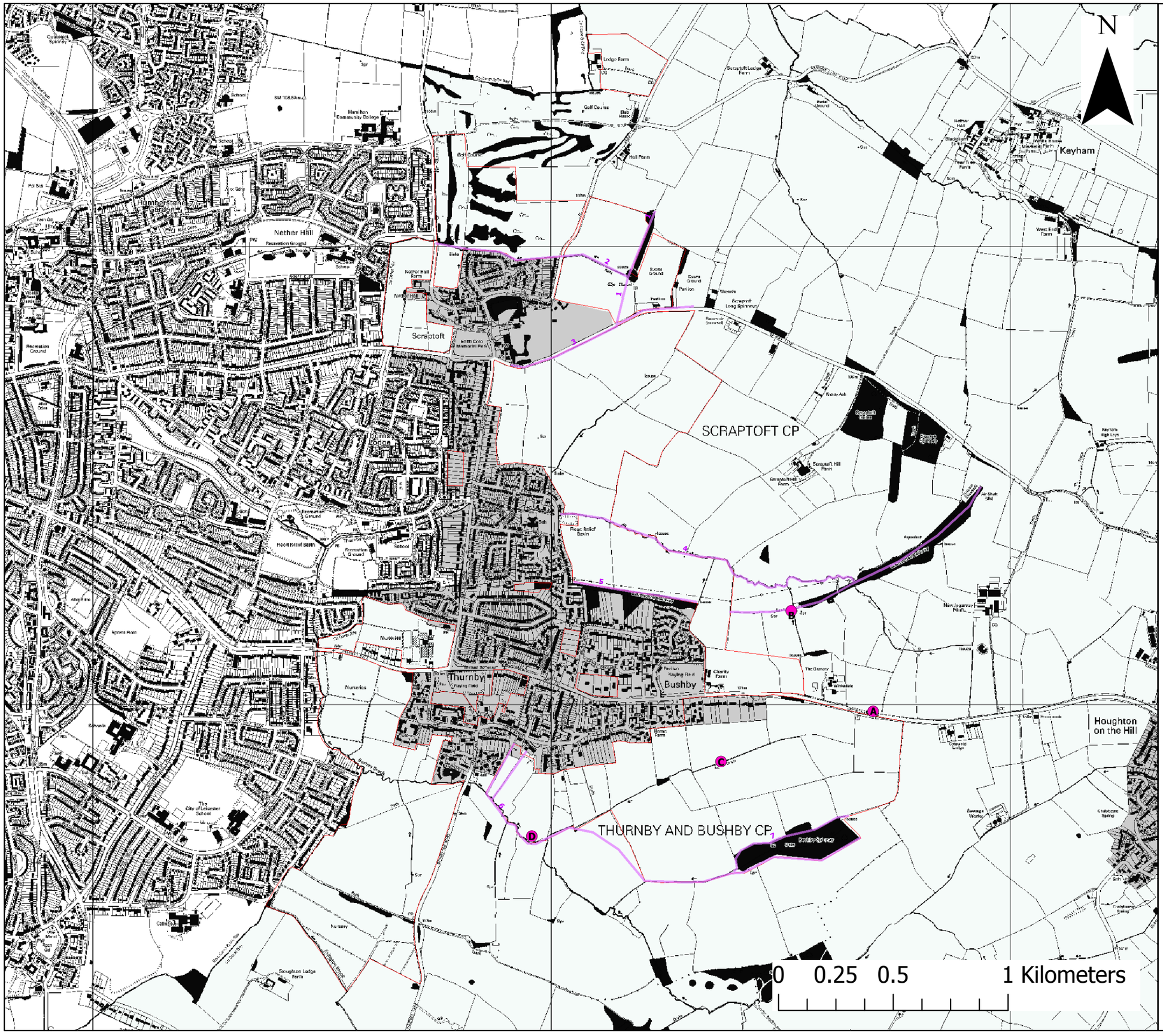
Drawing Title:

Figure 5c
Scraptoft, Thurnby and Bushby
Designated Sites

Drawn using:	Drawn by:	Date:	Checked By:	Date:	Approved By:	Date:
ArcGIS 9.3	DW	25/11/08	TK	25/11/08	RD	02/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	Harborough Designated Sites	3

Base map provided by Harborough District Council



Legend

- Potential Local Wildlife Site
- Wildlife Corridor
- Survey Areas
- Existing urban area
- Harborough District

	Wildlife Corridors
1.	Semi-natural broad-leaved Woodland
2.	Scraptoft Brook and hedge
3.	Hedgerow
4.	Thurnby Brook
5.	Dismantled Railway
6.	Bushby Brook
7.	Bushby Spinney & Hedgeline along watercourse.

	Potential LWSs
A	Species-rich hedgerow
B	Veteran tree TN4
C	Veteran tree TN7
D	Herb-rich neutral grassland (TN10)

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Harborough District Council

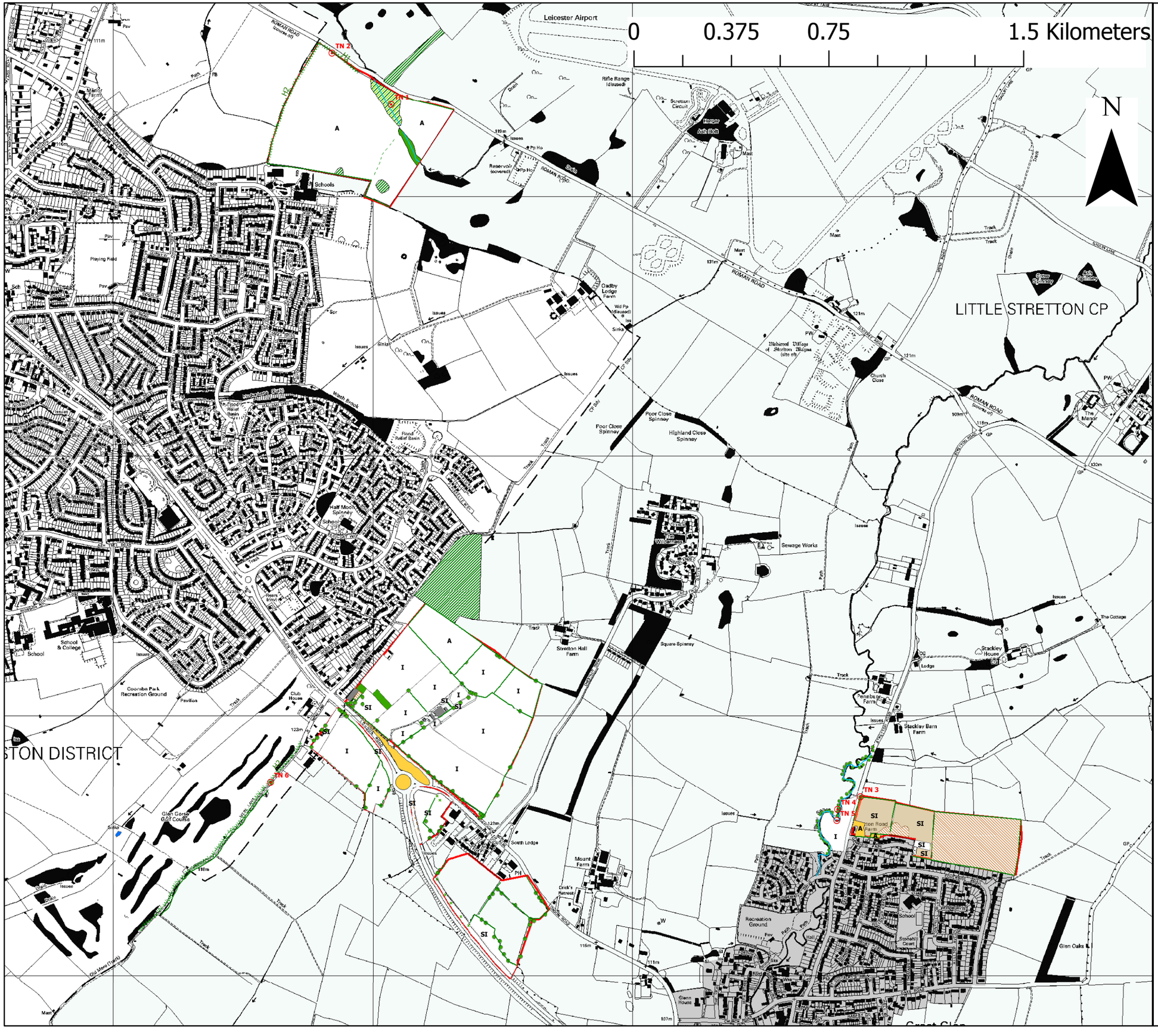
Drawing Title:

Figure 5d
Scraptoft, Thurnby and Bushby
Wildlife Corridors & Potential Local Wildlife Sites

Drawn by: Date:	Checked By: Date:	Approved By: Date:
DW 25/11/08	TK 11/12/08	RD 11/12/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- Target_Note
- Wall
- Native_Species_Rich_Hedge_and_Trees
- Native_Species_Rich_Hedge
- Native_Species_Poor_Hedge_and_Trees
- Native_Species_Poor_Hedge
- Fence
- Dry_Ditch
- Defunct_Native_Species_Rich_Hedge
- Defunct_Native_Species_Poor_Hedge
- Boundary_Removed
- Introduced_Shrub
- Car_Park
- Buildings
- Bare_Ground
- Arable
- Amenity_Grassland
- Running_Water
- Standing_Water
- Inundation_Vegetation
- Coniferous_Trees
- Scrub
- Mature_Trees
- Line_of_Trees
- Scattered_Scrub
- Mixed_Semi_natural_Woodland
- Mixed_Plantation
- Mixed_Parkland
- Dense_Continuous_Scrub
- Coniferous_Semi_natural_Woodland
- Coniferous_Plantation
- Coniferous_Parkland
- Broad_leaved_Semi_natural_Woodland
- Broad_leaved_Plantation
- Broad_leaved_Parkland
- Marshy_Grassland
- Semi_improved_Neutral_Grassland
- Poor_semi_improved_Neutral_Grassland
- Improved_Grassland
- Tall_Ruderal
- Scattered Bracken
- Continuous_Bracken
- Survey Areas
- Existing urban area

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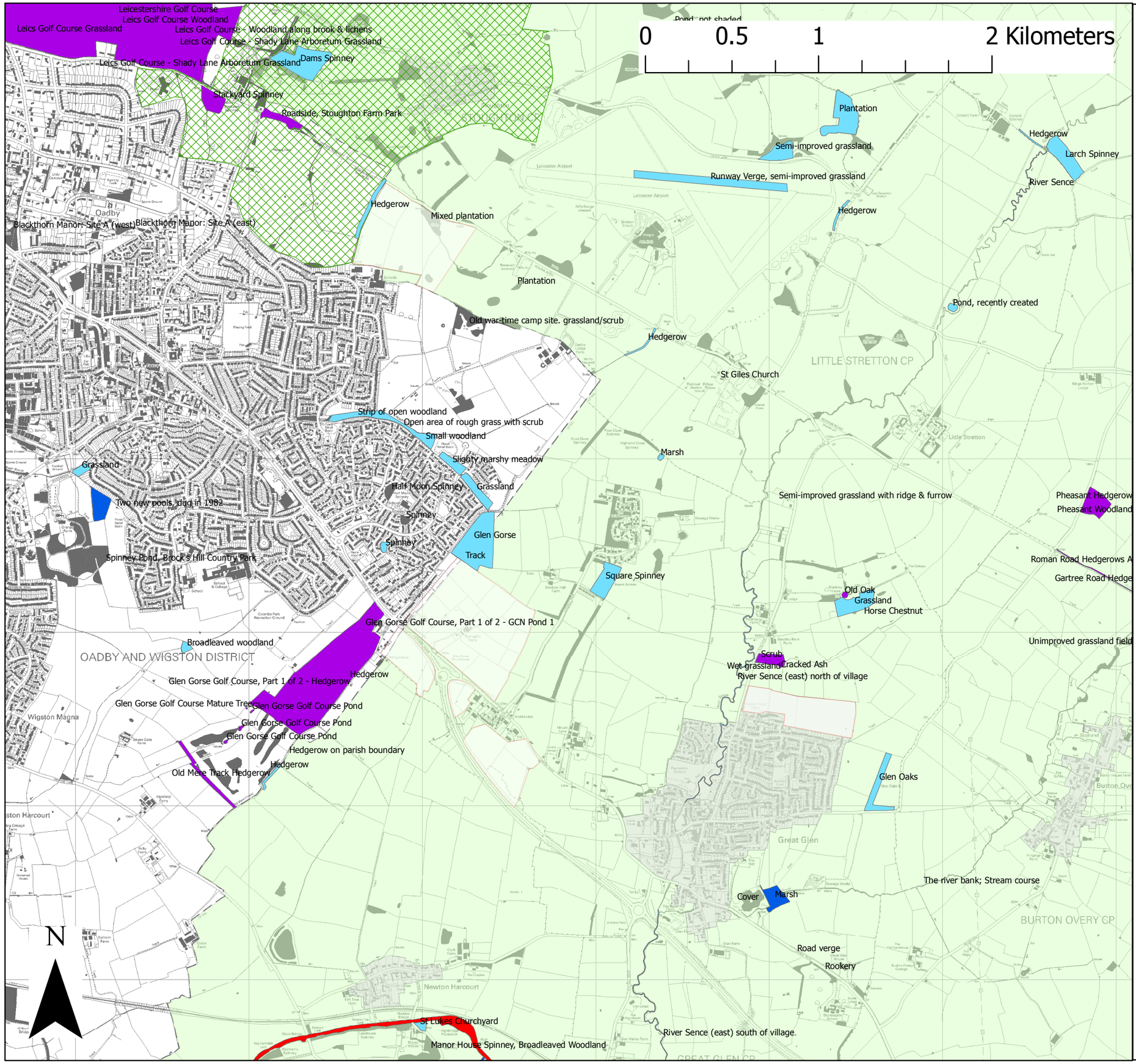
Drawing Title:

Figure 6a
Urban Fringe
Phase 1 Habitat Survey

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 11/12/08	RD 11/12/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council



Legend

- SSSI
- LWS
- District Level Site
- Parish Level Site
- Local Nature Reserve
- Green Wedge
- Survey Areas
- Existing urban area
- Harborough District

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Project

Harborough District Council

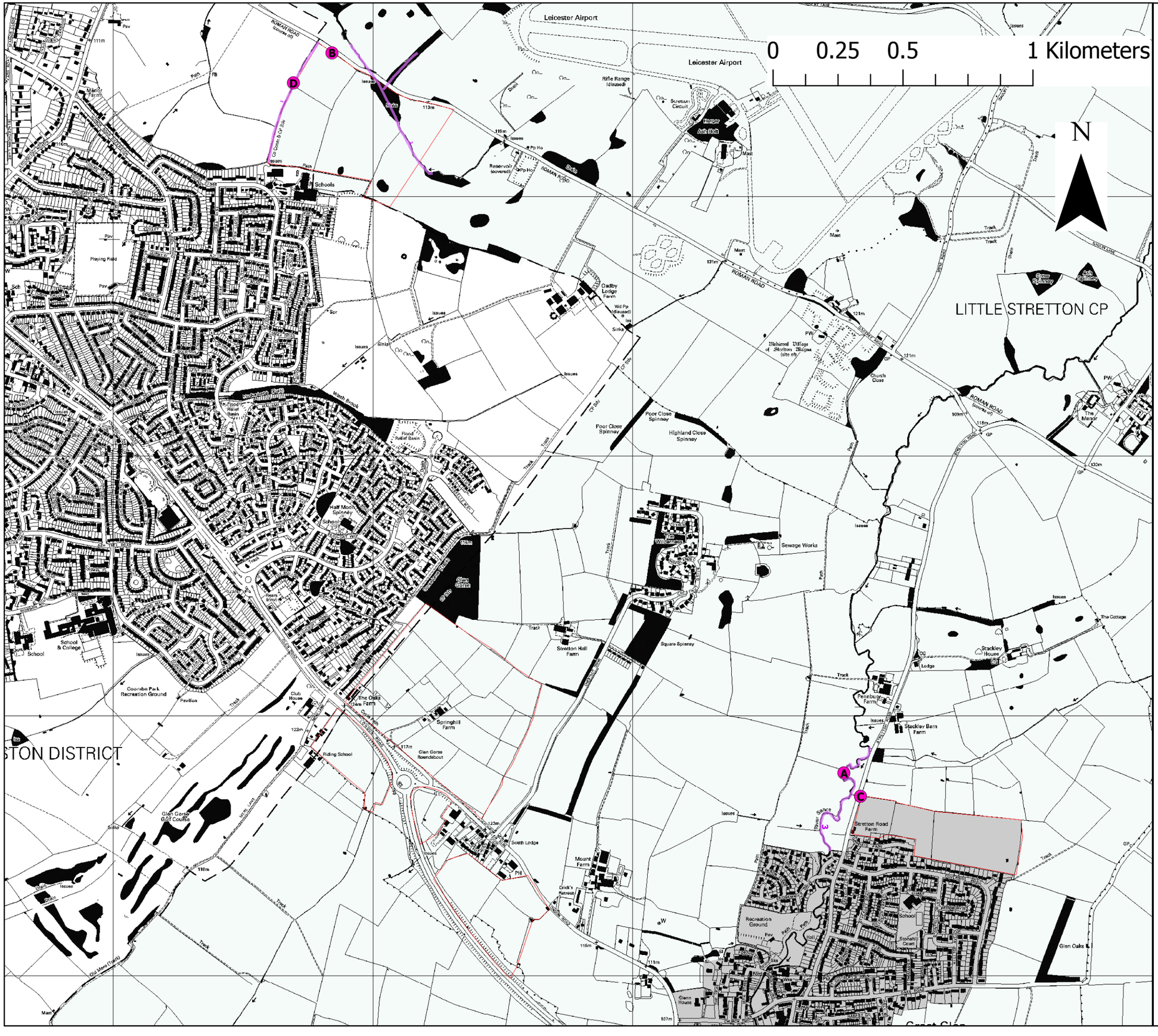
Drawing Title:

Figure 6c
Urban Fringe
Designated Sites

Drawn using:	Drawn by:	Date:	Checked By:	Date:	Approved By:	Date:
ArcGIS 9.3	DW	25/11/08	TK	25/11/08	RD	02/11/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	Harborough Designated Sites	3

Base map provided by Harborough District Council



Legend

- Potential Local Wildlife Site
- Wildlife Corridor
- Survey Areas
- Existing urban area
- Harborough District

	Wildlife Corridors
1.	Hedgerow
2.	Mixed plantation woodland
3.	River Sence

	Potential LWSs
A	River Sence
B	Veteran tree TN2 & species-rich hedgerow
C	Veteran tree TN3
D	Species-rich hedgerow

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Drawing Title:

Figure 6d
Urban Fringe
Wildlife Corridors & Potential Local Wildlife Sites

	Drawn by: Date:	Checked By: Date:	Approved By: Date:
	DW 25/11/08	TK 11/12/08	RD 11/12/08

Project No:	Office	Type	Drawing No.	Revision
A047059	35	04	2	2

Base map provided by Harborough District Council