

**Melton Borough  
Council**

**Melton Borough  
Biodiversity and  
Geodiversity Study**

Final Study Report

27 October 2008

Entec UK Limited



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**Report for**

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# Melton Borough Council

## Melton Borough Biodiversity and Geodiversity Study

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Final Study Report

27 October 2008

Entec UK Limited

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## Document Revisions

No.	Details	Date
1	Incomplete Draft	6 July 2008
2	Incomplete Draft	22 August 2008
3	Complete Draft	15 September 2008
4	Final Report	27 October 2008

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# Non-Technical Summary

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The Draft East Midlands Regional Plan sets out a planning strategy for the East Midlands up to 2026. When issued in its final form it will form part of the development plan and supersede the Leicestershire, Leicester and Rutland Structure Plan.

The broad strategy for development in Melton Borough is contained in the Regional Plan. The Regional Plan states that in Melton Borough most new development will be in and around the town of Melton Mowbray. Melton Borough Council has been developing options for the location of future development up to 2026 and is currently preparing its Local Development Framework which will provide spatial planning policies for Melton Borough to the year 2026. Following a recent public consultation, options for a sustainable urban extension to the town of Melton Mowbray are under consideration by Melton Borough Council to accommodate new residential and business development. Melton Borough Council has identified 11 areas of search (Search Areas) around the outskirts of Melton Mowbray as part of the process for identifying the best location for the sustainable urban expansion.

It is a priority of the council that the new LDF will contain policies which positively plan for the future of Melton Borough, including biodiversity and geodiversity policies which are consistent with, national, regional and local priorities, policies and objectives.

Entec UK Ltd is a national firm of experienced environmental and engineering consultants and was commissioned by Melton Borough Council to undertake a biodiversity and geodiversity study. The purpose of the study is to inform the preparation of the policies that relate to biodiversity and geodiversity within the Melton Local development Framework. The study has been undertaken in consultation with a range of relevant statutory and non-statutory stakeholders, and has utilised a wide range of information sources. The study has been undertaken using industry standard practices and methods.

The study report identifies the main biodiversity and geodiversity resources present in the Search Areas on the outskirts of Melton Mowbray. An evaluation of these resources and impacts assessment is provided and in particular, constraints to and opportunities associated with development proposals are provided. Important biodiversity and geodiversity resources are identified within the wider Melton Borough and recommendations for the monitoring of these resources is provided in the context of climate change and planning policy obligations. Opportunities to conserve and enhance biodiversity and geodiversity resources in the wider Melton Borough landscape are provided. Existing biodiversity initiatives, measures to release additional resources/funding for biodiversity enhancement, and opportunities to ally biodiversity initiatives with access, recreation and community involvement are also provided. Biodiversity opportunities have been provided by consideration of the landscape character assessment for the Borough.

The Borough does contribute significantly to the biodiversity and geodiversity resources of the Leicestershire County and the East Midlands region nonetheless considerable potential opportunities exist to further enhance the geodiversity and biodiversity resources of the Borough.



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# 1. Study Introduction and Context

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## 1.1 Sustainable Development and Conservation

### 1.1.1 Development and Spatial Planning

Sustainable development is the core principle of planning within Europe and the UK and is affirmed within Planning Policy Statement 1 (PPS 1) and within the UK Government's Sustainable Development Strategy (SD). The framework for sustainable development is provided by Regional Spatial Strategies (RSSs) and at the local level, Local Development Frameworks (LDFs)). Both tiers must demonstrate sustainability in accordance with European Directive 2002/42/EEC (enacted within the UK via the Environmental Assessment of Plans and Programmes Regulations 2004 SI 1633), which requires that a Strategic Environmental Assessment is undertaken to assess the effects of certain plans and programmes on the environment. In addition, Schedule 1 of the *Conservation (Natural Habitats, &c) (England and Wales) Regulations 1994 (as amended)* (the 'Habitats Regulations') requires that competent authorities assess the potential impacts of land use plans (including spatial planning documents such as Core Strategies and Local Development Frameworks) on the Natura 2000 network of European protected sites<sup>1</sup>. The process by which the impacts of a plan or programme are assessed against the conservation objectives of a European site is known as Habitats Regulations Assessment (HRA)<sup>2</sup>. The HRA determines whether there will be any likely significant effects (LSE) on any European site and, if so, whether these effects will result in an adverse effect on its integrity.

Section 39 of the *Planning and Compulsory Purchases Act 2004* also requires that local authorities must exercise their functions with the purpose of contributing to sustainable development and this can be achieved by undertaking Sustainability Appraisals (SAs) of their planning policies.

### 1.1.2 Conservation of Biodiversity and Geodiversity

The Government also expects local authorities to contribute towards meeting the international commitments and domestic policies for habitats, species and ecosystems. The Government's vision for conserving and enhancing biological diversity through the planning system is set out

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<sup>1</sup> HRA is required by law for all European Sites (Regulation 48). A European Site is any classified Special Protection Area (SPA) and any Special Area of Conservation (SAC) from the point where the Commission and the Government agree the site as a Site of Community Importance. HRA is also required, as a matter of Government policy, for potential SPAs, candidate SACs and listed Ramsar Sites for the purpose of considering development proposals affecting them (PPG 9 paras. 13 and C7). As such, pSPAs, cSACs and Ramsar Sites must also be considered by any HRA. "European site" is used as a generic term for all of the above designated sites.

<sup>2</sup> 'Appropriate Assessment' has been historically used as an umbrella term to describe the process of assessment as a whole. The whole process is now more accurately termed 'Habitats Regulations Assessment' (HRA), and 'Appropriate Assessment' is used to indicate the specific stage of HRA.

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in Planning Policy Statement 9: 'Biodiversity and Geological Conservation' (PPS 9), which includes the broad aim that planning, construction, development and regeneration should have minimal impacts on biodiversity and enhance it wherever possible. In order to achieve this PPS 9 states that regional and local planning authorities should ensure that development plan policies and planning decisions should be based on up-to-date information (a 'good evidence base') about the environmental characteristics of their areas including the relevant biodiversity and geological resources. It is recognised that a good evidence base sets a robust and credible framework for the development of well-informed spatial planning policies, and provides a sound basis for planning applications to be appropriately appraised.

From 1<sup>st</sup> October 2006 all local authorities also now have a 'Duty' to have regard to the conservation of biodiversity in exercising their functions. This Duty was introduced by the *Natural Environment and Rural Communities Act 2006* and is described in Section 40 of the Act. The aim of the Duty is to raise the profile and visibility of biodiversity, clarify existing commitments to biodiversity, and to make the biodiversity an integral part of decision making and policy.

### **1.1.3 Conservation of Landscapes**

The Government also expects local authorities to contribute towards meeting the international commitments and domestic policies for landscapes. Domestic policy with regard to landscape is included within Planning Policy Statement 7, 'Sustainable Development in Rural Areas' (PPS7). Objectives within PPS7 include raising the quality of life and the environment in rural areas and promoting more sustainable patterns of development. The document also stresses the importance of criteria-based policies in achieving these objectives and gives Landscape Character Assessment as an example of a tool to be used to deliver these. As such PPS7 represents a continuation of the shift from reliance upon area-based designations to protect certain landscapes, to a model where all landscapes are considered on their own merits. At an international level, the requirement for policies to protect all landscapes is reinforced by the European Landscape Convention (ELC), which came into force in the UK in March 2007. The ELC defines landscape as, "*an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors*" and the framework for implementation in England states that:

*"This definition applies to the whole territory of states including all urban and periurban landscapes, towns, villages and rural areas, the coast and inland areas. It applies to ordinary or even degraded landscape as well as those areas that are outstanding or protected."*

Article 5 of the ELC states that parties to the Convention must recognise landscapes in law, and establish and implement policies aimed at landscape protection, management and planning.

## **1.2 The Melton Study and Objectives**

### **1.2.1 Introduction to Melton Borough**

Melton Borough is an attractive rural area in the north east part of the county of Leicestershire in the East Midlands region and comprises an area of 48,138 hectares (Figure 1.1). The borough has a population of about 48,000, and in terms of population, it is the tenth smallest

district in the UK with a population density of 0.99 persons per hectare and is therefore also one of the 50 most sparsely populated districts in the UK.

The main activities of the borough are centred on the single market town of Melton Mowbray which has a population of about 25,000. There are more than 60 villages in the rural area. The predominant land use in the borough is agricultural, and a typical Melton Borough landscape setting comprises extensive areas of grazing pasture or cultivated arable land bordered by hedges, interspersed with occasional ponds and small ancient woodland copses.

The borough does contribute significantly to the biodiversity and geodiversity resources of Leicestershire and the East Midlands region; it has around 130 designated wildlife sites, and six designated geodiversity sites. However the latest Sustainability Appraisal of the Melton Local Development Framework highlighted that Leicestershire is one of the most impoverished counties in terms of biodiversity resources, and that these resources appear to be in decline (Scott Wilson, 2008).

### 1.2.2 The Melton Local Development Framework

The Draft East Midlands Regional Plan was published in September 2006 and underwent an Examination in Public during July 2007. It sets out a planning strategy for the East Midlands up to 2026. When issued in its final form it will become part of the development plan and supersede the Leicestershire, Leicester and Rutland Structure Plan.

The broad strategy for development in Melton Borough is contained in the Regional Plan. The Regional Plan states that in Melton Borough most new development will be in and around the town of Melton Mowbray. Melton Borough Council (the council) has been developing options for the location of future development up to 2026 and is currently preparing its Local Development Framework (LDF) which will provide spatial planning policies for Melton Borough to the year 2026.

After consultation with the public on the Core Strategy (Issues & Options), the most likely strategic growth scenario will result in future development being distributed as 80% in and around Melton Mowbray, and 20% in the rural area. Taking into account the potential to develop previously developed land in Melton Mowbray, the aforementioned scenario will require a sustainable urban extension (SUE) to the town of Melton Mowbray of around 1,000 new houses on greenfield land (about 30 hectares) that adjoins the fringes of the existing urban area together with land for business use (an additional 30 hectares). The strategy is also likely to include a proposal for a Melton Mowbray bypass around part of the town.

The Council has identified 11 areas of search (Search Areas) around the outskirts of Melton Mowbray (Search Areas A to K) as part of the process for identifying the best location for the SUE. A further Search Area (River Corridor Search Area), comprising a section of the River Eye and adjacent terrestrial habitats has also been included in this study (Figure 1.1).

It is a priority of the council that the new LDF will contain policies which positively plan for the future of Melton Borough, including biodiversity and geodiversity policies which are consistent with, national, regional and local priorities, and objectives.

The relevant Core Strategy objectives in relation to biodiversity and geodiversity are: “*To protect and enhance the built and natural environment*”, and, “*Protect and manage the use of natural resources and mitigate activities that cause their loss and degradation*” (Scott Wilson, 2008). The relevant LDF planning policies as per the adopted Local Plan dated 1999 and which

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are currently still relevant to biodiversity and geodiversity until the new LDF is adopted are: C13 Sites of Ecological, Geological or Other Scientific Importance; C14 Nature Conservation Value; C15 Wildlife Habitat Protection; and C16 Trees and Woodland.

### 1.2.3 The Melton Study and Study Report

#### The Melton Study and Study Requirements

The purpose of the Melton Borough Biodiversity and Geodiversity Study (The Melton Study) is to inform the preparation of the policies that relate to biodiversity and geodiversity within the Melton LDF.

Key to achieving this is the accumulation of a good evidence base as emphasised through national planning policies (Section 1.1). Guidance on establishing an evidence base for biodiversity is provided in Defra (2007), and, in summary, includes identifying:

- Designated wildlife sites;
- Important habitat and species including Biodiversity Action Plan (BAP) habitats, BAP species and protected species;
- Key habitat networks;
- Areas for potential enhancement or restoration;
- Trends in habitat extent and condition, species distribution and abundance;
- Key natural systems and processes in the area.

In addition, a local authority can demonstrate that it will fulfil its Duty to have regard to biodiversity by, for example (Defra, 2007):

- Contributing to local biodiversity initiatives (e.g. establishing/maintaining Local Biodiversity Action Plans (LBAPS), records centres and designating local wildlife sites);
- Achieving progress in line with biodiversity indicators and targets (e.g. those set out in BAPs);
- Establishing an appropriate monitoring system to monitor this progress<sup>3</sup>;
- Raising awareness of/improving access to biodiversity and recreation opportunities to improve community well-being and quality of life.

These principles have informed the scope of The Melton Study and although are predominantly aimed at biodiversity, many are applicable to geodiversity also.

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<sup>3</sup> Section 35 of the Planning and Compulsory Purchase 2004 and Planning Policy Statement 12 formally require local authorities to produce annual reports to the Secretary of State providing an update on whether the objectives of local planning policies are being achieved. Monitoring provides key information for the annual reports and it is recognised that establishing such monitoring, for example for biodiversity, goes part way towards local authorities fulfilling their Duty under the NERC Act 2006 (Defra, 2007)

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## Quality Assurance

The study report has been prepared based upon information provided by, and in close liaison with, officers of the council, and other stakeholders (Chapter 2). It is assumed that all information and/or documents provided to Entec in connection with the preparation of this report are accurate and complete.

A priority for the council was that The Melton Study should provide a scientifically robust and transparent basis for decision making during preparation of the LDF with regard to biodiversity and geodiversity.

Entec UK Ltd (Entec) who undertook The Melton Study is an environmental and engineering consultancy. Over the last 60 years, Entec has established an excellent reputation as one of the leading consultancies in the UK providing technically robust solutions to a wide range of public and private sector clients. The Entec project team comprised specialists with proven track records in their respective disciplines, as follows:

- Dr Andrew Brooks BSc (Hons.), PhD, MIEEM<sup>4</sup>, was the Study Director and technical reviewer. Andrew is an Associate Director Ecologist with 13 years professional experience in research projects, production of guidance and in the project management of, and undertaking of ecological assessments for Environmental Impact Assessments (EIA's), and ecological appraisals;
- Graham Morgan BSc (Hons.), MSc, CEnv<sup>2</sup>, MIEEM<sup>2</sup> was the Study Manager and study report co-author. Graham is a Senior Consultant Ecologist with 6 years professional experience in undertaking and project managing technical ecological assessments/appraisals, Environmental Impact Assessments (EIA's), and producing ecological guidance documents;
- Nick Masters BSc, MSc, AIEEM<sup>2</sup>, was the field surveyor and contributed technical input to the study report. Nick in an Assistant Consultant Ecologist with three years professional experience of undertaking field surveys throughout England and Wales;
- Richard Breakspear BSc, MCIWEM<sup>2</sup>, was the study report co-author and contributed technical input to the study report. Richard is a Consultant Hydrologist with over three years experience of working on numerous projects including those of a geomorphological focus. Richard has recently worked on the Strategic Flood Risk Assessment for Melton Borough Council and is therefore familiar with the Melton Borough area;
- Joe Dreissiger MSc was a project technical reviewer. Joe is a Senior Consultant Hydrogeologist with over 17 years experience in the hydrogeological and environmental fields in the UK and overseas.

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<sup>4</sup> Member of the Institute of Ecology and Environmental Management (MIEEM); Chartered Environmental Scientist (CEnv) with the Society for the Environment; Associate of the Institute of Ecology and Environmental Management (AIEEM); Member of the Chartered Institute of Water and Environmental Management (MCIWEM); Fellow of the Geological Society (FGS).

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A robust approach to information gathering and evaluation using industry standard methodologies was used throughout The Melton Study. The particular methodologies used and constraints encountered are described in Chapter 2.

### **Study Report Structure**

The council requested that the scope of the study should fulfil a number of different information requirements (classified as Outputs 1, 2 and 3 in accordance with the tender brief from the council), and in agreement with the council, it was considered that this information should be presented in three separate sections. Excluding this introduction, the remainder of this Melton Study report is structured as follows:

- Chapter 2 – Study Methodology - this chapter outlines the methods used to collect the information required for the study;
- Chapter 3 – Assessment of SUE Search Areas (Output 1) - this chapter identifies the biodiversity and geodiversity resources present in the Search Areas on the outskirts of Melton Mowbray. The chapter provides an evaluation of these resources and identifies constraints to and opportunities associated with development proposals in the Search Areas;
- Chapter 4 – Melton Borough Biodiversity & Geodiversity Resources (Output 2) - this chapter identifies important designated wildlife sites, species and habitats, and important geological features present in Melton Borough. Recommendations for the monitoring of these resources is provided; in particular monitoring indicators and targets are provided for biodiversity resources in the context of climate change demands and the need for the council to discharge its planning obligations;
- Chapter 5 – Melton Borough Biodiversity & Geodiversity Opportunities (Output 3) - this chapter identifies opportunities to conserve and enhance biodiversity and geodiversity resources in the Melton Borough landscape. Existing biodiversity initiatives, measures to release additional resources/funding for biodiversity enhancement, and opportunities to ally biodiversity initiatives with access, recreation and community involvement are also provided.

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## 2. Study Methodology

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### 2.1 Information Gathering Methodology

#### 2.1.1 Introduction

Mindful of the need to ensure the Melton Study was robust (Section 1.2.3), all three of The Melton Study outputs (see Chapters 3, 4 and 5) were informed by an extensive and comprehensive data gathering exercise undertaken between April and August 2008. This comprised desk studies, consultations, and ecological site surveys. More detail on the information gathering methods used for the biodiversity sections is described in Appendix A.

#### 2.1.2 Desk Study

A range of statutory and non-statutory stakeholders were approached for data and/or consulted for opinions and aspirations in relation to geodiversity and biodiversity in Melton Borough, including:

- Natural England (Benita Key, Planning and Biodiversity Advisor, East Midlands Team, based at the Lincolnshire office);
- Environment Agency (Ruth Elliot, External Relations Assistant, Environment Agency, East Midlands team);
- Leicestershire and Rutland Wildlife Trust (Neill Talbot, Senior Conservation Officer);
- LERC – the Leicestershire Environmental Resources Centre (Elaine Connor, Leicestershire County Council);
- Leicester County Council (Graham Walley, Historic and Natural Environment Team);
- British Geological Survey (Keith Ambrose).

The consultation responses received are provided in Appendix B.

The following freely available information was also obtained via websites:

- Citations and boundary information for statutory designated nature conservation sites – obtained from Natural England ([www.naturalengland.org.uk](http://www.naturalengland.org.uk) and [www.natureonthemap.org.uk](http://www.natureonthemap.org.uk)) and the government environmental information partnership project, MAGIC ([www.magic.gov.uk](http://www.magic.gov.uk));
- The location and extent of UK Biodiversity Action Plan habitats and other notable habitats (e.g. grassland inventory sites or ancient/semi-natural woodland) – obtained from [www.natureonthemap.org.uk](http://www.natureonthemap.org.uk) and MAGIC;

- 
- Records of protected and notable species – obtained from the National Biodiversity Network Trust’s website ([www.searchnbn.net](http://www.searchnbn.net));
  - Chemical and biological water quality information for the River Eye – obtained from the Environment Agency ([www.environment-agency.gov.uk](http://www.environment-agency.gov.uk));
  - The local Biodiversity Action Plan (LBAP) – Leicester, Leicestershire and Rutland Biodiversity Action Plan available at [www.lrwt.org.uk/bap.asp](http://www.lrwt.org.uk/bap.asp);
  - The Leicestershire and Rutland Geodiversity Action Plan ([http://www.dclgaggregatefund.co.uk/docs/finalreports/samp\\_1\\_003\\_leicester.pdf](http://www.dclgaggregatefund.co.uk/docs/finalreports/samp_1_003_leicester.pdf)). The Leicestershire and Rutland Geodiversity Action Plan (LRGAP) contains summaries of the geological characteristics of identified candidate RIGS. The LRGAP also identifies elements of Leicestershire’s geodiversity that are currently under-represented or absent within the current set of Leicestershire RIGS and makes recommendations for the identification of sites representative of these;
  - BGS Geology Map 142 (Melton Mowbray), and accompanying BGS Memoir and sheet explanation;
  - Details of several of the RIGS sites managed by the Leicestershire and Rutland Wildlife Trust (LRWT) were obtained from their website (<http://www.lrwt.org.uk/reserves.asp>);
  - Detailed paper-based information on RIGS held at by LERC on behalf of Leicestershire County Council.

Records of protected/notable species and locations of non-statutory sites were also obtained from LERC for the Search Areas, and for the wider Melton Borough, non-statutory sites only. LERC is able to provide a comprehensive data-set for protected and notable species and non-statutory sites within Melton Borough. Therefore considering the strategic scope of the study it was considered unnecessary to contact individual species groups for additional information.

### **2.1.3 Ecological Surveys**

An Extended Phase 1 Habitat Survey was undertaken of the Search Areas in April and July 2008.

Further botanical surveys (National Vegetation Classification surveys) of specific parcels of land (semi-improved grassland) within Search Area H were also undertaken in August 2008 to characterise the vegetation communities in this area more precisely.

More detail is provided in Appendix A.

## **2.2 Evaluation Methodology**

### **2.2.1 Ecological Evaluation Methodology**

In order to assess the effects of any development on flora and fauna, it is necessary to define the habitat areas and species that need to be considered as part of the assessment. In identifying these receptors, it is important to recognise that a development can affect flora and fauna not

only within the area of land-take required for the development but also ‘off-site’ (e.g. noise generation on the site of the development could affect bird populations that occur off-site).

The approach that has been taken in this document is to identify and consider ‘valued ecological receptors/ resources’ and, separately, to consider legally protected species (in accordance with guidelines produced by the Institute of Ecology and Environmental Management (IEEM, 2006). Consideration of the potential for designated sites, habitats and species to be valued ecological receptors then informed a system which ranked the relative biodiversity value of the Search Areas. More detail is provided in Appendix C.

## **2.2.2 Geological Evaluation Methodology**

To assess the effects of development on geodiversity, existing information on the distribution of geodiversity within Melton Borough has been collated. For RIGS sites the geological and geomorphological features for which sites have been identified have been noted. In addition examples of Leicestershire geodiversity identified as being un-represented or under-represented in the current set of RIGS sites have been noted.

This understanding of geodiversity feature distribution and the geological underpinnings of their designation has been used to assess the importance of the potential development areas identified by Melton Borough Council in terms of geodiversity. Potential ‘valued geodiversity receptors’ within these areas have then been identified, and these findings are presented in order to support Melton Borough Council’s decision making process.

## **2.3 Constraints**

### **2.3.1 Desk Study Constraints**

#### **Biodiversity**

Given the size of the study area (the Melton Borough), for logistical, resourcing and economical reasons it was agreed with LERC that it would provide the following information:

- Search Areas A to K and River Corridor Search Area – species records and information on non-statutory designated sites;
- Melton Borough – information on non-statutory designated sites.

It is noted that whilst current guidelines recommend that information on sites of nature conservation value (designated wildlife sites) should be obtained within 2 km of any potential development site, the method focused on the expansion areas only. This is because the precise location of future development is not known. Also, undertaking a future desk study within an appropriate search area would be the remit of a future ecological assessment in support of a planning application for any particular development.

#### **Geodiversity**

The RIGS across Leicestershire are currently being reviewed to ensure all RIGS have been recorded under a consistent assessment framework. The LRGAP was used to identify the geological characteristics of identified candidate RIGS and elements of Leicestershire’s geodiversity that are currently under-represented or absent within the current set of

Leicestershire RIGS. Nonetheless it is possible that the status of RIGS sites, or indeed the number of designated RIGS sites may change.

### **2.3.2 Ecology Survey Constraints**

Within the timescales of the study it was not possible to obtain comprehensive landowner access in advance of undertaking the Extended Phase 1 Habitat Survey, and the survey was predominantly conducted from public rights of way. By consideration of the generally limited nature conservation value of the habitats present (predominantly arable and poor semi-improved/improved grassland) it is considered that the effectiveness of identifying and evaluating habitats was not significantly compromised.

Semi-improved grassland habitat within Search Areas C and H were identified for more detailed floristic survey work however it was not possible to secure access to areas in Search Area C around the Twin Lakes Theme Park. Nonetheless extensive notes were taken from the grassland periphery and it is considered that a reasonably confident interpretation of the vegetation present has been possible.

### **2.3.3 Evaluation Constraints**

No detailed faunal surveys to establish the presence or absence of protected or notable species have been undertaken. No field visits have been made to ground-truth information on the potential for important geological exposures or geomorphological features in the Search Areas and along the River Wreake valley. This is because such surveys were outside the scope of the study.

Nonetheless it is considered that sufficient information was available during the desk study and from the ecological surveys to identify the likely main biodiversity and geodiversity resources and possible constraints relevant to the study.

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## 3. Assessment of Sustainable Urban Expansion Search Areas (Output 1)

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### 3.1 Introduction to Chapter 3

This chapter identifies the biodiversity and geodiversity resources present in the Search Areas on the outskirts of Melton Mowbray. The chapter also provides an evaluation of these resources and identifies constraints to and opportunities associated with development proposals in the Search Areas.

The results of the ecological desk studies and site surveys (see Chapter 2 and Appendix A) are provided in Section 3.2, and the biodiversity evaluation is provided in Section 3.3. Section 3.4 provides a preliminary ecological impact assessment.

The results of the geological desk study (see Chapter 2) and a geological evaluation are provided in Section 3.6. Section 3.7 provides a preliminary geological impact assessment.

The impact assessments (Sections 3.4 and 3.7) are based upon the assumption that a development of 60 hectares (30 hectares housing and 30 hectares business use) and a bypass is proposed.

Sections 3.5 and 3.9 provide the policy recommendations for biodiversity and geodiversity resources respectively within the Search Areas.

### 3.2 Ecological Results

#### 3.2.1 Desk Study Results

##### Designated Sites

There is one statutory and five non-statutory designated sites of nature conservation value within the Search Areas (Table 3.1 and Figure 3.1). Figures 3.2 to 3.5 inclusive show Areas A, D H and I in more detail. Equivalent figures have not been produced for the other Search Areas because there are no designated sites or species records in these other Search Areas (Figure 3.1). More detail on these designated sites is provided in Table 3.2 and non-statutory site data provided by LERC is provided in Appendix D. In summary, Area I has the most number of designated sites, whilst Area D contains the only statutory site in the Search Areas: the River Eye SSSI (Table 3.1).

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**Table 3.1 Summary of Designated Sites Within The Search Areas**


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Search Area	Statutory Sites		Non-statutory Sites			
	SSSI	Sub-Total	County	Parish	Other level	Sub-Total
A					1	1
B						
C						
D	1 (River Eye)	1		1		1
E						
F						
G						
H					1	1
I					3	3
J						
K						
River						

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Table 3.2 Details of Designated Wildlife Sites Within the A, D, H, I and River Corridor Search Areas

Search Area	Name of Designated Site	Designation and Status	Approximate Location within the Area	Reasons for Notification
Area A	'Hedgerows'	Non-statutory – (other) <sup>1</sup>	Located in the northwest corner	Not known based upon the information provided but presumed to be due to locally important, species-rich hedgerows
Area D	River Eye SSSI	Statutory - (national level nature conservation value)	Located in the southern half	Designated in 1983 under the <i>Wildlife and Countryside Act 1981</i> (as amended) as an exceptional example of a semi-natural lowland river comprising natural geomorphological features which support diverse and rich plant and animals communities. The invertebrate community is typical of a small, unpolluted and diverse river system including white-clawed crayfish ( <i>Austropotamobius pallipes</i> ), and a species at the northerly limit of its range in Great Britain – the white-legged damselfly <i>Platycnemis pennipes</i> .
	Corfe Wet Grassland	Non-statutory – (parish level nature conservation value)	Located in the far north	Not known based upon the information provided but presumed to be locally important grassland habitat/grassland communities
Area H	Leicester Road Grassland Sites A, B and C	Non-statutory – (other) <sup>1</sup>	Located in the north	Not known based upon the information provided but presumed to be locally important grassland habitat/grassland communities

Table 3.2 (continued) Details of Designated Wildlife Sites Within the A, D, H, I and River Corridor Search Areas

Search Area	Name of Designated Site	Designation and Status	Approximate Location within the Area	Reasons for Notification
Area I	Melton Mowbray Railway Sidings East and West	Non-statutory – (other) <sup>1</sup>		Not known based upon the information provided but presumed to be locally important habitats/vegetation communities
	'Eye Ash'	Non-statutory – (other) <sup>1</sup>	Located in the southeast	Not known based upon the information provided but presumed to be a locally important mature ash ( <i>Fraxinus excelsior</i> ) tree located adjacent to the River Eye
	Bullfield and Bullfield Oxbow	Non-statutory – (other) <sup>1</sup>	Located in the northeast	Not known based upon the information provided but presumed to be locally important grassland habitat/grassland communities
River Corridor	River Eye SSSI	Statutory - (national level nature conservation value)	Located along the central axis	See River Eye SSSI in Area D above.

**Table Notes:** <sup>1</sup> The relative nature conservation value of these designated sites is not known based upon the information provided but they are believed to be equivalent to those of local (Parish level) importance

### Protected and Notable Species Records

There are historical records for a variety of protected and notable species<sup>5</sup> from within the Search Areas and the locations of these records are shown in the overview Figure 3.1, and in more detail on Figures 3.2 to 3.5 inclusive for Areas A, D, H and I respectively. A summary is provided in Table 3.3 and the records compiled in this desk study are provided in Appendix E.

In summary, Area D contains the highest number of notable species records. However, these are nearly all bird records, which may indicate perhaps a localised bias in recording effort for birds. None of the bird species recorded are Schedule 1 species, which are afforded an increased level of protection in the breeding season above that afforded to other breeding birds. In terms of non-bird species, Area I contains the highest number of records and diversity of protected species. Four different protected species/species groups have been recorded within Area I; these being white-clawed crayfish (*Austropotamobius pallipes*), badger (*Meles meles*), unidentified bat species and great crested newt (*Triturus cristatus*).

**Table 3.3 Details of Existing Species Records Within the Search Areas**

Search Area	Protected Species							Notable Species 'Red List' Birds
	Great Crested Newt	Bats	Otter	Water Vole	Schedule 1 Bird	Badger	White-Clawed Crayfish	
A								
B								✓
C								✓
D						✓		✓
E								
F							✓ (possibly)	
G								
H								
I	✓	✓				✓	✓	
J						✓	✓	
K							✓	
River Corridor				✓			✓	✓

### Other Data

Chemical water quality data from monitoring points in close proximity to Melton Mowbray indicate that the Thorpe Brook, Scalford Brook, River Eye and Burton Brook have generally good water quality, either classed as A ('very good') or B ('good'). Biological data, from 2006,

<sup>5</sup> For a definition of protected and notable species within the context of this report see Appendix C.

for the same monitoring points indicate that the Scalford Brook had a biological water quality rating of C ('fairly good') and Burton Brook had a biological water quality rating of B ('good').

Macrophyte (aquatic plant) data and associated Mean Trophic Rank (MTR) scores for the River Eye supplied by the Environment Agency indicate that the MTR score decreased slightly from 29.1 to 27.6 at the downstream limit of the SSSI (approximately at the eastern end of the River Corridor Search Area) between 2006 and 2007. The lower the score the poorer the water quality. Scores between 25 and 65 indicate that a watercourse is, or maybe, at risk of eutrophication (poor water quality caused by high nutrient status). This in turn may lead to impoverished biological communities. However it is worth noting that the MTR score at the upstream limit of the SSSI was similar and had changed little between 2006 and 2007, indicating that the river water quality may be a catchment issue not necessarily a particular issue at the point where it enters Melton Mowbray.

Fish records for 2007 were provided by the Environment Agency for Brooksby, Crows Weir Sailing Club, Egerton Park, Sysonby and Syston Mills. Fairly widespread and common cyprinid species were recorded in generally low numbers from these areas and therefore based on the data provided these areas are considered to have limited biodiversity value.

### **3.2.2 Extended Phase 1 Habitat Survey Results**

The habitats mapped in each of the Search Areas and associated Target Notes are shown on Figures 3.6 to 3.17 inclusive. In summary, 11 major habitat types were recorded, excluding built habitats. In addition, extensive boundary features including hedges, fences and watercourses were also recorded. Detailed habitat descriptions and a description of the potential for a Search Area to support important faunal species is provided below in Table 3.4.

The total extent of each habitat type present within each expansion areas is provided in Tables 3.5 and 3.6. In summary, all Search Areas comprise predominantly arable, improved or poor-semi improved grassland. Area C, H and I contain the greatest proportion of semi-improved grassland habitat.

**Table 3.4 Descriptions of Habitat and Faunal Potential within the Search Areas**

Search Area	Habitat Description	Faunal Species Potential
A	<p>This Search Area primarily comprises improved grassland, with occasional arable and poor semi-improved grassland fields. The majority of the field boundaries comprise managed hawthorn (<i>Crataegus monogyna</i>) hedges, and those in the west contain numerous standard trees. Two small watercourses (agricultural drainage ditches) run from the north to the south of the Search Area, meeting near the southern tip. A small area of amenity grassland with occasional trees is present in the far south.</p> <p>The improved/poor semi-improved grassland is dominated by perennial rye-grass (<i>Lolium perenne</i>) with other common species including white clover (<i>Trifolium repens</i>) and in parts, Yorkshire-fog (<i>Holcus lanatus</i>), with the poor semi-improved grassland areas containing a few more meadow grasses such as rough meadow-grass (<i>Poa trivialis</i>). Broad-leaved dock (<i>Rumex obtusifolius</i>) is present occasionally.</p> <p>The amenity grassland contains managed lawns with scattered trees including weeping willow (<i>Salix x sepulcralis</i>), sycamore (<i>Acer pseudoplatanus</i>), crack willow (<i>Salix fragilis</i>), ash (<i>Fraxinus excelsior</i>), some of which are mature with cavities and deformities, and hawthorn.</p>	<p>The lack of habitat diversity and the intensively managed land-use potentially limits opportunities for protected and notable fauna. There are at least two waterbodies in the Search Area which may be used by great crested newt but these are considered to be sub-optimal habitats. Bats may forage over the area or roost in some of the trees, but again opportunities for bats may be limited.</p>
B	<p>The Search Area is mostly dominated by large fields of improved and arable grassland, although there are two smaller fields containing poor semi-improved grassland in the east, and two fields in the south where the habitat types could not be determined due to access constraints. Predominantly managed hawthorn hedges form the majority of field boundaries, with standard trees present in two hedges in the west and centre of the Search Area. A linear patch of broadleaved plantation lies at the southern boundary of the Search Area, and a disused railway line is located at the eastern boundary.</p> <p>The improved and poor semi-improved grassland are of a similar species composition to Search Area A.</p> <p>The area of mixed plantation was surveyed remotely from the eastern tip. It did not appear to be dominated by any particular species and included a mixture of broadleaved species such as hawthorn, elder (<i>Sambucus nigra</i>) and ash along with pines.</p>	<p>A waterbody is present which may be suitable for great crested newt but is considered to be sub-optimal. The mixed plantation in the south is likely to be used by nesting birds and the disused railway line may be used by a variety of fauna including foraging bats, nesting birds and herpetofauna (amphibians and reptiles).</p>

**Table 3.4 (continued) Descriptions of Habitat and Faunal Potential Within the Search Areas**

Search Area	Habitat Description	Faunal Species Potential
C	<p>This is a large Search Area containing a variety of habitats. The area to the west of Melton Spinney Road is dominated by large expanses of arable land and poor semi-improved grassland, with a single small field of improved grassland in the far west and an associated watercourse and small area of semi-natural broadleaved woodland. The area to the east of Melton Spinney Road contains arable land, semi-improved and poor semi-improved grassland, amenity grassland, two large waterbodies and small patches of scrub and ruderal vegetation. Watercourses also lie at the western and eastern boundaries. The eastern half of the Search Area also contains the more valuable hedgerows, as they are less intensively managed and therefore more naturalised.</p> <p>The improved and poor semi-improved grassland contained a similar species composition to that of Search Area A. The semi-improved grassland was surveyed remotely and so classified based on its general appearance as opposed to a detailed assessment of the species present but appeared to comprise Yorkshire fog and tufted hair-grass (<i>Deschampsia caespitosa</i>).</p> <p>The semi-natural broadleaved woodland in the west of the site contains a number of species including ash, hawthorn, beech (<i>Fagus sylvatica</i>) and elder and appeared to have a varied age structure.</p>	<p>The waterbodies in the east are artificial, and lie within the grounds of a small amusement park. They are unlikely to be suitable for great crested newts due to the high levels of disturbance caused by the presence of numerous waterfowl and they are likely to be stocked with fish. The watercourse in the north-west section of the Search Area is considered potentially suitable to be used by otter (<i>Lutra lutra</i>) and freshwater crayfish due to the shading and presence of overhanging roots. A badger sett was found during the walkover, although it was located outside of the Search Area to the south.</p>
D	<p>This Search Area is dominated by improved/poor semi-improved grassland, with a single field to the south containing tall ruderal species with very recently planted saplings. The River Eye SSSI runs through the southern area of the Search Area flanked by intensively managed grassland. A variety of habitats are present in the north-western corner of the site including amenity grassland, tall ruderal vegetation, gardens, scattered mature trees and semi-improved grassland and this probably constitute the most diverse area of the Search Area.</p> <p>The improved and poor semi-improved grassland are comprised of similar species as those described for Search Area A. The saplings in the central area could not be identified as they were immature and surveyed remotely. The semi-improved grassland in the northwest corner could not be inspected closely due to access constraints but appeared to comprise wet grassland species.</p>	<p>The three waterbodies off site but adjacent to the north-east corner are considered potentially suitable for use by great crested newts, and the north-west corner of the site offers suitable terrestrial habitat for the species during the terrestrial phase of the life cycle. The northwest corner and the River Eye corridor may be suitable for foraging bats.</p>

**Table 3.4 (continued) Descriptions of Habitat and Faunal Potential Within the Search Areas**

Search Area	Habitat Description	Faunal Species Potential
E	<p>This Search Area is almost entirely comprised of arable fields bounded by some reasonably well established hedgerows. There are also three waterbodies within the Search Area, and small watercourses at the north-western and southern boundaries.</p>	<p>The lack of habitat diversity and the intensively managed land-use potentially limits opportunities for protected and notable fauna. The Search Area may provide limited bat foraging opportunities, and there are two waterbodies are considered potentially suitable for use by great crested newts, albeit the lack of suitable terrestrial habitat is likely to be a limiting factor.</p>
F	<p>The eastern side of this Search Area is dominated by improved grassland with some scattered scrub. Towards the west, the Search Area becomes dominated by arable land interspersed by managed hawthorn hedgerows, and in the far west, there are two small fields of poor semi-improved grassland and a small block of broadleaved woodland.</p> <p>The improved and poor semi-improved grassland here is of a similar species composition to that described for Search Area A. The small block of woodland in the south-west of the Search Area could not be entered due to access constraints, but appeared to be dominated by ash with a ground flora of ivy (<i>Hedera helix</i>) and brambles (<i>Rubus fruticosus</i> agg.).</p>	<p>The area around the eastern boundary of this Search Area is considered suitable for great crested newts, due to the presence of a number of small waterbodies interspersed with scrub and woodland. The waterbodies in the centre of the Search Area are suitable for use by grass snake (<i>Natrix natrix</i>) recorded during field surveys, and potentially suitable for great crested newt and there are dispersal opportunities along nearby hedgerows. Foraging bat opportunities are provided along the hedge network in the centre of the site, in the south-east (scrub, waterbodies, hedgerows) and southwest corner (woodland, treelines, grassland and scrub).</p>
G	<p>Search Area G is one of the smaller Search Areas, with arable land being the predominant habitat type. There are also small fields of poor semi-improved grassland in the north-east and south, and a single, large field of improved grassland in the west. There are also private residences, a farm and other buildings. The Search Area is interspersed with hedges dominated by hawthorn with numerous standard trees occurring, particularly in the east of the Search Area. A small area of semi-natural broadleaved woodland also occurs in the north.</p> <p>The improved and poor semi-improved grassland was of a similar species composition to Search Area A. The woodland in the north is dominated by mature horse chestnut (<i>Aesculus hippocastanum</i>) and appeared to have a varied age structure. The private areas in the north and the area around the council depot buildings in the east could not be closely surveyed due to access constraints.</p>	<p>The general lack of habitat diversity and the intensively managed land-use potentially limits opportunities for protected and notable fauna. However the dismantled railway line and waterbodies which abut the western boundary could provide opportunities for foraging bats and there is a hedgerow/treelines leading to these areas from potential roosting habitat (buildings at Old Guadeloupe). There are three waterbodies within the search area which may be suitable for great crested newt and there are suitable adjacent terrestrial habitats.</p>

**Table 3.4 (continued) Descriptions of Habitat and Faunal Potential Within the Search Areas**

Search Area	Habitat Description	Faunal Species Potential
H	<p>This is one of the more diverse and complex Search Areas. There are two distinct business developments, situated on opposite sides of the road which traverses through the Area from east to west. These developments contain a complex of buildings, amenity grassland, plantation woodland and other planted trees, scrub and gardens. Other built features include a nursery in the north, a derelict and dilapidated farmhouse in the centre, and other private residences in the east. Another area of amenity grassland lies in the east, and there are three waterbodies scattered over the Search Area. There are also a number of patches of semi-improved grassland, as well as arable, poor semi-improved grassland and poor semi-improved grassland / ruderal mosaic, which is located in the north-east. Small blocks of woodland are located in the south-east and north-east, and there is scattered and dense scrub across the Search Area.</p> <p>The species composition of the poor semi-improved grassland is similar to that described for Search Area A; where forming a mosaic with ruderal species, broad-leaved dock and tufted hair-grass (<i>Deschampsia caespitosa</i>) were noticeable. The areas of scrub contain hawthorn, blackthorn (<i>Prunus spinosa</i>) and brambles.</p> <p>The semi-improved grassland areas were moderately diverse comprising species such as false-oat grass (<i>Arrhenatherum elatius</i>), yellow oat-grass (<i>Trisetum flavescens</i>), meadow foxtail (<i>Alopecurus pratensis</i>), cock's-foot (<i>Dactylis glomerata</i>), Yorkshire-fog, ground ivy (<i>Glechoma hederacea</i>), lady's bedstraw (<i>Galium verum</i>), woolly thistle (<i>Cirsium eriophorum</i>), meadow cranesbill (<i>Geranium pratense</i>), cut-leaved cranesbill (<i>Geranium dissectum</i>), common sorrel (<i>Rumex acetosa</i>) and ruderals such as hogweed (<i>Heracleum sphondylium</i>) and cow parsley (<i>Anthriscus sylvestris</i>). The grassland east of the northern business development was quite variable comprising localised wetter areas and including species such as lesser pond-sedge (<i>Carex acutiformis</i>) and soft rush (<i>Juncus effusus</i>). The southern boundary of this grassland was located close to a roadside verge which was found to contain an interesting mix of flora, including viper's bugloss (<i>Echium vulgare</i>), lords-and-ladies (<i>Arum maculatum</i>), lime trees (<i>Tilia</i> sp.) and a London plane tree (<i>Platanus x hispanica</i>).</p>	<p>The variety of habitats present provided opportunities for range of fauna including amphibians, reptiles, invertebrates, birds and bats. All of the waterbodies within the Search Area are considered to be particularly suitable for great crested newts and in all cases the surrounding areas provide favourable terrestrial habitat for the species. The semi-improved grassland areas are suitable for foraging amphibians and reptiles.</p> <p>There are numerous bat foraging opportunities along treelines, hedgerows, over waterbodies, scrub and woodland and potential bat roosting opportunities are present within buildings at New Guadeloupe and buildings immediately east of the northern business park.</p>

**Table 3.4 (continued) Descriptions of Habitat and Faunal Potential Within the Search Areas**

Search Area	Habitat Description	Faunal Species Potential
I	<p>This is another complex and varied Search Area. Starting from the western side, arable is the most prevalent habitat, with a small area of hardstanding and ruderal vegetation lying on the site of the demolished Sysonby Grange Farm. A small area of semi-improved grassland lies at the north-west of the site, which abuts a large golf course containing amenity grassland and occasional trees. A worksite lies in the central-southern area of the Search Area, and to the north of this semi-improved grassland / ruderal mosaic and a small area of semi-improved grassland. In the east of the Search Area are open areas containing improved and amenity grassland, as well as a waterbody and a disused railway line, which is now dominated by scrub. The River Eye runs through this Search Area; the river meanders in an east-west orientation. There are also small areas of dense scrub, tall ruderal and woodland within Search Area I.</p> <p>The species composition of the improved/poor semi-improved grassland is similar to that described for Search Area A. The semi-improved grassland in the centre could not be accessed and so the classification was based on the appearance of the habitat as opposed to an assessment of the species present. The scrub throughout the Search Area was generally dominated by hawthorn and blackthorn.</p>	<p>There are a number of areas suitable for reptiles within this Search Area; particularly the demolished buildings at Sysonby Grange Farm and the disused railway line. Both areas contain a mixture of dense vegetation, hardstanding and ruderal vegetation, which provides suitable habitats for reptiles to forage, bask and shelter within a small dispersal area.</p> <p>There are numerous bat foraging opportunities along treelines, the River Eye, hedgerows, over waterbodies, scrub and woodland and potential bat roosting opportunities are present within mature trees, the buildings at the southern end of Riverside Road near the River Eye, and an underpass under the disused railway.</p> <p>The River Eye is an important dispersal corridor in the landscape as well as potentially supporting a number of protected riverine species including white-clawed crayfish, otter, water vole (<i>Arvicola terrestris</i>) and birds such as kingfisher (<i>Alcedo atthis</i>).</p>
J	<p>Search Area J comprises predominantly improved grassland and poor semi-improved grassland habitats, with a large area of arable land in the northwest and a brook running in a north-south direction through the middle. Ministry of Defence buildings and a single field of amenity grassland are also present however much of the Search Area could not be accessed during the walkover. Waterbodies are present within the Search Area.</p> <p>The species composition of the improved and poor semi-improved grassland is similar to that described for Search Area A. A small area of semi-natural broadleaved woodland, dense scrub and the amenity grassland contribute to the habitat diversity.</p>	<p>The waterbodies are potentially suitable for great crested newt. Terrestrial opportunities for the species are present in the wooded areas and dense scrub. The brook along the central axis of the site, dense scrub and nearby woodland block may be suitable for foraging bats. The watercourse is considered to provide only limited opportunities for water vole.</p>

Table 3.4 (continued) Descriptions of Habitat and Faunal Potential Within the Search Areas

Search Area	Habitat Description	Faunal Species Potential
K	<p>Search Area K is one of the smaller Search Areas, and is roughly divided in half by a road running in an east-west direction through the centre. The habitats on both sides of the road are mostly comprised of poor semi-improved and improved grassland interspersed with managed hedgerows and thick, unmanaged hedgerows either side of the road. At least one small waterbody is situated in the northern half, and other habitats present in the southern half include poor semi-improved grassland / tall ruderal mosaic and scattered scrub. A brook runs through the centre of the Search Area north to south.</p> <p>The species composition of the improved and poor semi-improved grassland is similar to that described for Search Area A. The poor semi-improved grassland / tall ruderal mosaic and scrub contains similar species to that described for Search Area H.</p>	<p>At least one waterbody is present which may be suitable for great crested newts, albeit that surrounding terrestrial habitat opportunities for the species are limited. Bats may also forage along the brook and along treelines and hedgerows along the roadside</p>
River Corridor	<p>This Search Area is considered to extend from Melton Mowbray rail station, in an easterly direction towards the open countryside, at which point the river corridor extends in to Search Area D and the River Eye becomes the River Eye SSSI. Thus it is only necessary to describe the section to the west of Search Area D here. Beginning opposite the station, the predominant habitat to the south of the river is poor semi-improved grassland with scattered trees, with built areas to the north. The river then runs past semi-improved grassland with some scattered scrub, more trees and scrub, and further built areas. An area of broadleaved woodland lies to the west of this, followed by amenity land with scattered trees, tall ruderal with scattered trees, scrub and marshland. Not all of the river corridor could be surveyed during the walkover due to access constraints.</p> <p>The trees in the west include horse chestnut, pedunculate oak (<i>Quercus robur</i>) and beech. The semi-improved grassland contains false oat-grass which is the dominant species, meadow foxtail, broad-leaved dock and creeping buttercup (<i>Ranunculus repens</i>). The area of woodland was remotely surveyed but appeared to be dominated by poplars (probably Lombardy poplars, <i>Populus</i> sp.). The trees planted on amenity grassland in the east are weeping willows, and the ruderal is dominated by common nettle (<i>Urtica dioica</i>) with abundant common cleavers (<i>Galium aparine</i>). The marshy area in the far east is dominated by greater reedmace (<i>Typha latifolia</i>).</p>	<p>The River Eye is an important dispersal corridor in the landscape as well as potentially supporting a number of protected riverine species including white-clawed crayfish, otter, water vole (<i>Arvicola terrestris</i>) and kingfisher (<i>Alcedo atthis</i>).</p> <p>There are numerous bat foraging opportunities along treelines, the River Eye, hedgerows, scrub and woodland and potential bat roosting opportunities are present within mature trees in the woodland and opposite the railway station.</p>

**Table 3.5 Extent and Type of Terrestrial Habitats Present Within the Search Areas**

<b>Area (Hectares) of Each Habitat and Proportion (%) of the Total Land Available<sup>1</sup> Within Each Search Area A to K</b>											
<b>Habitat</b>	<b>A(96.2)</b>	<b>B(64.1)</b>	<b>C(124.2)</b>	<b>D(66.9)</b>	<b>E(84.7)</b>	<b>F(80.3)</b>	<b>G(68.0)</b>	<b>H(85.3)</b>	<b>I(112.0)</b>	<b>J(120.7)</b>	<b>K(66.3)</b>
Coniferous plantation woodland	0	0	0	0	0	0	0	0	0	0	0
Semi-natural broadleaved woodland	0	0	0.3 (0.2%)	0	0.1 (0.1%)	0.3 (0.4%)	0.2 (0.3%)	0.3 (0.4%)	0.8 (0.7%)	0.6 (0.5%)	0
Mixed woodland	0	0	0	0	0	0	0	0	0	0	0
Dense scrub	0	0	0	0	0	0	0	1.7 (2%)	3.6 (3%)	0	0.5 (0.8%)
Tall ruderal	0	0	0	0	0	0	0	0	1.1 (1%)	0	0.5 (0.8%)
Improved grassland	57.7 (60%)	25.3 (39%)	18.6 (15%)	31.9 (48%)	0	32.2 (40%)	12.8 (19%)	0	10.6 (9%)	28.3 (23%)	25.1 (38%)
Poor semi-improved grassland	14 (15%)	14.4 (22%)	33.2 (27%)	21.4 (32%)	10.5 (12%)	5.5 (7%)	0	6.2 (7%)	0.4 (0.4%)	40.7 (34%)	21.9 (33%)
Semi-improved grassland	0	1.2 (2%)	6.7 (5%)	1.6 (2%)	0.3 (0.3%)	0	0.3 (0.4%)	8.9 (10%)	6.8 (6%)	0	0
Arable	14.3 (15%)	15.8 (25%)	53.2 (43%)	0	73.9 (87%)	43.2 (54%)	40.3 (59%)	32.2 (38%)	28.7 (26%)	21.8 (18%)	0
Amenity grassland	0.2 (0.2%)	0	1.5 (1%)	2.1 (3%)	0	0	0	6.8 (8%)	21.6 (19%)	2.7 (2%)	0
Marsh or similar	0	0	0	0	0	0	0	0	0	0	0
Poor semi improved grassland / ruderal mosaic	0	0	0	1.9 (3%)	0	0	0	1.8 (2%)	5.8 (5%)	0	0.9 (1%)

**Table 3.5 (continued) Extent and Type of Terrestrial Habitats Present Within the Search Areas**

<b>Area (Hectares) of Each Habitat and Proportion (%) of the Total Land Available<sup>1</sup> Within Each Search Area A to K</b>											
<b>Habitat</b>	<b>A(96.2)</b>	<b>B(64.1)</b>	<b>C(124.2)</b>	<b>D(66.9)</b>	<b>E(84.7)</b>	<b>F(80.3)</b>	<b>G(68.0)</b>	<b>H(85.3)</b>	<b>I(112.0)</b>	<b>J(120.7)</b>	<b>K(66.3)</b>
Broadleaved plantation woodland	0	0.8 (1%)	0	0	0	0	0	0.8 (1%)	0	0	0
Other residual land use <sup>2</sup>	10 (10%)	6.6 (10%)	10.7 (9%)	8 (12%)	0 (0%)	0 (0%)	14.4 (21%)	26.6 (31%)	32.6 (29%)	26.6 (22%)	17.4 (26%)

Tables Notes: <sup>1</sup> all measurements are approximate but have been taken using ARCGIS to provide a degree of accuracy.

### 3.2.3 National Vegetation Classification (Phase 2) Surveys

Further detailed surveys are sometimes referred to as Phase 2 Surveys (after IEA, 1995) and are undertaken for particular ecological groups of flora and/or fauna once the need for such surveys has been established by preliminary surveys (Extended Phase 1 Habitat Survey). For vegetation, detailed Phase 2 surveys usually take the form of National Vegetation Classification (NVC) surveys (after Rodwell, 1991). These are undertaken so that the vegetation communities present can be characterised, and the nature conservation value described more precisely. It was considered at the Extended Phase 1 Habitat Survey stage that areas of semi-improved grassland near Tumbledown Farm in Search Area C (Figure 3.8) and in Search Area H (Target Notes 1, 3 and 4 Figure 3.13) warranted further investigation.

#### Search Area H

More detailed floristic surveys were undertaken of semi-improved grassland in Search Area H because it was considered during the Extended Phase 1 Habitat Survey that the grassland warranted further investigation due to a varied habitat structure and the presence of several species indicative of more naturalised and botanically interesting/diverse grassland habitat such as yellow oat-grass and lady's bedstraw. A National Vegetation Classification (NVC) survey (Rodwell, 1991a and b to 2000) was undertaken and the data analysed using specialist computer software as described in more detail within Appendix A.

The approximate location of stands of vegetation within which quadrats were taken within Search Area H is shown on Figure 3.13. The results of the analysis are presented within Table 3.6 and described as follows:

- The grassland east of White House Farm comprises localised 'wetter' grassland communities (poorly associated<sup>6</sup> with MG2 and M23 communities and closely associated with OV26b communities), within a moderately species-rich mesotrophic grassland community (MG1) characterised by false-oat grass. It is possible that the nearby watercourse influences the maintenance of wetter areas within this grassland;
- The grassland north of White House Farm and west of the pumping station within this Search Area comprise moderately species-rich mesotrophic grassland community (MG1) characterised by false-oat grass.

#### Search Area C

Due to access restrictions it was not possible to undertake detailed NVC surveys within the semi-improved grassland around the Twin Lakes Theme Park. However based upon observation from the periphery, the habitats may comprise moderately species-rich mesotrophic wet grassland communities characterised by wavy hair-grass and Yorkshire fog.

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<sup>6</sup> It is not unusual to record vegetation communities that do not correspond well with the NVC system. The difficulty is that not all examples of a vegetation community comprise exactly the same species in the same relative abundances as described by the NVC, for example if the vegetation community may be transitional (in a state of transition between one form or another) or occurs as a result of particular localised conditions that were not well represented in the national NVC datasets. Hence there can be communities that are a poor fit to the composition described by the NVC and others that will be a good fit.

Table 3.6 Results of NVC Analysis

Stand Ref.	Closest NVC Match/Matches	2 <sup>nd</sup> Closest Match/Matches	Match Ratings	Comments
1 East of White House Farm	47% MG2b <i>Arrhenatherum elatius-Filipendula ulmaria</i> grassland, <i>Polemonium caeruleum</i> subcommunity	47% MG2 <i>Arrhenatherum elatius-Filipendula ulmaria</i> grassland, typical subcommunity	Closest – very poor 2 <sup>nd</sup> closest - very poor	Analysis result is inconclusive – MG2 and MG2b NVC communities are typically associated with steep or precipitous slopes in upland fringes of northern England and the association with these NVC communities is poor here. More likely a wetter form of MG1.
2 East of White House Farm	53% M23 <i>Juncus effusus/acutiflorus-Galium palustre</i> rush pasture	49% M28 <i>Iris pseudacorus-Filipendula ulmaria</i> mire 49% M23b <i>Juncus effusus/acutiflorus-Galium palustre</i> rush pasture, <i>Juncus effusus</i> subcommunity	Closest – poor 2 <sup>nd</sup> closest – very poor	Analysis result is inconclusive – the M23 NVC community is typical associated with poorly drained and relatively agriculturally unimproved grassland however there is a poor association here with these NVC communities
3 East of White House Farm	91% OV26b <i>Epilobium hirsutum</i> open habitat, typical subcommunity	73% S24b <i>Phragmites australis-Peucedanum palustre</i> tall herb fen, <i>Glyceria maxima</i> subcommunity	Closest – Very good 2 <sup>nd</sup> closest - Good	Analysis result is considered to be valid – the OV26 communities are associated with the fringes of a variety of wet habitats in the lowland including streamsidess and there is a close association here
4 East of White House Farm	78% MG1 <i>Arrhenatherum elatius</i> grassland, typical subcommunity	74% MG5b <i>Cynosurus cristatus-Centaurea nigra</i> grassland, <i>Galium verum</i> subcommunity	Closest – Good 2 <sup>nd</sup> closest - Good	Analysis result is considered to be valid – the vegetation community present is closely associated with the MG1 community
5 North of White House Farm	84% MG1 <i>Arrhenatherum elatius</i> grassland, typical subcommunity	76% W24b <i>Rubus fruticosus-Holcus lanatus</i> underscrub, <i>Arrhenatherum elatius-Heracleum sphondylium</i> subcommunity	Closest – Very good 2 <sup>nd</sup> closest - Good	Analysis result is valid – the vegetation community present is closely associated with the MG1 community
6 North of White House Farm	71% MG1 <i>Arrhenatherum elatius</i> grassland, typical subcommunity	67% OV25 <i>Urtica dioica-Cirsium arvense</i> open habitat, typical subcommunity	Closest – Good 2 <sup>nd</sup> closest - Fair	Analysis result is valid – the vegetation community present is closely associated with the MG1 community
7 West of the pumping station	70% MG1 <i>Arrhenatherum elatius</i> grassland, typical subcommunity	59% MG1a <i>Arrhenatherum elatius</i> grassland, <i>Festuca rubra</i> subcommunity	Closest – Good 2 <sup>nd</sup> closest - Poor	Analysis result is valid – the vegetation community present is closely associated with the MG1 community

### 3.3 Biodiversity Evaluation

A relative ranking system of biodiversity value was derived and used to rank the Search Areas. The ranking is based upon consideration of the importance of specific wildlife ‘receptors’ which then informed a scoring system (see Appendix C for more details). The results of the ranking are provided in Table 3.7. In general terms, Search Areas dominated by habitats characteristic of intensively managed landscapes such as arable and improved grassland scored lower than Search Areas containing a more varied mix of more naturalised habitats including semi-improved grassland or semi-natural broadleaved woodland. Also, Search Areas with good opportunities for a range of protected/notable fauna also scored higher than those Search Areas with limited opportunities for fauna.

In summary, Areas I, H and D are considered to contain, in relative terms, the greatest biodiversity resources of all the Search Areas; Area I particularly so.

**Table 3.7 Relative Biodiversity Value Ranking for the Search Areas**

Relative Value Ranking		Search Area and Ranking Score	Rationale
Higher value	1	I (66.35)	A large area with comparatively, the greatest habitat diversity of all the Search Areas, and an intricate mosaic of interconnected habitats. The area scores well due to the presence of significant areas of important habitats including semi-improved grassland, broadleaved woodland, scattered and dense scrub, ruderal vegetation, waterbodies and watercourses. The Search Area includes the River Eye which upstream on the east side of Melton Mowbray becomes the River Eye SSSI and the river is known to support a variety of protected and notable species. There are several waterbodies present which are considered suitable for use by great crested newts. There are also three major linear features suitable for species dispersal through the landscape - a railway line, a disused railway line and the river.
	2	H (60.00)	This area is also large and similarly comprises an intricate mosaic of interconnected habitats, and significant areas of a range of important habitats including semi-improved grassland, broadleaved woodland, scattered and dense scrub, and waterbodies considered suitable for a range of protected and notable species. Watercourses and the disused railway line are suitable dispersal corridors for wildlife through the landscape.
Moderate value	3	D (48.25)	This area contains a moderate level of habitat diversity (e.g. semi-improved grassland, plantation woodland, scrub and two watercourses including the River Eye SSSI) considered to be suitable for a range of notable and protected species. The watercourses and their associated corridors also provide important linkages to other habitats in the vicinity. This area also scores well because several protected species have been recorded here.
	4	River Corridor (47.54)	In terms of area, the river corridor is small, but it is considered to be of value for a number of reasons. Firstly, the Search Area includes the downstream reaches of the River Eye which immediately upstream becomes the River Eye SSSI and the river is known to support a variety of protected and notable species. Also, the habitat diversity, provided by the terrestrial habitats adjacent to the river is significantly greater than the Search Areas in the lower value categories. Finally, the river is also believed to constitute an important corridor for species dispersal in the landscape.

**Table 3.7 (continued) Relative Biodiversity Value Ranking for the Search Areas**

Relative Value Ranking	Search Area	Rationale
Lower value	5	<b>C (34.30)</b> This area is relatively varied, and although dominated by low value habitats (notably arable, improved and poor semi-improved grassland) there is a relatively large area of semi-improved grassland in the north-east. Furthermore, the area contains a natural watercourse and associated woodland which have the potential to be used by several protected species and as a dispersal corridor for a wide variety of wildlife.
	6	<b>B (34.29)</b> Although intensively managed land is dominant, characterised by arable and improved grassland the value of this area is relatively higher than the others in this category because it incorporates a disused railway line and a natural watercourse in the east. As well as offering habitats which may support protected species such as reptiles, both of these features provide important linkages with ecologically important habitats in the wider area.
	7	<b>F (32.06)</b> Although intensively managed land is dominant, characterised by arable and improved grassland there are however numerous waterbodies considered suitable for great crested newt within the area, and a grass snake was seen during one of the field surveys.
	8	<b>G (30.48)</b> Although arable habitat heavily dominates the land-use within this area, and ecological connectivity for species dispersal is poor, there are two waterbodies which may be used by great crested newts and there are fragments of semi-improved grassland, broadleaved woodland, scrub, and a waterbody which marginally increase the value of the area. The area also contains numerous buildings which, although not subject to detailed survey, are considered potentially suitable for bats.
	9	<b>E (27.94)</b> Although arable habitat heavily dominates the land-use within this area, and ecological connectivity for species dispersal is poor, there are three waterbodies which are considered suitable for use by great crested newts and there are fragments of semi-improved grassland, semi-natural woodland and scattered scrub which marginally increase the value of the area.
	10	<b>K (26.35)</b> This area is less dominated by intensively managed land-use than areas A and J (arable is noticeably absent). The area contains one waterbody as well as pockets of scrub and ruderal habitats which can be of use to several protected species. A watercourse runs through the area offering some degree of species dispersal for wildlife in the area.
	11	<b>J (22.86)</b> Although Area J mostly comprises intensively managed land comprising improved grassland and arable and there are developed areas, the Search Area is slightly less intensively managed than Area A; there are areas comprising poor semi-improved grassland. There is however marginally more habitat diversity than Area A. Two isolated pockets of more ecologically interesting habitats (broadleaved woodland and amenity grassland with trees are present, and there are also several waterbodies. The watercourse (part of which is associated with an outgrown hedge / scrub corridor) provides some species dispersal opportunities through the area.
	12	<b>A (17.79)</b> Although there are various waterbodies that may be suitable for great crested newt, the area is dominated by intensively managed land comprising arable and improved grassland with low habitat diversity reducing the Search Area's biodiversity value. The area contains no existing records of protected species (excluding birds) and it is considered that the Search Area provide limited opportunities for such species. Ecological connectivity within the Search Area to more ecologically interesting areas is poor providing limited opportunities for species dispersal.

### 3.4 Biodiversity Impact Assessment

It is difficult to describe precisely how 60 hectares of mixed-use development will impact biodiversity resources within the Search Areas since this is largely dependent upon site layout and design and would be the scope of more detailed ecological assessments in support of specific planning applications.

Nonetheless, the anticipated potential impacts from inappropriate and unsympathetic development proposals on this scale which do not take account of biodiversity are described in Table 3.8.

**Table 3.8 Potential Impacts and Effects on Biodiversity from Unsympathetic Development**

Potential Construction Impacts	Potential Post-Construction Impacts	Potential Ecological Effect
Temporary landtake	Permanent landtake	Fragmentation of habitats; loss of habitats; degradation of habitat 'quality'; reduction in habitat and species diversity; fragmentation of faunal populations/local extinctions
Temporary disturbance (light/noise)	Permanent disturbance (light/noise)	Disturbance to sensitive faunal species; loss of species from an area
Temporary trampling (e.g. from construction traffic)	Increased trampling (e.g. from increased public usage)	Loss of habitats; degradation of habitat 'quality'; reduction in habitat and species diversity; harm/injury to individual animals/local population extinctions
Temporary pollution/eutrophication	Ongoing problems with pollution/eutrophication	Loss of habitats; degradation of habitat 'quality'; reduction in habitat and species diversity; harm/injury to individual animals/local population extinctions
Temporary dust deposition	-	Degradation of habitat 'quality';
-	Lack of community involvement/awareness, neglect, fly-tipping, burning.	Loss of habitats; degradation of habitat 'quality'; reduction in habitat and species diversity; harm/injury to individual animals/local population extinctions

Based upon Section 3.3, the biodiversity resources within Search Areas I, H, D and the River Corridor, particularly Area I, are those resources that potentially could be detrimentally affected the most in the absence of appropriate and sympathetic development proposals.

To avoid/significantly reduce the potential construction and post-construction impacts on biodiversity it is recommended that the principles described in Section 3.5 inform development proposals.

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## 3.5 Policy Recommendations for Biodiversity

### 3.5.1 Masterplanning and Design Stage – Opportunities and Constraints

There are a range of biodiversity opportunities and constraints present within each Search Area and these are shown on Figures 3.18 to 3.21 inclusive. These have been developed following the principles discussed in Chapter 5 and by consideration of biodiversity information derived from the study as presented in Section 3.2 and 3.3.

In addition, a more detailed ecological assessment will be required for any particular development within the Search Areas, in particular more detailed faunal surveys are likely to be required (e.g. great crested newt surveys of waterbodies, bat surveys of buildings and trees, surveys for otter and water vole along watercourses) if these species may be affected by development.

Search Areas I, H, D and the River Corridor contain, in relative terms, the greatest biodiversity resources of all the Search Areas, Area I particularly so for the reason described in Section 3.3. It should be anticipated that development in these areas would require comparatively marked resource expenditure to secure, enhance or create equivalent biodiversity resources in these Search Areas compared to other Search Areas.

General principles that could be adopted within development proposals include:

- Seeking the advice of a suitably experienced ecologist or ecologists to take development proposals forward at the earliest stage – a ‘biodiversity champion’;
- Retain and enhance existing watercourses, waterbodies, semi-natural broadleaved woodland and semi-improved grassland, and established species-rich hedges; or alternatively seek to create equivalent habitats of high biodiversity value on a two for one basis (create double the number/extent of habitat for that lost);
- Enhance existing watercourses within intensively managed landscapes by establishing ecological buffer zones, e.g. a rank grassland margin along the watercourse;
- Enhance the existing hedgerow network by planting up significant gaps;
- Retain and enhance existing ecological corridors in the landscape such as watercourses and disused railway lines;
- Ensure that ecological connectivity is maintained throughout each Search Area via the retention, creation or enhancement of ecological corridors (contiguously linked areas) and/or stepping stones (a ‘patchwork’ of different habitats distributed throughout the Search Area);
- Development seeks to be undertaken in line with the requirements of a suitable sustainable development accreditation scheme such as BREEAM ([www.breeam.org](http://www.breeam.org)) or to meet the requirements of the Code for Sustainable Homes;
- Built-up areas need to be drained to remove surface water. However inappropriate or inadequate traditional drainage systems may cause problems with flooding or pollution elsewhere in the catchment and historically have not included consideration of amenity issues and opportunities to contribute to biodiversity. It is

recommended that Sustainable Urban Drainage Systems (SUDS) are incorporated into development proposals. Further details can be found at [www.ciria.org.uk/suds/](http://www.ciria.org.uk/suds/);

- Ensure that habitat and species diversity is maximised within the Search Areas by creating an intricate patchy mosaic of interconnected habitats;
- Re-using the wood from any felled trees, e.g. to create interpretation boards or new fences, and using spare timber and cleared scrub to create brush piles for herpetofauna (amphibians and reptiles);
- Include within development proposal opportunities to ensure that the forthcoming local community that will reside within the newly developed areas engage positively with the biodiversity resources in the area. This could be achieved by ring-fencing resources for education/recreation/access opportunities in the few years following development.

### 3.5.2 Construction Stage Measures

A more detailed ecological assessment will inform the design and implementation of appropriate environmental measures specific to any particular development proposals/ planning application, which may include the need to undertake mitigation under licence from Natural England where protected species may be affected.

However, the following general environmental measures may be appropriate to construction activities:

- Careful programming of the dates when construction activities are proposed to minimise disturbance to valued ecological receptors;
- Preparation and implementation of a working method statement detailing the measures required to avoid/minimise impacts to wildlife during construction. It is recommended that a suitably experienced ecologist provides input into the method statement;
- Immediately prior to works occurring, a site walkover should be undertaken by an appropriately experienced ecologist to ensure that the status of the Search Areas/application area and adjacent land has not changed;
- With due consideration to the potential presence of the presence of protected species such as bats and herpetofauna (amphibians and reptiles), demolition of buildings and/or vegetation clearance should be undertaken outside the bird breeding season<sup>7</sup>, or alternatively, if during the breeding season, should be supervised by an appropriately experienced ecologist;
- All excavations should be covered overnight, or should have at least one gently sloping side to allow trapped animals to escape. Note that this approach to excavations may need to be modified if reptiles or great crested newts are present;

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<sup>7</sup> Bird breeding season taken to be April to July inclusive but the precise breeding season may be extended depending upon seasonal weather conditions.

- Temporary landtake is minimised and any disturbed habitats are reinstated or recreated appropriately.

The following may also be appropriate:

- Site working practices, particularly the directional drilling under the river, should be carefully controlled, in accordance with industry best practice and Environment Agency Pollution Prevention Guidelines 1, 5, 6 and 21;
- Run-off from areas of construction activity should be controlled. Water draining from areas of concreting activity may have highly alkaline pH, and topsoil and vegetation stripping can lead to large volumes of sediment-laden runoff entering nearby watercourses;
- Separate and store the top soil sub-soil separately if it is to be reinstated after construction. The soil should be stored no higher than 1 to 2m (to avoid soil compaction problems) and stored for no longer than a few months (to prevent degradation of soil 'quality');
- Spoil storage bunds should not be greater than 5 m in height and should have compacted side slopes at appropriate angles;
- Run-off from any stockpiles of waste materials should be controlled.

### 3.5.3 Relationships with Landscape Character

In addition to improving biodiversity within the Search Areas, the biodiversity enhancements recommended in this report may also have the potential to alter the visual appearance of the area. Changes to visual appearance may be positive, neutral or negative and, to a large extent, this will depend on the relationship between the proposed changes and the existing landscape character of the area in which they are to be made.

The current Landscape Character Assessment for Melton Borough is that produced by ADAS in March 2006 (the LCA), which also includes an assessment of landscape sensitivity with regard to the Search Areas. All the Search Areas fall within Landscape Character Area 20: Melton Fringes as identified in the LCA (ADAS, 2006). This area is described as “A *mixed urban fringe ridge and valley and valley floor landscape, mostly pastoral farmland, MOD and recreational land*”, and is also said to be characterised by:

- *Rolling landscape of fields and hedges;*
- *Mixed pasture and arable land;*
- *Clear distinction between urban edge and countryside;*
- *Housing estates remain unscreened;*
- *Some industrial and other land uses (e.g. MOD).*

More detailed assessments of the specific landscape sensitivities of each Search Area are included in the *Assessment of Landscape Sensitivity around Melton Mowbray* and are summarised in Table 1 of that document. The relationships between these sensitivities and the enhancement opportunities recommended in this report (and as shown by reference numbers ('Ref. Nos.') on Figures 3.18 to 3.21 inclusive) are reviewed below.

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### **Search Areas A, B and C**

These Areas are considered by the LCA to be the highest quality landscapes surrounding the town and are characterised as well-managed, coherent agricultural landscape with few visual detractors.

There are three opportunities within these Areas to establish or enhance hedgerows (Ref. Nos. 2, 5 and 6). These measures would enhance the existing landscape character and, in the case of opportunities 2 and 5, may also enhance continuity with the surrounding landscape areas. Overall, they would make a minor positive contribution to the existing landscape character.

Ecological enhancement of the disused railway line (Ref. No. 1) and the establishment of diverse neutral grassland (Ref. No. 8) would neither enhance nor detract from the existing landscape character and would both have a neutral effect in this context.

The proposed enhancements to water bodies, watercourses and field margins (Ref. Nos. 3, 7, 10, 19, 18 and 21) would involve the establishment of areas of rank grassland, which would have extremely localised landscape effects with no potential to alter landscape character. The overall effect of these changes would also be neutral in this context.

### **Search Area D**

This area is characterised by small traditional pastures with a strong network of hedges and trees, giving rise to an intimate rural landscape which contrasts with the large commercial/industrial buildings to the west.

The suggested establishment of areas of scrub/ small trees (Ref. No. 4) and rank grassland (Ref. No. 5) would have only minor local landscape effects and would not alter the overall landscape character. The effect of these ecological enhancements would be neutral in terms of landscape character.

### **Search Areas E, F and G**

These areas are defined as a productive, open agricultural landscape with few notable landscape features. The introduction of new hedgerows (Ref. Nos. 7 and 12) would be neutral in this context, as would the establishment of rank field margins (Ref. Nos. 5 and 3).

### **Search Areas H and I**

These are fragmented landscapes comprising a mosaic of housing, industry and agriculture. The introduction of trees and scrub (Ref. No. 4) along the bund to the east of the industrial estate would soften this artificial landform and improve screening and would have a positive effect on the landscape character of area H. Enhancing the disused railway line in Area J would neither add to, nor detract from, the landscape character of this area and would therefore have a neutral effect in this context.

### **Search Areas J and K**

Both these areas contain sizable areas of MOD land and are characterised by pastoral fields enclosed by hedges. The proposed enhancement of existing hedgerows (Ref. No. 4) and the establishment of a new hedgerow (Ref. No. 5) would enhance the existing landscape character of these areas and have a positive effect in this context. This would be particularly marked in the west of Area J, where the traditional field pattern has been degraded.

### **3.6 Geological Evaluation Results**

Based on BGS sheet 142 and information on current RIGS, Table 3.9 details the geology and geomorphology of each of the 12 Search Areas (Search Areas A to K and the River Corridor Search Area) surrounding Melton Mowbray and the Wreake valley through the town. The assessment of the 12 Search Areas is based on the findings of the Borough wide geodiversity assessment presented in Section 4.

**Table 3.9 Details of Geodiversity Features Within the Search Areas**

Expansion Area	Current Sites		Expansion Area Geology/Geomorphology / Potential for Exposures	Potential for RIGS
	SSSI (geo)	RIGS		
Area A	No	No	<p><b>Solid Geology:</b> Charmouth Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology over the southern 3/4 of the area. North of the Normanton Hills Fault, the Charmouth Mudstone Formation is overlain by the Dyrham Formation (interbedded siltstone and Mudstone) which forms the solid geology beneath the superficial geology over the northern 1/4 of area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, mostly glacial till (Oadby Till) with undifferentiated head deposits crossing the site in small north-south running river valleys.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau".</p> <p><b>Exposure Potential</b> Northern edge of the area located on periphery of historical iron mining area.</p>	Probably limited – no evidence of quarrying or associated exposures.
Area B	No	No	<p><b>Solid Geology:</b> Charmouth Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology over the southern 2/3 of the area. North of the Normanton Hills Fault, the Charmouth Mudstone Formation is overlain by the Dyrham Formation (interbedded siltstone and Mudstone) which forms the solid geology beneath the superficial geology over the northern 1/3 of area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, mostly glacial till (Oadby Till) with head deposits crossing the site in river valleys.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau".</p> <p><b>Exposure Potential</b> Northern edge of the area located on periphery of historical iron mining area. Potential exposures associated with any railway cuttings.</p>	Probably limited – no evidence of quarrying or associated exposures.

Table 3.9 (continued) Details of Geodiversity Features Within the Search Areas

Expansion Area	Current Sites		Expansion Area Geology/Geomorphology / Potential for Exposures	Potential for RIGS
	SSSI (geo)	RIGS		
Area C	No	No	<p><b>Solid Geology:</b> Charmouth Mudstone Formation (Mudstone) forms the entire solid geology beneath the superficial geology.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, mostly glacial till (Oadby Till) with alluvium along the course of the Scafford Brook and head deposits crossing the site in minor river valleys.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau"<sup>1</sup>.</p> <p><b>Exposure Potential</b> Potential exposures associated with any railway cuttings.</p>	Probably limited – no evidence of quarrying or associated exposures.
Area D	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology over the majority of the area. North of the Sileby Fault, the Scunthorpe Mudstone Formation is overlain by the Charmouth Mudstone Formation (Mudstone) which forms the solid geology beneath the relatively small portion of the Expansion Area to the north of the Sileby Fault.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, glacial till (Oadby Till) on the higher areas, with head deposits along smaller river valleys, and alluvium on the floodplains on the River Eye (Wreake) and the Thorpe Brook. In the southeast of this area is a small deposit of the Bytham Sands &amp; Gravels Formation.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau" and "Wreake Valley"<sup>1</sup>.</p> <p><b>Exposure Potential</b> Potential exposures associated with any railway cuttings.</p>	Some potential if exposures of quaternary deposits are present, or occur in future. <sup>2</sup>

Table 3.9 (continued) Details of Geodiversity Features Within the Search Areas

Expansion Area	Current Sites		Expansion Area Geology/Geomorphology / Potential for Exposures	Potential for RIGS
	SSSI (geo)	RIGS		
Area E	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology in this area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, glacial till (Oadby Till) on the higher areas, with undifferentiated head deposits along the minor river valleys. Some alluvium in north-west corner.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau" and "Wreake Valley"<sup>1</sup>.</p> <p><b>Exposure Potential</b> Potential exposures associated with any railway cuttings.</p>	Probably limited – no evidence of quarrying or associated exposures.
Area F	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology in this area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, glacial till (Oadby Till) on the higher areas, with undifferentiated head deposits along the minor river valleys.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau"<sup>1</sup>.</p> <p><b>Exposure Potential</b> -</p>	Probably limited – no evidence of quarrying or associated exposures.

Table 3.9 (continued) Details of Geodiversity Features Within the Search Areas

Expansion Area	Current Sites		Expansion Area Geology/Geomorphology / Potential for Exposures	Potential for RIGS
	SSSI (geo)	RIGS		
Area G	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology in this area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, glacial till (Oadby Till) on the higher areas, with undifferentiated head deposits along the minor river valleys.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau"<sup>1</sup>.</p> <p><b>Exposure Potential</b> -</p>	Probably limited – no evidence of quarrying or associated exposures.
Area H	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology in this area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, glacial till (Oadby Till) on the higher areas, with head deposits along the minor river valleys. Deposits of the Bytham Sands &amp; Gravels Formation, undifferentiated glaciofluvial deposits and exposures of the Wanlip and Syston Sands &amp; Gravels. Alluvium in the north east associated with the River Wreake.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as "Till-capped plateau" and "Wreake Valley"<sup>1</sup>.</p> <p><b>Exposure Potential</b> Potential exposures associated with any railway cuttings.</p>	Probably limited – no evidence of quarrying or associated exposures.

Table 3.9 (continued) Details of Geodiversity Features Within the Search Areas

Expansion Area	Current Sites		Expansion Area Geology/Geomorphology / Potential for Exposures	Potential for RIGS
	SSSI (geo)	RIGS		
Area I	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology in this area.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology. Main deposits are alluvium associated with the River Wreake. Elsewhere there are undifferentiated head deposits along the minor river valleys, and deposits of the Bytham Sands &amp; Gravels Formation, undifferentiated glaciofluvial deposits and exposures of the Wanlip and Syston Sands &amp; Gravels occur. In higher areas, along the northern margin, glacial till is exposed (Oadby Till).</p> <p><b>Geomorphology</b> Areas Geomorphology classified as “Wreake Valley”<sup>1</sup>.</p> <p><b>Exposure Potential</b> Potential exposures associated with any railway cuttings.</p>	Superficial geology is particularly diverse. Some potential if exposures of quaternary deposits are present, or occur in future. <sup>2</sup>
Area J	No	No	<p><b>Solid Geology:</b> Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology over the majority of the area. North of the Sibleby Fault, the Scunthorpe Mudstone Formation is overlain by the Charmouth Mudstone Formation (Mudstone) which forms the solid geology beneath the small portion of the area to the north of the Sibleby Fault.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, glacial till (Oadby Till) on the higher areas, with head deposits along the river valleys, and some alluvium in the southwest corner.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as “Till-capped plateau”<sup>1</sup>.</p> <p><b>Exposure Potential</b> -</p>	Probably limited – no evidence of quarrying or associated exposures.

Table 3.9 (continued) Details of Geodiversity Features Within the Search Areas

Expansion Area	Current Sites		Expansion Area Geology/Geomorphology / Potential for Exposures	Potential for RIGS
	SSSI (geo)	RIGS		
Area K	No	No	<p><b>Solid Geology:</b> Charmouth Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology.</p> <p><b>Superficial Geology:</b> Whole area covered by superficial geology, mostly glacial till (Oadby Till) and head deposits crossing the site in minor river valleys.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as “Till-capped plateau”<sup>1</sup>.</p> <p><b>Exposure Potential</b> -</p>	Probably limited – no evidence of quarrying or associated exposures.
River Corridor	No	No	<p><b>Solid Geology:</b> The Scunthorpe Mudstone Formation (Mudstone) forms the solid geology beneath the superficial geology.</p> <p><b>Superficial Geology:</b> Generally alluvium associated with the Rivers Wreake and Eye. On valley sides deposits of Syston Sand &amp; Gravel Formation and undifferentiated head deposits occur.</p> <p><b>Geomorphology</b> Areas Geomorphology classified as “Wreake Valley”<sup>1</sup>.</p> <p><b>Exposure Potential</b> Potential exposures associated with any railway cuttings.</p>	Some potential if exposures of quaternary deposits are present, or occur in future. <sup>2</sup>

## Table Notes:

- 1 Terms from the BGS report “Geology of the Melton Mowbray District. The ‘Till-Capped Plateau’ geomorphological unit is defined as the dissected plateau generally above 80m AOD. Oadby Till and other glacial deposits are present at the surface with valleys deeply incised into the bedrock common around the periphery of the plateau. The ‘Bytham Subdomain’ in the southeast consists of thicker glaciogenic deposits infilling the Bytham Valley. The ‘Wreake valley’ geomorphological unit is defined as “floodplains, river terraces and valley slopes of the Wreake river system”
- 2 LRGAP identifies suitable exposures of quaternary river terrace sands and gravels as a RIGS omission.

### 3.6.1 Receptor Specific Evaluation

No currently designated geological sites have been identified within the 12 Search Areas. Evaluation has therefore been based on the potential for the occurrence of interest features within the Search Areas, based upon the features present within existing geological SSSIs and RIGS outside the Search Areas. This has been supported by the LRGAP which also identifies omissions from the current set of RIGS, such as examples of more recent quaternary deposits. Areas of historic mining are generally located in more rural areas of the district, not immediately adjacent to Melton Mowbray, although the north-western, western and northern expansion areas do border on these areas (e.g. Holwell Works which is situated adjacent to Search Areas J and K, Figure 1.1). Due to the limited activity in these areas, the potential for geological exposures is considered to be low. The quaternary sand and gravel river terrace deposits and Bytham Sand and Gravel Formation along the Wreake valley through Melton are an important element of local geodiversity. Due to their complexity, and the evidence for the sequence of geological and geomorphological processes which occurred in this area during the quaternary, it is these deposits that may represent the most important geodiversity element within the Search Areas.

## 3.7 Geodiversity Impact Assessment

There appears to be only limited potential for severe development impacts on the geodiversity within the Search Areas, since the geodiversity found within each Search Area is also found across large areas of Melton Borough. Assuming that no exposures exist in the ‘Till-Covered Plateau’ areas, the most important area of geodiversity interest appear to be along the River Wreake valley, due to the complexity of quaternary sand and gravel deposits exposed there. In all cases, without local exposures and excavations the exact details of sub-surface geology cannot be readily determined; in this way future development or mineral extraction may lead to improvements in the understanding of the areas’ geodiversity. However the main impact on geodiversity would occur when areas are built upon, and effectively become ‘sterilised’ from further geodiversity assessment. If areas were to be ranked, the areas identified as ‘Wreake Valley’ appear to contain a greater degree of geodiversity than the “Till-Covered Plateau” areas. However, any notable exposures (none have been identified in this desk study) within either of these two zones could potentially be local geodiversity ‘hot-spots’.

## 3.8 Policy Recommendations for Geodiversity

The following recommendations can be made in relation to the Search Areas:

- Based on the known geology and geomorphology of the Search Areas, the areas located in the River Wreake valley appear to contain the most important geodiversity elements. Future development should therefore be directed away from Area D and I, where the majority of this geodiversity is located;
- More detailed assessment of potential development areas – i.e. field assessment to determine if any important local geodiversity features or notable exposures (geodiversity ‘hot spots’) are present. If any features are present these could be incorporated into the site masterplan;

- Preservation of railway cuttings with potentially important exposures as ‘green lanes’ within development areas;
- With respect to Holwell Works near Asfordby Hill, which is located adjacent to Search Areas J and K (Figure 1.1), future development proposals in these areas should be sympathetic to the industrial history of the locality. The site may qualify as a RIGS site for being of historical importance for mineral extraction (Section 5.3).



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## 4. Melton Borough Biodiversity & Geodiversity Resources and Monitoring (Output 2)

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### 4.1 Introduction to Chapter 4

This chapter identifies important designated wildlife sites, habitat and species, and important geological features present in Melton Borough. Recommendations for the monitoring of these resources are provided. In particular monitoring indicators and targets are provided for biodiversity resources in the context of climate change demands and the need for the council to discharge its planning obligations.

### 4.2 Biodiversity Across Melton Borough

#### 4.2.1 Biodiversity Resources

Designated sites, species records and UK BAP habitats<sup>8</sup> within Melton Borough are shown on Figures 4.1 to 4.7 inclusive. In summary, there are 16 SSSIs within Melton Borough, mainly occurring in the northern half of the Borough. One (Sproxton Quarry SSSI) is designated for geological reasons. It is believed that there are ~112 non-statutory designated local Wildlife Sites within Melton Borough<sup>9</sup> comprising 356 sites units (Appendix D; Figure 4.1). There are 14 sites of county-level nature conservation importance comprising 25 site units and these are mainly distributed to the northwest and north of the Borough (Figure 4.1). The local Wildlife Sites are distributed throughout the Borough, but there are aggregations of these sites in the northwest and south of the Borough. Conversely these sites are more sparsely distributed to the far-east and north of the Borough (Figure 4.1).

The Melton Borough designated site network makes an important contribution to the biodiversity of Leicestershire. An example of a noteworthy site is the Asfordby Hill non-statutory site situated at the southern end of the former Holwell Works (Figure 4.4); although the site is designated primarily for limestone grassland habitat, and is known to be important for butterflies, the site is believed to be the only site in Leicestershire for the nationally scarce and protected plant the Deptford pink (*Dianthus armeria*)<sup>10</sup>.

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<sup>8</sup> The location of LBAP habitats was not obtained during the study for the reasons provided in Section 2.3.1

<sup>9</sup> It is not entirely clear from the data provided (Appendix E) what the precise number of non-statutory designated sites is. Information from Melton Borough Council indicates that in March 2008 112 local Wildlife Sites had been designated.

<sup>10</sup> Perscomms with Neill Talbot, Senior Conservation Officer, Leicestershire and Rutland Wildlife Trust

Based upon the information provided, 71 individual locations for species records have been collected during the study, predominantly from Search Areas (Appendix E; Figures 4.1 to 4.7 inclusive) and the environs around Melton Mowbray. No species records for the wider Borough away from Melton Mowbray and its surrounds were obtained from LERC. It may be that the records obtained are mainly anecdotal since they appear to be mainly aggregated around areas of recreational usage such as the River Eye, urban fringe areas, Melton Country Park and Search Area I where there are non-statutory designated sites and Egerton Park.

Of the 15 local BAP (LBAP) species/ species groups, only seven (bats, otter, water vole, dingy skipper, grizzled skipper, white-clawed grayfish and sand martin) have been recorded within the Search Areas and surrounds.

It is difficult to provide further comments on the quality and quantity of data and gaps and deficiencies since it was not possible to obtain a comprehensive data set from LERC for the reasons described in Section 2.1.3 and, as a result, it is considered that it would be more appropriate for LERC to provide this analysis.

## 4.3 Changes and Monitoring Changes to Biodiversity

### 4.3.1 Climate Change

#### Climate Change Impacts on Biodiversity

It is now widely accepted that the Earth's climate is changing and there is strong evidence that most of the warming over the last 50 years may be attributable to human activities. Although the earth has undergone considerable change since its formation, the present rate of change is believed to be considerably quicker than that which has occurred previously.

It is known that climate is one of the most important factors determining the distribution of species, and a rapidly changing climate is anticipated to considerably affect biodiversity at all spatial scales (Hopkins *et al.* 2007a; and RSPB, c.2007). There is considerable evidence of the changes to a wide range of wildlife in response to climate change both globally and in the UK since at least as far back as the 1990s (Hopkins *et al.* 2007; and RSPB, c.2007). Changes in climatic conditions can affect species and habitats in many different, complex and interacting ways, and we are only beginning to understand some of the effects of climate change on biodiversity. In broad terms effects comprise changes in phenology (seasonal natural cycles), changes in geographical range, changes in occurrence of migrant species and non-natives, changes in native species' habitat requirements, changes in habitat extent and condition, changes in assemblages of plant and animals communities, and changes in natural processes such as growth and decay.

In order to account for climate change during nature conservation decision making and practice, it is essential that scientific data is collected via nationally and internationally co-ordinated research and that information sharing and policy amendments are undertaken at a strategic level. More information on these is described elsewhere (e.g. IUCN, c.2007). Further discussion on this particular area is beyond the scope of this study but there are some key principles already available (see below).

## Responsive Measures

There are a number of measures that can be undertaken to respond to climate changes effect on biodiversity, as derived from Hopkins *et al.* (2007b) and IUCN, c.2007, and suggestions for how these measures can be implemented in Melton Borough are provided in Table 4.1 below.

**Table 4.1 Measures for Responding to Biodiversity Change from Climate Change**

Suggested Measures For Responding to Climate Change's Effect on Biodiversity	Suggestions For Implementation of Measures in Melton Borough
Conserve 'high-quality' wildlife habitat such as semi-natural and/or species-rich habitats outside of designated areas because greater species diversity and population sizes are associated with these areas	Seek to encourage local farmers and land managers to enter into Environmental Stewardship schemes in the Borough so that land outside of protected areas can be managed in such a way as to improve habitat quality (see Section 5.2.5).
Provide ecological networks of corridors and stepping stones to facilitate species dispersal	Locally designated wildlife sites are more sparsely distributed to the far-east and north of the Borough and it would be appropriate to seek to improve connectivity and dispersal opportunities by providing more corridors and stepping stones in these areas (see Section 5.2.1)
Enlarge the extent of designated sites where appropriate	Locally designated wildlife sites are more sparsely distributed to the far-east and north of the Borough and it would be appropriate to seek to designate more sites in these areas, or extend the extent of existing ones (see Section 5.2.3)
Create/restore buffer zones and habitats mosaics around designated sites/important areas	For example, buffer zones around Melton Country Park, the River Eye and other watercourses (see Section 5.2.2)
Understand and prevent other pressures from compounding the effects of climate change (e.g. nutrient enrichment, inappropriate management, habitat loss/fragmentation, spread of non-native species, intensification of agriculture, over-abstraction of water);	Guidance on other factors affecting LBAP Habitats is provided in Leicestershire Wildlife Trust (2002).
Create, restore and maintain habitats and maintain as varied a range of habitats and physical features across as wide a geographical range as possible; focus on management at wider spatial scales (landscapes)	Locally designated wildlife sites are more sparsely distributed to the far-east and north of the Borough and it would be appropriate to seek to designate more sites in these areas. Particularly important would be the need to designate areas comprising a variety of habitats so that variation is represented across the Borough.
Adapting site management practices to changes in seasonal cycles and include adaptation to climate change within management plans and management objectives	Site management and management planning could be informed by the results of low-cost phenology surveys (see Section 4.3.2). The outcome may be, for example that the date when grass cutting occurs at Melton Country Park is earlier in the year and continues until later in the year due to a longer growing season. Or for example that conservation management of ponds is undertaken earlier in the winter because amphibians are breeding earlier.
Include management of ecosystem functions and services within management plans as well as for notable habitats and species	For example management of woodland areas at the Belvoir Estate should seek to ensure that the natural process of decay is allowed by leaving deadwood on the ground <i>in-situ</i> rather than removing.  Another example would be to ensure that geomorphological processes within main watercourses such as the River Eye are maintained. Sediment loading and deposition from poor land drainage infrastructure could alter the flow dynamics of the river.

**Table 4.1 (continued) Measures for Responding to Biodiversity Change from Climate Change**

<b>Suggested Measures For Responding to Climate Change's Effect on Biodiversity</b>	<b>Suggestions For Implementation of Measures in Melton Borough</b>
Build/enhance new working relationships with landowners and land-users (e.g. agricultural industry, forestry, and communities to secure acceptance of climate change adaptation).	Seek to engage the community with initiatives and schemes; there are already a wide variety of schemes available in Melton Borough which could be enhanced or alternatives initiated with appropriate partners (see Section 5.2.5)

### 4.3.2 Monitoring Change

#### Requirement for Monitoring and Review of Existing Monitoring Mechanisms

The purpose of establishing and operating monitoring mechanisms has two functions. First, local authorities can demonstrate that they are meeting their various obligations by developing appropriate monitoring systems and indicators against which the performance of specific policies on biodiversity can be measured (see Section 1.2.3). National guidance to local authorities on such monitoring mechanism and indicators is provided by ODPM (2002) and the councils' monitoring mechanisms and indicators for biodiversity are provided in the council's annual monitoring reports (e.g. Melton Borough Council, 2007).

Secondly, monitoring enables the effects of climate change to be assessed and this can iteratively feed into adapting policies and practices to respond to the effects of climate change on biodiversity.

Output Indicators are used to measure quantifiable physical parameters that are directly related to the implementation of specific policies and such indicators comprise Core Output Indicators (Core Indicators) and/or Local Indicators (ODPM, 2002). Output Indicators have been derived by Government to provide a consistent measure of LDF performance at a regional level, and Local Indicators are used to address particular local policies or issues that are not covered by Core Indicators (ODPM, 2002).

Melton Borough Council's uses Core Indicators to assess biodiversity policy performance and these are consistent with the Output Indicators for biodiversity provided by ODPM (2002) as follows (Melton Borough Council, 2007):

- Indicator 8(i): change in priority habitats and species by type;
- Indicator 8(ii): changes in areas designated for their intrinsic environmental value including sites of international, national, regional, sub-regional or local significance.

Within the latest annual monitoring report (Melton Borough Council, 2007) data are provided by LERC to inform the assessment of performance against the Core Indicators. These data take the form of a list of species records and newly identified priority habitats. However it is not entirely clear if the species records represent total species records to date or additional records recently acquired. The report states that there has been a change in priority habitats, species and designated sites in 2007 but no further comment is made. It is assumed that this change relates to the addition of newly identified habitats and newly acquired species records.

Based upon the information provided in the Annual Monitoring Report it is not clear:

- How many records currently exist for UK BAP and LBAP habitats and species, and what the geographical coverage of these records is; for example in the data for the 2007 report only four LBAP species are identified but it is not clear what the status of the other LBAP species is;
- What the extent and condition of designated sites and UK BAP and LBAP habitats is, and whether there is any change occurring to these;
- What the direct link is between biodiversity policies/ initiatives and biodiversity losses and gains; an increase in the number of records of species for example, may simply be based upon anecdotal *ad-hoc* sightings.

It is also noted that there is an action to: “*Consider how biodiversity can be robustly monitored in light of difficulties obtaining appropriate information*”.

### **Suggested Monitoring Enhancements and Targets**

Based upon a review of current monitoring mechanisms for Melton Borough and the requirement to monitor the effects of climate change (as described above), monitoring recommendations and targets are proposed in Table 4.2. The targets were derived in line with current guidance (ODPM, 2002), on SMART (specific, measurable, achievable, realistic, time bound) targets. It is not proposed to alter the Core Indicators since these are a standardised measure fixed by Government. Moreover, Local Indicators and targets are proposed which can feed into Core Indicators.

To avoid duplication of effort and to ensure consistency with the LBAP, the LBAP has been used to inform the targets and associated output indicators. The following selection of LBAP habitats and species have been chosen for the targets and output indicators because they are considered to be associated with the range of environments that may change in the Borough as a result of climate change or biodiversity initiatives:

- Terrestrial LBAP habitats – Broadleaved Woodland, Calcareous Grassland, Neutral Grassland, Reedbeds, Wet woodland;
- Aquatic LBAP habitats – Fast-flowing Streams (taken to be watercourses), Mesotrophic Lakes (taken to be waterbodies);
- Other linear LBAP habitat features – Hedgerows and Field Margins;
- LBAP species associated with terrestrial habitats – Barn Owl and Bats;
- LBAP species – White-clawed Crayfish, Otter and Water Vole.

Table 4.2 Suggested Local Indicators and Targets for Monitoring the Effectiveness of the LDF's Biodiversity Policies

Core Indicator	Proposed Local Indicators	Proposed Output Indicator	Possible Output Indicator Target <sup>1</sup>	Proposed Source	Actions
Change in priority habitats by type	Terrestrial habitats - Change in broadleaved woodland, calcareous grassland, neutral grassland, reedbeds and wet woodlands	Number of hectares of created habitat	<p><b>Targets to be defined</b></p> <p>Create X hectares of broadleaved woodland, calcareous grassland, neutral grassland, reedbeds and wet woodlands by 2010</p> <p>Create a further X hectares of these habitats by 2025</p>	Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council
		Extent (hectares) of broadleaved woodland, calcareous grassland, neutral grassland, reedbeds and wet woodlands lost to/created by development proposals	No net loss of extent (hectares) of broadleaved woodland, calcareous grassland, neutral grassland, reedbeds and wet woodlands in any one year	Melton Borough Council Development Control	Establish internal monitoring protocol to extract information from planning into a database/spreadsheet
	Linear habitat features – Change in field margins and hedgerows	Number of created hedgerows/ extent (hectares) or number of created field margins	<p><b>Targets to be defined</b></p> <p>Create X hedges / X field margins / X hectares of field margins by 2010</p> <p>Create a further X hedges / X field margins / X hectares of field margins by 2025</p>	Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council

Table 4.2 (continued) Suggested Local Indicators and Targets for Monitoring the Effectiveness of the LDF's Biodiversity Policies

Core Indicator	Proposed Local Indicators	Proposed Output Indicator	Possible Output Indicator Target <sup>1</sup>	Proposed Source	Actions
		Number of hedgerows / extent (hectares) / number of field margins lost to/created by development proposals	No net loss of hedgerows/no net loss of extent (hectares) / number of field margins in any one year	Melton Borough Council Development Control	Establish internal monitoring protocol to extract information from planning into a database/ spreadsheet
	Aquatic habitats – change in fast-flowing streams and mesotrophic lakes (waterbodies)	Number of watercourses restored / number of waterbodies created	<b>Targets to be defined</b> Restore X watercourses / create X waterbodies by 2010  Restore a further X watercourses / create X waterbodies by 2025	Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council
		Extent (length) of each main river with good chemical and biological water quality/desirable aquatic macrophyte communities	X (length) of each main river with good chemical and biological water quality/desirable aquatic macrophyte communities	Environment Agency	Establish mechanism for information provision by the Environment Agency
		Number of waterbodies / number of watercourses or extent (length) of watercourses lost to / detrimentally affected by/created by development proposals	No net increase in the number of waterbodies / number of watercourses / extent (length) of watercourses lost to / detrimentally affected by development proposals in any one year	Melton Borough Council Development Control	Establish internal monitoring protocol to extract information from planning into a database/ spreadsheet

Table 4.2 (continued) Suggested Local Indicators and Targets for Monitoring the Effectiveness of the LDF's Biodiversity Policies

Core Indicator	Proposed Local Indicators	Proposed Output Indicator	Possible Output Indicator Target <sup>1</sup>	Proposed Source	Actions
Change in priority species by type	Species associated with terrestrial habitats – barn owl and bats	Number of created bat roosts and barn owl nest sites	Create X bat roosts and X barn owl nest sites by 2010  Create a further X bat roosts and X barn owl nest sites by 2025	Barn owl - RSPB/local bird recorder group; Bats - Bat Conservation Trust	Establish appropriate targets, resources and condition monitoring protocols with these organisations
		Number of known bat roost and barn owl nest sites detrimentally affected by/created by development proposals	No net increase in the number of bat roost / barn owl sites detrimentally affected by development proposals in any one year	Melton Borough Council Development Control	Establish internal monitoring protocol to extract information from planning into a database/spreadsheet
	Species associated with aquatic habitats – white-clawed crayfish, otter and water vole	Number of watercourses enhanced for white-clawed crayfish, otter and water vole	Enhance X watercourses or X (length) of watercourses for these species by 2010  Enhance a further X watercourses or X (length) of watercourses for these species by 2025	Environment Agency/Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council
Number of watercourses where white-clawed crayfish, otter and water vole are known to occur detrimentally affected by/enhanced by development proposals		No net increase in the number of watercourses where white-clawed crayfish, otter and water vole are known to occur detrimentally affected by development proposals in any one year	Melton Borough Council Development Control	Establish internal monitoring protocol to extract information from planning into a database/spreadsheet	
Changes in areas designated for their intrinsic environmental value	Changes to statutory designated sites	Number of SSSIs in favourable/ unfavourable recovering status	National target is for 95% of SSSIs in favourable condition by 2010  <b>Target beyond 2010 to be defined by Defra/Natural England</b>	Defra/Natural England	Establish appropriate targets beyond 2010 with Natural England/Defra

Table 4.2 (continued) Suggested Local Indicators and Targets for Monitoring the Effectiveness of the LDF's Biodiversity Policies

Core Indicator	Proposed Local Indicators	Proposed Output Indicator	Possible Output Indicator Target <sup>1</sup>	Proposed Source	Actions
	Changes to non-statutory sites (County Wildlife Sites or local Wildlife Sites)	Number of Wildlife Sites designated / extent (hectares) of Wildlife Sites increased	<p><b>Targets to be defined</b></p> <p>Increase in the number of designated Wildlife Sites by X / or increase the extent (hectares) of existing Wildlife Sites by X hectares by 2010</p> <p>A further increase in the number of designated Wildlife Sites by X / or increase the extent (hectares) of existing Wildlife Sites by X hectares by 2025</p>	Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council
		Number of Wildlife Sites in favourable condition unfavourable recovering status (if such assessments are available in the future)	<p><b>Targets to be defined</b></p> <p>X Wildlife Sites in favourable condition / unfavourable recovering status by 2010</p> <p>A further X Wildlife Sites in favourable condition / unfavourable recovering status by 2025</p>	Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council

**Table 4.2 (continued) Suggested Local Indicators and Targets for Monitoring the Effectiveness of the LDF's Biodiversity Policies**

<b>Core Indicator</b>	<b>Proposed Local Indicators</b>	<b>Proposed Output Indicator</b>	<b>Possible Output Indicator Target<sup>1</sup></b>	<b>Proposed Source</b>	<b>Actions</b>
		Number of Wildlife Sites under favourable management/with an appropriate management plan/management agreement	<p><b><i>Targets to be defined</i></b></p> <p>X Wildlife Sites under favourable management/with an appropriate management plan/management agreement by 2010</p> <p>A further X Wildlife Sites under favourable management/with an appropriate management plan/management agreement by 2025</p>	Wildlife Trust/Leicestershire County Council	Establish appropriate targets, resources and condition monitoring protocols with the Wildlife Trust and Leicestershire County Council
		Number of Wildlife Sites or extent (hectares) of Wildlife Sites detrimentally affected/enhanced by development proposals	No net increase in the number of Wildlife Sites detrimentally affected /number of hectares within Wildlife Sites detrimentally affected in any one year	Melton Borough Council Development Control	Establish internal monitoring protocol to extract information from planning into a database/spreadsheet

Table Notes: <sup>1</sup> the requirement to define a specific target is identified by 'X'

### Additional Monitoring Recommendations

It is also recommended that local phenology<sup>11</sup> surveys are undertaken. This would provide information on how natural cycles in the borough were reacting to climate change. The surveys would involve the local community (Section 5.2.5), and the information could inform the adaptation of management plans and decision making. If the local community (general public) are involved in providing the bulk of anecdotal records, then the surveys could be implemented with relatively little expenditure apart from an initial awareness campaign and a co-ordinator who would collate the records.

Examples of data to be recorded include the first day or last day of the year that bats are seen flying, the first day that trees come into leaf, the first day that amphibians are seen in ponds, the first day that swallows are seen, or the first and last days of the year that butterflies are seen.

## 4.4 Geodiversity Across Melton Borough

### 4.4.1 Introduction

This section provides a short overview of the geology of Melton Borough. Much of the information presented here is based on the BGS Melton Mowbray Sheet 142, and its accompanying descriptions (BGS, 2002 and 2004).

Geological Sites of Special Scientific Interest (SSSI) are classified as SSSIs for their scientific and research value. The Joint Nature Conservation Commission (JNCC) advises the government on SSSI designation. Following the Geological Conservation Review (GCR), the JNCC has designated sites as geological SSSIs based on their national importance as a site representative of one of 100 categories (GCR 'blocks'), which are classifications based on particular geologies and geological formations. Like all SSSIs, geological SSSIs are statutory designated sites that have to be considered in the planning process.

Sites not classified as SSSIs but which are important at the Regional or County level are classified as Regionally Important Geological (or Geomorphological) Sites, or RIGS. RIGS are a national framework of important sites which are identified at the local level based on field visits and literature, allowing the protection of these sites for future scientific study. Whilst RIGS have a scientific underpinning, they are also designated for aesthetic, educational and historical reasons.

The Leicestershire and Rutland Wildlife Trust *Geological and RIGS subcommittee*<sup>12</sup> use the following criteria for the designation of RIGS, (where one or several may apply to individual sites). RIGS may be designated based on geomorphological features:

- Hills, valleys and river courses, or exposures of aesthetic or scientific value representative of an area.

RIGS designations can be made on a geological basis, due to:

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<sup>11</sup> The study of the seasonality of recurring natural phenomena

<sup>12</sup> [www.leics.gov.uk/rigs\\_information.pdf](http://www.leics.gov.uk/rigs_information.pdf)

- Rock ages/sequences/types, mineral exposures and geological structures representative of an area.

Sites can also be designated as RIGS due to their citation in the scientific literature or due to their importance in the history of geology or due to a site or areas historic importance for mineral extraction such as for building materials and metals and in shaping the built environment. Some sites may be designated based on their educational or research potential. The LRGAP uses the following definition of geodiversity (from Stanley, 2001):

*“the link between people, landscape and their culture: it is a variety of geological environments, phenomena and process that make those landscapes, rocks, minerals, fossils and soils which provide the framework for life on earth”.*

Geodiversity can be considered to underpin biodiversity. In a borough such as Melton with a rich mining history, RIGS provide a way to preserve and represent a site or area’s cultural and historical legacy (its heritage). RIGS provide a way to manage and protect a regions geodiversity, preserving unique features which otherwise could be lost forever, through poor management or inappropriate development. RIGS are a non statutory designation, although in practice the sites are considered in the planning process by Local Planning Authorities (LPAs), with the geological/geomorphological importance of the sites considered as part of any planning application.

#### 4.4.2 Geological History and Description

Figure 4.8 shows the solid and drift geology present in the Borough and Figure 4.9 shows the mineral safeguarding areas (areas of important mineral deposits).

Ordovician granodiorites form the oldest rocks of the concealed geology in the Melton district proved in borehole logs. These granodiorites form extensive intrusions into the Precambrian and Early Palaeozoic basement of the district. They are overlain by a thick Carboniferous sequence, dominated by mudstones, which were deposited on shelf areas and intervening deep basins, notably the Widmerpool Half-graben (approximately 8 km north of Melton Mowbray), which is a major asymmetric rift structure. The oldest proven component of the rift-fill consists of clastic sedimentary rocks. To the north of the graben (near Waltham), there is a relatively thinner limestone-dominated sequence that developed on the Nottingham Shelf. The Carboniferous syn-rift sequence as a whole is of considerable economic importance as a source for oil extraction.

The Coal Measures Group of the concealed Vale of Belvoir Coalfield (north-east Leicestershire) rest on these strata and represent the deposits of a widespread delta plain. Sedimentation was interrupted in the east and south by alkali-olivine basalt lavas and volcanoclastic rocks. Local tectonism and uplift, associated with the onset of the Variscan orogeny, initiated a major environmental change, and the youngest Carboniferous rocks, the red beds of the Warwickshire Group, were deposited in better-drained alluvial conditions. Variscan uplift inverted the coal basin, exposing the strata to erosion that spanned most of the Permian period.

Sedimentation was resumed during the Permian times, with the deposition of calcareous sandstones in arid continental conditions, including the Cadeby Formation, and mudstones in the Edlington Formation. The Triassic period commenced with a major fluvial episode, depositing strata of the Sherwood Sandstone Group. This group is characterised by red sandstone with locally abundant pebbly sandstone and pebbly-beds. Subordinate red mudstone

and siltstone is common in the upper and lower parts of the group (BGS, 2006). The overlying Mercia Mudstone Group is at outcrop in the far west of the Melton district. It is characterised by red-brown mudstones, deposited in Aeolian and playa lake environments, with commercially important gypsum seams reflecting evaporitic conditions, near the top. The grey mudstone and siltstone of the Penarth Group mark a change in the depositional environment to that of marine sedimentation caused by a sea transgression in the late Triassic.

Marine conditions persisted throughout most of the Jurassic Period. The deposits were predominantly fine-grained mud and silt, but conditions were variable with phosphatised fossils and bored phosphate nodules suggesting periods of slow deposition and reworking, bioclastic limestones indicating higher energy conditions, and ooidal ironstones having been deposited during a regression. The strata dip gently to the south-east to produce a cuesta topography, rising to a maximum elevation of about 150m near Waltham to the north-east of Melton Mowbray. Prominent dip slopes are developed on the relatively resistant limestones of the Barnstone Member, basal to the Scunthorpe Mudstone Formation of the Lias Group, which crop out in the Vale of Belvoir. Here, numerous thin limestones and subordinate sandstones have been eroded differentially to produce a series of small scarps and broad dip slopes seen between Upper Broughton and Barkestone-le-Vale. Similar topography is developed in the lower beds of the overlying Charmouth Mudstone Formation, up to the foot of a prominent escarpment that rises steeply above the Vale of Belvoir and where the transition to siltstone of the Dyrham Formation occurs. The Marlstone Rock Formation capping the escarpment has been extensively worked as a source of iron ore. The lower formations of the Middle Jurassic, Inferior Oolite Group, were deposited in marginal-marine and estuarine conditions, but later a marine-barrier complex was established on which the ooidal and peloidal limestones of the Lincolnshire Limestone Formation accumulated.

Quaternary deposits are widely distributed and locally very thick in the area. Pre-Anglian deposits of the Bytham Sands and Gravels lie within the largely drift-covered trunk valley and tributaries of the preglacial Bytham River, in the south of the district. The present-day River Wreake follows part of this old river course. The most widespread Quaternary deposit is Till deposited during the Anglian glaciation. Interleaved within the Till are lenses of glacio-fluvial sand and gravel, and glaciolacustrine clay. Three types of till can be identified across Melton: Thrussington Till, Lias Till and the Oadby Till. Thrussington Till being red in colour due to the red Triassic material it contains (indicating ice flow from the northwest), whilst the Lias and Oadby Tills are grey in colour and contain Jurassic and Cretaceous material respectively, indicating ice flow from the east. Extensive post-glacial deposits underlie the floodplains of the River Soar and the River Wreake, which flows through Melton Mowbray. They consist of modern alluvium, and remnants of earlier floodplain levels represented by the River Terrace Deposits, of which there are five separate generations. These are locally thick and constitute a major source of sand and gravel in the district. Quaternary Slope Terrace Deposits (head), of largely periglacial origin are developed in all parts of the area, but form well-differentiated sequences in 'clay-vales' such as the Vale of Belvoir and the Stapleford vale south-east of Melton Mowbray. Younger deposits of Flandrian age, including head and colluvium, are widespread, and landslips are common on the steeper escarpment slopes. The LRGAP identifies the occurrence of landslide deposits, commonly in areas overlain by Marlstone and Northamptonshire sands, associated with periods of deglaciation.

### 4.4.3 Structure

Tectonic structure of the Melton district falls into three main categories, namely fundamental structures that define domains related to Palaeozoic deformation, the relatively minor faults, flexures or folds that have been mapped in areas of Triassic or Jurassic outcrop, and structures of superficial origin, attributed to periglacial mass-wasting in Quaternary times.

The most important structures in the area are the Normanton Hills and Sibleby faults, which have a predominantly west-north-west orientation, and are located north of the centre of Melton Mowbray by approximately 2 km and 1km respectively. Although they displace Mesozoic rocks at the surface, these structures also give rise to deep-seated geophysical lineaments and boundaries that are of regional importance (Lee *et al.*, 1990, 1991). In particular, they reflect deep-seated fracturing around the margins of Ordovician-age plutons, such as the Rempstone and Melton Mowbray granodiorites. This coincidence between surface and deep structure indicates that these major faults, along with other major faults and cleavage domains formed during the Caledonian orogeny, are the 'posthumous' rejuvenations of pre-existing basement discontinuities (Turner, 1949).

### 4.4.4 Surface Geology

Quaternary geology in the vale around Melton Mowbray, as far east as Stapleford, and in the vicinity of Long Clawson consists mainly of a thick covering of chalky boulder clay with local patches of glacial sands. The River Wreake is extensively margined with river gravel (terrace), and Melton Mowbray itself is almost entirely on Wreak-side alluvium. The solid geology in this area is predominantly the Lower Jurassic Lias Group, specifically the Scunthorpe Mudstone Formation. This formation is a thick succession of grey, variably calcareous mudstone with numerous thin beds of limestone and calcareous siltstone, which locally have a rich shelly fossil fauna, particularly near the base and in the upper part.

North of the centre of Melton Mowbray, between the Sibleby Fault (northing 320000) and the Normanton Hills Fault (northing 321500), lies the Charmouth Mudstone Formation. This formation varies between 110 and 130 m and the lower parts form low-lying, commonly drift-covered ground, whereas the higher beds underlie the steepening scarp slopes capped by the Marlstone Rock Formation. The strata consist mainly of grey, fissile mudstone and there are several levels with abundant calcite-mudstone, and phosphate- or siderite-mudstone nodules. The Dyrham Formation crops out on the upper slopes of the escarpment and its natural exposures are mainly small sections in landslip back-scarps. Some beds contain siderite-mudstone nodules, and there are impersistent beds of well cemented, fossiliferous sandstone and ferruginous limestone. At the top, and commonly seen in sharp contact with the overlying Marlstone Rock Formation, is the 'Sandrock', typically consisting of calcareous sandstone, ferruginous sandstone and shell-detrital wackestone with a siderite mudstone matrix. The Marlstone Rock Formation is relatively resistant to erosion and forms a cap to the escarpment that overlooks the Vale of Belvoir. On the broad dip-slopes, ploughed fields show abundant ironstone brash in soils of a distinctive deep orange-brown colour. Most of the outcrop was quarried away during the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, when numerous exposures were created. At Brown's Hill Quarry [745 235], Holwell, the Marlstone includes 3.3m of cross-bedded, shell-detrital and ooidal ironstone, with some evidence of adits and adit collapse remaining. In the quarry east of Branston, the Marlstone is a massive, finely limonite-oidal and shell-fragmental ironstone with conspicuous nests of brachiopods and sporadic belemnites. The Whitby Mudstone Formation rests sharply on the underlying Marlstone Rock. At Brown's

Hill Quarry the lower part of the formation consists of well laminated, olive-green to dark blue-grey fissile mudstone.

In the east of Melton Borough, near Waltham, formations of the Middle Jurassic Inferior Oolite Group form the solid geology at surface. These include the Northampton Sand Formation, Grantham Formation and Lincolnshire Limestone Formation. The Northampton Sand Formation outcrop underlies broad dip slopes, and is marked by dark reddish brown, sandy loam soils with abundant brash of hard, limonite-cemented quartzose sandstone and ooidal ironstone, although the grade was insufficient for exploitation as iron ore. The Grantham Formation forms the low scarp just below the Lower Lincolnshire Limestone and consists of mottled greenish grey and bluish grey, commonly fissile mudstone. The Lincolnshire Limestone crops out on the high plateau between Waltham and Croxton Kerriel. It forms long, eastwards-facing dip-slopes characterised by pale brown, clayey soils strewn with abundant tabular brash of cream-coloured limestone. In Waltham Quarry [813 252], the few remaining exposures of the higher beds commonly show coarse ooidal and bioclastic muddy limestone, with local hardgrounds developed in well cemented, pale brown 'calcarenite'. Marine fossil fauna identified in the Lincolnshire Limestone include gastropods, brachiopods, echinoderms and corals.

A coal mine was opened at Asfordby in 1995, before closing in 1997 due to difficult geological conditions. Oil is currently pumped from a field beneath Long Clawson, and further deposits may exist in the potentially suitable reservoir geology beneath the Vale of Belvoir. In addition to the historical mining of iron-rich Marlstone to the northwest of Melton Mowbray, sand and gravel extraction has occurred in the main river valleys (i.e. Brooksby).

#### **4.4.5 Designated Geodiversity in Melton Borough**

Regionally important sites that are designated for geological reasons (RIGS) within Melton Borough are shown on Figures 4.10 to 4.16 inclusive. The only geological SSSI (Sproxton Quarry) is shown on Figure 4.10<sup>13</sup>. Further detail on these sites is provided in Table 4.3.

In Melton there is only one Geological SSSI (Sproxton Quarry), designated for its important exposures of mid-Jurassic geology. A definitive list of RIGS in Melton does not currently exist, therefore for completeness all potential RIGS sites (including potential RIGS) have been listed. It is understood that Leicestershire County Council is currently in the process of reviewing designations. The Leicestershire and Rutland Geodiversity Action Plan (LRGAP) provides considerable detail on the identified sites in Melton, based on current Earth science and detailed site audits. Importantly the LRGAP identifies potential omissions from the current set of RIGS and makes recommendations for their future inclusion.

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<sup>13</sup> Saltby Gullet potential RIGS (pRIGS) has been shown because it is in close proximity to the SSSI.

Table 4.3 RIGS within Melton Borough

Site Name	Significance	Grid Reference	Reason for Designation and Feature(s) of Interest
Sproxton Quarry <sup>1 &amp; 2</sup>	National	SK 864 253	GCR site 299, designated due to its exposures of Middle Jurassic geology (sands and limestones). These exposures are considered to be of national importance based on their importance in detailing the geological history of Britain.  The SSSI citation states that: " <i>Sproxton provides one of the finest and most complete sections of the lower Lincolnshire Limestone Formation, together with the underlying Grantham and Northampton Sand Formation. The main significance of this section rests in the stratigraphical and sedimentological features of the Lower Lincolnshire Formation, particularly its small scale cycles and rare ammonites. An Aalenian-Bajocian* sequence unrivalled in the southern Lincolnshire - Leicestershire area</i> ". *Mid Jurassic-period, 178 to 166 Ma BP.
Burrough Hill <sup>1 &amp; 2</sup>	District Level <sup>1</sup>	SK 761 120	Candidate RIGS <sup>2</sup> . Burrough Hill sits on the Scunthorpe Mudstone Formation (Lower Lias Group), which is noted for it's "rich, shelly fossil fauna".
Old Dalby Cutting <sup>1 &amp; 2</sup>	District Level <sup>1</sup>	SK 685 233	Candidate RIGS <sup>2</sup> . Exposures of Lias geology – similar to Holwell exposures.
Holwell - North Quarry <sup>1 &amp; 2</sup>	County Level <sup>1</sup>	SK 743 238	RIGS <sup>2</sup> . Managed by LRWT ( <a href="http://www.lrwt.org.uk/pp/Silver/viewSilver.asp?ID=319">http://www.lrwt.org.uk/pp/Silver/viewSilver.asp?ID=319</a> ). Website states that: "The major interest of the reserve lies in an outstanding exposure of Upper Lias clays, shales and limestone and Middle Lias (Jurassic) Marlstone similar to that of Brown's Hill Quarry." Exposures are particularly fossil rich.
Holwell - Browns Hill <sup>1 &amp; 2</sup>	County Level <sup>1</sup>	SK 742 234	RIGS <sup>2</sup> . Managed by LRWT ( <a href="http://www.lrwt.org.uk/pp/Silver/viewSilver.asp?ID=302">http://www.lrwt.org.uk/pp/Silver/viewSilver.asp?ID=302</a> ) Website states that: "The geological interest of the site consists of an excellent exposure of Middle Lias Marlstone and Upper Lias Paper Shales". The LRGAP indicates that the Dyrham formation sandstone and Marlstone Rock Formation are used locally as building stone. Above these, the upper Lias shales are part of the Whitby Mudstone Formation. Exposures are particularly fossil rich.
Eaton - East Ironstone Cutting <sup>1 &amp; 2</sup>	No information	SK 806 292	Candidate RIGS <sup>2</sup> . Remaining exposure due to historic opencast workings of iron-rich Marlstone (most workings elsewhere in the Borough having been restored to agricultural use). LRGAP: "cross-laminated ooidal iron grainstone" over and underlain by massive bedding of Marlstone.

**Table 4.3 (continued) RIGS within Melton Borough**

<b>Site Name</b>	<b>Significance</b>	<b>Grid Reference</b>	<b>Reason for Designation and Feature(s) of Interest</b>
Eaton - Ropeway Quarry <sup>1 &amp; 2</sup>	No information	SK 801 288	Candidate RIGS <sup>2</sup> . Remaining exposure due to historic opencast workings of iron-rich Marlstone (most workings elsewhere in the Borough having been restored to agricultural use). LRGAP: "cross-laminated ooidal iron grainstone" over and underlain by massive bedding of Marlstone.
Railway Cutting, Wymondham	No information	SK 48273 31869	Potential RIGS. Lincolnshire Limestone (ooidal grainstone) and Oadby Till, underlain by Thrusington Till. Limestone not recorded on geological maps (Marlstone and Dyrham formations), may be due to faulting or ice rafting. Recommended to be included as a RIGS due to the sites potentially unique geological exposures. Clearance of exposure required for better examination.
Pickwell	No information	SK 788 113	Potential RIGS. Remaining exposure due to historic opencast workings of iron-rich Marlstone (most workings elsewhere in the Borough having been restored to agricultural use). LRGAP: "ooidal iron grainstone interleaved with ferruginous limestone" over and underlain by massive bedding of Marlstone.
Saltby Quarry (Saltby Gullet) <sup>2</sup>	No information	SK 858 260	Candidate RIGS <sup>2</sup> Former ironstone quarry. Exposures of (Grantham and) Northampton Sand Formation and Lincolnshire Limestone - partially obscured. Gullet are represents main potential area for exposure interpretation.
Stonesby (Waltham)	No information	SK 481 325	Potential RIGS. Lincolnshire Limestone Formation - LRGAP indicates site does have some potential if clearance was undertaken to reveal more of the rock exposures.
Gaddesby Erratic <sup>2</sup>	No information	SK 680 135	Candidate RIGS <sup>2</sup> . Glacially placed erratics (boulders of non-local geology transported and deposited by ice).
Waltham on the Wolds - Station Pit <sup>2</sup>	No information	SK 800 266	Candidate RIGS <sup>2</sup> . Unclear – historic ironstone mining (location next to mineral railway line), no records of exposure details.
<b>Geological/Geomorphological features in Melton, for which suitable sites could be designated as RIGS in future (identified in the LRGAP)</b>			
River Terrace Sands and Gravels	N/A	N/A	Currently not represented as a RIGS site. Potentially the Brooksby site could yield valuable exposures, as could workings elsewhere in areas of quaternary river terrace sands and gravels. LRGAP identifies the lack of a representative RIGS site as an omission in the representation of the regions geodiversity.

**Table 4.3 (continued) RIGS within Melton Borough**

<b>Site Name</b>	<b>Significance</b>	<b>Grid Reference</b>	<b>Reason for Designation and Feature(s) of Interest</b>
Glaciolacstrine	N/A	N/A	Currently represented in no RIGS. LRGAP identifies that further work is required to identify potential sites across Leicestershire.
Alluvial fans and alluvium, abandoned channels.	N/A	N/A	Currently represented in no RIGS. LRGAP identifies that further work is required to identify potential sites across Leicestershire.
Landslips, head terraces in the Vale of Belvoir	N/A	N/A	Currently represented in no RIGS. LRGAP identifies that further work is required to identify potential sites across Leicestershire.

#### **4.4.6 Monitoring Recommendations for Geodiversity in Melton Borough**

Currently there is not a definitive list of RIGS in Melton. It is understood Leicestershire County Council will make this information available in the late summer/ autumn. The completed list with details should be obtained from Leicestershire County Council when available.

For existing RIGS, the key issues in terms of monitoring are the continued provision of good access (in the case of publicly accessible sites) and regular maintenance to ensure that exposures do not become overgrown. Numerous interpretation boards have been installed at some of the RIGS. In order to maintain the educational aspect of RIGS it is recommended that regular monitoring occurs to identify instances where remedial action is required, such as difficulties in site access, exposures becoming overgrown, or damage of the interpretation boards. Early monitoring would allow any key rock faces associated with quarrying operations to be identified, and opportunities for preservation identified.

It is recommended that the sites identified in this study are included in the planning process, so that future applications which may affect the integrity of the RIGS can be easily identified, and appropriate actions taken or mitigations sought.



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## 5. Melton Borough Biodiversity and Geodiversity Opportunities (Output 3)

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### 5.1 Introduction to Chapter 5

This chapter identifies opportunities to conserve and enhance biodiversity and geodiversity resources in the Melton Borough landscape. Existing biodiversity initiatives, measures to release additional resources/ funding for biodiversity enhancement, and opportunities to ally biodiversity initiatives with access, recreation and community involvement are also described.

### 5.2 Biodiversity Opportunities in Melton Borough

#### 5.2.1 Introduction to Biodiversity Opportunities

The opportunities for biodiversity enhancement suggested in this report have not been identified in isolation. Regard has been taken of the contexts in which any enhancements would be made, not least of which are the very real resource constraints within which local authorities operate. Consideration has also been given to the wider landscape context within which any changes would be made. The borough contains a variety of landscapes of different scales and textures, the majority of which contribute to an overall sense of an agriculturally productive and actively managed environment characterised by arable land and pasture bordered by hedges, and which would be ill suited to accommodate large-scale habitat restoration (e.g. creation of large blocks of woodland). As a result, whilst offering tangible improvements to the biodiversity of the borough, the opportunities identified are relatively small in scale and focussed in their scope.

On this basis the opportunities presented in this section have been based on the premise that biodiversity gains can be realistically delivered based upon limited additional expenditure, and that enhancement of linear boundary features such as hedges and grassland would not be to the detriment of the landscape character of the borough. Within these constraints, consideration has also been given to biodiversity opportunities that would benefit a selection of appropriate LBAP habitats and species which are known to occur within the Borough, notably the following:

- Calcareous, neutral grassland, reedbed and wet woodland;
- Hedgerows;
- Field margins;
- Barn owl;
- Bats;
- Water vole;
- Otter.

Consideration has also been given to the impacts of climate change (Section 4.3.1) and in particular the need to:

- Establish/ improve landscape-scale connectivity and species dispersal within the Borough using ‘stepping stones’ and ‘corridors’ (Section 5.2.1);
- Establishing ecological ‘buffer zones’ around key areas or sites (Section 5.2.2);
- Extending the protected sites network by designating new local wildlife sites or by extending existing ones (Section 5.2.3).

Specific opportunities within the wider Melton Borough are shown on Figures 5.1 to 5.7 inclusive. Nonetheless there remain uncertainties around possible financial, logistical, physical and social constraints to such measures being implemented and it is therefore suggested that the design of biodiversity opportunities within the borough should be an iterative process, which begins with the information presented here and could proceed to involve further feasibility studies and engagement with stakeholders. It should also be noted that the opportunities suggested are by no means comprehensive and it is recommended that additional opportunities and options are explored following consultation with appropriate nature conservation organisations and other key stakeholders (see Section 5.2.5), which may involve the concepts provided below.

## **5.2.2 Connectivity**

### **An Introduction to Ecological Connectivity**

This term refers to habitat features which allow the dispersal of flora and fauna across a geographical area. They may be in the form of contiguous habitats (‘corridors’) or intermittent non-contiguous ‘patches’ of habitat (‘stepping stones’), but both types essentially provide dispersal opportunities and link up areas. The desired habitats present within a connective feature may be dependent on the habitats which it serves to connect to; for example, small areas of coniferous woodland would probably not be considered a valuable connective feature between large areas of calcareous grassland, because the associated flora and fauna associated with the calcareous grassland would, in general terms be quite different to the woodland. By providing ecological connectivity, the isolation of habitats and populations of species is reduced and the areas of viable habitat suitable for a range of species can be vastly increased.

Increasing ecological connectivity prevents flora and fauna becoming trapped in the event that an isolated area of suitable habitat begins to deteriorate, which could occur for example as a result of climate change or by habitat degradation due to increasing levels of anthropogenic disturbance. This could otherwise lead to local extinction events.

The key consideration is that the corridor or stepping stones connect ecologically valuable habitats with similar habitats. There is no ‘standard’ length of corridors or distance between ecological ‘stepping stones’ because this may in part depend upon the dispersal distances of the species likely to make use of them. For example, birds (which typically can disperse over large areas) may be able to make use of stepping stones situated several kilometres apart, whereas amphibians such as great crested newts may only be able to make use of stepping stones situated less than 0.5km apart. However, the longer the connection is then the probability/ opportunity of incorporating a variety of potentially valuable habitats is increased, albeit there will be a trade-off with the resources available/ required.

Stepping stones and corridors may be created by changes in management (for example reduced frequency of cutting to allow a ranker sward to develop) or by actively creating habitats such as semi-improved grassland within intensively farmed areas. The longer-term certainty of the presence of these areas could also be secured via designation and protection, e.g. as local Wildlife Sites.

### Ecological Connectivity within Melton Borough

Features within Melton Borough which are considered to be valuable ecological corridors are listed in Table 5.1 together with the species/species group that would benefit.

**Table 5.1 Potentially Valuable Connections within the Borough and Associated Biodiversity**

Connection Type	Examples of Associated Wildlife/ Wildlife That Would Benefit
Watercourses (e.g. Grantham Canal, River Eye, Scaford Brook)	Water vole, otter, bats, birds, freshwater crayfish
Disused railway lines and active railway line embankments	Amphibians, bats, reptiles, birds, invertebrates, plants
Extensive hedgerow network	Amphibians, reptiles, birds, bats
Extensive field margins	Amphibians, reptiles, birds (e.g. barn owl), invertebrates, plants
Continuous roadside verges	Amphibians, reptiles, birds (e.g. barn owl), invertebrates, plants

An example of an increase in an ecological corridor is shown by point 3 on Figure 5.3 – extension to the Grantham Canal.

Ecological stepping stones would be important where there are good-quality examples of specific habitats in the area, but which are at risk from isolation. Examples of areas which may benefit from the provision of ecological stepping stones include:

- **Stapleford Park Parkland area** - Areas of grassland, particularly in the south-east of the Borough could provide some connectivity between Stapleford Park Parkland and the multitude of grassland sites to the north and south. The large gap in protected grassland sites to the south-west of Stapleford could be remedied by the addition of (or designation of) new grassland sites, ideally adjacent to small blocks of woodland in the area where the habitat diversity can be maximised (see point 15 on Figure 5.7);
- **Croxton Park area** - The east and north-east of the Borough contains a higher proportion of woodland – a habitat which is generally quite sparse in the region. Two woodland SSSIs are present in the north-east (Harby Hill Wood and Croxton Park) and it is thought possible that enhancing/managing or protecting the small blocks of woodland in between the two SSSIs (see points 7, 8 and 9 on Figure 5.5) would considerably reduce the SSSIs fragmented position in the landscape.

Further specific suggestions for increasing the ecological connectivity between habitats and designated sites from corridors and stepping stones are shown on Figures 5.1 to 5.7 inclusive.

### 5.2.3 Buffer Zones

#### Introduction to Ecological 'Buffer Zones'

An ecological 'buffer zone' is an area of land or habitat which usually separates areas of ecologically important habitat from areas of poorer-quality habitats, disturbed/developed areas, and/or sources of pollution. The aim of the buffer zone is to provide a barrier to potential impacts, and is often important around isolated designated sites. In designing and creating ecological buffer zones, the source of potential impacts and pathway to effect may need to be considered. Buffer zones may also provide connectivity opportunities (see Section 5.2.1) and can enhance the areas they surround since the extent of habitat is increased.

#### Buffer Zones within Melton Borough

Buffer zones will be most important where valuable or potentially fragile ecosystems lie close to heavily populated or disturbed areas or close to areas where future development is proposed.

Examples of areas which may benefit from the provision of buffer zones include:

- **Melton Country Park** – the park lies on the north-east edge of Melton Mowbray and is partially surrounded by residential areas. It is recommended that no further development encroaches on the country park and that a buffer zone is established around the north and east of the Park (Figure 3.18);
- **Holwell Works area** - three areas of the southern section of the former Holwell Works site comprise the Asfordby Hill non-statutory designated site (Figure 4.4). The designated site is situated on the outskirts of the town of Asfordby Hill and in close proximity to the western edge of Melton Mowbray. Establishing buffer zones around this designated site (or indeed expanding the designated site to take in more of the Holwell Works site) would increase the contribution this designated site makes to the biodiversity resources of the Borough as well as reducing the risk that the site would be impacted by development;
- **Main watercourses** – these could benefit from establishing suitable riparian corridors such as a margin of ranker grassland, and example include the River Eye and Scalford Brook (Figure 3.18); these watercourses currently reside within intensively managed landscapes.

Field margins can also be allowed to become rank where they are adjacent to more valuable areas, providing a buffer from agricultural activities and nutrient/sediment run-off.

Based on the information accessible within the scope of this study<sup>14</sup>, it is difficult to assess with certainty in the wider Borough which areas are likely to benefit the most from buffer zones, because some potential threats may be more cryptic than just urban encroachment, e.g. eutrophication. Certainly all designated sites could benefit by establishing buffer zones (e.g. point 14 on Figure 5.6). This could be achieved by simply seeking to agree with landowners

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<sup>14</sup> Freely available OS maps, aerial photographs, and information received from LERC

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that land adjacent to designated sites is managed less intensively, rather than actively creating new habitats which may involve more resources.

Other areas of ecologically important habitat could benefit from buffer zones, although they should be prioritised based on areas which are most at risk from threats such as:

- Changes in the local water table;
- Changes in local hydrochemistry;
- Excess nutrient enrichment;
- Urban encroachment;
- Airborne emissions and dust deposition;
- Run-off of toxic chemicals or pollutants;
- Anthropogenic disturbance (e.g. noise, litter, predation by pets);
- Agricultural activities;
- Changes to local climate or microtopography (for example by removal of trees or landscaping);
- Erosion.

#### **5.2.4 Protected Sites**

##### **Introduction to Protected Sites**

Unusual topographical or geological phenomena, or landscapes that are generally less intensively managed, often support important species and habitats and it is no coincidence that such areas (sites) are designated and protected for their inherent biodiversity interest. This protection, afforded via statutory or non-statutory designation, is an essential way of securing the future of biodiversity resources on such sites. However, designation alone is unlikely to negate the effects of climate change (see Section 4.3.1) on these sites and a landscape-scale approach to nature conservation is one of the ways to approach climate change.

It is therefore recommended that additional sites are identified for designation, particularly those that:

- Comprise an intricate mosaic of interconnected habitat types;
- Comprise good examples of 'high-quality' habitat such as semi-natural broadleaved woodland or species-rich grassland;
- Would provide stepping stones or ecological corridors (see 5.2.2) through the landscape where no such protected connections exist;
- Would increase the extent of existing designated sites.

The type of designation conferred upon a site will depend upon the relevant designation criteria and the biodiversity resources present on a site. A review of existing ecological information for a candidate site is therefore necessary along with additional surveys where appropriate. It is

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understood that Leicestershire County Council is reviewing its designated sites and it is recommended that Melton Borough Council liaise with the county council on this matter.

### **Additional Protection within Melton Borough**

Although there is a well established network of statutory and non-statutory designated wildlife sites within Melton Borough, there are additional areas within the Borough that warrant further investigation with a view to designation. Based upon the information collected in this study, examples of areas that have been identified as potential candidates for designation include:

- **Melton Country Park** – from species records obtained during the study, it is clear that Melton Country Park is quite valuable to a variety of wildlife, particularly birds, and there appear to be range of habitats available within quite a sizeable area. Undoubtedly the park is also an important area of amenity, education and recreational value due to its accessibility to the public and variety of habitats believed to be present. The park is situated on an urban fringe which increases the risk of future development unless protected by a designation. Within a predominantly urban context it is considered that this area is of at least local importance;
- **The Belvoir Estate** - although not necessarily at risk of impending development, desk-based studies revealed a large area of woodland on the estate in the north of the Borough, which mostly lies in between the settlements of Belvoir and Stathern. The area is by far the largest area of woodland within the Borough, and is surrounded by several smaller satellite woodland blocks. Two small areas of this woodland are designated as a SSSI and local wildlife site (Briery Wood Heronry and Terrace Hills Beetle Site respectively), and it is therefore possible that the woodland on the Belvoir Estate also has some inherent biodiversity value; of at least local importance;
- **The River Corridor** – the River Corridor Search Area through Melton Mowbray downstream of the River Eye SSSI has diverse range of habitats, and within a predominantly urban context it is considered that this area is of at least local importance.

It is considered that a statutory local designation (such as an LNR) or a non-statutory local designation (local Wildlife Site) may be appropriate for these three areas. It is recommended that existing available ecological data for these areas are reviewed in light of the criteria for local designation and further data collection undertaken where data gaps are highlighted.

Other opportunities are presented on Figures 5.1 to 5.7 inclusive.

### **5.2.5 Education, Awareness, Access and Recreation**

Melton Borough appears to already have a variety of initiatives and opportunities available that link biodiversity with outdoor recreation, access and education (see Table 5.2). In addition to these the following suggestions can be made:

- Installation of interpretation boards at key wildlife sites where non are currently present;

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- Establishing a programme of seasonal wildlife walks to take in the various key dates in nature's calendar (e.g. frog spawning in spring, bat swarming activity in autumn – these could be tied in with phenology surveys and provide real data to inform management planning, see Section 4.3.2);
  - Co-ordinating local activities in Melton Borough to coincide with national events such as Countryfile's Photo Competition or the annual programme Springwatch – in this way the local activities are already given impetus from the general awareness generated by national events;
  - Annual meetings with local stakeholders (nature conservation bodies, the local community and local businesses) to discuss ways to improve biodiversity via fundraising events and by designing biodiversity initiatives. With appropriate guidance, working groups within the local community could be established for particular projects or groups of projects giving the local community a real sense of ownership;
  - Seek to establish and enhance Country Parks and green spaces – Natural England has initiated a 'Country Parks Renaissance' scheme with the aim of rejuvenating country parks for recreation. There are also additional initiatives that could be established in Melton Borough such as Greenways, Quiet Lanes, National Trails and the Walking the Way to Health Initiative. See [www.naturalengland.org.uk](http://www.naturalengland.org.uk). Case studies and guidance on promoting access, recreation and community involvement with country parks and green spaces is available at [www.countryparks.org.uk](http://www.countryparks.org.uk). Also, a variety of appropriate schemes are already operating in Leicestershire by Groundwork Leicester & Leicestershire (see [www.gwill.org.uk](http://www.gwill.org.uk)) and there exists scope to extend their project to Melton Borough;
  - Establishing a network of Borough walking/cycling trails to take in key areas of the Borough. The Borough has a rich cultural heritage and added value could be brought to such 'nature trails' by ensuring the trails take in areas of biodiversity value that also contain archaeological and historical interest features such as at Burrough Hill Covert Grassland Wildlife Site where an old iron-age fort is located. The Romans are known to have had a prominent presence in the Borough and it is believed that public events touching on history are held within the grounds of the Belvoir Estate and the associated Belvoir Castle and it may be possible, for example to establish a 'Roman Trail' to take in the Belvoir Estate and wider Borough. This would require negotiation with landowners, the publication of information leaflets, installation of signposts, and may require some path management to improve access to certain areas. Other potentially suitable areas that warrant further investigation are the Grantham Canal, the River Eye, and the network of disused railway lines in the Borough. An example of a trail taking in historical features is the current Framland Church Trail;
  - Explore opportunities with local schools to link elements of the curriculum with visits to suitable designated sites, attendance of 'wildlife walks' or attendance with local wildlife groups (see Table 5.2);
  - Country Parks and green spaces can be awarded the Green Flag Award which is the national standard for parks and green spaces in England and Wales and attracts a

good reputation for areas designated as such. The award scheme is a means of recognising and rewarding the best green spaces in the country as well as encouraging others to achieve the same high environmental standards, thereby creating a benchmark of excellence in recreational green areas (see [www.greenflagaward.org.uk](http://www.greenflagaward.org.uk));

- Environmental Stewardship schemes also include measures to improved rights of way and access. More detail at [www.defra.gov.uk](http://www.defra.gov.uk).

### 5.2.6 Increasing Resources for Biodiversity Protection & Enhancement

Recommendations for ways in which local authorities can release more resources for biodiversity are provided in Defra (2007). Table 5.2 provides suggestions for how these can be realised in Melton Borough.

With regards to planning obligations (S106 agreements) and the funding of biodiversity initiatives; S106 agreements are legal agreements between a developer, landowner and the local planning authority. Such agreements can be used to secure the implementation of a planning policy in order to make acceptable a development proposal that would otherwise be unacceptable in planning terms. Circular 05/05: Planning Obligations states that an agreement must be:

- relevant to planning;
- necessary to make the proposed development acceptable in planning terms;
- directly related to the proposed development;
- fairly and reasonably related in scale and kind to the proposed development; and
- reasonable in all other aspects.

Paragraph B16 of the Circular identifies that:

*“planning obligations might be used, when appropriate, to offset through substitution, replacement or regeneration the loss of, or damage to, a feature or resource present or nearby, for example, a landscape feature of biodiversity value, open space or right of way.....A reasonable obligation will seek to restore facilities, resources and amenities to a quality equivalent to that existing before the development”.*

In the absence of specific development proposals it is difficult to detail the precise circumstances under which S106 agreements can contribute to the resourcing of biodiversity projects as this would largely depend upon a number of factors, primarily the scale, nature, layout and potential ecological impact of any particular development, and would be considered on a case-by-case basis.

Nonetheless, there are some general principles which can be followed. Using S106 agreements to release resources for biodiversity projects may be appropriate when

- an important biodiversity resource may be lost or impacted (such as a LBAP/UKBAP habitat, populations of LBAP/UKBAP species, designated sites);

- there are proposals to create/ designate more habitats/ areas as compensation (e.g. the 'create two for one lost' rule) or proposals to create/designate habitats greater in extent (e.g. 25% greater or more) than that to be replaced;
- the proposals can be closely allied to objectives within the LBAP/UKBAP; and,
- securing the longer term viability of created/ designated habitats/areas (e.g. via management) is desirable.

For example, in Search Area H the loss of ~10ha of semi-improved neutral grassland to development may be compensated (because neutral grassland is an LBAP habitat) by creating 12.5ha of equivalent habitat which would then be managed appropriately by the relevant landowners in the longer term via a management plan or management agreement.

The delivery of biodiversity opportunities via such mechanisms could be detailed within leaflets (see table below) or Supplementary Planning Documents (such as the Doncaster LDF Biodiversity Mitigation and Compensation Supplementary Planning Document).

**Table 5.2 Measures For Releasing Additional Resources for Biodiversity**

<b>Suggested Measures for Releasing Resources for Biodiversity</b>	<b>Suggestions for Implementation of Measures in Melton Borough</b>
Identify opportunities for cost savings	<p>e.g. <b>Habitat Management</b> - Identify areas where the management regimes can be altered so that they occur less frequently or are less intensive (e.g. reduction in the frequency and extent of grass cutting), or make more use of volunteer groups (see below) so that the resources could be made available to undertake monitoring or preparation of management plans.</p> <p>e.g. <b>Development Control Enhancement</b> - It is recommended that a short guidance leaflet (e.g. entitled 'Biodiversity, Protected Species and Your Planning Application: Guidance for Developers') is produced and made available as a downloadable document (e.g. as a pdf) on the council website. The leaflet would briefly introduce the protection afforded to designated sites and species, and the importance of biodiversity. The importance of considering potential effects on these wildlife features, and the obligations of developers to consider such effects at the early stages of a planning application should also be highlighted. Specific information on certain species/species groups could be provided and the leaflet could also provide links to useful sources of further information. An example of such a leaflet can be found at: <a href="http://www.lancashire.gov.uk/environment/ecology/protected_species_pp.asp?sysredir=y">http://www.lancashire.gov.uk/environment/ecology/protected_species_pp.asp?sysredir=y</a></p> <p>To compliment the above leaflet, an additional leaflet could be produced (e.g. entitled 'Mitigation Banking: Delivering Net Biodiversity Gains') and made available as a downloadable document (e.g. as a pdf) on the council website. The leaflet would introduce a list of strategic Borough-wide initiatives to create/enhance habitats or areas, and for which the council were seeking to be undertaken or funded. This would encourage developers to deliver real biodiversity gains within their development proposals that were closely allied to strategic biodiversity objectives for the Borough (e.g. such as those in the LBAP). Equally, such initiatives could be funded in the absence of development proposals by local businesses (see below). A list of initiatives could be derived via consultation with stakeholders (see below) and by consideration of the information in Section 5.</p> <p>The leaflets could potentially reduce the amount of time Development Control Officers spent responding to applications/queries.</p>
Identify opportunities to link biodiversity with other agendas	<p>Biodiversity aims can often work in tandem with the aims of other policies including the promotion of health, outdoor recreation, education, community engagement and social inclusion. One such organisation that delivers schemes in the borough that amalgamate these topics is The Melton Environmental Action Partnership (see below).</p>

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**Table 5.2 (continued) Measures For Releasing Additional Resources for Biodiversity**


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**Suggested Measures for Releasing Resources for Biodiversity**
**Suggestions for Implementation of Measures in Melton Borough**

Capitalise on external funding

There are a range of funding resources available as follows:

- Environmental Stewardship schemes – supersedes Environmentally Sensitive Area schemes and the Countryside Stewardship schemes and provides funding to farmers and land managers who provide effective land management on their land. There are three levels of stewardship: entry, organic and higher levels. Higher level stewardship is more involved and concentrates on the more complex types of management where land managers need advice and support and where agreements will be tailored to local circumstances. This scheme has the potential to deliver significant improvements in the countryside through a wide range of actions that will be beneficial to biodiversity. More detail at [www.defra.gov.uk](http://www.defra.gov.uk);
- The English Woodland Grant Scheme - supersedes the Woodland Grant Scheme and Farm Woodland Premium Scheme. The grants are paid as part of a contract in which land managers agree to look after the woodlands and do the approved work to reasonable satisfaction. The grants aim to create new woodlands and forest which provide an economic return to the community (jobs and income), opportunities for recreation, and an alternative land use to agriculture.. More detail at [www.defra.gov.uk](http://www.defra.gov.uk);
- Aggregates Levy Sustainability Fund in England - aims to reduce the environmental impacts of the extraction of aggregates and to deliver benefits to areas subject to these impacts. There is a delivery partner in Leicestershire. More information at [www.defra.gov.uk](http://www.defra.gov.uk);
- Heritage Lottery and Big Lottery Funds – The Heritage Lottery Fund uses money raised through the National Lottery to sustain and transform the country's heritage including the natural environment and has awarded more than £238 million to over 1,800 projects to protect important habitats and species in the UK and to help people get involved in and learn more about natural heritage. More information at [www.hlf.org.uk](http://www.hlf.org.uk) and [www.biglotteryfund.org.uk](http://www.biglotteryfund.org.uk)
- The latest EU LIFE Programme, LIFE+, provides financial support for projects that contribute to the development and implementation of Community environmental policy and legislation, in particular the objectives of the Sixth Environmental Action Programme and resulting thematic strategies. It has a budget of €2.143 billion between 2007-13. More information at [www.defra.gov.uk](http://www.defra.gov.uk)
- Local business groups and leaders, and developers – it is recommended that the council derives a number of biodiversity projects and initiatives that could be funded by local business groups and/or that could be secured through appropriate Section 106 agreements attached to planning permission for certain developments.

**Table 5.2 (continued) Measures For Releasing Additional Resources for Biodiversity**

<b>Suggested Measures for Releasing Resources for Biodiversity</b>	<b>Suggestions for Implementation of Measures in Melton Borough</b>
Encouraging all officers and elected members to "think biodiversity" across duties and functions	An in-house initiative or awareness campaign to promote biodiversity across all duties could be established, for example an annual 'Biodiversity Volunteer Day' where members spend time undertaking the duties of local authority ecologists, assisting volunteers with habitat management, assisting with the delivery of 'wildlife walks' to local community groups, or assist with undertaking phenology surveys (see Section 4.3.2)
Make the most of existing resources, and harnessing the energy of volunteers and local communities	<p>Local volunteer groups can be encouraged to contribute to biodiversity protection and enhancement through involvement in undertaking and co-ordinating surveys, education programmes, and habitat management.</p> <p>There is a range of groups, schemes and initiatives available for the Melton area as follows:</p> <ul style="list-style-type: none"> <li>• The Melton Group of the Leicestershire and Rutland Wildlife Trust meets regularly in Melton Mowbray. Further details at <a href="http://www.lrw.org.uk">www.lrw.org.uk</a></li> <li>• The Leicestershire and Rutland Wildlife Trust operates a Wildlife Watch Scheme and Wildlife Watch Group Leader scheme which aims to appoint adult volunteers to involve children in outdoor activities relating to the environment. There is a local Melton Group who regularly meet at Melton Country Park. Further details at <a href="http://www.lrw.org.uk">www.lrw.org.uk</a></li> <li>• The Leicestershire and Rutland Wildlife Trust operate three volunteer work groups that undertake voluntary habitat management. Further details at <a href="http://www.lrw.org.uk">www.lrw.org.uk</a>;</li> <li>• The Leicestershire and Rutland Wildlife Trust operate the Teen Ranger project which aims to promote a positive image of 13 -19 year olds and of how they can be involved in conservation and environmental activities. There is a local group called the Melton Teen Rangers. Further details at <a href="http://www.lrw.org.uk">www.lrw.org.uk</a>;</li> <li>• The Melton Environmental Action Partnership comprises a number of organisations that aims to enhance the quality of life for everyone in the borough of Melton. The partnership undertakes activities such as grounds maintenance at Melton Country Park and outdoor recreation activities. Further details at <a href="http://www.meltononline.co.uk">www.meltononline.co.uk</a></li> <li>• The British Trust for Conservation Volunteers (BTCV) has a local group the Friends of Melton Country Park who are conservation volunteers undertaking voluntary activities such as habitat management. More details at <a href="http://www.btcv.org.uk">www.btcv.org.uk</a></li> <li>• Groundwork Leicester &amp; Leicestershire is an independent charity and member of the national organisation, Groundwork UK. They provide information, advice and practical help to encourage individuals and organisations to take practical steps towards a more sustainable future. The organisation has conservation volunteers which work on nature reserves in Leicester and the organisation operates numerous schemes and project. It is recommended that the organisation is consulted on undertaking work/schemes in Melton Borough, or setting up a Melton Borough branch. More details at <a href="http://www.gwll.org.uk">www.gwll.org.uk</a>.</li> </ul>

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**Table 5.2 (continued) Measures For Releasing Additional Resources for Biodiversity**

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**Suggested Measures for Releasing Resources for Biodiversity**

**Suggestions for Implementation of Measures in Melton Borough**

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Work in partnership with other organisations

There are 37 organisations listed as involved partners in the LBAP. More details at [www.ukbap.org.uk](http://www.ukbap.org.uk)

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### 5.3 Geodiversity Opportunities in Melton Borough

It is recommended that Melton Borough Council should work with Leicestershire County Council, the British Geological Society, and Leicestershire and Rutland Wildlife Trust and the aggregates industry to identify and enable opportunities for funding to increase the value added to the Borough's geodiversity. This may be achieved via the provision of further interpretation boards and materials, following on from the good work undertaken in support of the LRGAP. The LRGAP identifies several opportunities where if funding was obtained from the aggregate industry levy, it could be utilised to improve the educational value of geodiversity in the Borough. These include:

- Wymondham Railway Cutting – clearance of vegetation required so exposures can be interpreted. Since the site appears to be on private land, the landowner should be approached. Should be designated as a RIGS (identify potential for public access if appropriate). If access is possible, interpretation boards could be provided;
- Eaton – ironstone exposures – approach land-owner. Site should be designated as a RIGS (identify potential for public access if appropriate. If access is possible, interpretation boards could be provided);
- Pickwell Quarry – identify owner of quarry, site should be designated as a RIGS (identify potential for public access if appropriate. If access is possible, interpretation boards could be provided);
- Saltby Quarry - ironstone exposures – approach land-owner. Site should be designated as a RIGS (identify potential for public access if appropriate. If access is possible, interpretation boards could be provided);
- Waltham (Stonesby) Quarry – currently has a biodiversity interpretation board. Some exposures are heavily overgrown. Potential to remove vegetation from some of these and to install an interpretation board;
- Holwell Works – the works site could be designated as a RIGS on the basis of the iron works (the demolished furnaces, and the continuing production of castings) - the guidelines for RIGS include for the designation of sites "*due to a site or areas historic importance for mineral extraction such as for building materials and metals and in shaping the built environment*". Based on this criteria, Holwell Works could be a key RIGS. If access is possible, or along adjacent public rights of way overlooking the key parts of the site, interpretation boards could be provided with references to the nearby iron mines which supplied the works. These interpretation boards could include historic images of the former works and their presence in the landscape. Any remaining features of historic interest should be catalogued and preserved. In addition, the site should be examined for suitable exposures for inclusion in the designation however it is currently unclear if any high-quality geological exposures exist on site (iron ore was imported to the works for processing);

- There are opportunities for RIGS to be designated on the basis of quaternary geology, such as exposures of river terraces and glaciogenic deposits, and of more recent alluvium in river banks or sand/ gravel workings;
- There are opportunities for RIGS to be designated on the basis of landscape features such as abandoned river channels, landslip escarpments and in the Vale of Belvoir, head deposits.



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# **Appendix A Ecological Information Gathering Methodology**

5 Pages

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## A1 Desk Study and Consultations

### Approach

The ecological desk study undertaken is based upon guidelines set out by the Institute of Environmental Assessment (IEA, 1995) and the Institute of Environmental and Ecological Management (IEEM, 2006). This involved the collection of data on protected, Biodiversity Action Plan (BAP), other conservation notable species, and information on statutory and non-statutory sites of nature conservation value (see Box A.1).

### Box A.1 Designated Wildlife Sites and Protected and Otherwise Notable Species

#### Statutory Nature Conservation Sites

Natural England notifies sites that are of international or national importance for their nature conservation, geological or geomorphological value as Sites of Special Scientific Interest (SSSIs), although some sites that are of national importance for certain species have not been specifically designated. Internationally important sites may also be designated as Special Areas of Conservation (SACs), Special Protection Areas (SPAs) or Ramsar sites.

#### Non-statutory Nature Conservation Sites

These sites are designated alongside the statutorily protected areas, as they constitute the most important sites for wildlife in each county. Non-statutory designated nature conservation sites include County Wildlife Sites (which in Leicestershire are known as Sites of Importance for Nature Conservation - SINCs) and in some counties, lower tier (locally important) sites, which in Leicestershire and Melton Borough are termed Wildlife Sites. Within Leicestershire and Melton Borough, SINCs and Wildlife Sites are identified and notified by Leicestershire County Council.

#### Legally Protected Species

Many species of animal and plant receive some degree of legal protection. For the purposes of this study, legal protection primarily refers (but may not be limited) to:

- species included on Schedules 1, 5 and 8 of the *Wildlife and Countryside Act 1981* (as amended), excluding species that are only protected in relation to their sale (see Section 9[5] and 13[2]);
- species included on Schedules 2 and 4 of *The Conservation (Natural Habitats, &c.) Regulations 1994* (as amended); and
- badgers, which are protected under the *Protection of Badgers Act 1992*.

For further information on legally protected species, please refer to Appendix C.

#### Other Notable Species Categories

- Biodiversity Action Plan (BAP) species: those targeted in local or national BAPs as being of particular conservation concern.
- Red List plant species: those listed as Critically Endangered, Endangered, Vulnerable or Near Threatened in Cheffings & Farrell (2005)
- Red and Amber List birds: those listed as being of high or medium conservation concern in Gregory *et al.* (2002). Red list species are "those that are Globally Threatened according to IUCN criteria; those whose population or range has declined rapidly in recent years; and those that have declined historically and not shown a substantial recent recovery". Amber list species are "those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recovery; rare breeders; and those with internationally important or localised populations".

During the desk study, the geographical context of the expansion areas was also examined using the relevant Ordnance Survey 1:10 000 and 1:25 000 scale maps and freely available web-based aerial photographs. These were used to identify the presence of ponds which may be suitable for breeding great crested newt, potential migration or dispersal corridors for protected, UK or Local BAP or conservation notable species, and any potential receptors of site-derived pollutants in the wider landscape.

## **A2 Field Surveys**

### **Extended Phase 1 Habitat Survey**

An Extended Phase 1 Habitat Survey of the Search Areas was undertaken by Entec Ecologist Nick Masters between 14<sup>th</sup> and 18<sup>th</sup> April 2008 inclusive, and between 1<sup>st</sup> and 3<sup>rd</sup> July 2008 inclusive. The survey included all land within the Search Areas where access was possible. The survey technique was based on standard Phase 1 Habitat Survey methodology (JNCC, 2007), involving mapping distinct habitats on and adjacent to the site at an appropriate scale using standard colour codes and/or acronyms and according to standard habitat definitions. Any features of potential nature conservation interest were also subject to a more detailed description in a Target Note. Hedges which were encountered and which were considered potentially ecologically important within the context of *The Hedgerows Regulations 1997*, were assessed based on the guidance provided in the *Hedgerow Survey Handbook* (Bickmore, 2002).

As the standard Phase 1 Habitat survey methodology is largely concerned with botanical communities only, the survey was 'extended' (IEA, 1995) to identify the presence/ potential presence of other nature conservation features such as legally protected species and is consequently referred to as an 'Extended' Phase 1 Habitat Survey. Where potentially suitable habitats were present and where such habitats were readily accessible during the course of the survey the methodologies briefly used to establish the presence or potential presence of species and species groups are summarised in Table A1. The survey cannot conclusively determine the absence of such species/species groups but can be used to identify suitable habitat, likely presence and/or direct future survey requirements

**Table A.1 Additional Methods Used During the Extended Phase 1 Habitat Survey to Identify Species/Species Groups**

Species/Species Group	Method
Bats (all species)	<p>During the Extended Phase 1 Habitat Survey trees and buildings that were readily accessible were briefly assessed for their potential to support roosting or hibernating bats. This assessment primarily focused on visually inspecting the exterior of structures such as trees and buildings for features deemed to be suitable as bat roosts, such as older trees with cavities, splits, cracks, holes or loose bark, trees or buildings with a dense covering of ivy (<i>Hedera helix</i>), buildings with significant cracks in brick work or gaps in soffit or fascia boards potentially allowing access to a place of refuge. Trees and buildings were inspected using binoculars and any the exterior of any accessible crevices were examined for evidence of bat activity (e.g. scratch marks, droppings and staining).</p> <p>Potential bat foraging habitat was also noted.</p>
Badger ( <i>Meles meles</i> )	<p>Evidence of badger activity including setts, badger paths, foraging marks, dung pits and hair, were recorded during the survey.</p> <p>Potential habitat suitable for badger and which may contain badger setts was also noted.</p>
Breeding birds	<p>The habitats within the Search Areas were assessed for their suitability for nesting birds, particularly conservation notable species or birds listed on Schedule 1 of the <i>Wildlife &amp; Countryside Act 1981</i> (as amended). Schedule 1 birds are generally uncommon or behaviourally vulnerable species that receive additional protection over that afforded to all nesting birds (see Appendix B).</p>
Great crested newt	<p>Where readily accessible waterbodies encountered were briefly assessed for their potential to support great crested newt during the breeding phase of their life cycle. A pond may have reduced potential to support a breeding population of great crested newts if a) it supports a very large fish or wildfowl population; b) it does not hold sufficient water to support a breeding population of the species; c) it appears to be of very poor quality.</p> <p>These principles are usually applied cautiously with professional judgement on the understanding that they do not necessarily preclude great crested newts being present in a water body.</p> <p>In addition, the likelihood of great crested newts (if they occur in ponds) dispersing, accessing or utilising the on-site terrestrial habitat is usually also assessed; the significance of ponds to the development proposals might be reduced where a) there are no suitable habitats, or habitat corridors (such as hedgerows or ditches), linking the potential breeding pond to the potential development site(s), such that the site is/sites are effectively isolated by sub-optimal great crested newt habitat; b) there are major boundaries to dispersal between the breeding habitat/ water bodies and the potential development site(s), such as roads with long stretches of kerb, urban or extensively developed areas or major railway lines (main line routes with no culverts); c) habitat linkages between the pond(s) and the potential development site(s) are poor (e.g. long gaps in hedgerows) and the pond occurs more than 250 m from the potential development site(s)<sup>15</sup>; d) the pond is more than 250 m from potential development site(s) and there are areas of suitable terrestrial habitat nearer the pond that are likely to be used preferentially over habitats on or near the potential development site(s).</p> <p>The proposed development areas were also screened against the quality of on-site habitat to be temporarily or permanently taken and the proximity, quality and accessibility of ponds and surrounding terrestrial habitats within 500 m.</p>

<sup>15</sup> 250 m is towards the upper limit of the distance most great crested newts typically disperse (Langton *et al.*, 2001).

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**Table A.1 (continued) Additional Methods Used During the Extended Phase 1 Habitat Survey to Identify Species/Species Groups**


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Species/Species Group	Method
Reptiles	<p>The application area's potential to support reptiles was assessed. Direct observation surveys for basking reptiles were undertaken during the Extended Phase 1 Habitat Survey in accordance with current guidelines (Froglife, 1999), with particular emphasis on the inspection of embankments, slopes, potential natural and artificial refugia, interface or edge habitats, and shade-free areas near dense vegetation where readily accessible. Possible refugia such as boards or logs were also examined when encountered</p> <p>Potentially suitable reptile habitat was also noted.</p>
Water vole ( <i>Arvicola terrestris</i> ) and otter ( <i>Lutra lutra</i> )	<p>Where readily accessible during the course of the survey, watercourses and waterbodies within expansion areas A to K were briefly inspected for evidence of water vole activity, signs such as latrines (droppings), prints, runs/ pathways in vegetation, 'lawns' (areas of cropped herbaceous and grassy vegetation) and other feeding remains, and for evidence of otter activity; signs such as prints and otter spraints.</p> <p>Where readily encountered, discrete features suitable for water vole and otter (burrows and holts/dens/couches respectively) and/or more extensive habitats potentially suitable for both species were noted.</p>
Non-native plants	<p>Where encountered, non-native invasive plant species such as Japanese knotweed (<i>Fallopia japonica</i>), giant hogweed (<i>Heracleum mantegazzianum</i>) and Indian (or Himalayan) balsam (<i>Impatiens glandulifera</i>) were recorded.</p>
Other notable species/species groups	<p>The expansion areas A to K were also assessed for the potential to support UK BAP priority species such as hedgehog (<i>Erinaceus europaeus</i>) and common toad (<i>Bufo bufo</i>)</p>

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**Further Botanical Survey**

It was identified during the Extended Phase 1 Habitat Survey that areas of semi-improved grassland within Search Areas C and H required a more detailed botanical survey so that the nature conservation value of the vegetation communities present could be described with more certainty.

Further botanical surveys (National Vegetation Classification (NVC) surveys, after Rodwell, 1991) were undertaken to areas of semi-improved grassland within Search Area H on 11<sup>th</sup> and 12<sup>th</sup> August 2008. Search Area C was not surveyed due to access restrictions but instead detailed notes were taken from the periphery.

The NVC survey comprised placing 5 quadrats within representative, homogeneous stands of vegetation within the semi-improved grassland habitats. A complete plant species list within the target areas was taken and each species assigned a quantitative abundance value using the DOMIN scale. The data was then ordered in a constancy table and analysed using the software program TABLEFIT (Hill, 1998) to identify correspondence with NVC communities.

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# **Appendix B**

## **Details of Consultations Responses Received during The Melton Study**

3 Pages

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### **Natural England**

See enclosed letter from Benita Key, Planning and Biodiversity Advisor, East Midlands Team, based at the Lincolnshire office. A guidance document by Defra (2007) was also received.

### **Environment Agency**

Macrophyte (aquatic plant) data and associated Mean Trophic Rank (MTR) scores for the River Eye from 2006 and 2007, and fish records for 2007 for Brooksby, Crows Weir Sailing Club, Egerton Park, Sysonby and Syston Mills were provided by Ms Ruth Elliot, External Relations Assistant, Environment Agency, East Midlands team. No other comments on the study's scope were received.

### **Leicestershire and Rutland Wildlife Trust**

Mr Neill Talbot (Senior Conservation Officer) confirmed that the Trust held no additional records to LERC and made no other comments on the study's scope.

### **Leicestershire Environmental Resources Centre (LERC)**

Data relating to non-statutory designated sites within the Melton Mowbray Search Areas and the wider Borough were received, and species data for the Melton Mowbray Search Areas was received by Ms Elaine Connor, LERC. No other comments on the study's scope were received.

### **British Geological Society**

Telephone discussions were held with Mr Keith Ambrose of the BGS on the project. The view from Mr Ambrose seemed to be that the main areas of geological interest (e.g. mining exposures that could be potential RIGS) were located away from the Melton Mowbray Search Areas. A map of the Search Areas was sent but no further details have been received. No other comments on the study's scope were received.

### **Leicestershire County Council**

Mr Graham Walley (Team Leader, Historic and Natural Environment) supplied a GIS dataset of RIGS. Entec confirmed that LCC held more detailed paper records in storage. It is believed that the GIS dataset was under review, with a new GeoCons database imminently available. No other comments on the study's scope were received.

### **Leicester Environmental Records Centre**

In terms of geodiversity, Entec was referred to Mr Walley at LCC. No other comments on the study's scope were received.

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# **Appendix C**

## **Evaluation Methodology for Nature Conservation Value within the Search Areas**

10 Pages

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## C1 Introduction to the Identification of Valued Ecological Receptors/ Resources

It is impractical and inappropriate for an assessment of the ecological effects of a development to consider every species and habitat that may be affected. Instead, the assessment focuses on species populations and habitats that meet one of two criteria (notwithstanding legally protected species, which are discussed separately below):

1. Species populations, habitats or designated nature conservation sites that are of sufficiently high value in terms of 'biodiversity conservation' (which relates to the need to conserve representative areas of different habitats and the genetic diversity of species populations) that an effect upon them could be significant – in these cases, the species population/habitat/site is treated as a receptor in its own right.
2. Species populations, habitats or sites that provide social benefits (e.g. relating to the enjoyment of flora and fauna by the public) or economic benefits (e.g. relating to angling or other activities that make use of ecological resources) that are of sufficiently high value that the effect of an ecological change could significantly affect the social or economic benefits – in these cases, the people affected are the receptor(s).

These criteria and their application are explored below.

## C2 Biodiversity Conservation Value

For habitats and species, the identification of valued ecological receptors has been undertaken using the process set out in Box C.1. This involves using a structured process to determine which species/habitats need to be subject to valuation and then making decisions about the value of species populations/habitats using professional judgement, informed by data derived from various sources.

<b>Box C.1</b>	<b>Valuation of Habitats and Species</b>
<p>The scope of the valuation covered in this report has been defined using the findings of the desk study and Extended Phase 1 Habitat Survey (sections 2 &amp; 3 above), and with reference to the following categories:</p>	
<ol style="list-style-type: none"> <li>1. Sites designated as SACs, SPAs, Ramsar sites, SSSIs or County Wildlife Sites (or equivalent non-statutory designation).</li> <li>2. Annexes I, II or IV of the Council Directive of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (92/43/EEC) (the Habitats Directive) – applies to species only.</li> <li>3. Schedules to the <i>Wildlife and Countryside Act 1981</i> as amended – applies to species only.</li> <li>4. The <i>Protection of Badgers Act 1992</i>.</li> <li>5. Priority species and habitats under the UK Biodiversity Action Plan (BAP).</li> <li>6. Priority species and habitats under the relevant county BAP.</li> <li>7. Red and amber lists of birds of conservation concern (Gregory <i>et al.</i> 2002).</li> <li>8. For species other than birds – UK Red Data Book species and Nationally/Regionally Notable species (e.g. Cheffings and Farrell, 2005).</li> <li>9. Important hedgerows as defined using the habitat criteria in <i>The Hedgerows Regulations 1997</i>.</li> </ol>	

10. Other reasons (e.g. all ancient semi-natural woodlands, good quality examples of other semi-natural habitats and other notable species populations).

If evidence from the desk study/Extended Phase 1Habitat Survey indicates the presence/potential presence of any species/habitats that fall within the categories listed above, further survey work relating to these particular species/habitats may be implemented, unless it has been possible to undertake the valuation on the basis of the desk study/Extended Phase 1Habitat Survey.

Valuations have been undertaken only for sites/habitats/species that fall within at least one of these categories and that could be affected by the proposed development. Species/habitats falling within these categories are not automatically considered to be valued ecological receptors (e.g. some UK BAP priority species are still common and small populations of these species will often not be considered to be valued ecological receptors). To be considered as a valued ecological receptor implies that the receptor has sufficient value such that a negative impact may be considered as *significant*. It is assumed that an effect could only be considered as significant if the species/ habitat can be classified within at least 1 of the above 10 categories and if the population size/ aerial extent is sufficiently large relative to its more general geographic distribution.

The use of the 10 categories enables often lengthy lists of sites/habitats/species to be filtered to derive a short-list of sites/habitats/species that can be the focus of more detailed valuation work. For sites, this valuation is often quite straightforward given that there are accepted levels of value for most site designations. For species/habitats, the valuation has to be carried out using information about the characteristics of the species populations/habitats and their distributions. This has been obtained from published sources (e.g. atlases of species distribution), local records centres and other local sources. The information that has been obtained has then been interpreted using professional judgement in order to define the value of the species population/habitat in that location. Those populations/habitats at or above the relevant threshold that could be affected by the proposed development (i.e. valued ecological receptors) are then subject to assessment work.

In terms of biodiversity conservation value, species' populations, habitats and sites have been valued using the following scale:

- International;
- UK;
- National (i.e. England);
- Regional (i.e. East Midlands);
- County (i.e. Leicestershire);
- District (i.e. Melton Borough)
- Local (i.e. Melton Mowbray);
- Less than local.

As indicated in Box C.1 the valuation of sites makes use of established value systems (e.g. SSSIs are of at least national importance). Typically sites are only identified at the international, national and county levels, although in some counties, sites of lower value (e.g. local importance) are also identified. For each designated site, the habitats or species that qualify the site for designation have been identified.

The approach taken in this report is that valued ecological receptors are defined as:

- Species populations that are considered to be of county or greater importance in biodiversity conservation terms – therefore if a species population is considered to be of district value or less, there can be no significant effect on biodiversity<sup>16</sup>;
- Habitats and sites that are of district or greater importance – no significant biodiversity effect can therefore occur to habitats of lower value.

These thresholds have been defined using professional judgement to determine how valuable a receptor should be for an effect upon it to be material to the determination of a consent relating to any part of the proposed development. The selection of a lower threshold for habitats primarily reflects the fact that habitats are important for the communities of plants and the assemblages of animal species that they support. A district threshold therefore captures a very wide range of species as well as the land cover upon which they depend. However, this does not capture all important species populations, given the fact that some such populations occur on sites/habitats that are of below county value. In this context, it is considered that the county threshold will bring into the assessment those species effects that could be material to the determination of a consent relating to the proposed development.

## C3 Legal Protection of Species

Notwithstanding what has been said above, there is also a need to identify all legally protected species (see Box A.1, Appendix A) that could be affected by the proposed development in order that measures can be taken to ensure that contravention of the relevant legislation is avoided. Such measures must be acceptable to Natural England. By implication, therefore, it is inappropriate to assess the significance of effects within the context of species' legal protection – effects on such species have to avoid contravention of the law (i.e. to be 'non-significant'), otherwise the development cannot be taken forward.

In certain situations, however, adherence to measures that are designed to ensure that the law is not contravened may not prevent a significant effect relating to a species' biodiversity conservation, social or economic value (i.e. in the context of the species being a 'valued ecological receptor' – see above). For example, it may be possible to avoid contravening the law regarding a legally protected species by translocating the population from the development site. However, if the species is sufficiently rare in the locality and is considered to be a valued ecological receptor, it may be concluded that the loss of the population from the site could be a significant effect in biodiversity conservation terms. Such an effect would therefore need to be subject to detailed assessment and significance evaluation.

Detailed protected species legislation pertinent to species/species groups that are considered within the study are provided below.

### Bats

All British bat species are listed in Schedule 2 of the *Conservation (Habitats & c.) Regulations 1994* (as amended) also known as the Habitats Regulations and Regulation 39 makes it an offence, *inter alia*, to:

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<sup>16</sup> Species/habitats of lower biodiversity conservation value may, however, be of social or economic value and changes affecting them may therefore result in significant effects.

- Deliberately capture, injure or kill a bat;
- Damage or destroy a breeding site or resting place of any bat; or
- Deliberately disturb a bat (this applies anywhere, not just at its roost) in such a way as to be likely significantly to affect:
  - the ability of any significant group of bat species to survive, breed, or rear or nurture their young; or
  - the local distribution or abundance of that bat species.

All British bat species are listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and are afforded full protection under Section 9 of this Act. The Act makes it an offence, *inter alia*, to:

- Intentionally or recklessly damage, destroy or obstruct access to any place that a bat uses for shelter or protection (this is taken to mean all bat roosts whether bats are present or not); or
- Intentionally or recklessly disturb a bat while it is occupying a structure or place that it uses for shelter or protection.

In addition, five British bat species are also listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat (*Rhinolophus ferrumequinum*);
- Lesser horseshoe bat (*Rhinolophus hipposideros*);
- Bechstein's bat (*Myotis bechsteini*);
- Barbastelle (*Barbastella barbastellus*);
- Greater mouse-eared bat (*Myotis myotis*).

### **Otter**

These animals are listed in Schedule 2 of the Habitats Regulations, which makes it an offence to:

- Deliberately capture, injure or kill any such animal;
- Damage or destroy a breeding site or resting place of any such animal;
- Deliberately disturb any such animal in such a way as to be likely to significantly affect:
  - the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young;
  - the local distribution or abundance of that species.

The legislation applies to all life stages of these species.

Otter is also listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded full protection under Section 9 of this Act. The Act makes it an offence, *inter alia*, to:

- Intentionally or recklessly damage, destroy or obstruct the access to any place that an otter uses for shelter or protection;
- Intentionally or recklessly disturb an otter while it is occupying a structure or place that it uses for shelter or protection.

### **Water Vole**

Water vole is listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is now afforded full protection under Section 9 of this Act. The Act makes it an offence, *inter alia*, to:

- Intentionally or recklessly damage, destroy or obstruct the access to any place that a water vole uses for shelter or protection;
- Intentionally or recklessly disturb a water vole while it is occupying a structure or place that it uses for shelter or protection;
- Intentionally kill, injure or take a water vole.

### **Badger**

Badgers and their setts are protected under the *Protection of Badgers Act 1992*. This makes it an offence to:

- Wilfully kill, injure, take or attempt to kill a badger;
- Interfere with a badger sett by damaging a sett or any part thereof;
- Destroy a sett;
- Obstruct access to a set or disturbing a badger while occupying a sett.

The 1992 Act defines a badger sett as “*any structure or place which displays signs indicating current use by a badger*”.

Work that disturbs badgers whilst occupying a sett is illegal without a licence. Badgers could be disturbed by work near a sett even if there is no direct interference or damage to the sett.

### **Breeding Birds**

With certain exceptions<sup>17</sup>, all wild birds, their nests and eggs are protected by the *Wildlife and Countryside Act 1981* (as amended). Therefore, it is an offence, *inter alia*, to:

- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- Take or destroy the egg of any wild bird.

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<sup>17</sup> Some species, such as game birds, are exempt in certain circumstances.

Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- Disturb any bird while it is nest building, or is at a nest containing eggs or young;
- Disturb the dependent young of any such bird.

### **Great Crested Newt**

These animals are listed in Schedule 2 of the Habitats Regulations, which makes it an offence to:

- Deliberately capture, injure or kill any such animal;
- Damage or destroy a breeding site or resting place of any such animal;
- Deliberately take or destroy the eggs of any such animal
- Deliberately disturb any such animal in such a way as to be likely to significantly affect:
  - the ability of any significant group of animals of that species to survive, breed, or rear or nurture their young; or
  - the local distribution or abundance of that species.

This relates to both the aquatic and terrestrial habitat that it may occupy. The legislation applies to all life stages of these species.

The great crested newt is also listed on Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and is afforded full protection under Section 9 of this Act. The Act makes it an offence, *inter alia*, to:

- Intentionally or recklessly damage, destroy or obstruct the access to any place that a great crested newt uses for shelter or protection;
- Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place that it uses for shelter or protection.

### **Reptiles**

The four widespread<sup>18</sup> species of reptile that are native to Britain, namely common lizard, slow worm, adder and grass snake, receive protection under Schedule 5 the *Wildlife and Countryside Act 1981* (as amended) such that it is an offence to:

- Intentionally kill or injure any of these species.

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<sup>18</sup> The two other native species of British reptile (sand lizard and smooth snake) are much less widespread. They receive a higher level of protection under the *Wildlife and Countryside Act 1981* (as amended) and *The Conservation (Natural Habitats &c.) Regulations 1994* (as amended).

### **White-clawed crayfish**

White-clawed crayfish receives protection under Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) such that it is an offence to:

- Intentionally take the species from the wild.

### **European Protected Species**

On 21 August 2007 an amendment to *The Conservation (Natural Habitats &c.) Regulations 1994* came into force. *The Conservation (Natural Habitats &c.) (Amendment) Regulations 2007* have a variety of consequences for the protection of European Protected Species.

The threshold above which a person will commit the offence of deliberately disturbing a wild animal of a European protected species has been raised. Now, a person will commit an offence only if he deliberately disturbs such animals in a way as to be likely significantly to affect (a) the ability of any significant groups of animals of that species to survive, breed, or rear or nurture their young, or (b) the local distribution of abundance of that species. Further advice on the implications of the amendments to the habitat regulations can be found on Natural England's website: [www.naturalengland.org.uk/conservation/wildlife-management-licensing/habsregs.htm#disturbance](http://www.naturalengland.org.uk/conservation/wildlife-management-licensing/habsregs.htm#disturbance).

The recent amendments to the Habitat Regulations have also removed many of the defences allowable in the original document. This includes the commonly relied upon 'incidental result defence', which previously covered acts that were the incidental result of an otherwise lawful activity and which could not reasonably have been avoided.

## **C4 Ranking Methodology**

The above principles described in Sections C1 to C3 were used to derive a ranking system for the Search Areas according to the biodiversity resources present, as described below. The score for each of the nine subcategories were summed to give an overall total.

### **C4.1 Scoring System**

#### **1. Natural watercourses AND Artificial watercourses**

1 = Single feature, no notable potential for protected species; less than 0.5 x length of Search Area.

2 = Single feature; no notable potential for protected species; in excess of 0.5 x length of Search Area OR Multiple features; no notable potential for protected species.

3 = Single feature; some potential for protected species; less than 0.5 x length of Search Area.

4 = Single feature with high potential for protected species; less than 0.5 x length of Search Area OR single feature with some potential for protected species in excess of 0.5 x length of Search Area OR multiple features with some potential for protected species.

5 = Single feature with high potential for protected species; in excess of 0.5 x length of Search Area OR multiple features with high potential for protected species.

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## **2. Hedgerows**

1 = Hedgerow(s) present but heavily managed with little suitability for nesting birds and other protected species.

2 = At least one hedgerow (total length  $< 0.5 \times$  length of Search Area) present which is suitable for common bird nests only.

3 = One hedgerow present (total length  $> 0.5 \times$  length of Search Area) which is suitable for common bird nests only OR multiple hedgerows with potential for common nesting birds only with a total length  $< 0.5 \times$  length of Search Area.

4 = One or more hedgerows (total length  $< 0.5 \times$  length of Search Area) which is varied, naturalised / bushy and is considered likely to be of value to protected species (e.g. bats, herps) as well as nesting birds.

5 = One or more hedgerows (total length  $> 0.5 \times$  length of Search Area) which is varied, naturalised / bushy and is considered likely to be of value to protected species (e.g. bats, herps) as well as nesting birds.

## **3. Ponds (all categories)**

1 = Single pond surrounded by 'poor terrestrial habitat'.

2 = Single pond surrounded by good habitats OR 2-3 ponds mostly surrounded by poor habitat.

3 = 2-3 ponds generally surrounded by good habitats OR  $> 3$  ponds surrounded by mostly poor habitat.

4 = 2-3 ponds surrounded by good habitats and with good connectivity (unlikely to include ponds with low GCN pot.) OR  $> 3$  ponds surrounded by mostly good habitat.

5 =  $> 3$  ponds mostly surrounded by good habitats and with connectivity to other good habitats and to other ponds.

## **4. Habitats (i.e. all grassland, arable, scrub, all woodland etc., NOT buildings)**

1 = Single, small, isolated area of habitat.

2 = Single, small area of habitat which is connected to ecologically good habitats on or off-site.

3 = Multiple, distinct areas of generally isolated habitat OR single medium sized area of habitat.

4 = Single, large area of habitat, little or no connectivity to ecologically good habitats OR multiple small or medium sized areas of habitat with some connectivity to ecologically good habitats.

5 = Multiple medium or large sized areas of habitat OR single large area of habitat with good connectivity to ecologically good areas on or off site.

## **5. Buildings with Moderate to High Bat Potential**

1 = Single building which is not within 10m of hedgerows, woodland or other sheltered commuting / foraging features.

2 = Multiple buildings which are not within 10m of hedgerows, woodland or other sheltered commuting / foraging features.

3 = At least one building with mod-high bat potential is present within 10m of a hedgerow or commuting feature.

4 = At least one building with mod-high bat potential is present within 10m of a hedgerow or commuting feature which connects directly to valuable habitat such as parkland, scrub / grassland, SI grassland, river corridor or woodland.

5 = Multiple buildings with mod-high bat potential are present within 10m of a hedgerow or commuting feature which connects directly to valuable habitat such as parkland, scrub / grassland, SI grassland, river corridor or woodland.

## **6. Protected Species Records**

1 = Single record of a protected species within the Search Area.

2 = 2-4 different protected species within the Search Area which are generally clustered near a single point OR a single protected species which has been recorded in separate, multiple locations.

3 = 2-4 different protected species scattered throughout the Search Area.

4 = >4 generally clustered records of different protected species.

5 = >4 different protected species records scattered over the site.

## **7. Protected Species Potential**

1 = Potential for a single protected species in a single, discrete area.

2 = Potential for 2-4 different protected species in a single, discrete area OR potential for a single type of protected species in multiple areas.

3 = Potential for 2-4 different protected species at multiple locations throughout the Search Area.

4 = Potential for >4 different protected species within a single, discrete area of the Search Area.

5 = Potential for >4 different protected species within multiple areas of the Search Area.

## **8. General Connectivity**

1 = The Search Area does not offer any connectivity with notable habitat either within it or on any of the sides; negligible habitat connection value.

2 = The Search Area contains a single feature linking areas of notable habitat, at least one of which is small in size (NB such habitats may be on or off site).

3 = The Search Area contains a single feature linking 2 areas of notable habitat which are both of at least medium size.

4 = The Search Area contains a single feature linking 3 or more areas of notable habitat OR the Search Area contains at least 2 features linking generally small areas of ecologically interesting habitat.

5 = The Search Area contains at least 2 features linking areas of notable habitat, of which at least 2 are medium sized or larger OR the Search Area contains a feature which is considered

highly likely to provide the most important linkage between areas which are known or considered highly likely to support protected species.

### **9. Designated Wildlife Sites**

1 = 1 x non-statutory wildlife site present which takes up less than 5% of the Search Area OR any designated site outside but within 250m of the Search Area.

2 = 1 x non-statutory wildlife site present which takes up between 5 and 20% of the Search Area OR 2 non-statutory wildlife sites present which take up a total of less than 5% of the Search Area.

3 = 1 non-statutory wildlife site present which takes up in excess of 20% of the Search Area OR multiple non-statutory wildlife sites present which take up more than 20% of the Search Area OR 1 statutory site present which takes up less than 5% of the Search Area.

4 = 1 statutory site present which takes up more than 5% of the Search Area OR an assemblage of more than one site (with at least 1 being statutorily designated) taking up more than 5% of the Search Area.

5 = multiple statutory wildlife sites OR any assemblage of wildlife sites (with at least 1 being statutorily designated) taking up more than 5% of the Search Area.

### **C4.2 Scoring System Notes**

1. Everything is scored from 0.01-5. The weightings of varying importance (e.g. the fact that semi-improved grassland is more important than arable) are taken in to account in the formula which calculates the final score.

2. The term 'length' always refers to the longest axis of a Search Area.

3. Protected species is taken to refer to Schedule 1 birds, European Protected Species (EPS), Nationally Protected Species.

4. In terms of habitat size, 'small' implies less than 10% of the Search Area size, 'medium' implies between 10 and 25% of the Search Area size, and 'large' is anything over 25% of the Search Area size.

5. 'Potential' for protected species implies good (i.e. not speculative) potential for protected species e.g. where you would recommend a survey if it was for an ES. It also refers to a protected species being dependent on an area – not just passing through. Reptiles and bats are species groups but each of these groups has been considered as single protected species. This section excludes GCN as they are covered elsewhere.

6. If a protected species is known to be present within a Search Area, then the Search Area's potential to support that particular protected species should not be taken in to account in its scoring.

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# **Appendix D Non-Statutory Designated Site Information Provided by LERC**

11 Pages

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# **Appendix E**

## **Species Records for Melton Mowbray and Environs Sourced from LERC and UKBAP**

5 Pages

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No.	Common Name	No. of Records	Location	Easting	Northing	NGR	Protected Species Present
1	Common frog, great crested newt & smooth newt	Multiple	Hoby Farm Barn	467900	318800	SK679188	Yes
2	Otter	Single	Hoby Frisby River Wreake	468300	317400	SK683174	Yes
3	Common frog, great crested newt & smooth newt	Multiple	Nether Broughton	469600	325700	SK696257	Yes
4	Otter	Single	Kirkby Bellars River Wreake	471800	318000	SK718180	Yes
5	Reed bunting	Single		472200	318100	SK722181	No
6	Bullfinch & sand martin	Multiple		472200	319100	SK722191	No
7	Linnet & song thrush	Multiple		472400	319600	SK724196	No
8	Badger	Single		472500	319200	SK725192	Yes
9	Song thrush	Single		473200	319000	SK732190	No
10	Linnet	Single		473500	318600	SK735186	No
11	Linnet & bullfinch	Multiple		473700	318300	SK737183	No
12	Turtle dove	Single		473700	318400	SK737184	No
13	Sand martin	Single		473700	319200	SK737192	No
14	Bullfinch	Single		473800	318500	SK738185	No
15	Song thrush	Single		473800	319300	SK738193	No
16	Reed bunting & bullfinch	Multiple		473900	318500	SK739185	No
17	Freshwater crayfish, bullfinch & song	Multiple	River Eye; Upstream	473900	318600	SK739186	Yes

No.	Common Name	No. of Records	Location	Easting	Northing	NGR	Protected Species Present
	thrush		Melton Mowbray				
18	Linnet & reed bunting	Multiple		473900	318800	SK739188	No
19	Reed bunting, bullfinch & song thrush	Multiple		473900	318900	SK739189	No
20	Grey partridge	Single		474000	320200	SK740202	No
21	Skylark	Single		474100	319300	SK741193	No
22	Bullfinch	Single		474200	320500	SK742205	No
23	Reed bunting	Single		474200	320800	SK742208	No
24	Linnet, reed bunting & song thrush	Multiple		474300	320500	SK743205	No
25	Bullfinch	Single		474500	319200	SK745192	No
26	Skylark	Single		474600	319100	SK746191	No
27	Skylark	Single		474700	319000	SK747190	No
28	Bullfinch & song thrush	Multiple		474700	319100	SK747191	No
29	Linnet & reed bunting	Multiple		474800	319000	SK748190	No
30	Song thrush	Single		474800	319700	SK748197	No
31	Bullfinch	Single		474900	319100	SK749191	No
32	Skylark	Single		475000	320700	SK750807	No
33	Reed bunting	Single		475100	318100	SK751181	No
34	Bat (unidentified), badger & freshwater crayfish	Multiple		475200	318600	SK752186	Yes

No.	Common Name	No. of Records	Location	Easting	Northing	NGR	Protected Species Present
35	Freshwater crayfish	Single		475200	319000	SK752190	Yes
36	Freshwater crayfish & badger	Multiple		475300	319100	SK753191	Yes
37	Badger	Single		475600	319700	SK756197	Yes
38	Great crested newt	Single		475700	319300	SK757193	Yes
39	Bat (family: Vespertilionidae) & freshwater crayfish	Multiple		475700	320300	SK757203	Yes
40	Badger, freshwater crayfish, Bat (family: Vespertilionidae), great crested newt, sand martin, spotted flycatcher, water vole, grizzled skipper, dingy skipper, pipistrelle bat, ruddy darter, otter, grass snake & brown long-eared bat	Multiple		475700	320400	SK757204	Yes
41	Song thrush	Single		475800	318200	SK758182	No
42	Bullfinch	Single		475800	318300	SK758183	No
43	Reed bunting	Single		475800	320500	SK758205	No
44	Otter & water vole	Multiple		475800	321200	SK758212	Yes
45	Great crested newt & smooth newt	Multiple	Scalford	475900	324100	SK759241	Yes
46	Otter	Single		476000	319000	SK760190	No
47	Water vole	Single		476000	320500	SK760205	Yes

No.	Common Name	No. of Records	Location	Easting	Northing	NGR	Protected Species Present
48	Badger & bullfinch	Multiple		476000	320800	SK760208	Yes
49	Linnet	Single		476100	318600	SK761186	No
50	Song thrush & reed bunting	Multiple		476100	320200	SK761202	No
51	Buzzard	Single		476100	321700	SK761217	No
52	Bullfinch	Single		476200	319200	SK762192	No
53	Linnet, sand martin & song thrush	Multiple		476300	316400	SK763164	No
54	Freshwater crayfish, sand martin, linnet, reed bunting, soprano pipistrelle bat & adder	Multiple	Melton Mowbray, R Eye	476300	318800	SK763188	Yes
55	Reed bunting	Single		476900	320100	SK769201	No
56	Freshwater crayfish, song thrush, bullfinch, reed bunting, buzzard, sand martin, linnet, water vole, Bat (Family: Vespertilionidae), otter, badger, grass snake & song thrush	Multiple	U/S Melton Mowbray (Sk7714019210): Wreake (Lt)	477100	319200	SK771192	Yes
57	Bullfinch & turtle dove	Multiple		477500	318000	SK775180	No
58	Common pipistrelle bat & freshwater crayfish	Multiple		477600	320300	SK776203	Yes
59	Unidentified bat	Single		477700	318300	SK777183	Yes
60	Freshwater crayfish	Single		477700	318400	SK777184	Yes

No.	Common Name	No. of Records	Location	Easting	Northing	NGR	Protected Species Present
61	Freshwater crayfish	Single		477700	320500	SK777205	Yes
62	Freshwater crayfish	Single		477800	318400	SK778184	Yes
63	Freshwater crayfish	Single		477900	318100	SK779181	Yes
64	Freshwater crayfish	Single	Brentingby, R Eye	478500	318600	SK785186	Yes
65	Water vole	Single	River Eye	479000	318400	SK790184	Yes
66	Freshwater crayfish	Single	Stapleford, R Eye	481200	318800	SK812188	Yes
67	Otter	Single	Stapleford Park River Eye	481700	317900	SK817179	Yes
68	Otter	Single	Knipton Reservoir	481900	330800	SK819308	Yes
69	Great crested newt	Multiple	Muston Meadows Nnr And Sssi	482400	336700	SK824367	Yes
70	Otter	Single	Muston River Devon	482500	338100	SK825381	Yes
71	Common frog	Single	Gibbs Lodge Meadows Sssi	489900	318800	SK899188	No