
Chapter 1: Introduction

What are Ecological Networks?

- 1.1 Ecological networks are needed to maintain environmental processes and to help to conserve biodiversity where remnants of semi-natural habitat have become fragmented and isolated.
- An ecological network is made up of:
- core areas or ‘hotspots’, where the conservation of biodiversity, including habitats, is a priority function;
 - movement routes, which allow species to travel between core areas – these may take the form of linear corridors or ‘stepping stones’;
 - Permeable areas, usually with a low intensity of management and land-use and some semi-natural features;
 - buffer zones, which are adjacent to and protect the network from damaging impacts arising from human activities.
- 1.2 Mapping and describing the primary parts of the ecological network – the hotspots and the main movement corridors - for an area is the first step towards protecting, conserving and enhancing the network.
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Connectivity

- 1.3 An important principle is the concept of ‘connectivity’ within the landscape. Different landscape elements and habitat patches create a mosaic of features that can either hinder or enhance movement of species through a landscape. Increasing connectivity to enable the movement of plants and animals between otherwise isolated habitat patches is thought to sustain populations of these species, making them less vulnerable to environmental impacts.
- 1.4 The ability of species to move through a landscape mosaic depends on various specific traits, such as dispersal, movement and colonisation abilities and dependence on specific habitat features. Barriers like major roads or large tracts of inhospitable land such as intensively managed arable farmland can prevent movement of species.
- 1.5 Species will move across different landscapes at different rates depending on the range of features present and the intensity of land use. Species also have different spatial requirements for connectivity depending on various species specific traits. Many mobile species, such as birds and bats, will have very different requirements from more sedentary specialist species with exacting habitat requirements. An effective means of meeting a range of species connectivity requirements across highly fragmented landscapes is by reducing the overall land use intensity and either improving the quality or size of remaining semi-natural habitat patches.

Planning policy

- 1.6 Planning authorities should map and conserve ecological networks: extracts from the National Planning Policy Framework, paragraph 117 (NPPF, 2012):

NPPF Paragraph 117:

To minimise impacts on biodiversity . . . planning policies should:

- **plan for biodiversity at a landscape-scale across local authority boundaries;**
- **identify and map components of the local ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat restoration or creation;**
- **promote the preservation, restoration and re-creation of priority habitats, ecological networks and the protection and recovery of priority species populations, linked to national and local targets, and identify suitable indicators for monitoring biodiversity in the plan.**

The impact of planned development on Ecological Networks

- 1.7 Without care, development can cause the loss of key habitats or severance of important links in the network of connected habitats, increasing species isolation and reducing the viability of some species to survive environmental change.
- 1.8 In the example below, the industrial development has effectively severed the wildlife corridor along the River Sence, here little more than a small stream. The river has been channelled and culverted, and the opportunity to strengthen the green corridor and link the wetland to the south to the wet grassland fields to the north has been missed.



- 1.9 Conversely, planned development can enhance the ecological network by creating habitats, strengthening or buffering existing corridors, and creating new stepping stones to join up existing habitat parcels. In the example below, the corridor of River Sence is retained and strengthened through habitat creation along its length.



- 1.10 Taking land out of intensive agricultural production and managing it in a less intensive manner as private gardens, public open space or peripheral development land can improve its overall biodiversity value, and increase its permeability. An example is the peripheral land around industrial estates or solar farm installations, which can be managed as species-rich grassland and be an important source of nectar for pollinators.

Chapter 2: Components of the Ecological Network in North-west Leicestershire

National Character Areas

- 2.1 North West Leicestershire has the most varied landscape of any of the administrative districts in Leicestershire, due to the geology and industrial history of the area. It includes parts of five National Character Areas: the Trent Valley Washlands, Melbourne Parklands, Leicestershire and South Derbyshire Coalfield, Charnwood and the Mease/Sence Lowlands. The boundaries of these are shown on [Map 1](#).
- 2.2 Natural England divide England into 159 distinct natural areas called ‘National Character Areas’. Each is defined by a unique combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries.
<https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making>

Trent Valley Washlands

- 2.3 This comprises the river flood plain corridors of the middle reaches of the River Trent’s catchment in the heart of England. It is a distinctly narrow, linear and low-lying landscape, often clearly delineated at its edges by higher ground, and it is largely comprised of the flat flood plains and gravel terraces of the rivers. The Trent Valley Washlands are strongly defined by the riverine environment and periodic inundation.
- 2.4 Pastoral farming generally takes place on the river flood plains, where soils are subject to frequent flooding or are naturally wet. Here fields are usually smaller and the hedgerows fuller with more tree cover. Overall woodland cover in the Washlands is very limited, although riparian trees, especially willows, provide an important component of the landscape.
- 2.5 The Rivers Trent and Soar and their flood plain form the main habitats of the Washlands in North West Leicestershire, with flooded former gravel extraction sites introducing new wetland habitat into the area. There are numerous gravel pits along the River Trent which are important habitats for breeding and wintering waterfowl, waders and other wetland birds. Many of these gravel pits and reservoirs have associated habitats such as marsh, swamp and reedbeds, and wet floodplain grasslands along the Soar and Trent support some species-rich grassland.

Melbourne Parklands

- 2.6 This area includes the ancient Castle Donington Parkland, notified for its veteran trees and associated flora and fauna, and Staunton Harold parkland. It also includes some of the

best semi-natural ancient woodland in North West Leicestershire, at Cloud Wood, Spring Wood and Dimminsdale, Pasture and Asplin Woods, Piper and Oakley Woods, and many other small mature plantations such as those clustered around Long Whatton.

- 2.7 It also includes the only areas of limestone grassland in North-West Leicestershire, at Breedon hill and Cloud wood Quarry.

Charnwood

- 2.8 Charnwood is unique to Leicestershire, and a significant part is within North West Leicestershire. The upper peaks of the Charnwood Natural Area, such as Bardon Hill and Charnwood Lodge, are formed from Precambrian rocks which are some of the oldest rocks in England. They contain internationally important fossils that are the earliest known life recorded in England. The hard granite rocks have been extensively quarried, and Bardon Hill Quarry is still actively being quarried. Once use ceases, the quarries have the potential to become important wildlife sites, usually regenerating naturally with woodland on the slopes and quarry benches, whilst the quarry sides may attract cliff-nesting birds such as Raven and Peregrine Falcon.
- 2.9 The thin acidic soils of Charnwood Forest support acid grassland and lowland heath on the hills, usually in association with rock outcrops on the hill summits, as at High Sharpley, and these are some of the rarest habitats within Leicestershire. The heathland is particularly important as a habitat for several rare invertebrates and the upland nature of Charnwood produces fast-flowing streams such as the Black Brook and Grace Dieu Brook.
- 2.10 Leicestershire has relatively few ancient woodlands remaining, but there is a significant cluster of this nationally important habitat within Charnwood, as at Grace Dieu, Holly Hayes Wood in Whitwick, and Burrow Wood on the edge of Charnwood Lodge. Secondary woodland, often colonising former heathland and quarries is also frequent, making this one of the most wooded parts of the county.

Leicestershire and South Derbyshire Coalfield

- 2.11 This area is characterised by dense populations centred on a number of towns and other settlements that developed largely as a result of the underlying coal fields. A belt of the Coal Measures crosses the centre of North West Leicestershire, containing most of the larger towns and urban areas of the Borough – Ashby de la Zouch, Coalville, Ellistown, Moira and Donisthorpe, Swannington and Coleorton, and the settlements in between. Despite this urban development, there is much green space, grazing land, farmland and ‘trapped countryside’ remaining between population centres, including many small parcels of species-rich grassland.
- 2.12 The coal measures are deposits of shales and sandstones of late Carboniferous age, which were deposited in equatorial swamps. Peat accumulated in these swamps and has subsequently been converted to coal, which has been exploited for centuries in North West Leicestershire; Coleorton and Swannington have some of the earliest coal pits known in Britain. All coal mines have now closed, but coal extraction continues at the recently opened Minorca Colliery opencast site. Brick claypits are often found in association with coal extraction.

- 2.13 Natural colonisation of coal spoils, claypits and overburden can lead to very species-rich habitats – mosaics of grasslands, wetland and scrub, often with large pools or ‘flashes’ caused by localised subsidence of former coal workings. Very occasionally, former colliery land may regenerate with secondary heathland. These sites often support an extremely rich invertebrate fauna, and large colonies of Great Crested Newts. This nationally scarce protected species has its stronghold on post-industrial land. It is not uncommon on the Coal Measures, and some of the largest known great crested newt populations in Leicestershire are in North West Leicestershire, on post-industrial sites; see Map 4 for the distribution of this species.
- 2.14 Since 1995, part of the area has been within National Forest, which is centred at Moira, and large areas (mostly of former industrial or mining land) have been planted with woodland, much of it native species. This is now one of the most wooded parts of the county, and of the UK, and there has been significant landscape change, benefitting woodland species such as Roe Deer and many birds.

Mease/Sence Lowlands

- 2.15 The Mease/Sence Lowlands are a gently rolling agricultural landscape centred around the rivers Mease, Sence and Anker. The area extends across Derbyshire in the north, Warwickshire in the south, Leicestershire in the east and Staffordshire in the west.
- 2.16 The NCA contains one Special Area of Conservation (the River Mease), and the Ashby Canal SSSI. Important habitats include neutral grasslands, wet meadows, parkland, wet woodlands, rivers and streams, all of which support characteristic and rare species of international importance, including the white-clawed crayfish, the spined loach and the bullhead fish.

Designated sites

- 2.17 Across Leicestershire and Rutland, important places for wildlife have been designated as Sites of Special Scientific Interest (SSSIs) or Local Wildlife Sites (LWS, cLWS and pLWS).
- 2.18 **Sites of Special Scientific Interest** are the country's very best wildlife and geological sites, and are nationally important. There are 17 in North West Leicestershire, shown on [Map 2](#). One – the River Mease – has been designated as a Special Area of Conservation (SAC) of international importance for its aquatic habitats and associated species. SSSIs have statutory protection, and are designated by Natural England.
- 2.19 **Local Wildlife Sites** are designated following the criteria and procedures set out in the '*Guidelines for the selection of Local Wildlife Sites in Leicester, Leicestershire and Rutland (revised 2011)*' published by Leicestershire County Council. The definition of LWS given in this publication is:
'Local Wildlife Sites are important reservoirs of rare, local and declining native species and are the best examples of typical Leicester, Leicestershire and Rutland habitats. LWS may also be areas of ecological interest that provide people with the opportunity to learn about, appreciate and experience habitats and species of the natural world.'
- 2.20 **Proposed and Candidate Local Wildlife Sites** are sites that have not been through the formal notification process as a LWS but for which there is evidence that the site meets the criteria necessary for designation as LWS. Candidate LWS are those which are known through survey data to meet the LWS criteria. Potential LWS are those that are likely to meet the LWS criteria, but further survey is needed to confirm.
- 2.21 Candidate LWS have the same status in planning terms as LWS. The only difference between the two is that LWS have been accepted by the landowner and formally endorsed by a panel of experts. Both designations mean that a site has met local quality criteria related to local BAP priorities, and are of county-wide value for wildlife.
- 2.22 Many of the locally important sites were identified during the recent (2006-08) Habitat Survey of NWL, which has provided an invaluable evidence base for the ecological network map. This was a comprehensive survey of the area, attempting to categorise all land parcels within the district through surveys on the ground, backed up by analysis of aerial photographs. There are inevitably some gaps in coverage caused by difficulties in accessing land, etc. New sites are still being identified, and this will continue; especially on post-industrial and former mineral land, which can naturally regenerate very quickly after activity ceases.
- 2.23 These locally designated sites are non-statutory, intended to inform landowners and decision-makers. The distribution of sites is shown on [Map 2](#). These designated sites form the basis of the core areas or 'hotspots' in NWL.

Irreplaceable habitats

- 2.24 The National Planning Policy Framework singles out irreplaceable habitats as requiring protection in the planning process:

NPPF Paragraph 118 (part):

'... Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss.'

- 2.25 In North West Leicestershire, irreplaceable habitats are

- **Ancient woodlands**
- **Mature plantation or secondary woodland**
- **Species-rich ancient hedgerows**
- **Ancient or veteran trees**
- **Species-rich neutral grassland**
- **Acid grassland and heath grassland**
- **Dry and wet heathland**
- **Bogs and *Sphagnum* pools**
- **Rock outcrops**

Many of the irreplaceable habitats have been designated as nationally or locally important sites (Ancient woodlands, SSSIs, LWS or candidate LWS) but there is always a possibility that some have been overlooked. For this reason, definitive habitat maps do not exist for any of these habitats apart from Ancient woodlands. It is likely that there are many species-rich hedgerows and veteran trees that have not yet been found and designated, but most acid grassland, heathland, bogs, *Sphagnum* pools and rock outcrops will be included within SSSIs and local Wildlife Sites. Many species-rich neutral grasslands are designated, but it is likely that there will be more sites with this habitat to be discovered .

- 2.26 **Ancient woodlands** are shown on **Map 3**. The term includes both ancient semi-natural woodlands and replanted ancient woodland. The latter have been clear-felled and replanted in the past, but still retain the characteristic rich ground flora and invertebrate fauna associated with ancient woodland. The woodlands have been identified by research undertaken by Natural England, and it is extremely unlikely that any have been overlooked.
- 2.27 **Mature plantation or secondary woodland** is only replaceable in the long-term (40 years or more) and given the scarcity of truly ancient woodland in Leicestershire, its value is extremely high. In many Parishes in North West Leicestershire it is the only mature woodland habitat present, and its loss would break the continuity of woodland habitats across the Borough. Therefore, it should also be deemed an irreplaceable habitat.
- 2.28 **Species-rich ancient hedgerows** have affinities to ancient woodlands, often supporting similar species, and are irreplaceable. When present, it is usually along old boundaries, such as Parish or Park boundaries, or along roads, tracks and public rights of way. They are

defined either by our Local Wildlife Site criteria or by being assessed as ‘important’ hedges under the Hedgerow Regulations ecology criteria.

- 2.29 **Ancient or veteran trees** are defined by the Local Wildlife Site criteria. Many have been designated as LWS or candidate/potential LWS, and are shown on the Alert layers for the Borough; however, it is extremely likely that many have not yet been identified. This habitat is susceptible to slow and un-noticed loss of individuals, but it is known that veteran trees are exceptionally rich in invertebrate life, as well as supporting fungi, lichens and many species of birds and mammals such as bats. Concentrations of veteran trees are especially important in this respect.
- 2.30 Old **species-rich neutral grassland** is often identified by the presence of ‘ridge and furrow’, which indicates a lack of recent disturbance through ploughing, draining etc. Unimproved grassland is very rare in Leicestershire, and species-rich grassland is usually ‘semi-improved’ in the sense that it is, or has been, subject to minor agricultural improvements.
- 2.31 **Acid grassland, heath grassland, dry and wet heathland, bogs, Sphagnum pools and associated rock outcrops** are extremely important habitats, rare in Leicestershire, and supporting the relic populations of species that were once much commoner in our county. They are completely irreplaceable.
- 2.32 Most other habitats present within North West Leicestershire are replaceable, in the sense that they can naturally regenerate or be created under certain conditions. These habitats include recent secondary woodland and scrub, recent plantation, hedges that post-date the Enclosures Acts, semi-improved grassland of low species richness, many ponds and wetlands, brooks and streams, and post-industrial habitats. For these habitats to regenerate or be created, the right conditions of soil pH, structure, substrate, drainage, soil fertility, aspect and hydrology must be created first.

Biodiversity ‘hotspots’

- 2.33 An overview of designated sites and irreplaceable habitats in NWL reveals natural clusters and groups of designated sites in areas of high biodiversity value and low intensity management. These clusters form the ‘hotspots’ and ‘stepping stones’, which are the main areas for priority nature conservation. 13 of these have been identified, with the boundaries determined by drawing a line to enclose the clusters of designated sites, etc. They are shown on [Map 5](#) and listed in [Table 1](#). In [Appendix A](#), an account is given of each hotspot, with threats and opportunities, and a more detailed map.

Wildlife corridors

- 2.34 Many of the hotspots and designated sites are already linked by wildlife corridors, underlining the importance of these corridors for conservation. Watercourses, canals, railways (active and disused) are the backbone of the ecological network. To these can be added a few main roads, including the motorways – although main roads are paradoxically also barriers to species movement across them, they can act as dispersal corridors along their length if they are associated with wide verges, cuttings and embankments. The main corridors are listed in [Table 2](#) and shown on [Map 5](#).
- 2.35 Corridors can be of national, regional/county and local importance. National and Regional/County/District corridors are listed in the table, but in addition to this are many local corridors. These are hedges, roadside verges, disused railways, small watercourses and other associations of habitats, which are extremely important at a local level.
- 2.36 Local corridors will be a consideration in almost all major development proposals, and many smaller ones, and how they are treated will have a major impact on the overall viability and conditions of the ecological network. Generic policies for the enhancement and protection of these small but vital links are covered in [Chapter 3](#) below.

Crossing administrative boundaries

- 2.37 The ecological network does not stop at a planning authority’s boundaries, and the network map takes account of the ecological resource over the boundary with a neighbouring authority.
- 2.38 Most wildlife corridors cross administrative boundaries, and some (such as the Rivers Soar and Trent) form part of the boundary of NWL. Their value and importance may not be all that clear when viewed in isolation, and those at the boundaries of the administrative area may be undervalued and forgotten.

- 2.39 The significance of the R Mease SAC is hard to understand when the NWL section is viewed in isolation. Over the border into Staffordshire it is a much more significant landscape and biodiversity feature. However, much of its headwaters come from NWL, so it is extremely important for its conservation to ensure that these are protected.
- 2.40 A further example is the Ashby Canal, which just extends into Leicestershire for a short distance at Snarestone. However, over the boundary into Hinckley & Bosworth, it is extremely important wildlife corridor of national value, as part of it is designated as a Site of Special Scientific Interest. Decisions near the short section of the Ashby Canal in NWL need to take this into account.

Table 1: Hotspots with main sites and habitats

1	River Trent and River Soar and tributaries	River Trent, River Soar, Lockington Marshes SSSI, Ulley Gully, Lockington gravel pits	Large rivers and wetlands: flooded gravel pits, riparian habitats, marsh and wet grassland, wet woodland, small streams, waterfowl and wetland birds, otter
2	Castle Donington Park	Donington Park, River Trent	Parkland and veteran trees, ancient woodland, large river
3	Breedon Hill	Breedon Hill Quarry	Calcareous grassland
4	Piper and Oakley Woods	Piper Wood SSSI, Oakley Wood SSSI	Ancient semi-natural woodland
5	Cloud, Pasture and Asplin Woods	Cloud Wood, Pasture Wood, Asplin Wood, Breedon Cloud Quarry	Ancient semi-natural woodland and calcareous grassland
6	Staunton Harold and Lount	Staunton Harold Park and reservoir, Spring wood, Dimmingsdale, Lount wood and Meadows, Rough Park	Ancient semi-natural and plantation woodlands, parkland, species-rich grassland
7	Coleorton and Swannington	Coleorton Park, Swannington Common, Caliphat Colliery, Hough Windmill and Gorse Field	Species-rich neutral grassland and ponds, parkland, amphibia
8	Heart of the National Forest	Albert Village lake, Moira Furnace, Donisthorpe, Willesley wood, Saltersford valley, Hicks Lodge, Newfield Colliery	Plantation woodland, post-industrial land, ponds, lakes and wetlands, secondary heathland
9	Alton and Queen Elizabeth Diamond Jubilee Wood	Alton Grange; Beech, Roecliffe and Quaker's wood, Springfield wood, Normanton Wood	Plantation woodland, species-rich grassland, small stream
10	Coalville and Ellistown post-industrial habitats	Ellistown tip, Hugglescote wet meadows, 'Nature Alive', Snibston, disused and active railway lines	Species-rich post-industrial habitats, ponds and small pools, recent plantation, great crested newts
11	Grace Dieu, Whitwick and High Sharpley	Grace Dieu Brook, Cademan Hill, High Sharpley, Holly Hayes Wood, Whitwick Quarry and Ratchett hill	Acid grasslands and heathland, rock outcrops, neutral species-rich grassland, ancient semi-natural woodland, fast flowing stream
12	Charnwood Forest and Blackbrook	Charnwood Lodge, Warren Hills, Burrow Wood, Black Brook and reservoir, Birch Hill, Holly Rock fields, Bardon Hill and Quarry	Heathland/acid grassland, woodland, rocky outcrops, species-rich neutral grassland; geology.
13	River Sence	Kelham Bridge nature reserve, Sence Valley Forest Park, Newton Burgoland Marshes	Small river and tributaries, wetlands, lakes and ponds, waterfowl and wetland birds, plantation woodland

Table 2: Wildlife Corridors

Corridor	Type	Importance	Connecting	Habitats, species
River Trent	Large watercourse	National	Staffordshire moorlands - Burton-on-Trent – Nottingham - Newark, Gainsborough – Humber estuary. Short section along NWL's northern boundary	Waterfowl, floodplain wetlands, lakes, pools, marsh.
River Soar	Large watercourse	National/ Regional	South of Leicester to Trent confluence; boundary with Charnwood BC	Floodplain wetlands and riparian habitats; species-rich grassland
R Mease and tributaries	Small watercourse	International/ National	Measham – NE Staffs – R Tame	Otter, Water Vole, fish, crayfish, riparian habitats
Gilwiskaw Brook	Small watercourse	County	Tributary of R Mease: Ashby – Packington – Measham	
River Sence	Small watercourse	County	Bardon – Donington le Heath – Heather – Sheepy Magna – R. Anker	
Black Brook	Small watercourse	County	Tributary of Soar: Charnwood Lodge - Blackbrook Reservoir - Shepshed - Loughborough	
Grace Dieu Brook	Small watercourse	County	Tributary of Black Brook: Whitwick – Belton – Black Brook	Rocky 'gorge'
Ashby Canal	Canal	County	Grand Union – Market Bosworth – Snarestone. Small section only in NWL but part of important corridor	Aquatic plants – parts are SSSI
Long Whatton, Diseworth and Westmeadow Brooks	Small watercourse	Local	Long Whatton and Diseworth – R Soar at Zouch	
Ramsley Brook	Small watercourse	Local	Worthington – Tonge – R Trent at King's Newton	
Ivanhoe Railway	Freight line	Regional	Leicester – Coalville – Ashby – Moira - Burton	Species-rich grassland and post-industrial habitats
Measham Railway/Ivanhoe Way	Disused railway	County	Market Bosworth – Snarestone – Measham Donisthorpe - Moira	Species-rich grassland and post-industrial habitats
Swannington Railway/Cloud Trail	Disused railway	Local	Coalville – Swannington – Worthington – Tonge - Melbourne	Species-rich grassland and post-industrial habitats
M1	Motorway	Regional		Species rich roadside verges and roundabouts

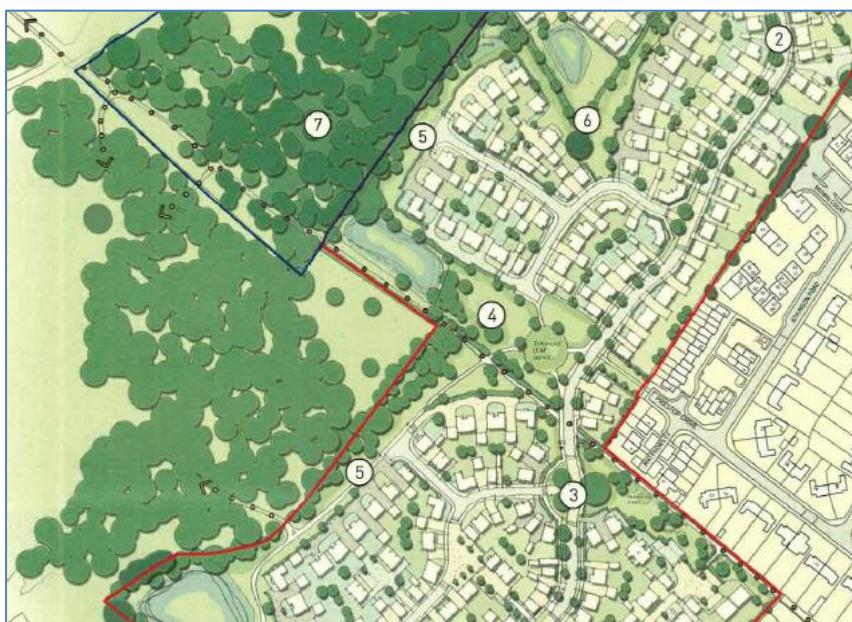
M42/A42	Motorway/Trunk road	County		Species rich roadside verges and roundabouts
A511	Trunk road	Local	Leicester – Ashby de la Zouch	Species rich roadside verges and roundabouts
A512	Main road	Local	Ashby to Loughborough	Species rich roadside verges and roundabouts
*HS2	Railway (proposed)	National		<i>Potential to be a significant wildlife corridor</i>

**the current proposed route of HS2 will have great potential for wildlife corridor creation, if it is implemented.*

Chapter 3: Local Wildlife corridors – protection and enhancement

Retaining habitats and corridors in the development Masterplan

- 3.1 Local wildlife corridors include hedges, watercourses, roadside verges, disused railway lines and many other associations of habitats. The following general principles should always be applied.
- 3.2 It is important to look beyond the boundaries of the development site to identify corridors that link habitat in the site to those outside. The priority for retention of hedges and other habitats within the site should be
 - those that have connectivity beyond the site;
 - those that link to important habitat within and outside the boundary;
 - those that have been demonstrated to have value for foraging bats and birds;
 - those that are species-rich and/or meet our Local Wildlife site criteria.
- 3.3 It is acceptable to have occasional breaks in retained hedges for pedestrian and cycle routes and for minor roads through the development site, but generally breaks should be kept to a minimum, and to the smallest width possible.
- 3.4 The edges of development adjoining open countryside, country parks, nature reserves and other natural open space should be natural, and incorporate existing hedges and other habitats. Avoid layouts where private gardens back on to the open countryside – this will lead to a risk that garden refuse will be tipped in the wild, and to the removal of natural vegetation and replacement with fencing and non-native trees.



Buffer zones

- 3.5 Retained and created habitats and corridors will always need to have a buffer zone of natural open space between them and built development, private garden or formal open space. This applies to features within the site and to off-site features abutting the boundary. Management of the buffer zones should be part of the open space management arrangements for the site.
- 3.6 The width of the buffer zone depends on the kind of habitat corridor. In general terms:

Trimmed hedges	5-10m from the centre of the hedge
Small watercourses	at least 10m from the centre of the hedge or the top of the bank
Woodlands, tree belts and hedges /watercourses with mature trees:	10-20m. It is important to ensure that adequate space is made between trees and built development or well-used open space, to avoid anxieties about trees falling or branches dropping.
Large watercourses	20 – 30m from the top of the bank

Large and small watercourses

- 3.7 There is no standard definition for a 'large' or 'small' watercourse. In North West Leicestershire, all watercourses are categorised as small, EXCEPT for the following:
- River Trent
 - River Soar
 - River Mease downstream of the confluence with the Gilwiskaw Brook

Lighting along wildlife corridors

- 3.8 The NPPF covers the impact of lighting on wildlife:

NPPF Paragraph 125:

By encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

- 3.9 Wildlife corridors along woodland edges, hedges and watercourses are locally important for bat foraging and as bird habitats. Changes in the amount of light falling on a habitat may deter bats from foraging, and may disrupt bird nesting, feeding and behaviour. To avoid adverse impacts, light spillage onto them should not be more than 1lux at 1m above ground level.
- 3.10 To demonstrate this, an isolux plot should be submitted. This should show the extent of the habitat feature (i.e. the spread of a tree canopy, not the trunks of trees), the position of lighting columns and the 1, 2 and 5lux levels around the lighting columns, at 2 metres above ground.

- 3.11 Light spillage can be minimised by (for example) adjusting the position and height of the lighting columns; by fitting baffles to the sides, rear and top of lamps; use of shields or masking, fitting louvres to the lamp; by adjusting the angle of the lamp. Impacts are reduced by using LEDs or low or high pressure Sodium lamps instead of Mercury or metal halide.

See [Appendix B5: Bats and lighting](#)

Strengthening wildlife corridors

- 3.12 It is better to retain and strengthen a few strategically important links with good buffer zones and with planned aftercare and management, rather than retaining all minor habitats with inadequate buffers and management regimes.
- 3.13 Wildlife corridors are enhanced and strengthened by appropriate adjacent habitat creation and management. Inappropriate habitat creation can be harmful, and will not benefit the function of the corridor. The primary value and function of the corridor should be identified first, and any strengthening measures should aim to increase this value and function.
- 3.14 **Woodland corridors** and those linking woodlands together: it is appropriate to plant more trees of the right species alongside. The value of the corridor could also be improved by removal of non-native species, woodland management and controlling public access or tipping.
- 3.15 **Hedges:** reinstatement of good hedgerow management, planting of standard trees, filling gaps and removal of non-native species are all appropriate; but it is not acceptable to plant woodland directly alongside as this will shade out the hedge.
- 3.16 **Watercourses:** creation of off-line wetlands, re-profiling engineered sections, planting standard willows or alders, creating channel variety through weirs and bank modifications etc. and de-culverting are beneficial; it is not usually appropriate to plant densely with woodland on both sides of the watercourse. Wildlife ledges for species such as Otter, Water Vole and Amphibia can be installed in road culverts to reduce the effect of the road barrier.
- 3.17 **Species-rich grassland and open post-industrial land**, such as former railway land: woodland and tree planting should be limited to edges and patches within a habitat mosaic, as most of the species of conservation value associated with these habitats need open sunny situations to survive. It is beneficial to control or manage scrub along these habitats to create a mosaic of scattered scrub within grassland. Areas of bare ground are usually of value in themselves, and should not be planted or sown.
- 3.18 Where links between habitats are missing or broken, the opportunity to reinstate or create them should be taken. A frequent example is a break in a woodland corridor formed along a disused railway line; this can be reinstated through woodland planting either as a series of stepping stones or as a continuous belt.

Chapter 4: On-site habitat creation, restoration and management

The importance of ecology survey information

- 4.1 Planning decisions that could affect biodiversity need to be informed by up-to-date, independent and accurate ecological surveys, of a level and scope appropriate to the site being considered.
- 4.2 A search of the Local Record Centre's database will provide useful background information on locally designated sites and past records for protected and UK BAP priority species recorded from the area, but their data is not comprehensive, may not be up-to-date, and is unlikely to be specific to the site in question. Instead, it should be used as context for the required ecology survey, and as a means of alert to the species that may be present.

When are surveys needed?

- 4.3 The Local Validation Criteria provide more information on how to scope ecology surveys. **Tables 3 and 4** show an edited extract; the criteria for when invertebrate surveys are needed have been added.

Table 3: Local Requirements for Designated Sites and Priority Habitats for when a Survey and Assessment is required

DESIGNATED SITES	
Internationally designated sites	Special Protection Area (SPA), Special Area of Conservation (SAC), Ramsar Site
Nationally designated sites	Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR)
Locally designated sites	Local Wildlife Site (LWS), Candidate/Potential LWS, Local Nature Reserve (LNR)
PRIORITY HABITATS	
• Arable field margins	• Lowland meadows
• Eutrophic standing waters	• Lowland mixed deciduous woodland
• Hedgerows	• Mesotrophic lakes
• Inland rock outcrop	• Open mosaic habitats on previously developed land
• Floodplain grazing marsh	• Ponds
• Lowland calcareous grassland	• Reedbeds
• Lowland dry acid grassland	• Rivers
• Lowland fens	• Wet woodland
• Lowland heathland	• Wood-pasture and parkland
OTHER BIODIVERSITY HABITATS	
▪ Mature Trees	
▪ Fast-flowing streams	
▪ Spring and flushes	
▪ Sphagnum ponds	

Table 4 - Local Requirements for Protected Species and invertebrates for when a Survey and Assessment is required

Development proposals that trigger the need for a species survey	BATS	BARN OWLS	BREEDING BIRDS	G C NEWT	OTTER	DORMOUSE	KINGFISHER	WATER VOLE	BADGER	REPTILES	W C CRAYFISH	INVERTEBRATES
Proposed development which includes the modification, conversion, demolition or removal of buildings and structures (especially roof voids) involving the following:												
<ul style="list-style-type: none"> all agricultural buildings (e.g. farmhouses and barns) particularly of traditional brick or stone construction and/or with wooden beams; buildings and structures close to woodland, trees and/or water, particularly those with weather boarding, hanging tiles and/or gable ends; all tunnels, mines, kilns, ice-houses, adits, military fortifications, air raid shelters, cellars and similar underground ducts and structures; all bridge structures, aqueducts and viaducts (especially over water and wet ground) 	Y	Y	Y									
Proposals involving lighting of churches and listed buildings or flood lighting of green space close to woodland, water, field hedgerows or lines of trees with obvious connectivity to woodland or water.	Y	Y	Y									
Proposals affecting woodland, parkland, large gardens with trees or field hedgerows and/or lines of trees with obvious connectivity to woodland or water bodies.	Y		Y			Y			Y			
Proposed tree work (felling or lopping) and/or development affecting:												
<ul style="list-style-type: none"> mature and veteran trees; trees with obvious holes, cracks or cavities. 	Y		Y									
Proposals affecting gravel pits or quarries and natural cliff faces and rock outcrops with crevices or caves.	Y		Y							Y	Y	Y
Major proposals within 500m of a pond or Minor proposals within 100m of pond <i>(Note: A major proposals is one that is more than 10 dwellings or more than 0.5 hectares or for non-residential development is more than 1000m² floor area or more than 1 hectare)</i>				Y								
Proposals adjacent to or affecting rivers, streams, canals, lakes, or other aquatic habitats.	Y		Y		Y		Y	Y			Y	
Proposals affecting 'derelict' land (brownfield sites), allotments and railway land.			Y	Y					Y	Y		Y
Proposed development affecting any buildings, structures, feature or locations where protected species are known to be present **	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

* Note that Dormice are very rare in Leicestershire and Rutland, and the only recent confirmed records are from a few woodlands to the south of the two Counties.

** Confirmed as present by either a data search (for instance via the local environmental records centre) or as notified to the developer by the local planning authority, and/or by Natural England, the Environment Agency or other nature conservation organisation.

Creating and restoring habitats

4.4 The NPPF refers to a net gain for biodiversity from the planning process:

NPPF Paragraph 109:

The planning system should contribute to and enhance the natural and local environment by . . . minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures

4.5 There are six basic principles:

- Where possible, restore existing habitats in preference to creating new ones;
- Most habitats of conservation value are dependent on nutrient-poor soil; use of topsoil and soil improvers such as compost or sewage sludge must be avoided;
- Create or restore habitats that are national or local BAP priorities. These are listed in **Table 3**, above. Note that plantation woodland is not a local BAP priority;
- Work with nature and the natural regeneration of habitats, conserving what is present of value and ensuring that created and restored habitats can and will be sustained through low-intervention management into the future;
- Creation plans should be informed by recent surveys of the site and understanding of soil-type, pH, hydrology/water table, existing species and habitats present, and position within the ecological network;
- Provide double the area of newly created or restored habitats in compensation for the area of that habitat lost.

Biodiversity Management Plans

4.6 Created or restored habitats will need to be managed in the future. This will require a Biodiversity Management Plan.

4.7 This should set out the conservation objectives for each habitat, and describe the habitat management actions required to achieve the objective. The actions should include:

- one-off actions required to establish the habitat, such as dredging an existing wetland, planting a hedge or sowing a new grassland from seed;
- periodic intervention and management needed to sustain it, such as hedge-laying or coppicing woodland every 10 years;
- the annual management regime needed to maintain it, such as annual hay-cutting or hedge trimming.

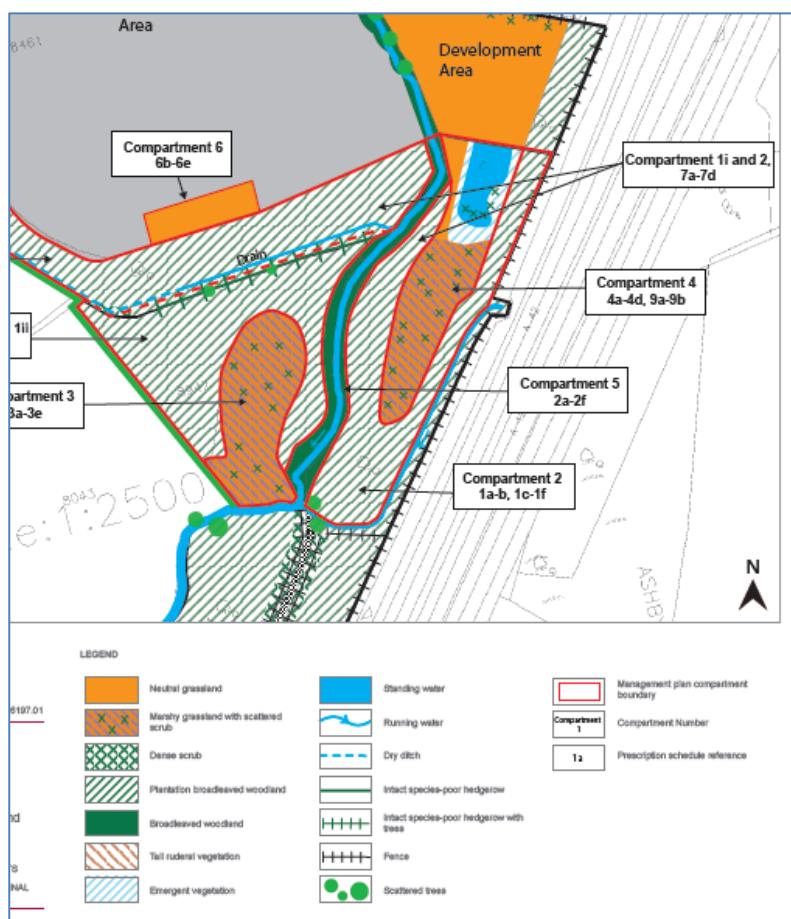
4.8 The Plan should include a timetable, specifying the optimum time of year for each action, and set out an annual programme of actions for a set period of years. It is usual to review a management plan every 5 years.

4.9 The Biodiversity Management Plan should include clear maps showing the extent of each habitat referred to in the plan. It is helpful to produce a summary annotated map illustrating the broad objectives of the plan.

4.10 Below is an extract from a management plan, showing a tabulated list of required actions:

Area	Specification	Timing												Years				
		J	F	M	A	M	J	J	A	S	O	N	D	1	2	3	4	5
G2/3	Remove hay from site to prevent it smothering seedlings.																	
G2/3	Over-sow the ground with yellow rattle at 1g/m ² .																	
G2/3	Roll to ensure good contact between seeds and soil.																	
G2/3	Leave the sward uncut to allow establishment of seedlings until Year 2.																	
On-going Grassland Management:																		
G2/3	Only cut on the advice of the Ecologist if there is an infestation of annual weeds.																	
G1/2/3	Take annual hay crop by cutting sward to 20-50mm height (August).																	
G1/2/3	Leave hay on field for 2-3 weeks and turn regularly. Remove cuttings.																	
G1/2/3	Undertake secondary cutting through either frequent mowing (to keep sward below 20mm in height) or final cut in October/November.																	
G1/2/3	Create mown paths through the meadow to allow informal access. Cut as needed to maintain grass below 20mm (April – November).																	
G1/2/3	Disturb ground through light scratch cultivation (e.g. chain harrow) every 3 years to maintain open patches within sward for seed germination.																	
G1/2/3	Remove any perennial weeds (e.g. thistles, docks) by spot-treating with glyphosate.																	

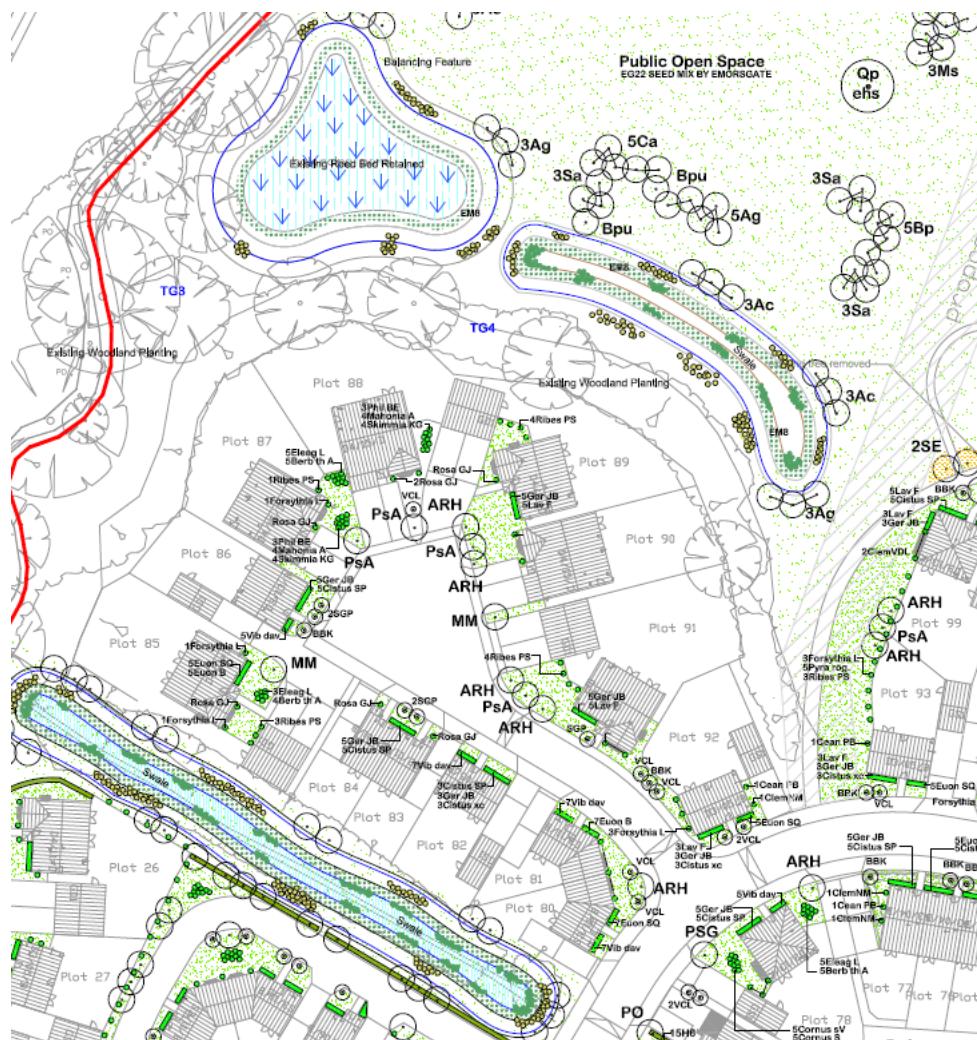
4.11 The following extract shows part of a management plan, showing the locations of different compartments for habitat management:



Sustainable drainage systems

- 4.12 Sustainable drainage features ('SUDS') provide an opportunity to create wetland and marshland habitats, and they should always be designed to optimise biodiversity benefit. If wetlands are integrated within a wider area of natural open space containing a habitat mosaic of woodland, hedgerows and species-rich grasslands, the benefits to wildlife increase.
- 4.13 The wildlife value of existing wetland habitats and surrounding terrestrial areas should be surveyed by a suitably qualified/experienced ecologist during the early planning stages, to ensure that a valuable habitat already present is not damaged or destroyed by the creation of the drainage feature. Particular attention should be given to protected species and sites and to habitats and species of principal importance.
- 4.14 Existing habitats being retained on site may be affected by changes in hydrology, so hydrological surveys of the area should be undertaken to ensure that natural waterflow, above and below the ground, will not be affected either by changes in water quantity or quality.
- 4.15 Designing for biodiversity should:
- Aim to mimic the natural drainage systems and processes as far as possible.
 - Ensure that the drainage feature is permanently wet (although not necessarily always flooded).
 - Ensure adequate protection for existing aquatic habitats from flooding events.
 - Locate drainage features close to existing wetlands and watercourses and natural green corridors, to improve habitat connectivity and function of these corridors, and so that plants and animals can naturally colonise the new features.
 - Create irregular shaped ponds and depressions, with varying depths and well vegetated shallow bays; aim to establish wetland habitat mosaics with areas of marsh, wet grassland, dry grassland, with woodland and scrub and shallow small ponds.
 - Avoid smoothly finished surfaces as they provide less physical habitat diversity and niches for plants and animals.
 - If the location within or close to formal open space means that tidiness is an issue, then concentrate the formal landscape maintenance to the edges and a buffer zone around the feature.
 - Allow natural regeneration by aquatic plants wherever possible; if planting is considered necessary (e.g. to aid stability of the feature, for amenity reasons or because of isolation from potential seed sources) ensure that only locally native plants are used.
 - Ensure that access for biodiversity maintenance is allowed for – in particular it may be necessary to periodically dredge/re-excavate marshland that has become colonised with scrub.
 - Ensure strong connections for wildlife between drainage features themselves and existing habitat.
 - Low productivity soils will encourage more diverse vegetation; nutrient rich topsoil should be avoided where possible.
 - Design and zone to include areas for recreation and areas which are disturbance-free for wildlife.

- 4.16 The following example shows existing wetlands and swales integrated within open space.



Planting locally native species

- 4.17 All landscape planting in natural open space or adjacent to open countryside should use locally native common species. This will help the new landscape to integrate into the local natural environment, and will provide additional habitat for species already present in the area. Lists of recommended species are in [Appendix C](#).
- 4.18 Ideally, species of local provenance should be planted – i.e. species that have the same genetic profile to those found locally. This can be difficult to source, but the plant material should be of UK stock, at least. There is great variation in DNA within a species across its geographic range, and plants from (for example) western Europe have a different genetic make-up to those from eastern Europe, even though they are the same species.

- 4.19 Planting rare native species or native species not found locally is not recommended, as it will potentially affect the natural distribution of such species, and may introduce non-local genetic material into the local population.

Biodiversity opportunities associated with development types

- 4.20 The most suitable habitats to create or restore are dictated by individual site characteristics, but some types of development lend themselves to certain kinds of habitat creation or management.

Major housing

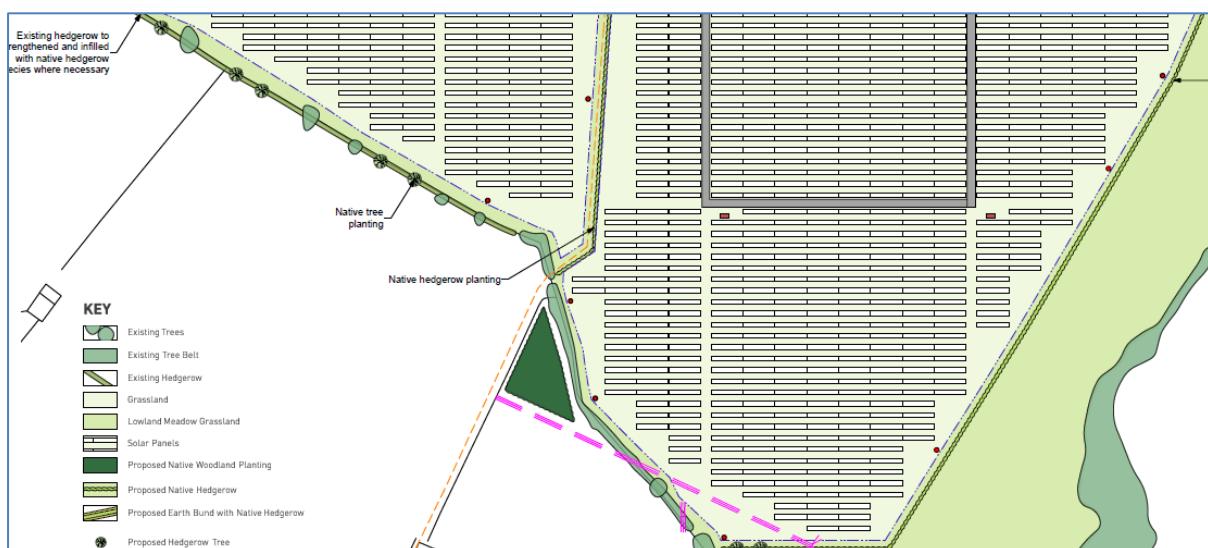
- 4.21 Opportunities arise through design of the associated open space, which in major developments should include natural open space, and the design of sustainable drainage features. Species-rich grasslands, parkland and ponds/wetlands are the most appropriate habitat to create in association with native woodland plantation. Public use of created or restored habitats must be considered and properly integrated, though provision of paths, dog-bins, pond-dipping platforms and other infrastructure; and by avoidance of habitats that feel unsafe and have no natural surveillance from surrounding property. Fencing people out of land within a development site is rarely successful or desirable; instead, access should be channelled by paths and placement of planting areas. Edges of natural habitats should be maintained more formally, to avoid untidiness and litter-traps, and hay-meadows will need supplementary winter/early spring cuts to maintain a tidier appearance. Bird and bat boxes/bricks can be provided as long as they are sited in accordance with guidance – see [Appendix D](#)

Major employment

- 4.22 Opportunities for significant pond and wetland creation arise through design of sustainable drainage features. Re-grading of land to create large development plateaux will often create steep banks, which are ideal for the creation of open habitats - species-rich grassland, heathland and early successional/pioneer habitats, in association with naturally regenerated scrub. For these to succeed with minimal or no maintenance, the substrate must be low nutrient and free-draining. Large industrial units create opportunities for 'green' or 'living' roofs. Sedum roofs are commonly used, consisting of a thin blanket for the sedum plants to live on, but have limited value for wildlife. Of greater value are 'brown' roofs made of a layer of crushed gravel, stone, brick, concrete or other granular material, usually derived from the development site, which can either be seeded or allowed to regenerate naturally. These can support the same species as those found on the national UKBAP priority habitat 'Open mosaic habitats on previously developed land'.

Solar farms

- 4.23 If created on arable land, these installations will be of more benefit to wildlife than the original site. The land around the panels can be grazed by sheep, leading to opportunities for creation of species-rich pasture around. Alternatively, the margins can be used for sowing with a nectar-rich bee crop.



Horse-related development

- 4.24 Few opportunities for habitat creation occur, but the development is usually set within a group of grazing fields. Planning obligations associated with small scale development, including horse-related development such as stables, maneges, etc. should seek to establish beneficial and long-term grassland management or these fields.

Quarry restoration

- 4.25 Restoration of quarries provides one of the most significant opportunities for large-scale habitat creation and natural regeneration. North-west Leicestershire has a great diversity of mineral sites – sand and gravel in the Trent Valley, clay at Measham, hard granitic rock at Bardon, limestone at Breedon and Cloud Hill, coal at numerous former sites and one active site near Measham.

Many minerals sites are left with voids that naturally regenerate to become wetlands, often needing some intervention and earth-modelling to maximise biodiversity value, by (for example) creating more varied profiles, shallows and islands.

The availability of large amount of nutrient-poor substrate such as coal-waste, gravels, sands, crushed rocks etc. creates opportunities for the creation of open habitats - species-rich grassland, heathland and early successional/pioneer habitats, in association with naturally regenerated scrub. For these to succeed with minimal or no maintenance, the substrate must be low nutrient and free-draining.

http://www.rspb.org.uk/Images/natureaftermineralsreport_tcm9-257075.pdf

Major roads

- 4.26 As linear features in the landscape, new roads can become important wildlife corridors, especially if they link together other sites of biodiversity value. They will be of more value if they have significant grassland verges, especially on embankments, cutting and traffic roundabouts. Woodland planting along the road verges will be valuable if it connects other woodlands together. Most major roads have sustainable drainage features, and these have potential to become important habitats – some created very recently already have developed into habitats that meet our Local Wildlife Site criteria, as in the example below at junction 24A of the M1 at Lockington.



Chapter 5: Off-site habitat creation, restoration and management

- 5.27 Planning obligations and open space management provide many opportunities for enhancement of biodiversity. In some cases this can be achieved on-site; in other cases enhancement of existing habitats off-site may be of more value. When developments are within one of the biodiversity ‘hotspots’ identified in this document, the opportunity to make enhancement to the priority habitat for which the hotspot is noted should be taken, and this could include off-site work.
- 5.28 Targetted enhancements in an area wider than the application site are more likely to bring real biodiversity benefits than trying to fit habitat creation etc. into a constrained site boundary.
- 5.29 It is important to evaluate opportunity and to identify sites that would benefit from enhancement early on. These will need to be land in the applicants’ control, or land that is in public ownership or otherwise managed primarily for the benefit of biodiversity – such as a country park, community wildlife area, nature reserve, local wildlife site or site of special scientific interest.
- 5.30 In some cases, habitat creation or management is needed to compensate for loss of a habitat to development. In these instances, the size of the compensatory habitat should be at least double the size of the destroyed habitat. The new habitat need not be the same as that lost; instead a decision should be made about the most valuable habitat to created, in the context of the ecological network and the particular priorities of the ‘hotspot’.