

- 3.8.5 **V59** (SP 60280 98737) A maiden horse-chestnut at the junction of Launceston road and Bushloe End, Wigston. Girth measurement 4.6m and approximate height 18m (Photograph 3.8.3).
- 3.8.6 **V27** (SK 62518 01833) A maiden pedunculate oak in the front garden of a residential property, south of Gartree Road (Photograph 3.8.5). The tree has a girth measurement of 4m, an approximate height of 12m and has a hollow in one of the main branches. (Photograph 3.8.4).
- 3.8.7 Other trees identified for their potential to support roosting bats were those possessing features such as woodpecker holes, cracks and splits in boughs, delaminating bark and ivy-clad trunk and limbs (English Nature, 2004). Their position in the landscape and connectivity to suitable feeding areas such as tall hedgerows, woodland edges, rivers, canals and ponds was also considered.

3.9 ALIEN SPECIES

- 3.9.1 Invasive non-native plants do not appear to be a major problem in the borough at the present time and were rarely encountered. All sightings were mapped and are shown in Figure 7. Two stands of Japanese knotweed in close proximity to each other were recorded on the banks of the Grand Union Canal. The larger of the two stands (Grid Ref SP5863 9782) is shown in Photograph 3.9.1 below. British Waterways should be contacted to ensure they are aware of the presence of this species since it has potential to spread from this location. Small patches of Indian balsam were recorded in several places on the River Sence and the Washbrook Stream.



Photograph 3.9.1 Stand of Japanese knotweed on the banks of Great Union Canal.

4 ASSESSMENT OF CURRENT STATUS OF SINC_s

4.1 CRITERIA FOR SELECTION

4.1.1 According to the Guidelines for SINC Selection (Lott, 2001), a site may be selected if it meets the criteria within at least one of five areas of consideration. These are:

- 1 Habitat quality
- 2 Habitat diversity
- 3 Presence of (Leicestershire) Red Data Book species
- 4 Significant species assemblages
- 5 Use of site as a wildlife resource by the community

4.1.2 **Habitat Quality.** Nine habitats are considered, for each of which there are primary and secondary criteria. Both sets of criteria have quantified thresholds, either as area (eg woodland and scrub), number of qualifying species from an indicator list, minimum girth, and so on. Provision of numerical thresholds has the advantage of making the criteria very straightforward to apply.

4.1.3 **Habitat Diversity.** This draws on the criteria for habitat quality, requiring a site to have at least two listed habitats, together amounting to more than 1ha, and meeting at least the secondary criteria for each habitat. This category is therefore useful for mosaic sites which may have no one habitat large or valuable enough to score in its own right, but for which the whole has significant value.

4.1.4 **Red Data Species.** This category allows for selection of sites which are possibly not of large size or high value in numerical species terms, but support populations of rare, scarce or endangered species. It relies on continual scrutiny of the relevant red data books by local experts, and sufficient survey of the sites to ensure that the interest feature is maintained.

4.1.5 **Significant Assemblages.** This category provides a parallel to the SSSI criteria, with species relevant to a particular habitat assigned scores, which must in total reach the defined threshold. Assemblages are provided for breeding or wintering birds, amphibians and lichens at present. As for habitat quality, numerical thresholds have the advantage of being easy to apply providing that the relevant expertise is available to produce and maintain the lists.

4.1.6 **Community Criteria.** It is widely recognised that sites of lower ecological value may still be of high value to a local community for other, related purposes, particularly education but including also more subjective criteria such as 'sense of ownership'. It is however important that inclusion of this category is not seen to 'water down' the value of more objectively

assessed criteria, and this is handled here by requiring sites selected in this category to meet at least the secondary criteria for the habitats present.

- 4.1.7 In general it would appear that these criteria are soundly based, and the sites selected using them should therefore have substantial validity in the local context.

4.2 METHOD OF RE-ASSESSMENT

- 4.2.1 A detailed survey of each SINC was carried out as described in ESL (2005) and the results are given in Appendix 5, together with a location map, Figure A5.1. For each site the results comprise a copy of the original citation document; a current site description; an assessment of whether the SINC would currently meet the selection criteria; and, notes on other topics such as current management, other species recorded, and whether, so far as can be judged, the site has changed significantly since the time of selection.

5 CURRENT STATUS OF PROTECTED SPECIES

5.1 WHITE-CLAWED CRAYFISH

Ecology

- 5.1.1 The white-clawed crayfish is the only native crayfish in the British Isles. It requires clear, well-oxygenated and preferably alkaline water and can be found in streams, rivers, canals, ponds, lakes and reservoirs that are relatively free of sediment. Here it lives under rocks and stones, tree roots, aquatic macrophytes or in burrows and crevices in the riverbank. This makes it very susceptible to any riverine development or river engineering works which results in disturbance to or destruction of river banks or channels. Crayfish tend to be nocturnal and are omnivorous, feeding on snails, worms, insect larvae, small fish and vegetable matter. All species can be cannibalistic.
- 5.1.2 Crayfish are relatively long-lived and can exceed 10 years of age. Breeding takes place in autumn or early winter when the water temperature drops. The female carries her eggs (usually less than 100) in a cluster attached to the underside of her abdomen, and the young hatch in late spring to early summer. They become independent during their second stage of development, when they develop a tail fan.
- 5.1.3 White-clawed crayfish have many predators including fish (such as trout, pike, eel, chub and perch), birds (heron) and mammals (otter, mink, rat). They are also particularly vulnerable to pollution and suffer from two main diseases: porcelain disease (*Thelohania contejeani*) and crayfish plague (*Aphanomyces astaci*). Porcelain disease is caused by a protozoan and is not

always fatal if it occurs at low levels in a population. Crayfish plague is caused by a fungus, and is thought to be one of the major causes of white-clawed crayfish decline in Britain. It is thought to have been introduced with imported signal crayfish (*Pacifastacus leniusculus*) in the 1970s. Spores of the fungus can spread through water and by becoming attached to angling equipment, mud and fish scales. The signal crayfish is a carrier of the fungus, but only seems to be affected by crayfish plague when put under stress. The signal crayfish is a fertile, invasive and aggressive species and its introduction is usually followed by the predation and competitive exclusion of white-clawed crayfish.

Previous Surveys and Records

- 5.1.4 Recent surveys have been conducted within the borough by Church (2002) and Beal (2002), with a baseline inventory of records in Leicestershire and Rutland undertaken by LRWT in 2005. The records incorporated in this review came predominantly from the Environment Agency in the period 1973-2004. Records only indicate presence.
- 5.1.5 Stone-turning surveys by Church took place in the summer of 2001 along stretches of the River Sence (SP 5871 9771 to SP 6224 9579), the Wash Brook (SK 6078 0036 to SK 6397 0015) and Elvington Brook (SK 6292 0243 to SK 6318 0234) where the habitat looked appropriate. The two sections of the River Sence subject to UWWTD surveys by ESL in 2005 are within the length surveyed by Church.
- 5.1.6 Beal's trapping surveys took place on the Grand Union Canal. Two locations were within the ESL survey area Kilby Bridge (SP 610 970) and Crow M I Bridge (SP 589 978). Reach 1 of the ESL UWWTD survey of the canal was immediately to the east of Kilby Bridge.
- 5.1.7 No systematic surveys were undertaken during the 2005 ESL survey, but stones were turned and a visual search was made in watercourses where habitats looked suitable for native crayfish. This was not possible due to water depth in the Grand Union Canal, where trapping would be required.

Results

- 5.1.8 No crayfish were recorded in any of the surveys in the borough. Beal recorded white-clawed crayfish in the Grand Union Canal just beyond the western boundary of Oadby and Wigston. Given the close proximity of the canal to the River Sence it is possible that crayfish may have been present in the river in the past, especially given that the LRWT reports Environment Agency records of native crayfish in the River Sence at Ratcliffe Culey (approximately 20 km west of Oadby and Wigston) and also in the River Sence (to River Anker). No location is

given for the latter, but given the location of the River Anker, the records must also be west of the borough.

5.2 GREAT CRESTED NEWT

Ecology

- 5.2.1 Great crested newts require different habitats at different times of the year. Waterbodies are used from February as the adults move from winter refuges to mate and lay eggs. The males use open shallow areas for their display, and the females then need suitable vegetation, such as floating sweet-grass and water speedwell, on which to lay their eggs. The young hatch with external gills and at this time they are vulnerable to drying of the ponds. Such drying-out is not in itself detrimental to great crested newts as it prevents populations of predators such as fish building up, but it is important that this doesn't happen before the young newts have undergone metamorphosis and left the water, typically by the end of August.
- 5.2.2 Once they move out of the water all amphibians need terrestrial habitat that will provide foraging places, both daytime and more permanent refuge areas, and routes along which they can disperse (Langton *et al*, 2001). Rough grassland, woodland, hedges and scrub are particularly important for these purposes. These habitats support high numbers of the insects, snails, slugs, etc, on which great crested newts feed. Newts will shelter by day in tussocky grassland, but need piles of rubble, dead wood and mammal burrows which provide more protection from extremes of weather in the winter months. While they are able to cross areas of bare ground and arable land, great crested newts prefer to use land with good ground cover when moving between sites.
- 5.2.3 Great crested newts have been recorded living up to 14 years in the wild (Langton *et al*, 2001). While this allows the population to recover even from several poor breeding seasons, for long-term survival they need access to a range of ponds and terrestrial habitats as protection from pond loss, pollution or a build-up of predators, and an overall stability in the wider environment.

Previous Surveys and Records

- 5.2.4 A survey for great crested newts was carried out at Glen Gorse Golf Club in May and June 2004 by members of the Leicestershire and Rutland Wildlife Trust (LRWT) and Oadby and Wigston Borough Council (Talbot, 2004). This survey confirmed the presence of great crested newts in two of the ponds on the golf course with smooth newts also present. It consisted of only one daytime survey and one evening visit and from this it is not possible to assess the status of the population present.

- 5.2.5 The current state of the waterbodies is described in detail in Appendix 5 since the golf course is a SINC designated partly for the presence of this species. A number of management prescriptions were included as an appendix in the LRWT report but it is not clear if any of these have been taken up. Control of vegetation in ponds has been carried out by application of herbicides and the results of this were obvious at the time of survey. However, further work could be done to regenerate some of the other ponds for the benefit of great crested newts. This could include such measures as removing scrub from around some of the ponds and clearing vegetation, for example some of the bulrush in Pond 3, to open up the ponds more. Conversations with the head groundsman indicate that he is aware of the presence of this species and open to consultations with the Council.
- 5.2.6 There are historical records of great crested newts in the Lime Delves SSSI. However, these records date back to the 1970s and further surveys are needed to determine if this species is still present. The waterbody is now managed by a fishing syndicate so it is possible that the habitat is no longer suitable for great crested newts.
- 5.2.7 Great crested newts have apparently been recorded in a number of other places in the borough (NBN Gateway: data from the Biological Records Centre and Leicestershire Environmental Resources Centre), although the data available do not give exact locations for these records. This does indicate however that it would be beneficial to carry out further surveys. There are several other ponds within 500m of the golf course which appear suitable to support great crested newts. In particular, attention could be focussed on Coombe Park and Blackthorn Manor (SINC 3) where historical records show the presence of this species.
- 5.2.8 Field ponds, both temporary and permanent, are an important resource for great crested newts particularly when they are associated with other habitats such as rough grassland, scrub and woodland. The Borough of Oadby and Wigston has a large number of such ponds, many of which have suitable features for great crested newts.

6.3 REPTILES

Ecology

- 5.3.1 Grass snakes will use a variety of habitats but are strongly associated with water because amphibians are their major food source. For basking they require open places close to dense cover, into which they can quickly retreat if disturbed. A crucial element of suitable habitat is the availability of incubation sites for the eggs, which in Britain are laid during June-July and hatch in August-September (Beebee and Griffiths, 2000). Decomposing organic matter provides the warmth and moisture required for egg hatching and heaps of rotting vegetation,

5.4 BATS

Ecology

- 5.4.1 Bats are unique among mammals in having powered flight. There are about 970 species world-wide, of which around 16 are resident in Britain. All British bats are insectivorous and all are able to conserve energy by dropping their body temperature and entering 'torpor'. This behaviour is best known in winter, when they congregate in special roosts, typically caves, buildings or other structures with a very small temperature range, to hibernate, but may be seen at all times of year to a lesser degree.
- 5.4.2 Mating usually takes place in autumn but female bats are able to store the male's sperm and don't become pregnant until spring. From that point the females gather in maternity roosts; this may enable them to maintain a higher body temperature, assisting with gestation. The young are born in May-June and are dependent on their mothers until July or August, when they take their first flight. During this time the mother may move them several times, perhaps to reduce the risk of predation, to avoid parasites, or to obtain just the right temperature conditions. In some species maternity roosts are in buildings, while others use trees or caves.
- 5.4.3 In most species the males live singly in the summer, and may use many different roosts in this time, although occasionally males may be present in the maternity roost. It is likely that young bats remain near their mothers, at least in early autumn, while they learn to hunt. Throughout the year a colony of bats needs access to very many roosts and feeding areas. Depending on their size, bats may forage between 2-20km from their daytime roost but small bats in particular will seek roosts close to good feeding areas, or linked to them by good commuting sheltered corridors.

Previous Surveys and Records

- 5.4.4 There appears to have been little or no systematic surveying for bats in Oadby and Wigston. The records which do exist (see Figure 8) are almost all for roosts in houses, and these are likely to have been reported by the householders. Some follow-up monitoring has been carried out however, as a number of the premises have subsequent records on the same date three years later. The only record for a roost not in a building is one for Ringers Spinney (also known as Stackyard Spinney) in the north of Oadby near Stoughton Farm Park. This was for 45 kHz pipistrelle, first recorded in 1989 and again in 1992. Finally, the citation for the Kilby-Foxton Canal SSSI, south-west of the Borough, refers to a roost of Daubenton's bats in Fleckney Tunnel (also known as Saddington Tunnel).

Potential for Populations

- 5.4.5 The Grand Union Canal is likely to be an important site for bats in the borough. As well as being able to feed on insects hatching from the water, bats will use this linear feature as a corridor to help them travel to other foraging areas. There are also two bridges over the canal which have spaces in the brickwork suitable for bats to exploit and where an emergence watch could usefully be carried out. These are bridge number 88, Kilby Lock Bridge and number 89, Taylors Bridge.
- 5.4.6 Other corridors likely to be used by bats for feeding and moving around the borough, are the River Sence and the Leicester to London railway. Areas of scrub and broad-leaved woodland close to these corridors and hedges abutting them, all similarly provide both good feeding opportunities and movement corridors. Any hedges, scrub or woodland connecting with these major corridors could provide sites where surveying with bat detectors could prove fruitful, and in this way a more accurate picture of the borough's bat population could be drawn up.
- 5.4.7 The Phase 1 survey attempted to record all trees in the accessible (thus mainly rural) parts of the borough which had obvious potential to support roosting bats (see Figure 6). These tended to have features such as lifting bark, old woodpecker holes, split branches, rot holes, crevices and so on. The borough is fortunate in the number of mature and over-mature ash trees in its hedgerows and woodlands as older trees of this species often support a high level of such features.

5.5 WATER VOLE

Ecology

- 5.5.1 Water voles are mostly found within 2m of the riparian zone along streams, ditches, canals and rivers where water is present throughout the year. High numbers can be found at sites with slow-flowing water, steep banks suitable for burrowing and abundant highly layered bankside vegetation. Marshes and other wetland sites can also provide suitable habitat where tussocky vegetation can accommodate dry nests above the water table. Waterways that are heavily shaded by long stretches of overhanging trees and shrubs are less favoured.
- 5.5.2 The water vole has suffered one of the most severe declines of any British mammal over the last century, initially due to changes in both land and riparian habitat management and in more recent years the combined impacts of the loss and degradation of suitable habitats and predation from the introduced American mink. As populations are lost, the fragmentation of those that remain often results in further losses, as isolated colonies are more vulnerable to

extinction from localised conditions such as drought, floods and predators. English Nature (1998) estimate that the water vole has now been lost from 90% of its former sites.

Surveys and Records

5.5.3 Previous surveys to establish the status of water vole within Oadby and Wigston were carried out during 2001 and positive field signs were recorded at two separate locations along the River Sence (Church, 2002). Three locations that had historic records for water vole were re-surveyed during the 2001 surveys and showed no evidence of occupancy at that time. Over the last two years, casual surveys for water vole carried out during surveys for otter on the River Sence have not revealed any evidence of their presence.

5.5.4 During the current survey, positive field signs were recorded in the form of a latrine at the bottom of the bank on the River Sence (SP 601 967) along a stretch that had a negative result in 2001. However, none of the locations that had shown positive signs or potential for water voles in 2001 had any signs of water vole activity in 2005. Similarly, neither of two locations on the Wash Brook stream which were recommended for re-survey due to their potential for the species, showed any evidence of current presence. It should be noted that surveys for water vole were carried out from the banks and overhanging vegetation can easily conceal any field signs and burrows therefore a more thorough survey of the River Sence carried out from the channel during the period of peak activity during April to September is recommended to gain a more accurate picture of water vole occupancy.

Potential for Populations

5.5.5 There is much suitable habitat for water vole in the borough and anecdotal evidence from local farmers suggests that the species was at one time widespread and fairly common, particularly along the River Sence and its tributaries. While river engineering works, dredging, heavy grazing and poaching of banks by livestock have probably all played a part in the decline of the species in the borough, the arrival of American mink would appear to be a significant factor. The 2001 surveys recorded field signs of mink all along the River Sence

5.5.6 No field signs of mink were recorded during the current survey, but again the restrictions imposed from only surveying from the banks may have resulted in scats and footprints being missed. The species is still regularly sighted by local farmers and scats are also regularly found during the ongoing otter surveys within the Borough. The continued presence of American mink will prevent any significant restoration of water vole populations as control of the species has to be intensive and sustained to be effective.

5.6 OTTER

Ecology

- 5.6.1 The size of the home range of an otter can vary enormously and is dependent on the quality of the habitat and food supply. As 80% of the diet is composed of fish, good water quality is paramount. A dog otter's home range can extend to a distance of 40km or more along rivers, with up to 30 resting sites (Environment Agency, 1999). A wide variety of sites are used as resting places including root systems under trees, rock cavities, scrub thickets and timber piles. Along the Sence there are a number of very mature trees, particularly crack willow pollards, and dense scrub patches which can provide such sites.
- 5.6.2 Whilst resting sites can be found in relatively disturbed areas, female otters are usually much more secretive when it comes to breeding sites and the availability of suitable breeding holts can be a limiting factor to the increase in the species on a local level. Breeding sites tend to be in secluded, undisturbed locations away from the risk of flooding, are close to a good food supply and able to provide one or more natal dens and play areas for cubs (Liles, 2003).

Survey Results and Records

- 5.6.3 Evidence of otter was recorded in three locations during the surveys by this survey. Spraints were found both under Taylors Bridge on the canal (SP 6004 9701) and in the channel of the River Sence (SP 6054 9671). There were also in-channel feeding signs of fish remains near Kilby Bridge. However, regular surveys for otter are undertaken by Paul Fisher, a local volunteer, along the waterways of the borough and the resulting field sign records show activity of the species along most of the length of both the River Sence and the Grand Union Canal, particularly in the south-east and south-west (see Figure 9).
- 5.6.4 Habitat along the River Sence and Grand Union Canal could be significantly enhanced for otter through sympathetic management. The installation and regular maintenance of stockproof fencing along the river would prevent the over-grazing and poaching of the banks which in some places was quite extensive. Fencing-off meanders and odd field corners which adjoin the river and planting them up with native trees and dense shrubs would enhance the corridor by providing more resting places and potential breeding sites. The canal is obviously an important food resource for otter and along the undisturbed banks, management initiatives such as the creation of clumps of dense cover and allowing hedge bottoms to thicken out by avoiding heavy flailing, could provide valuable 'stepping stones' for movement of the species.
- 5.6.5 A number of mature hedgerows span pasture fields between the river and the canal and these could serve as corridors for movement between the two watercourses; maintaining a dense

understorey will provide the cover they require. Funding for habitat enhancement may be available to landowners and tenant farmers through the Higher Level Stewardship scheme. Advice should of course be sought from the Environment Agency prior to any changes in management along the river and its tributaries.

6.7 SCHEDULE 1 BREEDING BIRDS

Hobby

- 5.7.1 Hobbies are summer visitors and records would therefore not have been expected on this survey. However, the 1988-91 national breeding atlas (Gibbons *et al*, 1993) had breeding records for all three 10km squares that include parts of the Borough of Oadby and Wigston. Hobbies breed in open landscapes such as farmland with unobstructed views across the surrounding area. Nests are built in mature trees, tree belts or the edge of small woodlands. Food for both adults and young consists of larger flying insects such as dragonflies and beetles and small birds eg meadow pipits, finches and hirundines.
- 5.7.2 Mature hedgerows with trees, small woodland blocks, open farmland and wetlands in the rural areas to the south and east of the borough could all be used by this species. Based on the availability of suitable habitat it is therefore possible that this species has bred in the borough; however breeding birds are very sensitive to human disturbance and close proximity to large urban areas may not be tolerated. Improving the population of open country passerines, creation and protection of wetlands, retaining mature trees, retaining and creating wooded areas and protecting nesting areas from disturbance would all benefit breeding hobbies in and close to the borough.

Quail

- 5.7.3 Quail are secretive summer visitors and are rarely recorded once the male stops calling in late summer, so no records would have been expected during this survey. However the 1988-91 breeding atlas recorded possible breeding (ie presence of a calling bird in suitable habitat in the breeding season) in one of the 10km squares that includes part of the borough. Preferred breeding habitat for this species is relatively dry and open with seasonally dense, moist but not wet herbage less than 1m high, and relatively free of hedgerows and forest edge. Adult food is a mixture of weed and crop seed e.g. wheat, barley, chickweeds, docks and goosefoots, though the young particularly also search for insects, including beetles, bugs, ants, earwigs and grasshoppers (Cramp and Simmons, 1979).
- 5.7.4 In Britain the requirements of this species are similar to those of grey partridge, and land supporting one is likely to be attractive to the other. Both can use cereal crops such as winter

wheat where the fields have unsprayed (conservation) margins and/or headlands, producing a mixture of plant seed and insects. However, it should be noted for monitoring purposes that this nationally scarce species shows wide annual fluctuations and suitable habitat may not be occupied for many years.

Barn Owl

- 5.7.5 No barn owls were recorded during this survey and the 1988-91 national breeding atlas has no records even of possible breeding for any of the 10km squares relevant to the borough. However, a member of the public reported that at least one bird regularly hunts in the farmland around Oadby Lodge Farm in the north-east corner of the borough. This area has suitable feeding habitat and there may be possible breeding sites in derelict Nissan huts and the Oadby Lodge Farm buildings
- 5.7.6 Most British barn owls breed in suitable built structures, particularly agricultural buildings, although tree holes are also widely used. Prey for adults and young is mainly small rodents such as field voles, mice, shrews and rats, with small passerines, frogs, bats and invertebrates also taken but generally to a lesser extent. Good feeding habitat is therefore where such prey items are abundant e.g. rank grasslands, unsprayed grassy field margins and headlands, drainage ditches, woodland edges and rides. Once the clutch is complete the male moves to a separate roost and when the young no longer need to be brooded and can take whole animals as food, both parents will roost away from the nest site (Taylor, 2001). A breeding territory therefore needs several suitable sites for nesting and roosting.
- 5.7.7 Suitable feeding habitat in the form of rank grassland, road verges, field margins, ditches and pasture is present throughout the borough. Although some areas have several farmsteads in relatively close proximity, buildings may not be suitable in structure or too highly disturbed to be used by barn owls. An increase in the number of unsprayed grassy field margins, headlands and 'buffer zones' bordering ditches would all boost the amount of suitable feeding habitat; especially where these habitats are well connected. Where buildings are unsuitable, provision of nest-boxes may assist in persuading barn owls to breed.

Kingfisher

- 5.7.8 Records from this survey and taken from additional data show a year-round concentration along the Grand Union Canal and River Sence at the southern end of the borough. Isolated records consist of non-breeding season single birds at Navvy's Pit SINC and an urban drain at SP 593 980, whilst multiple breeding season sightings were recorded at Lucas Marsh LNR.

- 5.7.9 Kingfishers need relatively shallow and slow-flowing freshwater with a good supply of small fish and steep earth cliffs soft enough to excavate a nesting burrow. The nest site does not have to be very close to the feeding area, and nests have been recorded at least 250m away (Sharrock, 1976). Overhanging vegetation and other perching opportunities over the water are also required for hunting. Eroded earth cliffs along the River Sence appear to be the optimal nesting areas, whilst the Grand Union Canal, Navy's Pit SINC, Lucas Marsh LNR and other suitable waterbodies may also hold breeding pairs and provide feeding habitat.

6 CURRENT STATUS OF BAP AND LOCALLY IMPORTANT SPECIES

6.1 MARBLED WHITE BUTTERFLY

- 6.1.1 Marbled whites have a very localised distribution in the East Midlands and are much more widespread and abundant in southwest England. Their typical habitats are downland and meadows with a range of grass species available as food plants for the caterpillars (including fescues, tor-grass, cock's-foot and timothy) and a variety of herbs such as field scabious and knapweeds available as nectar for the adults. Marbled white caterpillars hibernate low down in dead vegetation and emerge in early spring to feed. Generally, the adults first appear in late June, peak in mid-July and disappear mid to late August (Thomas and Lewington, 1991).
- 6.1.2 The colony of marbled white butterflies at the Wigston Triangle has been known since the late 1990s and is currently believed to be the only colony in Leicestershire (Billings, 2004). Twelve visits were made to the site between 3 April and 18 September 2004 by volunteers from the East Midlands Branch of Butterfly Conservation to record the butterfly fauna of the site. This survey recorded marbled whites from 19 June to 24 July with a peak of 18 individuals on 10 July. Mating pairs were encountered twice. Most records were from the relatively open area of tussocky grassland in the east of the site with a few elsewhere including around the railway station. Two individuals were also recorded on site at a rather late date of early September 2005 (Helen Gregory *pers comm*).
- 6.1.3 Suitable habitat for marbled whites at Wigston Triangle is currently centred on the tussocky open grassland in the east of the site. Grasses present here include cock's-foot and red fescue and good nectar-source plants include knapweeds and ragworts. This area has remnants ridge and furrow and several very large ant hills indicative of old grassland, so it is possible that the marbled white colony could be a historic ecological component of the grassland ecosystem. However, it must be stated that unauthorised introductions of butterflies (usually as caterpillars) do take place and this cannot be ruled out as the source of the population here. There is the possibility of an MSc research project into the genetics of the marbled white colony at Wigston Triangle and those in neighbouring counties for comparison.

6.2 BROWN HARE

- 6.2.1 Brown hares, which were recorded on several occasions during surveys in the rural parts of the Borough, are a Priority Species in the UK Biodiversity Action Plan (Anon, 1998), selected because their numbers have shown a decline of about 75% in the last 60 years (Tapper and Hobson, 2002). The ideal habitat for brown hare is the traditional mixed farm, a mosaic of cereals, root crops and pasture in close proximity to each other, which provides food and cover throughout the year. Modern farming practices are rarely conducive to the support of brown hare since neither large scale mono-culture or extensive livestock pastures can provide continuity of grazing through the seasons.
- 6.2.2 All sightings were of individuals running for cover into hedgerows and crops, from open areas such as set-aside and grassland. Abundance of brown hare in the Borough is difficult to assess due to their association with longer grass and tall crops, but in general they appear to be fairly widespread. Being mainly nocturnal an effective way to assess numbers is by undertaking a spotlight count of fields at night. Anything above 40 hares per 100 hectares is a high density (Tapper and Hobson, 2002).
- 6.2.3 Resources for brown hare can be increased in a number of ways. These include the planting of game crops to provide both cover and food and including mown grass strips across arable fields to provide valuable summer grazing away from hedgerows where predation risk is high. On livestock farms, leaving some areas ungrazed and uncut is also recommended to provide undisturbed cover for the rearing of leverets.

6.3 FARMLAND BIRDS

- 6.3.1 This section describes distribution and use of the borough mainly from this very brief survey, though 2004 records provided by Paul Fisher have been incorporated wherever relevant.

Grey Partridge

- 6.3.2 The current survey and additional 2004 data have produced only two records for grey partridge. Both records are for single birds using farmland between the Grand Union Canal and River Sence, east and west of Kilby Bridge and both are from the non-breeding season. However, as a sedentary species seen in suitable habitat, these are likely to be birds which have bred locally.
- 6.3.3 Suitable breeding and wintering habitat is available in the areas from which these records came and throughout the borough, as a mixture of pasture, rank, semi-improved and marshy grassland, arable crops and areas of dense scrub and hedgerows. However, the generally

scattered distribution of good quality habitat in intensively managed farmland may be a limiting factor, as may the high proportion of hedges with standard trees. Andrews and Rebane (1994) identify a requirement for hedges less than 2m in height and without trees to provide look-out posts for predators. Preferred habitat for this species has low hedges, pesticide-free grassy margins and headlands to provide nesting, sheltering and feeding areas, with weed-rich stubbles and set-aside for winter feeding. Careful selection of options under agri-environment schemes provides the best possibility of securing suitable habitat for this species.

Skylark

- 6.3.4 Small numbers of feeding skylarks were recorded at the southern end of the borough near, SINC 6, Navvy's Pit and in the north-east of the borough near SINC 9. Fludes Lane Wet Meadow, A single bird was also recorded in SINC 15, the Wigston Triangle. The additional 2004/05 records show that farmland around the River Sence and Grand Union Canal has skylarks throughout the year, including singing males in the breeding season. With a mixture of pasture, arable crops and non-intensively managed grassland, the rural parts of the borough have suitable year-round habitat for skylarks.
- 6.3.5 In general, cereals and root crops support higher densities than pastures and leys (Williamson, 1967), but the move from spring- to autumn-sown cropping has been highly detrimental to this species. When sown in autumn, the crop becomes tall and dense earlier than for a spring-sown crop and many pairs will only manage a single brood before the habitat becomes unsuitable. Autumn sowing also removes the availability of over-winter stubbles in which spilt grain and weed seeds are an important food source.
- 6.3.6 In this situation the availability of mixed crops can be important. Andrews and Rebane (1994) comment that skylarks may move between crop types for suitable habitat structure e.g. winter cereals in April, spring cereals in May and root crops in June. More recent research has identified the importance of certain agri-environment scheme options, such as unsown 'skylark patches' and conservation headlands, in addition to set-aside, all of which benefit this species.

Song Thrush

- 6.3.7 Six records of individual birds came from the current survey, scattered throughout farmland where suitable habitat exists, and 'low numbers' were also recorded during November 2004. Since the majority of British song thrushes are fairly sedentary, it would be reasonable to assume that these records relate to birds which bred locally. Song thrushes will breed in almost any habitat with trees or bushes, including gardens which have become an

increasingly important resource for this species, so the Borough of Oadby and Wigston, with both rural and urban/suburban areas, should provide much suitable habitat.

- 6.3.8 On farmland, activities such as removal of hedgerows and field boundaries and land drainage have been associated with the decline of this species (Newton, 2004), and the loss of important invertebrate prey species through pesticide use may also be important. Agri-environment schemes may help improve and secure suitable farmland habitat. Provision of information for householders on ways to provide suitable conditions in gardens, e.g. small boulders or other hard surfaces for breaking open snails, and the use of alternatives to weedkillers and molluscicides, may help within the urban and suburban areas.

Willow Tit

- 6.3.9 Records of willow tit on this survey came from the railway corridor scrub near SINC 6, Navy's Pit SP 601 975 and a hedgerow near the River Sence at SP 606 967. On 5 September 2004 a willow tit was noted coming in to roost in a similar area near the River Sence. Possible but not diagnostic calls were also heard from two individual birds in hedgerows near the Wash Brook in the north-east corner of the borough. As willow tits are sedentary and remain in their territories throughout the year (Perrins, 1979) the above records are likely to relate to local breeders, although they may also relate to dispersing juveniles.
- 6.3.10 Since willow tits excavate their own nest-holes they need mature or over-mature trees starting to rot, ideally in riparian or other wetland habitats although many pairs hold territory in fairly dry woodlands. Removal of old trees suitable for excavating nest holes could threaten the continuation of willow tits in the borough; this activity sometimes occurs as the result of the urge to 'tidy' such trees, or from a (sometimes mistaken) concern that they are dangerous. The existence of mature connected hedgerows, mature riparian trees and scrub through agri-environment scheme agreements will all benefit a possible willow tit population in the area.

Tree Sparrow

- 6.3.11 In this survey, tree sparrows were only recorded in farmland at the southern end of the borough; a flock of approximately 20 on the farmland immediately surrounding Kilby Bridge Lock SP 603 970 and a flock of approximately 10 in the fields neighbouring Tythorn Farm SP 622 971. Additional 2004/05 records reinforce the significance of these areas, and small numbers of birds were also present during the breeding season on farmland neighbouring Kilby Bridge. These records also show land immediately to the north of the sewage works at SP 582 966 to hold winter flocks of 20 birds, with a flock of 30 present on 17 April 2005. The Farmland Birds Database also flags this part of the borough as a target area for this species.

- 6.3.12 The land around the Kilby Bridge Lock provides suitable nesting areas, cover and feeding habitat for tree sparrows year-round. Nesting habitat is present in the many non-intensively managed hedges in this area with mature and over-mature trees and mature crack willows along the River Sence may also provide nest holes.
- 6.3.13 Stands of goosefoots and oraches in an arable margin were seen to be used for feeding during this survey, whilst the weedy margins of the same field and additional areas of ruderal food plants may also be important food sources. The mosaic of habitats in the area could also provide invertebrate food needed for raising the young. Land surrounding Tythorn Farm possesses similar habitat features and opportunities for tree sparrows, whilst the presence of three other farmsteads within a one kilometre radius may also be significant. Extensive areas of ruderal vegetation, arable areas and mature trees and woodland all provide potential for a colony in land to the north of the sewage works.
- 6.3.14 Tree sparrows in this area would certainly gain from certain beneficial agricultural practices available under agri-environment schemes, e.g. arable field margins, reduction of herbicide usage and provision of over-wintering stubbles. Newton (2004) identifies loss of food supply as the main causal factor for recent declines in seed-eating farmland species such as the tree sparrow.

Linnets

- 6.3.15 In this survey linnets were recorded near Oadby Lodge Farm in the north-east of the borough and on land surrounding the Grand Union canal near Kilby Bridge Lock. These were mainly single birds but included a flock of approximately 12. Additional data provided records of flocks of 20 birds on 15 February 2005 and 35 on 17 April 2005 on land around the sewage works.
- 6.3.16 Breeding and wintering habitat is available throughout the borough: a mixture of pastoral and arable farmland with a network of hedgerows, grassland interspersed with scrub and localised large stands of ruderal vegetation, such as that found near the sewage works, being a locally significant food source. The large stretches of dense scrub along the Leicester to London railway corridor may also be significant local nesting habitat. Threats to the potential breeding population would relate to agricultural practices and their impacts on availability of nest sites and feeding areas. More detailed breeding season surveys could highlight areas used by linnets and help target particular landowners for participation in beneficial management practices through agri-environment schemes.

Bullfinch

- 6.3.17 Bullfinches were mainly recorded in two areas, namely the southern end of the borough, east of 'Kilby Bridge Lock' and between the railway line and the River Sence and in notably higher numbers on farmland north of the Wash Brook. Single birds were noted in Lucas Marsh LNR and Wigston Triangle SINC 15. Records were mainly singles and pairs, but a group of three comprising two males and a female was recorded. From the additional 2004/05 data it seems that non-breeding season records of singles and pairs of birds are concentrated along the railway corridor and the Grand Union Canal. A notable flock of three males and at least six females was recorded at the sewage works SP 592 967.
- 6.3.18 The area to the south of the borough has good quantities of year-round habitat in the form of suitable scrub nesting areas, a network of continuous cover and good feeding areas. Breeding habitat is provided by non-intensively managed mature hedgerows with trees that include areas of dense blackthorn scrub, such as along the Grand Union Canal, and the continuous areas of dense hawthorn scrub along the railway corridor. Feeding opportunities are available through a range of woody species for buds, shoots, flowers and seeds and marginal areas for arable weeds and stands of ruderal vegetation. Invertebrate food, needed for raising young, will also be provided by the mosaic of habitats in this area. The bullfinch records at Lucas Marsh LNR and Wigston Triangle SINC reflect the connectivity of these sites to year-round suitable habitat.
- 6.3.19 The main threats to the bullfinch population in this area would arise from intensification of the arable farmland e.g. loss of hedgerow nesting habitat and loss of quantity and diversity of weed seeds. In this respect the railway corridor could prove to be significant habitat in the future, as its management is likely to remain favourable for bullfinches. Recommended future work would be for breeding bird surveys to pinpoint breeding areas and whether favourable management could be secured with the relevant landowner. This may be achieved through agri-environment scheme agreements.

Yellowhammer

- 6.3.20 Yellowhammers were recorded in farmland in the north-east of the borough, the eastern boundary immediately north of Glebe Farm and south of the Grand Union Canal between Knights Bridge and Kilby Lock Bridge. At least three separate single birds and a group of four birds were recorded near Oadby Lodge Farm. Additional 2004/05 data provides similar records plus evidence of yellowhammers in farmland east of Kilby Bridge and south of the Grand Union Canal. Several singing males were also noted throughout this southern end of the borough, east and west of Kilby Bridge on 25 and 27 March 2005.

6.3.21 Non-intensively managed hedgerows, a mixture of arable and pastoral land uses, wetlands and marginal habitats provide yellowhammers with suitable habitat. Like many predominantly seed-eating farmland birds, this species is at risk from intensive agricultural practices that remove seed food sources and nesting areas. Practices such as reduced use of pesticides, weed-rich margins, non-intensively managed hedgerows with dense cover at the base and over-winter stubbles all benefit this species. Promotion of agri-environmental schemes to landowners within the borough could help secure such beneficial practices.

Reed Bunting

6.3.22 Reed bunting records during this survey and from additional 2004/05 data are predominantly associated with the Grand Union Canal and the River Sence or nearby farmland. Records mainly consisted of single birds outside of the breeding season, whilst reed buntings were recorded coming in to roost 'in numbers' (*pers comm.*) near the sewage works SP 592 966 on 01 September 2004. Isolated records were of single birds in the Wigston Triangle SINC and near the Wash Brook in the north-east corner of the borough.

6.3.23 The main watercourses and surrounding farmland habitats provide a range of nesting sites and feeding opportunities all year. Suitable habitat includes marginal areas of tall emergent vegetation, dense scrub on the banks of watercourses and a mixture of seed sources such as arable margins, grass leys and stands of ruderal vegetation. However the ratio of intensively grazed pasture to arable crops and the quality of feeding opportunities within arable areas may be a limiting factor. Important breeding season invertebrate food sources such as midges, damselflies, dragonflies and caterpillars will be provided by waterbodies and surrounding hedgerows and trees. The relatively large stands of ruderal vegetation around the sewage works may be a locally important food source. Away from the main watercourses suitable breeding habitat is available at the wetland areas of Navy's Pit SINC, Lucas Marsh LNR and the Limeselves area of the Kilby-Foxton Canal SSSI. Ponds with stands of marginal vegetation and willow scrub and the rough grassland areas with scattered scrub at Glen Gorse Golf Club are also potential breeding habitat.

6.3.24 Hedgerow removal and loss of seed food sources are perhaps the most likely threats to reed buntings in the borough. Breeding season surveys would be recommended to assess the distribution and density of birds which could enable particular areas to be targeted for agri-environment schemes and the provision of suitable habitat.

7 SUMMARY OF CURRENT STATUS

7.1 OVERVIEW

- 7.1.1 The Borough of Oadby and Wigston has two important advantages in terms of promoting high biodiversity. Firstly, it has urban, suburban and rural habitats in close proximity. The value of the first two of these is increasingly being recognised, and for suburban habitats in particular, is steadily growing. Secondly the borough has a series of 'green wedges' which bring these habitats even closer together. This allows many species, particularly birds but other groups also, to use features of all of them.
- 7.1.2 The borough has three major corridors: in the north, bounding the north-east edge of Oadby; centrally, dividing the two 'villages'; and in the south, formed by the railway line, canal and River Sence. Each of these corridors has its own character in terms of current and future potential biodiversity. These are briefly described here, and the remainder of this section summarises current strengths and opportunities in terms of individual habitats and species. The final section sets out recommendations for optimising this potential and for further surveys to continue and monitor this process.
- 7.1.3 The northern corridor comprises mainly farmland along the minor road to Little Stretton, linking in to the golf course at Evington and the large areas of garden in the northern part of Oadby. Ponds are scarce and this area has relatively large fields, mainly arable but still including some substantial areas of grassland. The potential exists for good populations of open country birds here, particularly skylark but perhaps also grey partridge and even lapwing, and also for brown hare. All of these species use arable, especially where carefully managed, but benefit from having grassland close by. Comparison with the earlier survey has shown that the grassland here has been subject to agricultural improvement, but the potential exists for using agri-environment schemes to retrieve grassland of botanically greater value.
- 7.1.4 In the open farmland areas old trees are relatively scarce, although close to Oadby the importance of this resource increases greatly, and this often relates to woodland: in fact this area has most of the current woodland in the borough, much of it within Oadby itself. Despite the relative scarcity of hedges, bullfinches were a feature of this area, and were mainly seen close to these small woodlands.
- 7.1.5 The central wedge, extending out to include farmland to the east, between the A6 trunk road and the railway, also includes some large areas without hedges but in general fields here are smaller, often with species-rich and/or well-tree'd hedges, and there are many important trees. This area also has most of the ponds in the borough but outside the Country Park,

woodland is scarce. Grassland occurs in three main areas, on the golf course, in the Country Park, and close to the southern edge of Wigston, along the railway line. Most of this is poor semi-improved, and comparison with the last survey again shows loss of botanically richer grassland.

- 7.1.6 Records of farmland birds were surprisingly scarce in this area, but it should have high potential for use by hedgerow species and also by foraging bats, given the extent of hedges and their links to ponds. It is perhaps notable in this regard that most of the known bat records are from houses around this corridor, although this could be an artefact of recording.
- 7.1.7 The southern corridor is formed initially by three parallel features although the canal and river continue west while the railway sweeps north through Wigston, bordered by significant garden and similar suburban habitats. Where they run parallel the three features are linked by small, often hedged, fields and most of the better grassland in the borough is now found here. Ponds are relatively scarce, although most of the larger waterbodies are here, and despite the good numbers of hedgerow trees, veteran and other important trees are also scarce, as is woodland.
- 7.1.8 The most significant species using this corridor is the otter, and opportunities exist to improve this further. The status of water vole is problematic at present, perhaps linked to the presence of mink, but again this could be improved. With hedges, and both linear and still waterbodies, targeted survey should prove this corridor to be as good for foraging bats as it certainly is for farmland birds. Willow tit, tree sparrow, bullfinch and reed bunting were all recorded here, and the range of habitats needed by these species both indicate the excellent mosaic already present and point up the potential for building on this in future.

7.2 HABITATS

- 7.2.1 The borough has a very good hedgerow network, and many of these hedges have native trees. Given this, the fact that only 13 meet the Hedgerow Regulations criteria for Importance might be considered disappointing. However, many more meet or almost meet the BAP criteria for species-richness, having four or five native species. Some of these are recently planted, so will in time become 'Important' but an opportunity exists to improve others, for example by gapping up (perhaps with additional locally-native species) those which are no longer stockproof, by allowing tree saplings (or singling coppice stools) within the hedge to grow up into standard trees, or by increasing their 'connections' by planting up field-corner woodlands (see paragraph 7.2.7 below).
- 7.2.2 The network already includes many well-managed hedges, of good height and width with dense growth at the base, but there are hedges in all areas which could be improved by

managing them to this standard. This might include initial laying (over several winters so that some hedges in all areas are available for nesting and feeding throughout) followed by rotational cutting so that flowers (providing nectar and pollen) and berries are always available for feeding. This would benefit many faunal species, particularly invertebrates, foraging bats and nesting and roosting birds. Provision of even a narrow headland of tussocky rough grassland adjacent to these hedges would increase their value to nesting birds, hares and small mammals (and hunting owls and kestrels), though the wider this can be, the better.

- 7.2.3 The loss of **species-rich grassland** in recent years is disappointing, although summer survey (see paragraph 8.1.2 below) may show this to be less severe than it appears at present. All areas lack grassland so any increase would be valuable, but if resources are limited, targeting the southern corridor, which already has the most grassland, and where plants could spread via the railway embankments, river and canal, could be the most cost-effective. In addition, serious consideration should be given to increasing species-richness of grassland in sites where the borough council has some input to management or is otherwise in a position to influence this, such as the Country Park and perhaps the municipal golf course.
- 7.2.4 The good number of still-identifiable **ponds**, particularly in the eastern part of the central wedge, is another asset to the borough, and although many, perhaps most, of these are not in good condition, the opportunity exists to improve this. Available resources could be most cost-effectively directed to retrieving ponds which hold water all year, but have, for example, begun to silt up, or are too overshadowed by tall woody vegetation, or are getting overgrown by dominants such as bulrush, or are filling with woody debris, all of which will reduce aquatic plant growth and thus their viability as ponds.
- 7.2.5 Other ponds which it would be valuable to restore are those which lie beside or close to good hedges, good grassland or existing ponds with great crested newt records, and/or have veteran or other important trees close by. In all cases these are likely to be used by foraging bats and other wildlife. Where any ponds which currently lack good aquatics are enhanced by removal of shading growth etc, it would be valuable to introduce water plants from some of the ponds described in this report which have a good aquatic flora. Transplantation of plants may also re-introduce aquatic invertebrates, and this process could be hastened by similarly moving one or more buckets of basal substratum from healthy ponds. Whenever such transplantation is used, however, the donor pond should first be very carefully scrutinised to ensure that aquatic aliens (eg *Crassula helmsii*) are not present. No such species were identified by this survey, but they could be accidentally introduced at any time.
- 7.2.6 Also not in good condition is the **ditch network**. Although many hedges are accompanied by ditches, most of these are only seasonally wet at best. Their potential to act as both movement corridors and wetland habitats in their own right, for example for amphibians or

water voles, would be much improved by holding water all year. This is considered further below.

7.2.7 This survey has shown that all **three flowing watercourses** in the borough are eutrophic, but this is now typical of lowland streams and rivers, particularly in arable areas. It would require concerted action to improve this situation, but a first step would be to determine whether pollution comes from one or more point sources, or whether it is more widespread (see paragraph 8.1.2 below). In the latter case, provision of riparian buffer strips could both improve water quality and provide land for good new habitats in their own right. Interestingly the Grand Union canal appears to be the least eutrophic of the three watercourses, despite the presence of boat traffic.

7.2.8 The major habitat deficiency in the borough is the very small total area of **woodland**, with what there is mainly comprising scattered scraps. Increasing the total area, both by planting new farm woodlands, ideally adjacent to good hedges or grassland (but certainly not on existing grassland, itself a scarce habitat) or other linear corridors such as the railway line, and by extending existing woods, would be a valuable enhancement. In the northern corridor it would be possible to aim to link existing woodlands by such planting (or just by fencing an area adjacent to a woodland to allow natural regeneration), but elsewhere there is so little woodland that this must remain a long-term aim.

7.2.9 The borough does however have a tremendous resource in its **trees of special interest**, and these should be protected and monitored. Not all the trees identified are yet true 'veterans', but it is equally important to conserve near-veterans for coming years. The majority of these trees are in rural locations, but closer survey of private gardens, perhaps by questionnaire, will certainly identify more. Should it be necessary to manage any important trees which are close to roads or paths, this should wherever possible be limited to removal of the minimum number of branches only, leaving the trunk if at all possible. Even where these trees die, their standing dead stumps are of huge biodiversity value. This habitat is essential to some very rare invertebrates and nationally it is a diminishing resource. To possess so many large trees, often closely adjacent, is one of the borough's major strengths.

7.3 SPECIES

7.3.1 The borough has a known population of **great crested newts** using the Glen Gorse Golf Course and records may exist for other areas. There is therefore clear potential to expand this population, and that of other amphibians, by enhancing existing ponds and retrieving others. Where good ponds exist or could be brought back to viability, in mainly arable areas, these need to be linked together for the greatest effect. For maximum use by as many species as possible, the ideal corridor would be a good hedge (at least 1.5m high and

managed to have a dense base) with a wet ditch and rough grass headland. For amphibians the last two are the most important, and at least one of these should be provided along every hedge.

- 7.3.2 In terms of mammals the borough has both solid strengths and good opportunities. Its main obvious strength at present is its use by otters. This appears to be mainly for passaging at the moment; feeding signs and spraints are regularly found and two artificial holts have been constructed, but as yet there is no evidence that these are being used. There is therefore high potential to provide habitat for both holts and lying-up places, ideally in the corridor formed by the river, canal and railway line, particularly where these features are furthest from access points. The best habitat to provide would be wet woodland, which is itself a BAP priority and very seriously lacking. If suitable sites for woodland creation lie back from the watercourse, they should be linked to it by a hedge/wet ditch corridor.
- 7.3.3 A full targeted survey of the canal and river in summer may find more evidence of the presence of water voles, especially if account is taken of the way water voles change their habits in the known presence of mink by becoming more secretive, not producing latrines and tending to use under-water entrances to their burrows. The use of floating platforms with a clay substratum for recording footprints can be a useful tool where mink are present. The chance of retaining water voles in the borough could be enhanced however by taking advantage of two characteristics of this species: they are more likely to use small watercourses and waterbodies, such as ditches and ponds, than mink, and they are much less sensitive to the presence of humans. Enhancing the ditch network and improving defunct field ponds, perhaps initially close to sites with previous water vole records, would therefore assist this species.
- 7.3.4 With such a wealth of old trees and both the canal and river providing foraging corridors, it is likely that the borough already has populations of several bat species, and targeted survey could establish this. Populations of most bats could be enhanced by the measures already mentioned for other species: increasing the area of woodland and enhancing corridors both from the suburbs to the countryside and between features in the more open areas. Bats need sheltered corridors both to reduce the risks of predation, especially in summer when they leave the roost before dark, and to reduce energy loss when flying on windy nights. A very good opportunity exists to enhance bat populations by identifying actual and potential foraging routes and upgrading these where necessary and possible.
- 7.3.5 The final strength in biodiversity terms identified by this audit is the use of the borough by BAP and red list farmland birds. Two areas were found to be particularly rich in this survey, the eastern salient and the southern corridor, but individual species were also recorded in other areas. It is noteworthy that the Farmland Birds Database flags both these areas for tree

sparrow and farmland close to the northern corridor also for grey partridge. All of the measures suggested for the borough's key habitats would benefit one or more farmland bird species.

8 RECOMMENDATIONS

8.1 FURTHER DATA COLLECTION

8.1.1 National and, where known, local bodies or individuals who could be approached to provide additional existing information are listed in Appendix 6. Some of these bodies, or their members, may also agree to undertake or assist with the further surveys suggested below.

8.1.2 The following specialist surveys are recommended in order to fill existing gaps and provide locations for targeting habitat enhancement or creation:

- summer botanical survey of as many as possible of the areas identified as semi-improved grassland, particularly poor semi-improved, to determine whether any could be upgraded;
- UWWTD surveys on each watercourse where it enters and leaves the borough and where they can be identified, above and below any point source of pollution (eg sewage or storm drain outfalls: the water vole surveys may help in finding these). Discuss these results with the Environment Agency to determine whether any action is possible to improve the status of the watercourses.
- great crested newt survey of as many extant ponds as possible, particularly those within 500m of ponds with existing records. Whilst torchlight survey would be the ideal, this could simply involve daytime egg- and refuge-searches initially, especially if manpower is limited;
- 'tinning' and cold-searching for reptiles at selected sites, such as Wigston Triangle and other SINC's close to the railway line;
- evening and/or dawn bat watches to identify roosts in trees or canal structures, and transect walks with bat-detectors in potential feeding areas;
- water vole surveys, by boat along the canal and from the channel for the river, and including use of rafts; and
- spotlight counts of fields at night to determine the presence and densities of brown hare.

8.2 SINC's

8.2.1 The recommendations in this and the following section are ideals and it is recognised that as most or all of the areas concerned are private land, they will not always be (immediately) attainable. They are however intended to provide guidelines for directing action where

biodiversity gain becomes possible, whether as a result of agri environment schemes or via the planning process, eg within a S106 agreement.

8.2.2 Consideration should be given to learning more about the following SINCs, extending them and/or improving their current management as set out below:

- **SINC 1:** Spring great crested newt survey; cut back overhanging vegetation to allow light in to the surface; clear blanketweed in autumn/winter (with care, so that any animals removed are able to return to the pond)
- **SINC 2:** Visit to assess any damage to trees resulting from construction works,
- **SINC 3:** Plan a programme of coppicing or pollarding trees over the pond to reduce shading. (But note the presence of important lichens.)
- **SINC 4:** Clear snowberry and control ruderal vegetation; add habitat diversity to the notification
- **SINC 5:** Carry out dredging and tree/shrub clearance works on the pond to increase the area and extent of open water. Clear/coppice or pollard some stretches of trees and scrub along the stream to allow light to reach the water. Reinststate meanders.
- **SINC 6:** Investigate current use for fishing. Survey for amphibians and reptiles; try to secure at least one pond free from stocking in order to retain breeding amphibians. Resurvey for aquatic plants in summer and attempt to re-introduce if important species have been lost.
- **SINC 7:** Summer surveys for water voles, aquatic plants, invertebrates and use by bats; check structures for bat roosts. Discuss the possibility of reducing siltation with British Waterways.
- **SINC 8:** Clear/coppice or pollard some stretches of trees and scrub along the stream to allow light to reach the water. Re-survey both woodland and stream for plants in summer and consider enhancing the flora from local sources if necessary.
- **SINC 9:** Manage the hedgerow to reach at least 1.5m and retain dense growth at the base. Monitor for Invasion of woody species and introduce a mowing regime if necessary to prevent this. Survey for invertebrates and use by foraging bats.