

**BOROUGH OF OADBY AND WIGSTON:
REPORT ON THE BIODIVERSITY AUDIT 2005**



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**BOROUGH OF OADBY AND WIGSTON:
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1 INTRODUCTION

- 1.1 Given the considerable time which has elapsed since the last Phase 1 survey was undertaken (a full survey in the 1970s with an urban survey in 1996 and a rural survey in 2000), the Borough of Oadby and Wigston has identified a need to update this work and re-evaluate baseline information on its biodiversity.
- 1.2 The Phase 1 survey in turn will serve as a baseline for the Sustainability Appraisal for the progress of the Local Development Framework, and for a review of the Biodiversity Action Plan. The Biodiversity Audit will be used to update this Action Plan, and to assist in identifying future targets.
- 1.3 The objectives for the survey were set out as follows:
- 1 to determine the extent in hectares and condition of each characteristic habitat within the borough and compare this with baseline data from the previous Phase 1 Habitat Survey;
 - 2 to determine the extent and distribution of each priority species within the borough and compare this with baseline data from the Record Centre;
 - 3 to put forward a proposal for recording data at a local district level, using GIS;
 - 4 to determine which of these characteristic habitats are protected as SSSIs or SINC's and identify other sites which may be suitable, as SINC's in particular;
 - 5 to determine the quality of the SSSI and the SINC's;
 - 6 to determine whether further surveying and/or monitoring of species needs to be undertaken by identifying specific habitats suitable for specific priority species in order to assist with management of 'corridors' at a landscape scale;
 - 7 to determine whether the priority species within the BAP can be supported within the borough by addressing the current condition of the specific habitat required and relating this to objective 1;
 - 8 to determine whether additional habitat or species action plans may be required for the borough, in particular for farmland birds; and
 - 9 to determine whether there are suitable locations for additional woodland planting.
- 1.4 ESL (Ecological Services) Ltd has been commissioned to provide this information. This report covers the Biodiversity Audit. It follows on from the Phase 1 survey report (ESL, 2005) which describes the fieldwork carried out for both surveys and gives the results for the Phase 1 survey. English names for species are used throughout the text, with scientific names for all species mentioned provided in Appendix 1.

2 METHODS

2.1 FIELDWORK

2.1.1 Surveys were carried out between 26 September and 1 November 2005 by a team of experienced ecologists. The fieldwork completed for both the Phase 1 survey and Biodiversity Audit is described in detail in ESL, 2005 and summarised below.

- All areas of open land within the Borough were mapped using the standard Phase 1 methodology (JNCC, 1993), with agreed codes and symbols to specify habitat types and boundaries.
- A modified version of the Environment Agency aquatic macrophyte survey developed for the Urban Waste-water Treatment Directive was used to assess the ecological status of the Grand Union Canal, River Sence and Washbrook Stream. This is described in Appendix 2.
- All rural hedges were surveyed against the criteria set out in the Hedgerow Regulations 1997, to identify hedges Important for Wildlife and Landscape.
- Details were recorded of all 'significant' trees, comprising those considered to qualify for veteran or near veteran status, together with smaller/younger trees considered to have potential to support roosting bats.
- All field signs and sightings of statutorily protected species and species included in Local and UK Biodiversity Action Plans were recorded and mapped.
- Invasive alien plants encountered were recorded and their locations mapped.
- More detailed surveys were carried out of Sites of Importance for Nature Conservation (SINCs) in order to compare status at designation and current condition. More detailed descriptions were also prepared for the Brocks Hill Country Park, Lucas Marsh Local Nature Reserve and Lime Delves SSSI.

2.2 DESK STUDY

2.2.1 Prior to the surveys commencing, a search was carried out for existing information relating to the Biodiversity of the Borough. Copies of the SINC citations were supplied by Oadby and Wigston Borough Council, together with a copy of Guidelines for the selection of Sites of Importance for Nature Conservation in Leicester, Leicestershire and Rutland (Lott, 2001). Other documents supplied by Oadby and Wigston Borough Council are listed in Appendix 3.1. The Council also provided notes and records on a number of sites and species collected by Paul Fisher, a local naturalist.

2.2.2 Leicestershire Environmental Resources Centre provided records of veteran trees and data relating to surveys carried out in the 1980s and 1990s, a copy of the English Nature citation for the Kilby-Foxton Canal SSSI, and a copy of the draft site management statement for Lime

Delves, which is part of this SSSI. Elizabeth Peat provided details of known bat roosts in the borough. This information is given in Appendix 3.2.

2.2.3 Maps produced for the RSPB/RDS/EN/BTO Farmland Birds Database, used in determining target species for Defra HLS, were also reviewed.

2.2.4 Where these reports have been quoted from or used extensively in preparing specific parts of this report, they are also listed in Section 9, the Bibliography, below.

2.3 MAP PREPARATION

2.3.1 In summary, the information from the field maps was digitized using MapInfo Professional v8.0 Geographic Information System (GIS); this was then converted to ARCview to provide the required electronic copy.

2.3.2 GPS records of all features, both habitats and species locations, were converted directly into a MapInfo table which was used to create points on the maps. Area polygons were mapped first by using the underlying Ordnance Survey (OS) vector data to determine the field boundaries and MapInfo tool 'Snap to Node'. Hedges were mapped to the same field boundaries. All other species sightings, for which there were no GPS records, were located as accurately as possible on the base maps and input to spreadsheets, which were converted to MapInfo tables. The tables were then used to produce draft maps for checking by the surveyors and amendments were made where necessary.

3 HABITATS

3.1 HEDGEROWS

3.1.1 The total length of hedges recorded in the Borough of Oadby and Wigston by this survey was 84.96km (See Table 1 below). From the standard method, hedges can be broken down into eight categories: intact and defunct (defined as having gaps totalling more than 10% of the total length), rich and poor in native woody species, and both with and without standard trees in each case. Species-rich hedges are those which average at least 5 woody species over 30m and species-poor, those averaging less than 5. Hedges in five of these categories were found in the borough, and Table 1 gives the length of each present. The hedge which runs beside the towpath of the Grand Union Canal was surveyed along its entire length within the borough. As this hedge runs for several kilometres, it was divided into sections beginning and ending at either locks or bridges, with the number of samples surveyed in each section being determined by the section length.

TABLE 1 LENGTH OF HEDGEROW IN EACH CATEGORY

Description	Length (m)	Description	Length (m)
Intact, species-poor, with trees	60,297	Defunct, species-poor, with trees	0
Intact, species-poor, without trees	11,178	Defunct, species-poor, without trees	6,617
Intact, species-rich, with trees	5,548	Defunct, species-rich, with trees	0
Intact, species-rich, without trees	1,121	Defunct, species-rich, without trees	0

- 3.1.2 Although it is difficult to identify a 'typical' hedge over the entire borough, by far the most frequent hedge type identified in this survey was that dominated by hawthorn with smaller amounts of blackthorn, elder and dog-rose. Ash and English elm occurred fairly frequently as both shrubs and standard trees, but pedunculate oak was found almost entirely as a standard. In the south of the borough, between the River Sence and Grand Union Canal, mature crack willows were a common feature of the hedges.
- 3.1.3 All hedges were assessed against two different but related standards. The methodology for identifying hedges which meet the criteria set out in the Hedgerow Regulations (HR) 1997 is described in ESL 2005. A number of other hedges in the borough have been classified as species-rich according to the UK Biodiversity Action Plan for this habitat. This only requires that hedges have an average of five woody species over 30m (calculated exactly as for the HR) for southern counties, or an average of four species in the north. These hedges may not qualify as important under the HR because they are less than 30 years old (often quite recently planted) or because they do not score highly enough on additional features. To qualify under the HR, hedges must be at least 30 years old. Both Important and species-rich hedges are shown on Figure 1 and ESL standard hedge recording forms for these hedges are given in Appendix 4. Thirteen hedges were found to satisfy the regulations, and a description of each hedge is given below.
- 3.1.4 H1 forms part of SINC 4, Stackyard Spinney. This hedge averaged six species over two 30m lengths and contains nine species in total. These species are field maple, hawthorn, ash, crab apple, blackthorn, pedunculate oak, dog-rose, elder and beech. Sycamore is also present but being non-native it is not included in the species counts. The field side of this hedge at the time of survey had recently been flailed and there was evidence of historical laying. No other management was obvious and the large number of mature trees indicate that this hedge is growing out. Three of the mature pedunculate oaks in this hedge were classified as veteran or near veteran, adding to the interest in this hedge.
- 3.1.5 H2 runs adjacent to a public right of way. It had four species in the 30m section surveyed and a total of seven scoring species over the length of the hedge. These are hawthorn, blackthorn, ash, crab apple, pedunculate oak, dog-rose and elder. Sycamore was also

present but does not score. This hedge connects to two hedges and a pond. At the time of the survey there had been no obvious recent management.

- 3.1.6 **H3** runs adjacent to a public footpath and part of it is next to SINC 8, Fludes Lane Wet Meadow. The average height of the hedge is 3m and width 2.5m and the three 30m sections surveyed averaged five woody species each. Ten scoring species were present overall, together with a non-scoring domestic apple. The scoring species are field maple, hawthorn, ash, both as a standard tree and shrub, crab apple, blackthorn, dog-rose, buckthorn, elder, English elm and a willow species. At the time of survey there had been no recent management but there was evidence of historic laying. This hedge is connected to five other hedges and also to a pond and to broad-leaved woodland. Two bullfinches were recorded at the eastern end of this hedge, with two more where the hedge meets SINC 8.



Photograph 3.1.1 Hedge H3

- 3.1.7 **H4** is a short section of hedge with six species, field maple, hawthorn, blackthorn, ash, dog-rose and English elm, in a 30m length. At the time of survey there had been no obvious recent management of the hedge but there was evidence that it had been layed in the past. The average height is 5m and width is 2 to 3m.
- 3.1.8 **H5** divides two arable fields near the Beauchamp Community College complex. Over three 30m sections the average number of woody species is five, with ten species overall in the hedge. These are field maple, hawthorn, ash, holly, crab apple, blackthorn, dog-rose, willow, elder and English elm. The hedge had obviously been trimmed to a box shape in the past, but the number of mature trees present indicate this hedge is in the process of growing out. This hedge has two connections to ponds and one to broad-leaved woodland.
- 3.1.9 **H6** forms the south-western boundary to Coombe Park. It runs adjacent to a footpath and thus, although having a mean of only four woody species in three 30m sections, it meets the

HR criteria through its additional features. These include connections to two other hedges and an area of broad-leaved plantation. There is evidence that this hedge has been historically layed but is now growing out. Its average height is 5m and width 3m.

3.1.10 H7 forms the south-eastern boundary of SINC 16, Glen Gorse Golf Club. Over 3 x 30m lengths, the average number of woody species is 5.33 with 11 species overall. These are field maple, dogwood, hawthorn, ash, crab apple, blackthorn, dog-rose, buckthorn, elder, wych elm and English elm. Non-native species present, not included in the total species count, are horse-chestnut and sycamore. There has been no obvious recent management of this hedge but it has been historically layed and is considered to be grown out. Other features contributing to the overall score of this hedge are standard trees at least every 50m and a parallel hedge within 15m, in addition to three hedge connections and three connections to ponds. Mere Lane bridleway runs parallel along the entire length of the hedge.

3.1.11 H8 could be considered to be a continuation of the previous hedge, running parallel to Mere Lane south of Glen Gorse Golf Club. Over 2 x 30m lengths, woody species average six with eight species in the hedge overall, including field maple, hawthorn, ash, blackthorn, dog-rose, elder and English elm. Unlike the previous hedge, this hedge has been trimmed in the past as well as being layed. The average height of the hedge is 2m and width is 1.5m. It has standard trees at least every 50m and four hedge connections.



Photograph 3.1.2 Hedge H8

3.1.12 H9 is one stretch of the long hedge which runs parallel to the canal towpath. The three sections surveyed had an average of 4.33 species present although in total, six scoring

species were present: hawthorn, spindle, ash, blackthorn, dog-rose and elder. Garden privet was also present but is not native so does not score. This hedge is adjacent to a public right of way and for this reason, together with features including a parallel hedge within 15m and gaps less than 10% of length, it meets the Hedgerow Regulations criteria.

- 3.1.13 H10 contained six species in the 30m section surveyed. Species present were dogwood, hawthorn, blackthorn, dog-rose, elder and ash, the latter appearing as both a shrub and standard tree. The average height of the hedge is 2m and width is 1m. While the hedge has been trimmed into a box shape, there is evidence of historical laying.
- 3.1.14 H11 is a short section of hedge on the eastern boundary of the borough, south of the railway line. At the time of survey it had been recently flailed into a box shape but there is evidence of past laying. The average height is 2m and width 1.5m. One 30m section of this hedge was surveyed and the six species recorded were field maple, hawthorn, ash, blackthorn, dog-rose and elder.
- 3.1.15 H12 is located between the canal and River Sence. It is managed to a box shape and there has been some flailing. The average height and width are 4.5m and 2.5m respectively. The number of woody species recorded in a 30m length was seven with eight present in the entire hedge; these are hawthorn, ash, crab apple, blackthorn, dog-rose, buckthorn and guelder-rose in the 30m, with elder also present elsewhere.
- 3.1.16 H13 also lies on the eastern boundary of the borough, between the Grand Union Canal and River Sence. Over two 30m lengths the average number of woody species is 5.5 with nine species in total. These species are field maple, dogwood, Midland hawthorn, hawthorn, ash, blackthorn, dog-rose, elder and English elm. At 4m tall and 2m wide, this hedge is now grown out but has evidence of past laying. It should be noted that this hedge has been damaged by the erection of a new post and wire fence on its western side. A number of branches and roots had been removed.

3.2 GRASSLAND

- 3.2.1 The total area of each major type of grassland present in the borough is shown in Table 2. To the extent possible, given that the original maps were produced to a much smaller scale, this table shows the areas identified in the 2001 survey for comparison. Figure 2 shows locations of each grassland type, excluding amenity and improved grasslands. For locations of areas of these grasslands refer to Phase 1 maps in ESL, 2005.
- 3.2.2 Grasslands identified on this survey have been classified as amenity, poor semi-improved neutral grassland, good semi-improved neutral grassland, semi-improved calcareous

grassland, unimproved neutral grassland, unimproved calcareous grassland and marshy grassland. Comparing the totals given in Table 2, it is clear that there have been significant changes in the grassland composition of the borough since the previous survey in 2001.

TABLE 2 AREA OF GRASSLAND OF EACH TYPE FROM EACH SURVEY

Description	2005	2001
	Area (ha)	Area (ha)
Amenity grassland	220.76	106.98
'Poor' semi-improved (neutral) grassland	92.46	67.47
'Good' semi-improved (neutral) grassland	32.21	132.10
Semi-improved calcareous grassland	1.75	-
Unimproved neutral grassland	10.97	9.26
Unimproved calcareous grassland	0.15	-
Marshy grassland	4.30	6.19

- 3.2.3 By far the most extensive grassland type in the borough is amenity grassland making up 220.76ha of the current grassland resource. This includes school playing fields and public parks and its area has doubled since the 2001 survey.
- 3.2.4 Of particular note is the reduction in total area of good semi-improved grassland from 132.10ha to 32.21 ha. Much of this loss has occurred in the south of the borough, between the River Sence and the Grand Union Canal, south of Wigston Triangle, where agricultural practices have resulted in the improvement of the grassland. A similar situation has occurred in the north-east of the Borough, near the former Oadby Lodge Farm where formerly good semi-improved grassland has been reduced to either poor semi-improved or improved status.
- 3.2.5 Very little unimproved grassland exists in the borough and most of what remains is to be found in SINC's (see descriptions of SINC's 6, 10 and 15 in Appendix 5). Outside SINC's, neutral grassland is predominantly rank with low value in relation to the species present but no agricultural management. Examples of this include neutral grassland in squares C7 and F3 where the grassland is dominated by coarse grasses including cock's-foot, false oat-grass and common couch with common nettle and creeping thistle also present. Opportunities exist in these areas for management to improve the quality of these grasslands.
- 3.2.6 Similar unimproved neutral grassland was also identified along the railways east of SINC 6 (Navy's Pit) and around SINC 15 (Wigston Triangle). These areas are dominated by false oat-grass and common couch, but do provide corridors connecting habitats and could be a valuable wildlife resource in the borough.



Photograph 3.2.1 Unimproved grassland along railway



Photograph 3.2.2 Road verge along Gartree Road, B582

3.2.7 The only other neutral grassland identified was in three road verges in the north of the borough (grid squares B5 and B6). These verges are managed by regular mowing but again have not been agriculturally improved. The species present include perennial rye-grass, Yorkshire-fog, cock's-foot and false oat-grass with dandelion, creeping buttercup, yarrow and common vetch. Fuller descriptions of these areas are given in the target notes of ESL, 2005.

3.2.8 Most of the areas of marshy grassland in the borough are located in SINC's (see descriptions of SINC's 9, 11, 15 and 20 in Appendix 5), with an area also present in Lime Delves SSSI. There are also two areas of this type of grassland in flood relief basins in grid squares E4 and F4. Both are surrounded by amenity grassland and used by local people. The area in E4, north of Newton Lane, has been identified as a possible SINC. Wetland species present include hairy sedge and hard rush, with Yorkshire-fog, crested dog's-tail, cock's-foot, white clover, red clover, meadow vetchling and creeping buttercup. A small pool of water present at the time of survey had floating sweet-grass present in the margins. Species present in the area in F4 include creeping bent, red clover, dandelion, meadow buttercup, a sedge, crested dog's-tail, hard rush and common reed.



Photograph 3.2.3 Marshy grassland north of Newton Lane



Photograph 3.2.4 Marshy grassland north of Cooks Lane

- 3.2.9 Two further areas of marshy grassland occur in the south of the borough, in squares F2 and G2. The first is an area in an improved grassland north of the sewage works and adjacent to a tributary of the River Sence. This patch is carpeted with marsh foxtail with creeping bent, floating sweet-grass and tufted hair-grass, all of which indicated that this area is likely to be seasonally inundated. The second is adjacent to the Grand Union Canal, south of Knights Bridge. This is only a small area set in semi-improved grassland but the presence of hard rush, tufted hair-grass, bulrush, great willowherb and gypsywort show its marshy nature.



Photograph 3.2.5 Cattle poached ditch and marshy grassland

- 3.2.10 The last area of marshy grassland is part of a cattle-poached wet ditch in square G3. It has hairy sedge, hard rush, creeping and meadow buttercups, crested dog's-tail and creeping bent.

3.3 PONDS

- 3.3.1 In total, 83 ponds were recorded on this survey. This includes both permanent areas of standing water and those that are possibly seasonal and were dry at the time of this survey. All ponds located during the present survey are shown in Figure 3; those which occur on SINC's are described in Appendix 5 and those surveyed in SINC 16, Glen Gorse Golf Course, are numbered separately, GP1-11, according to the SINC citation. A figure for the number of ponds identified on the previous survey of the borough is not available for comparison since it appears that not all ponds were identified at that time.
- 3.3.2 Waterbodies found on SINC's are generally of better quality than those outside these areas. However, a small number of ponds outside designated areas were considered to have some good qualities for wildlife and some of these are described in more detail below. These include a number of field ponds, which are a priority habitat in the Leicester, Leicestershire and Rutland BAP.



Photograph 3.3.1 Pond P34 (3.3.3)

3.3.3 Of particular note is Pond P34. This pond is 20m long by 2-15m wide and lies in an arable field, though surrounded by a wide margin of rough grassland and scrub. It held water at the time of survey but due to access restrictions the depth could only be estimated at 200-500mm. The banks are mainly shallow with some flat sections and are densely vegetated by false oat-grass, common nettle, broad-leaved dock, great willowherb and bramble. There is a wide margin of branched bur-reed with bittersweet but the only aquatic vegetation visible at the time of survey was duckweed with dense patches of blanketweed and other submerged algae.

3.3.4 Brocks Hill Country Park has two good ponds. The first (Pond P22) is on the edge of broad-leaved woodland and is 10m long and 5-6m wide. Water depth at the time of survey was less than 100mm but was obviously lower than normal. The banks are mainly shallow but with some flatter and steeper areas. Marginal vegetation comprises stands of yellow iris, rushes and great willowherb, and the dominant emergents are small stands of bulrush, rushes and floating sweet-grass. The latter was also the dominant aquatic plant with celery-leaved buttercup. Towards the centre of the pond is a small island with a willow tree.



Photograph 3.3.2 Pond P22



Photograph 3.3.3 Pond P21

- 3.3.5 The second pond in the Country Park (Pond P21) is located on the field edge between two hedges. It is approximately 6m long and 3-4m wide, with a maximum depth of 100mm at the time of survey. Its banks are steep and overgrown with tall grass and herbs including bramble and great willowherb. The margins are partially shaded by hawthorn, ash and blackthorn scrub from the hedges, restricting the extent of marginal great willowherb, hard rush and yellow iris. Emergent vegetation comprises floating sweet-grass which, with a duckweed species, is also one of the only aquatics.
- 3.3.6 The last pond in this category is Pond P27, adjacent to hedge H6. This pond is approximately 15m long and 2-5m wide with an unknown depth. The banks are shallow, with marginal vegetation including hard rush, branched bur-reed and great willowherb. Emergent vegetation comprised branched bur-reed and soft rush with brooklime, which was also growing as an aquatic species.
- 3.3.7 All these waterbodies have good features for wildlife including a good ranges of plant species and varied adjacent habitats such as borders of tall grass and scrub vegetation and proximity to woodland. These are important features for amphibians, including great crested newts and also for wildfowl and a wide range of aquatic invertebrates. A number of ponds were dry at the time of this survey, but if they hold water at other times these may still be of value to wildlife, and they should continue to be monitored.



Photograph 3.3.4 Pond P27

3.4.8 The poor water clarity and the presence of mats of algae and stands of vegetation indicative of nutrient enrichment suggest that the local land use is directly or indirectly introducing high levels of nutrients into the watercourse. A suitably-sized 'buffer zone' on either side of the river would intercept some indirect runoff and seepages, but the water quality from field drains would also need to be investigated.

3.4.9 The natural meandering course of this river is important for creating and maintaining channel features that provide important ecological niches. These include submerged and exposed silt and gravel bars used by fish, plants and invertebrates, as well as vertical earth cliffs providing breeding sites for kingfishers.

UWWTD Reach 1 (Rural): SP 6059 9666 to SP 6068 9669

3.4.10 A meandering rural section with cattle-grazed pasture on the right and arable on the left. The banks are dominated by tall herbs and coarse grasses, with occasional overhanging crack willows and patches of osier on the left at the upstream end, and blackthorn and hawthorn shading the channel on the left at the downstream end.

3.4.11 The channel is 1.5-2.5m wide and predominantly 0.25-0.5m deep, with silt/clay, sand, pebbles/gravel and cobble substrata. There is a short riffle towards the upstream end. Water clarity is generally moderate throughout. Marginal vegetation is predominantly reed canary-grass with occasional marsh woundwort and great willowherb, with scattered patches of branched bur-reed, fool's water-cress and amphibious bistort.



Photograph 3.4.1 River Sence Reach 1 looking downstream

3.4.12 At the upstream end aquatic vegetation consists of patches of branched bur-reed with occasional fennel pondweed, with the algae blanketweed and tubeweed. In the riffle there are patches of fennel pondweed, stream water-crowfoot and Nuttall's waterweed. In the

3.4 RIVER SENCE

- 3.4.1 Most of the river was walked during the Phase 1 survey, and many stretches are described in the target notes in ESL (2005). A summary description of the characteristics of the whole river through the borough is given below, drawing on all the field notes. The only significant length of the river not surveyed was a 500m stretch near Kilby Bridge, SP 609 967 to SP 606 966, approximately one third of which lies outside the borough.
- 3.4.2 In addition, two 100m stretches were surveyed in more detail using the Environment Agency UWWTD methodology (Appendix 2). The locations of these stretches is shown in Figure 4. During the survey period, weather conditions were reasonably settled, dry and with sunny periods, with only one notable period of prolonged rain on 30 October 2005.
- 3.4.3 The channel width typically ranged from 1-3m and depth from 0.2-0.5m, however slow-flowing stretches 4-5m wide were present downstream of SP 600 968. The only major difference in the channel structure recorded was the representative urban reach sampled for the UWWTD survey. At this point the river is notably wider and the banks are artificially modified. A full description of this reach is given below.
- 3.4.4 The banks generally had a mixture of open grass/herb communities with scattered trees and shrubs and tree- and shrub-dominated areas with more closed canopies. The more open communities are predominantly improved swards, with large stands of common nettle indicating localised nutrient enrichment. The ground flora in the shaded areas is very limited due to the low light levels.
- 3.4.5 Where grazed, the top of the bank is generally fenced-off to livestock. However, these fences are in varying states of repair and in places do not prevent livestock from poaching the banks and grazing emergent and bank vegetation. Some specially created cattle drinks also allow access to livestock. No obvious management such as mowing or pollarding was recorded.
- 3.4.6 Land use throughout this stretch is predominantly improved pasture and arable farmland; field drains from these areas flow into the river. Some broad-leaved plantations and scrub were located on land immediately bordering pronounced meanders.
- 3.4.7 Notable bird species recorded from this river were grey heron, grey wagtail, siskin and reed bunting between SP 606 966 and SP 600 968. A kingfisher was heard at Crow Mill Bridge, SP 588 976. A bullhead was recorded at SP 6059 9666. An in-channel otter spraint was present at SP6054 9671, and there were in-channel feeding signs left by this species at SP 6104 9679. A water vole latrine was present at the bottom of the left bank at SP 601 967.

midsection there are large patches of both unbranched and branched bur-reed with common club-rush and a small patch of arrowhead. Patches of blanketweed coat the substratum. At the downstream end the channel is shaded, with no aquatic vegetation present.

UWWTD Reach 2 (Urban): SP 5878 9767 to SP 5884 9765

- 3.4.13 A gently curving, more urban, section with a track on the left and a track, car park and gauging station on the right. The banks are dominated by tall herbs and coarse grasses, with an overhanging crack willow on the left at the upstream end. The vegetation is short on the right bank beside the gauging station, and the bank toe on either side is artificial.
- 3.4.14 The channel is 5-7.5m wide, and predominantly 0.5m deep, with silt/clay, pebbles/gravel and cobble substrata. The bed adjacent to the gauging station is artificial. There is a short riffle immediately downstream of the bridge at the upstream end. Water clarity is generally moderate throughout. On the right side marginal vegetation is predominantly reed canary-grass with occasional scattered patches of branched bur-reed and fool's water-cress. On the left side there are patches of branched bur-reed, reed canary-grass, water-cress and common club-rush with scattered marsh woundwort and fool's water-cress.
- 3.4.15 In the riffle at the upstream end aquatic vegetation consists of patches of water-crowfoot, fennel pondweed, Nuttall's waterweed and the algae blanketweed and tubeweed. In midsection there is occasional fennel pondweed and Nuttall's waterweed with patches of emergent branched bur-reed and common club-rush. At the downstream end where the channel bed is artificial, aquatic vegetation was limited to small patches of Nuttall's waterweed and blanketweed.

Summary of Ecological Status

- 3.4.16 The Mean Trophic Rank (MTR) for Reach 1 was 24.8, and for Reach 2, 25.8. This river is probably in JNCC River Community Type 1: Lowland rivers with minimal gradients, predominantly in S and SE England, generally eutrophic, base-rich, stable flows, for which the mean MTR is 34.0. (It should be noted that any watercourse with an MTR of <50 is considered to be eutrophic) These low scores therefore indicate high levels of eutrophication, possibly caused by agricultural operations.

3.5 THE GRAND UNION CANAL

- 3.5.1 This watercourse is of very similar character throughout the borough; no significant lengths were not walked. Typically the channel is very uniform and possesses few features; small areas of exposed cobbles at the margins were the only feature of note. During the survey

period weather conditions were reasonably settled and mainly dry but with several days of prolonged rain. Water levels were relatively uniform throughout the canal but raised water levels and flooding were noted during the rainy period where the canal borders suburban areas towards the western boundary of the borough.

- 3.5.2 In sample stretches, water depth was predominantly >1m in the middle of the channel, with the edges typically 0.5-1m deep. The channel is typically 5-10m wide with a bank height on average <0.5m, except at locks where the banks can be >1m. Water clarity was generally poor throughout.
- 3.5.3 Throughout the borough the canal possessed very few areas of aquatic vegetation, with yellow water-lily being the only noticeable species. This can most probably be attributed to the eutrophic water conditions (refer MTR score in UWWTD section) poor water clarity and channel disturbance by boat traffic.
- 3.5.4 Stands of marginal vegetation were present throughout the length canal, more noticeable in areas where the banks were less modified. Stands mainly comprised a mixture of reed sweet-grass, branched bur-reed and greater pond-sedge. Common club-rush, reed canary-grass, hard rush, meadowsweet, yellow iris, marsh woundwort, gypsywort and water dock were less abundant, but regularly recorded. Flowering-rush, arrowhead, unbranched bur-reed, lesser water-parsnip, sweet-flag, amphibious bistort, water forget-me-not and water-plantain were the least abundant species.



Photograph 3.5.1 Showing more natural bank structure and development of marginal vegetation on the right bank

- 3.5.5 Bank habitats generally consist of vegetation typical of the surrounding land use or man-made reinforced structures. The low sheer-faces of reinforced banks are approximately 0.2m high and are typically colonised by plants such as the mosses *Amblystegium riparium* and *Fontinalis antipyretica*. At 88 Kilby Lock Bridge the north bank supports a community of ferns including hart's-tongue and a spleenwort. A stand of trees at SP 603 970 has a network of exposed roots which may be a suitable sites for an otter holt.
- 3.5.6 Adjacent land use is predominantly arable, improved grassland, semi-improved grassland, hedgerows with trees and houses with gardens where the canal borders the suburban fringes. Existing management appears to comprise mowing the towpath, with trees and shrubs pruned as and when required. Some clearing of channel vegetation may occur although boat traffic may be effective in controlling vegetation build-up.
- 3.5.7 Otter spraints were found at SP 600 970 Taylors Bridge and kingfishers were seen at several points between Taylors Bridge and the Limedelves area, SP 615 968. Migrant hawkler, brown hawkler and common darter dragonflies were recorded near Taylors Bridge.
- 3.5.8 As a waterbody running through agricultural land, the canal is susceptible to nutrient-rich runoff. A suitably-sized 'buffer zone' on either side of the canal would intercept some indirect runoff and seepages but the water quality from any drains would also need to be investigated.
- 3.5.9 The larger stands of marginal vegetation tend to occur where the bank structure is less modified. Areas where this could be recreated safely could provide more extensive areas of this habitat. Due to the large stands of marginal vegetation the canal may be a significant site for dragonflies within the borough and possibly the county.

UWWTD Reach 1: SP61100 96921 to SP 61008 96965

- 3.5.10 A gently curving section to the east of Kilby Bridge with a house and gardens and improved grassland on the right and a towpath and arable land on the left. The left bank is dominated by tall herbs and coarse grasses, and there is a short length of metal piling upstream of the bridge. The right bank is predominantly overhanging trees and shrubs.
- 3.5.11 The channel is 10–12 metres wide, and generally more than 1m deep, with a silt/clay substratum. Water clarity is generally poor throughout.
- 3.5.12 On the right side, marginal vegetation consists of scattered patches of branched bur-reed, reed sweet-grass and greater pond-sedge with occasional marsh woundwort and water dock, and a single patch of arrowhead. On the left side there is a narrow, but species-rich, fringe in the downstream half with patches of branched bur-reed, reed canary-grass, marsh

woundwort, arrowhead, water forget-me-not, greater pond-sedge, reed sweet-grass, meadowsweet, sweet-flag, water-mint, orange balsam and water-plantain. Aquatic vegetation is limited to a narrow band along the left side close to the bank, with patches of unbranched bur-reed and yellow water-lily.

UWWTD Reach 2: SP61440 96828 to SP 61523 96803

- 3.5.13 A virtually straight section to the east of a small bridge and approximately 250m east of Kilby Bridge, with open water and marshy grassland on the right and a towpath and arable land on the left. Both banks are dominated by tall herbs and coarse grasses, and there is an overhanging ash tree and scattered shrubs. The left bank face is artificial.
- 3.5.14 The channel is 8–10m wide, and generally more than 1m deep, with a silt/clay substratum. Water clarity is generally poor throughout.
- 3.5.15 On the right side, marginal vegetation consists of a continuous fringe of branched bur-reed and greater pond-sedge with occasional marsh woundwort, reed sweet-grass and lesser water-parsnip. On the left side at the upstream end there is a short length of narrow, but species-rich, fringe with marsh woundwort, water dock, reed canary-grass, great willowherb, branched bur-reed, reed sweet-grass, sweet-flag and yellow iris. There is a patch of greater pond-sedge and reed sweet-grass further downstream, with occasional patches of the mosses *Amblystegium riparium* and *Fontinalis antipyretica* on the artificial bank face and a small patch of gypsywort at the downstream end. Aquatic vegetation is limited to scattered patches of common club-rush, amphibious bistort, water-plantain and arrowhead along the left side of the channel.

Summary of Ecological Status

- 3.5.16 The MTR for Reach 1 was 32.0, and for Reach 2, 33.3. The canal will be in either JNCC River Community Type 1, as for the River Senca, with MTR 34.0 or Type 2, (clay dominated rivers. Eutrophic, often species-poor, mean MTR 32.9). In either cases these rivers are close to the mean for their type, again indicating high levels of eutrophication.

3.6 THE WASH BROOK

- 3.6.1 The Wash Brook emerges from a culvert on the edge of a field in the east of the borough which suggests that its source spring is outside the borough boundary. The first stretch is designated SINC 5, and the brook then runs through SINC 8, Fludes Lane Spinney. Both are described in the SINC descriptions, Appendix 5. It then flows through a residential area, emerging near Oadby Town Football Club.

- 3.6.2 Due to access constraints, an approximate 500m stretch between the B582 London Road and Rosemead Drive, and an approximate 300m stretch between the B582 Wigston Road and the Leicester Racecourse were not surveyed. All other lengths were surveyed as part of the Phase 1 habitat survey. A 100m stretch on Oadby Golf Course was selected for more detailed survey using the Environment Agency UWWTD methodology (see below).
- 3.6.3 The section adjacent to the football ground was surveyed from the channel. The channel here is 1-2m wide with a slow to moderate flow at the time of survey. The substratum is predominantly sand and gravel with some cobble and depth varied from 0.1-0.4m. The brook is heavily shaded by the hawthorn, elder and crack willow hedge adjacent to the road leading to Parklands Leisure Centre and Brocks Hill Country Park and as a result little vegetation was present other than a small raft of fool's water-cress. The banks are steep and up to 1.5m high with vegetation including ivy, bramble and elder with hart's-tongue and small stands of greater pond-sedge. Two small stands of Indian balsam were present at SP 6196 9992 and 6194 9991, each comprising one or two stems. As the brook flows under the B582 (Wigston Road) it becomes too deep to survey from the channel.
- 3.6.4 The Wash Brook becomes accessible again on Leicester Racecourse. This section of the brook was deep and fast flowing making it difficult to survey. The channel is 1-3m wide. The only vegetation present in a 100m stretch was fool's water-cress, although other vegetation including floating sweet-grass and broad-leaved pondweed was noted in small amounts at other locations in this area. The grassland on both sides of the brook is heavily managed; coarse grasses with broad-leaved dock and common nettle dominate the vegetation on the banks with occasional bushes present. The banks themselves are steep and eroded with slumping in places, evidence of the spaty nature of this stream at certain times of the year.

UWWTD Reach 1: SK 6096 0010 to SK 6104 0015

- 3.6.5 A predominantly straight section of the Wash Brook, with managed grassland of Oadby Golf Course on both sides. The bank vegetation is also managed, with sections of bare earth, short grass and herbs including dandelion and common nettle. Some sections of the bank have eroded and become undercut, with slumping in places. There is no shading of the bank although occasional hawthorn and elder are present at crossing points.
- 3.6.6 The channel is 1-4m wide and mainly 0.25-0.5m deep, but up to 1m in places with silt/clay and cobble substrata. Water clarity is generally good throughout. Marginal vegetation comprises small amounts of creeping bent, floating sweet-grass, water figwort, pendulous sedge and creeping buttercup. Aquatic vegetation is sparse with only small amounts of fool's water-cress, common club-rush and a water-starwort species.



Photograph 3.6.1 Stretch of Wash Brook on golf course

3.6.7 The MTR for this section is 33.3, close to the mean for this type of watercourse but again indicating eutrophication/poor ecological status. It is possible that management practices employed on the golf course and perhaps input of garden waste where it runs through the residential area have contributed to the eutrophication of the Wash Brook, but it is also likely that if the source is or includes a contribution from field drains under arable fields, it will be eutrophic from its first emergence.

3.7 WOODLAND

3.7.1 The total area of woodland identified in this survey was 41.57ha. This is shown in Figure 5, and Table 3 gives areas of the various types, with figures for the previous survey where these can be calculated. No conifer woodland or plantation and no specifically wet woodland was identified on this survey.

TABLE 3 AREA OF WOODLAND OF EACH TYPE FROM EACH SURVEY

Description	2005	2001
	Area (ha)	Area (ha)
Broad-leaved woodland	13.43	9.40
Broad-leaved plantation	24.27	16.48
Mixed woodland	0.35	-
Mixed plantation	3.52	-

- 3.7.2 Broad-leaved woodland exists as scattered remnants of once larger stands and tends to be confined to the Oadby area. Two such remnants are present at SP 638 998 and SP 639 996. Almost certainly they were parts of the same woodland prior to the building of the surrounding housing and amenities which now separates them. Not surprisingly they contain a similar mix of mature tree species – pedunculate oak, ash and beech. They both have an under-storey of hawthorn, elder, holly and blackthorn and their ground flora includes wood avens, herb-Robert, false brome and ivy, which scrambles up many of the trunks.
- 3.7.3 In the north of the borough part of the broad-leaved woodland in Stoughton Farm Park includes the tree-lined drive to the main house. This contains veteran and potential veteran pedunculate oaks, probably the finest examples of such trees in the borough outside the SINC.
- 3.7.4 Stoughton Farm Park also contains the only piece of mature mixed woodland in the borough, made up of Scots pine, ash and pedunculate oak. It has an under-storey of hawthorn and blackthorn and a ground flora of common nettle, ivy and broad-leaved dock.
- 3.7.5 Broad-leaved plantation makes up the largest proportion of woodland in the borough. It is either very recently planted, such as the extensive areas in Brocks Hill Country Park, or approaching maturity, such as the large area at SP 642 955 that extends over the borough boundary.

3.8 TREES OF SPECIAL INTEREST

- 3.8.1 In total, 185 trees of special interest were recorded during the survey and are shown in Figure 6. Of these, 112 were identified for their veteran or near veteran status (see Table 4) and 73 as (other) mature trees possessing characteristics that have the potential to support roosting bats (Table 5). It can be assumed that all the veteran/near veteran trees have some potential to support roosting bats; not only are these trees always at risk of being wind damaged, which can create opportunities for bats, but many also have dense ivy coverage. In addition to being a useful feature to bats in itself, this may also conceal holes, cracks and loose bark.
- 3.8.2 Veteran and near veteran trees were identified and recorded as a result of having characteristics of maturity that made them stand out in the local landscape. The primary consideration was the trunk girth (measured at 1.5m) and the size of the limbs. The presence of bracket fungi, ivy cover and hollows and any evidence of rot were also recorded. A selection of memorable trees recorded in this category are described below: numbers are as given in Table 4.

3.8.3 **V110 (SP 61588 96339)** A crack willow pollard on the banks of the River Sence, with a girth of 5m and an approximate height of 15m. There are some holes and one large cavity in the trunk (Photograph 3.8.1).

3.8.4 **V80 (SP 59905 96948)** An ash pollard in a line of mature standard hawthorn trees in a pasture close to the Grand Union Canal. Girth measurement of 4.4m and approximate height of 15m (Photograph 3.8.2).



Photograph 3.8.1



Photograph 3.8.2



Photograph 3.8.3



Photograph 3.8.4