HABITAT MANAGEMENT PLAN

Grassland

Scything at Jubilee Meadows, Chessington (C. Cockel, summer 2014).

CONTENTS

Abbreviations:

KBAP	Kingston Biodiversity Action Plan
BAP	Biodiversity Action Plan
HAP	Habitat Action Plan
SAP	Species Action Plan
GHAP	Grassland Habitat Action Plan
LMP	Lower Mole Project
ET	Environment Trust
LNR	Local Nature Reserve
SNCI	Site of Nature Conservation Importance
SMI	Site of Metropolitan Importance
SBI	Site of Borough Importance
LBG	London Bat Group
GIGL	Greenspace Information for Greater London
CWoA	Chessington World of Adventures
TCF	Tolworth Court Farm
RoW	Rights of Way

Acknowledgements: Many Thanks to Elizabeth Cheesman; Elliot Newton, Sivi Sivanesan, Chris Cockel and Hannah Neale. Opinions expressed are the Author's.

1.0 Introduction and definition of Grassland types

Grassland sites tend to be the result of an interaction between human activity and the environment, such as mowing or the keeping of grazing animals and the cutting of feed for livestock. Grassland types can also be dependent on the underlying geology but may also be influenced by the history of a site, the presence of rivers and/or inundation, or of imported substrates. The influence of human activity can also extend to creating thin and/or nutrient poor soils or bringing these to the surface. Alkalinity, acidity and wetness or lack of these factors will tend to determine the type of grassland and grassland species, which are present.

Of sites noted for their floristic diversity, those which have been subjected to regular management by traditional cutting and grazing, but without agricultural improvement (especially the addition of fertiliser) tend to be of most interest. Floristically rich grasslands tend to be long established and may be relicts of extensive grasslands from the historic rural landscape. Where these survive, biologically rich areas are usually small fragments in neglected meadows, or in parks, cemeteries or roadside verges. It is worthy of note that regular short mowing, such as on amenity grassland, does not necessarily rule out the presence of flora of botanical interest, particularly in the absence of applications of fertilisers or herbicides. Species lists for grassland sites may reflect an urban influence, either through being impoverished due to urban isolation, or extended through the presence of garden escapes and species deliberately introduced through sowing of seeds (such as yellow rattle) or plug planting.

Grassland habitat types seldom occur in isolation, instead occur in mosaics with other grassland types. Neutral dry lowland grasslands usually contain a high proportion of broad leaved herbaceous species, relative to grasses. This gives rise to a colourful wildflower sward in summer, heavily used by insects such as butterflies. Within urban areas a potential resource of species-rich grassland is that of roadside grass verges and formal amenity parkland.

Where the ground is periodically waterlogged by flooding or by poor drainage, the boundaries between wetlands and grasslands can be difficult to establish. Neutral wet lowland grasslands may be botanically species-rich, but are characterised by seasonal flooding and a high water table. They are traditionally managed by removing the hay crop and aftermath grazing. Although some of the sites described in the Gazetteer have seasonal wet flushes, sites which are wet all year are excluded.

On more acidic soils such as the sands of the Bagshot Beds, acid grassland occurs. Lowland dry acid grassland and purple moor-grass and rush pasture are relatively poor in botanical diversity when compared to the hay meadows, but are very important for birds and invertebrates.

Grassland on chalky soils has a distinct flora and fauna and in our region is associated with the sheep and rabbit grazed swards of the North Downs. However there are examples of chalk grassland within the borough, which have a tenuous connection to this geology and are influenced by introduced substrates and/or inundation from chalk streams.

When grasslands are undermanaged they often become dominated by coarse species, for example, oat grass or tufted hair grass, which will exclude other species (the latter in impeded drainage). In these cases the hay cutting should prevent them dominating the sward, provided the arisings are removed. After some years of hay-cutting, the hay will become softer and more nutritious as less coarse species reassert themselves.

When pastures are overgrazed and heavily trampled they often become full of rapidly growing tall herb species, which germinate well in bare or disturbed ground. This includes: spear thistle, docks and ragwort as well as bartsia.

There are three main domestic grazing species seen in London: sheep, cattle and horses. The former are infrequent as they are most worried by dogs. Cattle graze many of London's pastures. They produce a characteristically uneven sward, which is not very close cropped. Horses graze more closely and like cows avoid grazing around their own dung and urine, so the mosaics produced by the two animals are very different. Voiding patches become rank because they are avoided and they are rich in nutrients so may develop scrub. Scrub control is an important part of grassland management, although some scrub is desirable for birds, small mammals and invertebrates.

The species richness of some grasslands has been increased by the introduction of additional wild species, an approach which should be used with caution. It should not be assumed that ancient meadows can be generated horticulturally. However some natural processes have successfully been augmented, such as at Hogsmill O.S. and The Fishponds, by the seeding particularly of yellow rattle in the early 1990's.

In summary, grasslands can be described by the following:

- They are variable plant communities. They may occur as smaller areas within an urban context or as more extensive areas. They change visibly on an annual cycle and need active and appropriate management to maintain their biodiversity.

- They are often part of a historic landscape and can show evidence of ridge and furrow cultivation within fields, as well as their boundaries forming parts of ancient field systems, which also can be associated with species-rich hedgerows.

- They can contain a rich diversity of vascular plant species, supporting invertebrates, birds, fungal and lower plant communities, and providing further conservation interest as part of a mosaic of habitats.

- They can suffer enormously from inappropriate management with a reversion to Arrhenatherum grassland (False oat grass *Arrhenatherum elatius*).

  Over the last fifty years we have been losing our ancient meadows and pastures, together with their associated species of flora and fauna. We have lost 95% of our lowland, flower rich, neutral grasslands, largely through agricultural intensification. Drainage, ploughing and rotarvation destroy soil structure and the micro-organisms within. They also raise the level of nutrients in the soil allowing common or coarse grasses to out-compete the wild flowers and finer grasses. Lack of management may mean a Yorkshire fog–Creeping bent *Holcus lanata-Agrostis stolonifera* grassland establishes, along with patches of taller species such as docks, thistles and nettles. Plants of garden origin may dominate such as Michaelmas daisy *aster novi-belgii,* Golden rod *Solidago Canadensis,* Goat's rue *Galega officinalis* and cultivated brambles.

The Kingston Angle

Of the areas documented by the Wildlife Habitat Survey (GLA, 1985) neutral grassland (semi or unimproved) was the most common grassland type in the borough. The neutral grasslands in the borough are concentrated along the valley of the Bonesgate Stream and the Hogsmill River. From Chessington northwards, an almost uninterrupted belt of grassland once dominated open space alongside the river, extending as far as Kingston Cemetery (page 11, LEU Handbook, 1992). The most floristically rich examples of grassland can be found at Tolworth Court Farm and Seething Wells (chalk). This is due to the large size of these areas as well as a link to past management. Acid grassland is found only at Kingston Hill, at sites owned by the Council but leased to Golf Clubs, which makes monitoring difficult.

Large amenity grassland areas such as at Wimbledon Common (in Kingston) have had a mixed use until recently, employing varied mowing regimes and longer grass at the field margins. Their very existence means that there is potential for the promotion of a conservation regime, flood storage capacity, soil conservation, generation of earthworms to promote soil fertility and nutrient recycling. However trends indicate that more sites are being developed exclusively as sports pitches with floodlights and astro-turf, recreation grounds are tarmacked as car parking or for housing; or have some other intensive use to make it unsuitable for a shared use with wildlife. Current plans exist to pave over part of the historic Fairfield in the town centre, to replace the loss of the Monday Market for housing development. Grass verges in Chessington, only recently notified as SNCI's are being lost to road widening and the creation of bus shelters. It is therefore difficult to assess the current state of grasslands in the Borough due to their dynamic nature.

The table below is taken from Kingston Open Space Assessment (Atkins, 2005). For the purpose of the GHAP, the last two values are useful. This is the most up to date information available about the current amount of grassland in the Borough. It states that within fourteen ecologically designated areas (LNR's, SNCI's etc) there are unimproved meadows comprising 81 ha's. With a further forty one informal recreational areas there the report draws attention to the potential for creating additional sites. There are obvious areas excluded from here such as the cemeteries and privately owned sites, which have no public access.

Table 7.9 – Natural Greenspace Provision (Parks & Privately Managed Open Spaces)

Natural Greenspace Provision	No of Open Spaces	Area (in ha)
Natural Heathland / Downland / Common	0	0
Natural Woodland	19	49.85
Wetland	1	1.12
Scrubland	7	6.48
Unimproved meadows	14	81.74
Informal recreational grassland	41	98.93
Total Open Spaces with Natural Greenspace Provision	**58**	**238.11**

Note: Only includes natural greenspace provision, rather than other types of open space, within ecological designated sites

Although the Atkin's report does not delineate between grassland types it is noted that the initial section has a value of '0', for heathland. Acid grassland does exist in the borough, and there is at least the potential for some heathland, although the relevant areas at Kingston Hill are privately leased to the golf courses. Heather was present at the Coombe Hill GC during a visit undertaken by the London Wildlife Trust accompanied by the local borough representative (*E. Cheesman, pers. comm.*) A review by GIGL (undated) found that there was potential for creating an additional 26 Ha of acid grassland (currently thought to be 5.6 Ha).

The same GIGL review, found that the area of existing calcareous grassland BAP habitat was 0.6 Ha and there was no potential for expanding this due to the nature of the grassland. Chalk is absent from the geology of the borough but it has been brought in artificially at Seething Wells Filter Beds, a site along the Portsmouth Road. At Field 5847 (the south east quadrant of TCF) there may be some chalk influence from the Hogsmill river where some characteristic chalk grassland plants are located.

Rough grassland adjacent to a wood or under hedgerows is important ecologically and steps could be taken to relax the management of a greater number of grassland areas for example: the meadows at Jubilee Wood; the grassland created by the gas pipeline service area at Chessington Wood; and the National Grid grassy wayleave located throughout the Castle Hill, Jubilee and World's End woodlands.

Grass is not usually left long in parks as the council do not have the required cut and collect machinery in-house and have to hire cutters at extra expense. From a financial point of view there's no incentive for the Council to go down this route in this age of tight budgets, so this type of management may need to be supported by volunteers.

As an example, the grass at Jubilee Meadow was left during 2014. Volunteers from the Environment Trust scythed the long grass at the end of summer. They managed to cut about a third of the grass and the rest was taken down by the triple ride on-mower, but not collected. An alternative would be that volunteers could rake the grass as happens at some sites in Surrey.

3.0. Aims of the KHAP

- To identify the number, type and location of Kingston's grasslands;
- To maintain and improve the biological diversity of existing grassland, assess the management and assign volunteer interventions, such as raking of the arisings;
- To incorporate Kingston's dwindling area of Heathland into this plan;
- To create new grasslands and extend the existing grassland areas;
- To raise the council's awareness of the importance of grassland and to ensure no further loss of the resource through sporting interests, development and inappropriate management;
- Any unavoidable loss should be adequately compensated on a like for like basis; and
- To raise public awareness of the importance of the habitat

4.0 Grassland in Kingston

Table 2: Grassland in order of designation from Met sites to local RBK, 2015

NAME	ADDRESS	DESCRIPTION INCLUDING AREA	OWNER S/
Wimbledon Common	TQ216 717	Site of Metropolitan Importance SMI: The sports pitches are managed by Merton on Kingston's behalf	RBK
Coombe Hill GC	TQ210 707	A Site of Metropolitan Importance SMI; Leased to a private club where there is no public access. Acid grassland as well as a small area of Heathland is mentioned in the LEU Handbook.	RBK
Jubilee Meadows and The Meadowlands	Under Sixty Acre Wood	Metropolitan/SBI Grade 1 and 11 and LNR. Plantation woodland divided by National Grid Sub-station with an area of meadow, which has been degraded by cabling works. The Meadowlands was formerly MOD land and the best site in the borough for orchids. It is now *Arrhenatherum* grassland	RBK
Tolworth Court Farm Fields and Medieval Moated Manor	TQ196 645	Metropolitan Open Land, SBI Grade 1 and a LNR. The site is incorporated into the Higher Level Stewardship (HLS) scheme for the land in RBK ownership (or long lease) that runs from TCF to Rose Walk at Berrylands.	RBK, EA and private
Kingston University, Kingston Hill Campus	TQ 209 715	SBI Grade 1 9.2 ha in total, a portion of which is acid grassland, now under restoration management.	Kingston University
Hogsmill Valley Sewage Works and Hogsmill River	TQ193 684	SBI Grade 1 and 2. Some grassland at the Sewage Works as well as at the recently opened nature reserve. Borough Grade 1 Grassland species include plants that are unusual in the borough (Six-acre meadow).	Thames Water
Bonesgate Open Space	TQ191 635	SBI Grade 1 and LNR. Tussock grassland has suffered from Cabling works and poor management	RBK
Seething Wells	TQ173 675	SBI Grade 1 Chalk grassland	Hydro Properties .
Malden Golf Course and Thames Water Pipe Track	TQ217 693	SBI Grade 1 or 11 No public access	RBK and TW
Coombe Wood GC	TQ202 705	SBI Grade 11 and LNR. No public access	RBK
Fishponds	TQ188 668	SBI Grade 11	RBK
Raeburn O.S.	TQ198 674	SBI Grade 11 and LNR	RBK
Winey Hill	TQ170 628	SBI Grade 11 Horse pasture	RBK

Manor Park	TQ222 667	Site of Local importance	RBK
Royal Park Gate O.S	TQ176 711	Site of Local Importance Lower Ham Road	RBK
Kingston Cemetery	TQ191 687	Site of Local Importance Bonner Hill Road	RBK
		New sites (notified after 2011).	
Kingston Railside land		Some grassland sites includes Manor Park	
Rushett Farm and Telegraph Hill	TQ168 605	Renamed and extended.	Private
Churchfield's Recreation Ground		A site only recently managed for conservation but with some interesting features including birds, bats and possibly amphibians and reptiles.	RBK
Kingshill Avenue verge and open space	TQ224 667	Some Grassland and allotment close to Beverley Brook	RBK
Leatherhead Road, grass verges		Local site: some of which has been lost to development of new bus shelters and road junction.	RBK
Relaxed mowing regimes	QUADRON	Parks and verges around the Borough where relaxed mowing regimes have been implemented. A late cut at a section at Dickerage Lane recreation ground, has become routine. A similar regime at Kingsmeadow was only implemented for one year.	RBK
Wild flower sown verges	QUADRON	Also worthy of mention, implemented at seven sites.	RBK

Blue indicates that the site has suffered from development or some development is expected.
There is a conflict between the grading of sites between GIGL and the UDP.

Flagship Species

Table 3 These special plants and animals are characteristic of Grassland in Kingston

COMMON NAME OF SPECIES	SPECIES	COMMENTS
Plants	Orchids, Corky-fruited water dropwort, Yellow rattle.	The Meadowlands, Fishponds
Reptiles	Viviparous lizard Grassnake, Slow worm	Tolworth
Insects including Butterflies	Ringlet and Skippers. Yellow Meadow Ants	Tolworth Moated Manor

5.0 SITE GAZETTEER

The Gazetteer follows the SNCI listings. Some of the sites have been mentioned in the Woodland or the Standing Open Water HAP's and efforts have been made not to duplicate the information, unless relevant. As this has been written during the winter months a Desk Study and Evaluation have been performed, rather than Phase 1 site surveys, although in many cases the sites were surveyed during 2014. The exceptions are the Golf Courses which are privately leased from the Borough and have not been surveyed since 2006 (LWT) due to problems of access as well as health and safety.

JUBILEE WOOD AND THE MEADOWLANDS, CHESSINGTON (surveyed March, April, June and August, 2014). Designation: LNR SBI Grade 1 and SNCI (respectively).

Jubilee Meadow (C. Cockel) and the Meadowlands (A. Fure).

Jubilee Meadows forms the northern part of Jubilee Woods. The grassland quality is variable and is entirely dependent on the timing of mowing regimes, adequacy of restoration work post-cabling, offsite operations (which might affect hydrology or light levels) and the amount of shading received from surrounding scrub and trees. The Meadows connect with Chessington World of Adventures (CWoA) at its northern buffer zone, where some habitat management (planting of scrub) has recently occurred. A field in the eastern buffer zone was found to have an interesting wet patch of *Deschampsia cespitosa* (2014) which is now surrounded by hoardings as part of a road widening scheme.

Grassland Species: The meadow grasses at Jubilee Meadows are typical of neutral semi-improved grassland such as False-oat grass, Cock's-foot, Yorkshire Fog and False Brome, although finer grasses have recently been introduced. Meadow Vetchling, Birds-foot Trefoil, Wild Carrot, Ox-eye Daisy, Black Knapweed and Fleabane are plants characteristic of the meadow, although there are a number of rogue species arising from recent works, such as Scarlet Pimpernel, the chalk loving Marjoram, Verbena and Garden Mint. There are two ponds periodically overgrown with Phragmites Reed and Typha, with plants such as Flag Iris and Marsh Marigold.

Grassland Management: The Meadow is frequently mowed and cut too flush to the hedge bottom to develop conservation interest from varied micro habitats. During 2014 one third of the long meadow grass, was scythed by volunteers (cover photo) with the remainder cut by machinery (although the arisings could not be collected). Rabbit and Roe deer graze the grassland. The former prefer to graze areas recently seeded with finer grasses, following fibre optic cabling/pipeline works.

Evaluation: The management of the meadow should be relaxed and the number of cuts reduced on a permanent basis. There is a role for volunteers, who could rake off the arisings after an autumn cut.

The Meadowlands is 1.5 km north of Jubilee Meadows and is a new SNCI designated in 2005. It is an isolated plot, which is a remnant of unimproved grassland at former MOD land, now developed for housing, but originally undeveloped for hundreds of years.

Grassland Species: At the western end the vegetation is less rank and more diverse grasses are found including: Crested Dogs-tail, Timothy, Smooth Meadow Grass, and Meadow Foxtail. In turn there are patches of Birds-foot Trefoil, Meadow Vetchling, Smooth and Hairy Tare, Common Vetch, Upright Chickweed, Lesser Stitchwort, Common Sorrel, Ladies Bedstraw, Salad Burnett, Meadow Buttercup and one Pyramidal Orchid was recorded during 2014.

Grassland Management: The grassland was originally rabbit grazed, which developed an excellent flora, including several orchid species. There is no longer any grazing and the site is isolated and overshadowed by trees and buildings. Thus, the grassland is now dominated by rank species, more specifically MG1 *Arrhenatherum elatius* grassland, reflecting a lack of suitable management. MG1 grassland is dominated by False Oat-grass and Cock's-foot, producing a tussocky grassland habitat. As is common in this community, the tussocks and litter accumulation have depressed the species richness and tall herbs such as Creeping Thistle and Common Nettle are found in small quantities. Unless management is increased, scrub and the arisings removed from the site, the grassland will continue to deteriorate. Due to the development of gardens around the site, there has been hybridisation of closely related species such as Cowslip with Polyanthus. Invasive garden species now include Green Alkanet.

Evaluation: Whilst the vegetation community is considered common and widespread on a national and local scale, the site does represent an area of local wildlife importance and forms a habitat mosaic of rough grassland and tall ruderal vegetation. It is likely to provide habitat for a wide range of invertebrates including Yellow Meadow Ant, Common Blue butterfly and Cinnabar Moth. In turn these will benefit local birds and small mammals and it is therefore considered to be of conservation value in a local context.

COOMBE HILL GOLF COURSE, KINGSTON HILL

Designation: SBI Grade 1.

This and Coombe Wood and New Malden Golf Courses are council owned but little is known about their current condition. When the LEU Handbook was written it was considered to have an area of heathland. However during the habitat resurvey LWT (2006) no heathland plants were recorded.

BONESGATE O.S. (surveyed during August, 2014). Designation: LNR SBI Grade 1 (forms part of the Castle Hill SNCI).

Photo: Bonesgate looking north

This site is close to Castle Hill LNR which gives it the designation of Grade 1. It runs from Filby Road to Moor Lane with the Bonesgate Stream forming its western boundary and providing the main ecological feature.

Grassland Species: Both amenity and MG1 grassland exist on the site. The former dominated by Rye-grass and Couch and the latter dominated by tall herbs such as Broad-leaved Dock and Hogweed. Meadow Browns are routinely seen during the summer along with the Thick-kneed Flower Beetle. A wet patch of *Deschampsia cespitosa,* under the southernmost pylon had led to the development of some large tussocks that were never mowed and made good territory for Tawny Owls and Badgers hunting for small mammals and earthworms. Recent works have destroyed much of this area.

Grassland Management: The grass is mown regularly along a line of pylons. The management at this site is very different to that over the Borough boundary (on the east side from Moor Lane onwards). There are no scalloped edges, the trees are not sensitively managed (having been cut off at their mid-point) the banks are full of garden waste, cabling operations have destroyed a Badger sett, (although it appears it have dug itself a new bolt hole) and a lack of bankside management has led to the demise of Marsh Woundwort.

Evaluation: Management improvements are required: Invasive species include Japanese Knotweed and Himalayan Balsam which are found along the Bonesgate. Marsh Woundwort was a feature of this site and has been overcome by brambles. This was a good site for invertebrates; the wet tussock grassland yielded unusual lacewings, beetles including *Chrysolina oricalcia* (a leaf beetle with a local distribution) and Lesser Marsh Grasshopper.

KINGSTON UNIVERSITY (Surveyed 2011-2014)

Designation: SBI Grade 1

Photo: Coombehurst (S. Sivanesan, 2014).

The Kingston Hill campus of Kingston University is located on Kingston Hill (the A308) and is centred on OS grid reference TQ207714. The campus contains a number of teaching buildings, student residences, and ancillary buildings such as restaurants and a drama hall. The buildings are surrounded by woodland and grassland. During 2011 a new building was constructed, which required ground source heating. Works resulted in an area of the acid grassland being affected.

Grassland Species: The grassland species listed here pre-date works. Characteristic broad-leaved herbaceous plants typical of the unimproved acid grassland include: Sheep's Sorrel, Heath Bedstraw, and Birds-foot-trefoil. Less frequent, but still present in many areas were Field Wood Rush, Mouse-ear-hawkweed and Heath Speedwell.

Grassland Management: Kingston University is working to restore the acid grassland, which is characteristic of Kingston Hill. The treatment of the area has occurred in two stages. The initial stage remediation involved treatment and reseeding of the area with a meadow mixture for acid soils (EM7A). This was then allowed to establish in the first year and then managed via mowing, leaving arisings for seven days and then removing arisings to maintain low nutrient levels while allowing seed retention. Re-assessment of the area in 2014 confirmed that the regenerated area was favouring the wildflower generalists within the mixture. To encourage the area to favour indigenous acid grassland species, the cutting regime has been modified to a:

- cut and immediate removal of arisings from the meadow dominated area, followed by a
- cut and a spread of the arisings from the acid grassland area;
- The arisings are spread and left in place for 7 days to allow seed dispersal; and then
- raked and removed to remove nutrients.

Cuts are conducted in the late summer/early autumn.

Evaluation: A restoration model to watch with interest.

SEETHING WELLS

Designation: Metropolitan Open Land SBI Grade 1


Photos: Ox-eye daisy and cornflower with ladies bedstraw (A. Fure).

The secret of the unique (to the Borough) species-rich chalk grassland at this site is due to:

- the importation of chalk during the construction phase of the reservoirs;
- The management regime; and that
- no pesticides or fertilisers have been used for fear of contaminating the drinking water.

This has promoted a nutrient poor, fine sward that led to a flourishing chalk flora usually associated with the North Downs. Chalk grassland, is a UK and London BAP priority habitat. At least 16 species are unique to the Borough as this is the only chalk grassland site (although there is evidence of a chalk influence at F5847 (south-east quadrant TCF). A London Ecology Unit Handbook stated: “Several wildflowers normally associated with the dry calcareous grasslands further south have gained a northern outpost on this unusual site”.

Grassland species: This site contains the most diverse flora of any site in the borough and to be fully appreciated the vegetative plant list is appended with scientific names. Plant species recorded here include London rarities (emboldened) including: **Devils bit Scabious**, **Small Scabious**, Dropwort, **Salad Burnet**, Pyramidal Orchid, Fern-Grass, Common Broomrape, **Restharrow**, Field Scabious, Wild Carrot, a host of butterflies, dragonflies, grasshoppers and crickets, which support higher mammals, birds, amphibians and reptiles. The grassland at the FB’s is known to contain records of juvenile Grass Snake indicative of breeding. Grass snakes are rarely recorded in Kingston. In fact, the GIGL data base (2012) shows just four records for the whole borough. This is the only breeding record and probably arises from communication between the FB’s and Home Park.

Grassland Management: Lack of recent management has meant that some of these species are no longer recorded.

Evaluation: Grassland has been lost to successional processes.

TOLWORTH COURT FARM TCF AND THE MOATED MANOR

Designation: Metropolitan Open Land, SBI Grade 1 and a LNR.

Photos: Informal grazing TCF and the ant mounds at the Moated Manor.

Tolworth Court Farm Fields (TCFF) has been farmed since Doomsday with different farming practices at various stages. Documented evidence suggests that existing fields were attached to a high-status manor in medieval times, with the Manor House at the moated site to the north of Kingston Road. The Manor site and the farm buildings (which existed until the late 1980's) have become separated from the fields by the development of the Kingston Road. The Enclosure map gives field names, which are still present on the Long Ditton Tithe map of c1843. These field names probably originate from land use and ownership, and are still in use today. Many of the hedgerows show signs on the ground of a ditch and bank and in some places individual ancient trees, this, together with species assemblage and documentary evidence indicate that the hedges pre-date the Enclosure Acts of the late 18th century. Given the locality this makes the hedgerows and invaluable landscape feature in an area of 'encapsulated' countryside. The Right of Way (RoW) footpath that runs across the site is particularly interesting as this originally ran along a green lane wide enough for two carts to pass side by side between two hedgelines. It seems likely to be a 'drove' road possibly for the purpose of driving livestock.

Grassland Species: The plant species for this site are too numerous to list here and are appended. In the records of London's rare plants, three are listed for Kingston. These are: Pale Flax *Linum bienne,* Yellow Vetchling *Lathyrus aphaca* and Pepper Saxifrage *Silaum silaus* (LHHS undated and LEU, 1992.)

Grassland Management: In 2001 the Council entered into 10 year Countryside Stewardship Scheme (CSS) Agreement, when this finished in 2010 the site became incorporated into the Higher Level Stewardship (HLS) scheme for the land in RBK ownership (or long lease) that runs from TCF to Rose Walk at Berrylands. The CSS was approved for the purpose of maintaining the fields for hay meadows and restoring and maintaining the hedgerow system, in addition the creation of a wetland habitat on the wet meadow in the south east corner was completed. The key management principles were reiterated for HLS. 'Informal' grazing is a feature of this site (see photo).

The Moated Manor is a roughly square site, with an area of approximately 2.7 ha. Landscape features include remnants of old farm buildings, a medieval moat and pond. A barn, near the gated entrance, has a relatively new roof but no walls and has a Barn Owl box installed by LMP. The pond forms part of the moat, which runs from south west to south eastern boundaries and partially encloses an island. Evidence suggests there may be remains of a medieval manor on the island. The boundaries are largely fenced with earth bunds along Kingston and Old Kingston roads installed by RBK in 1992 to prevent incursions by Travellers.

Grassland Species: Habitats with nature conservation potential include; grassland, scrub/woodland, wetland and veteran/pollard crack willows. The oldest, most numerous and best Yellow Meadow Ant mounds in the Borough are found here (see photo). During a survey Common Broomrape was found (2013).

Grassland Management: A current aspiration is to reinstate cattle grazing on the site to improve the grassland sward. This entails the need for an expensive security gate. This will enable:

- Cattle to graze on the site;
- Improve the grassland sward, which has become rank;
- Increase the grassland flora and therefore numbers of butterflies;
- Be iconic to see cattle grazing in the borough; and
- Free the income which the council currently spend on mowing.

Evaluation: Large areas contain rank vegetation, some of which has recently been under conservation management would benefit from a grazing regime. This vegetation hides material from the pond excavation in the 1990s and various areas of rubble and litter left by Travellers and the demolition of buildings, so there is a lot of work to be done.

HOGSMILL SEWAGE WORKS AND HOGSMILL RIVER

Designation: SBI Grade 1

Photo: Cow Parsley Hogsmill Sewage Works.

Hogsmill Sewage Works is owned by Thames Water, this relatively large site covers 55 hectares, and was created by the amalgamation of two separate sewage plants in 1959. This area contains a range of different habitats and is bisected by the Hogsmill River. The sewage work provides ditches, hilly meadows, small areas of woodland and most notably the Surbiton Lagoon, which opened to the public in February 2014 with controlled access and a bird-watching hide.

Grassland Species: The site features course grassland and dense riverbank vegetation along the Hogsmill, however many wild flowers grow across the reserve, some of which include Cow Parsley (pictured). As the lagoons begin to dry out during the summer, annual plants colonise

the area, with species including seed-providing oraches and Marsh Yellow-cress. Kestrels breed close to the site and hunt for small mammals in the grassland.

Grassland Management: The opening of the site was delayed due to the tall stands of Hemlock dominating the grassland. Coping with a large amount of this tall growing plant can cause allergic reactions to toxins within the plant unless protective clothing in employed. However the House Sparrows were seen making multiple visits to the flower heads for feeding purposes. Whether they were gathering flower beetles or other invertebrates to feed their chicks is unknown.

HOGSMILL RIVER (Regularly surveyed). Designation: SBI Grade 1


Photos: Meadowsweet Elmbridge Meadows and Six-acre Meadow Hogsmill O.S. (C. Cockel)

The stretches of the Hogsmill within Kingston upon Thames are managed as a Local Nature Reserves (Elmbridge Meadows and Hogsmill O.S). The Hogsmill Valley corridor is a relatively large area of neutral grassland forming a ribbon of open land, with housing either side, extending to the main railway line at Berrylands (where it joins Hogsmill Sewage Works). Branching south-west from the Hogsmill Valley is the Raeburn Open Space, which extends along the Tolworth Brook and consists of improved and semi-improved grassland. Along these river corridors there is good connectivity to parcels of privately and council owned open land used for grazing and amenity. They act as green corridors for wildlife and is important for both birds and bats especially at certain times of the year, such as during: the bird breeding season or migration, autumn fruiting, midge swarms, or the bat mating season.

Grassland Species: Some good quality grassland with seeded and relict meadows. There is a large plant species list especially at Six-acre Meadow, which includes Meadow Cranesbill. Some plants are transitional or depend entirely on the amount of management, inundation or shading as in the case of the Meadowsweet (photo).

Grassland Management: Is currently under Higher Level Stewardship. The implementation of varied mowing regimes has resulted in botanically rich areas, particularly at particularly at Six-acre Meadow in Old Malden. There is scope for more focused management here due to the negative impact of Himalayan balsam at Six-acre Meadow, which has spread and is encroaching

onto the meadow. Brambles are mixed with the balsam, which make management difficult. Plus, in a neighbouring wet area, balsam stretches into private land, which again makes control difficult without dialogue with landowners. The Lower Mole Project has undertaken management and boardwalk construction at Six-Acre Meadow.

WINEY HILL GRASSLAND (surveyed 2.9.14).
Designation: SBI Grade 2


Photos: Winey Hill Looking towards Barwell Court Lake; Lower Moles working on horse barrier.

This is a domed mound lying to the west of Chessington World of Adventures and may derive its name to the *Whin* or Gorse, which still grows there. This is a Council owned site, located along the Chessington Countryside Walk. LMP undertook conservation work last year (2014) in order to maintain the path and reinstate horse barriers.

Grassland species: According to the London Wildlife Trust survey (2006) some of the finer meadow grasses are recorded here such as fescues and bents and include Crested Dogs-tail. Hairy Sedge is found amongst the Common Knapweed, Sheep's Sorrel, Hawkweed and Bird's Foot Trefoil have all been stunted by heavy grazing although this was not so evident during 2014 when this was found to be a good site for butterflies.

Grassland Management: Grazed by horses.

Evaluation: In former years the site has been overgrazed which has led to pressure on local landowners to make available their land for grazing. The problem of overgrazing may have been resolved (though possibly through the increased availability of new sites.

FISHPONDS (surveyed 10.6.14 with E. Cheesman).
Designation: Borough Grade 11


Photos: Corky fruited water dropwort and Yellow rattle

The Fishponds is a 5.15 hectare park, which contains three ponds, a stream, grassland areas, as well as more formal grounds. The largest of the three ponds is located at the southern end of the park, it lies within a depression and is naturally fed by groundwater and run off from the surrounding land. The two upper ponds are more artificial, having been lined with plastic sheeting to retain water.

Grassland species: The meadow is only partly cultivated, and consists of a variety of grasses such as Meadow Foxtail, Yorkshire Fog, Cock's Foot, Sweet Vernal Grass Rough and Smooth Meadow Grass and one small stand of Crested Dogs tail. Vegetative plants include: Common Knapweed, Bird's-foot Trefoil, Meadow Vetchling, Common Vetch, Meadow Buttercup, Hairy Tare, and Tansy, as well as an important colony of the regionally scarce plant Corky-fruited Water Dropwort. Reed beds are to found in the largest pond, a habitat scarce within Greater London. Many grassland species of Lepidoptera and Odonata were noted during the survey including Large Skipper.

Grassland Management: This was one of the sites where Yellow Rattle was sown during the early 1990's as a conservation measure to slow down the growth of the more vigorous species (A. Watson *pers. comm*. 1997).

Evaluation: Invasive species noted include: Blackthorn invading the best meadow area and a grass from New Zealand *Anemanthele lessoniana,* which is being removed by Quadron.

KINGSTON CEMETERY AND CREMATORIUM
Designation: Site of Local Importance

Kingston Cemetery is about 32 acres and was opened in 1855. Burials include Thomas Hansard recorder of Parliamentary debates, A.C. Ranyard editor of Truth magazine and Dr. Joseph Moloney, African explorer. The older graves are covered with lichens for which there is a Biodiversity Action Plan Lichen Plan. There are Symmetrical Gothic chapels, flanking the carriageways, which are of no use for roosting bats as they are illuminated by wasteful floodlights at night. The Crematorium was added in 1952 with yellow stained glass and brick cloisters and walls.

Grassland Species: The Cemetery has a long plant list including species not found at many sites in the Borough such as Field Madder. The plant list is appended. The cemetery is the best site in the borough for fungi many species are typical of unimproved grassland and reflect a management regime sympathetic to both flora and fauna.


Photos: Golden Spindles and Yellow Wax Cap.

Fungi associated with unimproved grassland includes Golden Spindles, which have a pointed end and are not to be confused with blunt-ended grassland species known as clubs. It is not possible to do the cemetery justice here and additional species can be found here: http://alisonfure.blogspot.co.uk/2014/10/fungi-at-kingston-cemetery.html

Grassland Management: The old cemetery is cut in September, which has increased the abundance of the vegetative plant species. Ringlets were particularly abundant in the Grassland over the last two years.

Evaluation: Should be evaluated at a higher level, perhaps at least SBI Grade 11.

MANOR PARK
Designation: Site of Local Importance

Manor Park (C. Cockel, August, 2014)
A good all-round site with some surprises (see Standing Water HAP).

Grassland Species: The LWT grassland survey (2006) indicated floristic interest such as Cuckoo Flower, Meadow Vetching, Ladies Bedstraw, Common Knapweed, Bulbous Buttercup, Germander Speedwell, Common Vetch and Bird's Foot Trefoil. A range of grasses and rushes are present such as Annual Meadow Grass, Common Bent, Gallingale, Hard Rush and Meadow Foxtail.

Grassland Management: This is an unusual site in the borough as it is grazed by the rabbits, which live along the railway line. Unfortunately a large number of trees on the southern boundary have been felled by the adjacent landowner, which has had an impact on the site.

ALEXANDRA MILLENIUM PARK (surveyed 23.6.14).

Photos: View north towards the pond, and a view east to the mound (June).

The Millennium Green is managed by a registered charity, which formed prior to 2000, in order to create the park in its current form. It contains one of the most productive reed beds for birds in the borough, which includes Reed Warblers, quite surprising in such a residential area. However it was a very productive site for scrub warblers in the overgrown allotments, which were destroyed to create an area of otherwise 'green concrete'.

Grassland Management: Unfortunately the grass is kept short and few of the grassland species identified in the London Wildlife Trust survey (2006) could be found.

Evaluation: A number of invasive species were documented (see Standing Water HAP) including Goat's Rue and *Crassula helmsii*, which will infect neighbouring sites. It is unfortunate that the site is now managed as parkland when it was previously very good for more specialised wildlife species.

ROYAL PARK GATE 5.1.15
Designation: Local site

Photo: The meeting of two mowing regimes, at the borough boundary (M. Mason).
The photograph shows the borough boundary stone from the Kingston side and the two different approaches to managing grasslands. Species found amongst the presumed MG1 grassland on occasion, includes *Cannabis sativa*.

Grassland Management: Recently, the Thames Landscape Strategy has devised a management plan for the whole catchment, which requires streamlining the treatment to Half-Mile Tree at Lower Ham Road: an autumn hay cut. It states that,

'The management principle to be adopted in this stretch is 'managed not manicured' in order to retain the natural character of the reach, maintain river views, provide a sense of security to walkers and to encourage a healthy and diverse riparian ecology. Native riverside trees are to be encouraged but self-sown sycamore should be removed. The remaining tree stock (where appropriate) to be managed through a rotational coppice and pollarding agreement. The area has high value grassland, which should be encouraged and scrub controlled'.

VERGES

During 2014, the council *via* its main contractor Quadron, began to manage seven roadside verges for wildflowers by annual seed sowing to encourage plants and insects. All were very successful, however it was noted that the most floriferous were the sites in full sun.

The sites need to rotarvated and re-sown during spring 2015, as some large weeds have appeared in the beds. One verge will be left as a trial, to see how it copes by itself, and how bad the dominant weed problem becomes and how quickly. This makes an important contribution to biodiversity and engages the public imagination and makes it easier for them to accept relaxed mowing regimes in parks.


Photos (H. Neale, Quadron, 2013).

6.0 Factors affecting the habitat

- Lack of appropriate management/inappropriate management;
- Poor perception of long grass;
- Overstocking of grazing animals/lack of grazing animals.
- Development, road widening and loss of verges;
- Installation of pipelines and cabling operations;
- Rubbish dumping.

Lack of appropriate management/inappropriate management

Lack of management of Kingston's grassland has been a problem since the end of the 1990's when conservation measures were reduced after a period of enlightenment. Inappropriate management at Bonesgate O.S. had led to a loss of diversity and a shabby appearance, which encourages flytipping. Over-management at Jubilee Meadows has led to loss of butterflies and other invertebrates. Lack of management at the Seething Wells site had led to the loss of chalk grassland. Lack of acid grassland management at Kingston Hill sites has led to a loss of acid grassland and possibly heathland. LMP have written Management Plans for improved grassland management providing quotations for bringing grasslands back to health by the implementation of grazing at the Moated Manor site. This remains unimplemented due to lack of funds for a suitable security gate.

Poor perception of the importance of local grasslands

As soon as an area of amenity grass is left to grow, it may receive numerous complaints. This is particularly true of past management at Kingston Cemetery. However a number of ruses were employed which seem to have quelled letters to the Surrey Comet. Perhaps now the public are increasingly used to seeing relaxed mowing regimes and equating this with wildlife management rather than neglect. Verges of wildflowers will help to increase the public interest and knowledge as to the benefits of eschewing green concrete.

Invasive species

Garden varieties such as polyanthus have hybridised with closely related species (primroses and cowslips) at The Meadowlands. Himalayan Balsam lines the banks of the Bonesgate especially where vegetation has been cleared during works. Invasive species will take hold wherever soil is imported and vegetation cleared such as at Alexandra Millennium Green and Jubilee Meadow.

Loss of grassland due to: development, road widening and new bus shelters.

Road widening is occurring at Fairoak Lane in Chessington, 2014 leading to loss of grass verges. Some wet Deschampsia tussock grassland has also been lost although it is difficult to assess how much at this stage.

Photo: Deschampsia cesspitosa east of Jubilee Woods

Poor reinstatement of grassland post-works.

Pipelines and cabling operations on LNR's including a fibre optic cable throughout Jubilee Wood and Bonesgate O.S. led to the destruction of grassland areas. Green spaces are the easiest routes to take, whenever works are necessary, but they are rarely reinstated properly. As this site was subject to planning permission, proper reinstatement should have been a requirement.

Rubbish dumping

This is a problem at the Bonesgate O.S.

Objectives and Actions

The Grassland HAP as part of the Kingston Biodiversity Management Plan could have broad generic actions and objectives, which apply to all the habitats and species in our plan. These actions could be *Site Management, Habitat Protection, Species Protection, Ecological Monitoring, Biological Records, Communications should address the issues above* as follows:

Objective 1: Implementation of the Grassland HAP as part of the Green Spaces and other Strategies

A Biodiversity Management Plan for a Grassland HAP to be completed		February, 2015	
To ensure the incorporation of the plan into the Green Spaces Strategy		June, 2015	
To present the BMP to planning officers and others involved in the implementation of biodiversity legislation in the form of seminars.		Ongoing	
New sites to be managed/monitored for conservation interest could include Churchfield's Recreation Ground and King Georges Field. The former may qualify for SNCI status.		2015	

Objective 2: Site Management

Actions			
Engage the Trustees of the Millennium Green in aspects of Conservation Management.		2015	
Encourage additional verges of flowers and relaxed mowing regimes. This may require streets pulling invasive weeds and volunteers raking the arisings.		2015	
Ensure that at least two grasslands attract comprehensive management improvements each year. Perhaps starting with The Meadowlands and Bonesgate O.S.		TBA	
Implementation of grazing at the Moated Manor site.		2015	
Implementation of raking by volunteers at Jubilee Meadow to enable a conservation mowing regime.		TBA	
Ascertain how much the borough spends on grassland management at the Moated Manor and use the saving to spend elsewhere (e.g. pay for additional mowing at The Meadowlands and hiring of a cut and collect Mower for The Fishponds and Jubilee Meadows.		2016	
Sites requiring a more 'focused' approach pertaining to the removal of invasive species (Himalayan Balsam, Goat's Rue) include Six-acre meadow, Hogsmill O.S,. Bonesgate and Alexandra Millennium Green.		ASAP	

Objective 3: Habitat Protection

Actions			
Object to any increases in activities, which will may affect the ecological services provided by Grasslands such as: flood storage capacity; recycling of nutrients by increased use of astro-turf; and paving of grasslands.		TBA	
Discuss as a Steering Group how we realistically require 'no net loss', 'net gains' or even Biodiversity Offsetting policies working for grassland within the borough, as this is one of the most vulnerable habitats. How far are we prepared to go?		TBA	
Require a 'no net loss' of grassland when roads are widened, bus shelters are constructed etc. by discussing re-provision with the council/planning department.		TBA	
Additional HAP actions should focus on improvements to Bonesgate O.S.		TBA	
Upgrade Kingston Cemetery to a 'Site of Borough Importance Grade 11'.		TBA	

Objective 4: Ecological Monitoring

Actions			
Assess the Grassland resources at the Boroughs Golf Courses Requires formal letters of introduction, with a rationale for the visits.		2015	
Targeted species monitoring might be appropriate e.g. • Fishponds and Corky Fruited Water Dropwort; • The Meadowlands and number and species of orchids.		TBA	
Where are the boroughs characteristic grassland species? Monitoring of Lepidoptera, Odonata, Yellow Meadow Ants etc.		TBA	
Churchfields, Chessington. A new site requiring monitoring especially as there is an active spring in the southern portion.		TBA	

8.0 Site Specific Management

SITE	MANAGEMENT HISTORY	MANAGEMENT
JUBILEE MEADOWS	QUADRON ENVIRONMENT TRUST	Volunteers to rake arisings?
THE MEADOWLANDS	QUADRON	Increase mowing and ensure arisings are removed. Invasive species include *Pentaglottis sempervirens*
COOMBE HILL GC	PRIVATE	Monitoring required.
WINEY HILL	LMP	Current works are mainly to the footpaths and horse barriers around the pond. Ensure grazing levels do not increase.
CHURCHFIELDS	ENVIRONMENT TRUST	This is a new site to conservation management. Monitoring should obtain baseline data. Note: a spring exists at the southern end of the site. An evening walk (2014) indicated that there was a bat interest along the tall hedgerows.
TOLWORTH COURT FARM AND MOATED MANOR	RED KITE, ENVIROMENT TRUST AND LMP	Plans exist to install a security gate to allow cattle grazing at the MM Kingston Biodiversity Network has been undertaking hedgerow surveys.
HOGSMILL VALLEY	LMP	Management of scrub under HLS
HOGSMILL SW and RIVER	THAMES WATER, RED KITE, LMP AND ENVIRONMENT TRUST	Six-acre meadow at the Old Malden end of the Hogsmill river requires intervention, as the grassland is being overtaken by Himalayan balsam. Balsam is regenerating from dumped piles as well as encroaching from neighbouring land. Joint management with the adjacent landowners should be sought. LMP require funding to restore the boardwalk at Six-acre meadow. There are too many sycamores along the river, which create too much shading and increase nutrient loading, both along the river corridor as well as the meadow.

9.0 BIBLIOGRAPHY

AUTHORS DATA 1998-2014;

ATKINS., 2005 Kingston upon Thames Open Space Assessment Report

DOBSON, J., 2006 HABITAT RE-SURVEY (RESULTS AVAILABLE FROM GIGL)

GREENSPACE INFORMATION for GREATER LONDON GIGL 2012-2013 Kingston upon Thames data search results;

KENDAL, I., 1995 BREEDING BIRD SURVEYS

KINGSTON COUNCIL 2012 Core Strategy policies DM5-DM6 MOL and Biodiversity;

KINGSTON COUNCIL 2008-2018 Green Spaces Strategy;

KINGSTON UNIVERSITY 2012 Biodiversity Action Plan: Biodiversity Implementation Group (BIG); see also
www.kingston.ac.uk/biodiversity
www.kubiodiversity.blogspot.com

LONDON NATURAL HISTORY SOCIETY (undated) Rare Plant inventory.

LOWER MOLE PROJECT 2014 http://www.surreycc.gov.uk/environment-housing-and-planning/countryside/explore-surreys-countryside/looking-after-the-countryside/our-work-to-manage-surreys-countryside/countryside-management-projects/lower-mole-project/lower-mole-project-volunteer-task-programme

MITCHELL JONES, T., 2011 Focus on Bats: discovering their lifestyle and habitats;

SWALES, S., YARNHAM, I., and BRITTON, B., (1992) Nature Conservation in Kingston 18 London Ecology Unit; Now out of print, several copies are available to read at the Kingston Environment Centre, 1 Burlington Road, New Malden.

THAMES LANDSCAPE STRATEGY, 2014 Arcadian Thames Towpath Management Plan Weybridge – Kew pgs. 93

THE FUTURE OF TOLWORTH COURT FARM MOATED MANOR SITE 2008 Old Kingston Road Residents Association.

TOLWORTH COURT FARM MOATED MANOR SITE 2008-2018 Management Plan

TOLWORTH COURT FARM 2006 Management plan

10.00 APPENDIX

Tables Vegetative plant species recorded at Seething Wells and Kingston Cemetery (GIGL Holdings, 2013).

Kington Cemetery		Seething Wells	
Scientific name	English name	English name	Scientific name
Epilobium ciliatum	Willowherb	Autumn Hawkbit	Leontodon autumnalis
Persicaria amphibia	Amphibious Bistort	Autumn Squill	Scilla autumnalis
Poa annua	Annual Meadow-grass	Balm	Melissa officinalis
Anisantha sterilis	Barren Brome	Barren Brome	Anisantha sterilis
Sedum acre	Biting Stonecrop	Bearded Iris	Iris germanica
Medicago lupulina	Black Medick	Bent Grass	Agrostis
Brassica nigra	Black Mustard	Bird's-foot Clover	Trifolium ornithopodioides
Colutea arborescens	Bladder-senna	Black Horehound	Ballota nigra
Rumex obtusifolius	Broad-leaved Dock	Black Medick	Medicago lupulina
Lathyrus latifolius	Everlasting-pea	Bladder Campion	Silene vulgaris
Epilobium montanum	BL Willowherb	Branched Bur-reed	Sparganium erectum
Agrostis vinealis	Brown Bent	Broad-leaved Dock	Rumex obtusifolius
Plantago coronopus	Buck's-horn Plantain	Everlasting-pea	Lathyrus latifolius
Ceratochloa carinata	C. Brome	Buck's-horn Plantain	Plantago coronopus
Eschscholzia californica	C. Poppy	Bulbous Meadow-grass	Poa bulbosa
Conyza canadensis	C. Fleabane	Burnet-saxifrage	Pimpinella saxifraga
Solidago canadensis	C. Goldenrod	Canadian Fleabane	Conyza canadensis
Ranunculus sceleratus	Celery-leaved Buttercup	Canadian Goldenrod	Solidago canadensis
Cichorium intybus	Chicory	Caper Spurge	Euphorbia lathyris
Galium aparine	Cleavers	Carrot	Daucus carota
Rumex conglomeratus	Clustered Dock	Cat's-ear	Hypochaeris radicata
Dactylis glomerata	Cock's-foot	Cleavers	Galium aparine
Agrostis capillaris	Common Bent	Clustered Dock	Rumex conglomeratus
Lotus corniculatus	Bird's-foot-trefoil	Cock's-foot	Dactylis glomerata
Stellaria media	C. Chickweed	Common Bent	Agrostis capillaris
Valerianella locusta	Cornsalad	Bird's-foot-trefoil	Lotus corniculatus
Lemna minor	Duckweed	Common Broomrape	Orobanche minor
Hedera helix	Ivy	Chickweed	Stellaria media
Cerastium fontanum	Mouse-ear	Comfrey	Symphytum officinale
Urtica dioica	Nettle	Common Cornsalad	Valerianella locusta
Atriplex patula	Orache	Common Couch	Elytrigia repens

Senecio jacobaea	Ragwort	Common Duckweed	Lemna minor
Cochlearia officinalis	Scurvygrass	Common Figwort	Scrophularia nodosa
Rumex acetosa	Common Sorrel	Common Fleabane	Pulicaria dysenterica
Vicia sativa	Common Vetch	Common Knapweed	Centaurea nigra
Aster novi-belgii	Confused Michaelmas-daisy	Common Mallow	Malva sylvestris
Anthriscus sylvestris	Cow Parsley	Common Mouse-ear	Cerastium fontanum
Salix fragilis	Crack-willow	Common Nettle	Urtica dioica
Ranunculus repens	Creeping Buttercup	Common Ragwort	Senecio jacobaea
Potentilla reptans	Creeping Cinquefoil	Common Ragwort	Senecio jacobaea
Cirsium arvense	Creeping Thistle	Common Reed	Phragmites australis
Rumex crispus	Curled Dock	Common Sorrel	Rumex acetosa
Geranium dissectum	Cut-leaved Crane's-bill	Common Spike-rush	Eleocharis palustris
Bellis perennis	Daisy	Common Stork's-bill	Erodium cicutarium
Rosa canina	Dog-rose	Common Vetch	Vicia sativa
Geranium molle	Dove's-foot Crane's-bill	Common Whitlowgrass	Erophila verna
Epilobium x interjectum	E. montanum x ciliatum	Cow Parsley	Anthriscus sylvestris
Arrhenatherum elatius	False Oat-Grass	Creeping Bent	Agrostis stolonifera
Chenopodium album	Fat-hen	Creeping Buttercup	Ranunculus repens
Foeniculum vulgare	Fennel	Creeping Cinquefoil	Potentilla reptans
Convolvulus arvensis	Field Bindweed	Creeping Thistle	Cirsium arvense
Luzula campestris	Field Wood-rush	Crested Dog's-tail	Cynosurus cristatus
Ficus carica	Fig	Crested Hair-grass	Koeleria macrantha
Galinsoga parviflora	Gallant Soldier	Dame's-violet	Hesperis matronalis
Petroselinum crispum	Garden Parsley	Dandelion Agg.	Taraxacum
Alliaria petiolata	Garlic Mustard	Dove's-foot Crane's-bill	Geranium molle
Veronica chamaedrys	Germander Speedwell	False Fox-sedge	Carex otrubae
Ribes uva-crispa	Gooseberry	False-brome	Brachypodium sylvaticum
Epilobium hirsutum	Great Willowherb	Fat Duckweed	Lemna gibba
Vinca major	Greater Periwinkle	Fat-hen	Chenopodium album
Plantago major	Greater Plantain	Fern-grass	Catapodium rigidum

Pentaglottis sempervirens	Green Alkanet	Feverfew	Tanacetum parthenium
Glechoma hederacea	Ground-ivy	Field Bindweed	Convolvulus arvensis
Senecio vulgaris	Groundsel	Field Scabious	Knautia arvensis
Conyza sumatrensis	Guernsey Fleabane	Fool's-water-cress	Apium nodiflorum
Lycopus europaeus	Gypsywort	Fringed Pearlwort	Sagina apetala subsp. erecta
Cardamine hirsuta	Hairy Bitter-cress	Germander Speedwell	Veronica chamaedrys
Phyllitis scolopendrium	Hart's-tongue	Grape-hyacinth	Muscari neglectum
Conium maculatum	Hemlock	Grass Vetchling	Lathyrus nissolia
Eupatorium cannabinum	Hemp-agrimony	Great Lettuce	Lactuca virosa
Geranium robertianum	Herb-Robert	Great Mullein	Verbascum thapsus
Humulus lupulus	Hop	Great Willowherb	Epilobium hirsutum
Trifolium campestre	Hop Trefoil	Greater Plantain	Plantago major
Veronica hederifolia	Ivy-leaved Speedwell	Ground-elder	Aegopodium podagraria
Cymbalaria muralis	Ivy-leaved Toadflax	Groundsel	Senecio vulgaris
Fallopia japonica	Japanese Knotweed	Gypsywort	Lycopus europaeus
Galium verum	Lady's Bedstraw	Hairy Sedge	Carex hirta
Calystegia silvatica	Large Bindweed	Hard Fescue	Festuca brevipila
Trifolium aureum	Large Trefoil	Hard Rush	Juncus inflexus
Arctium minus	Lesser Burdock	Heath Groundsel	Senecio sylvaticus
Ranunculus ficaria	Lesser Celandine	Heath Wood-rush	Luzula multiflora
Stellaria graminea	Lesser Stitchwort	Hedge Mustard	Sisymbrium officinale
Coronopus didymus	Lesser Swine-cress	Hemlock Water-dropwort	Oenanthe crocata
Trifolium dubium	Lesser Trefoil	Hemp-agrimony	Eupatorium cannabinum
Dryopteris filix-mas	Male-fern	Herb-Robert	Geranium robertianum
Chenopodium polyspermum	Many-seeded Goosefoot	Himalayan Knotweed	Persicaria wallichii
Gnaphalium uliginosum	Marsh Cudweed	Hoary Mustard	Hirschfeldia incana
Stachys palustris	Marsh Woundwort	Hoary Plantain	Plantago media
Rorippa palustris	Marsh Yellow-cress	Hogweed	Heracleum sphondylium
Ranunculus acris	Meadow Buttercup	Holly	Ilex aquifolium
Alopecurus pratensis	Meadow	Honeysuckle	Lonicera periclymenum

Lathyrus pratensis	Foxtail Meadow Vetchling	Ivy	Hedera helix
Filipendula ulmaria	Meadowsweet	Japanese Honeysuckle	Lonicera japonica
Soleirolia soleirolii	Mind-your-own-business	Lady's Bedstraw	Galium verum
Artemisia vulgaris	Mugwort	Large Bindweed	Calystegia silvatica
Chenopodium murale	Nettle-leaved Goosefoot	Lesser Soft-Brome	Bromus hordeaceus
Lapsana communis	Nipplewort	Lesser Stitchwort	Stellaria graminea
Bidens cernua	Nodding Bur-marigold	Little Mouse-ear	Cerastium semidecandrum
Impatiens capensis	Orange Balsam	Meadow Barley	Hordeum secalinum
Leucanthemum vulgare	Oxeye Daisy	Meadow Crane's-bill	Geranium pratense
Senecio squalidus	Oxford Ragwort	Meadow Foxtail	Alopecurus pratensis
Persicaria lapathifolia	Pale Persicaria	Meadowsweet	Filipendula ulmaria
Campanula persicifolia	Peach-leaved Bellflower	Michaelmas-Daisy	Aster
Parietaria judaica	Pellitory-of-the-Wall	Mind-your-own-business	Soleirolia soleirolii
Linum perenne	Perennial Flax	Mistletoe	Viscum album
Diplotaxis tenuifolia	Perennial Wall-rocket	Mouse-ear-hawkweed	Pilosella officinarum
Hypericum perforatum	Perforate St John's-wort	Mugwort	Artemisia vulgaris
Euphorbia peplus	Petty Spurge	Orange Balsam	Impatiens capensis
Matricaria discoidea	Pineappleweed	Oxeye Daisy	Leucanthemum vulgare
Lactuca serriola	Prickly Lettuce	Pale Persicaria	Persicaria lapathifolia
Sagina procumbens	Procumbent Pearlwort	Parsley-piert	Aphanes arvensis
Oxalis corniculata	Procumbent Yellow-sorrel	Pellitory-of-the-wall	Parietaria judaica
Echium plantagineum	Purple Viper's-bugloss	Pendulous Sedge	Carex pendula
Vulpia myuros	Rat's-tail Fescue	Perennial Rye-grass	Lolium perenne
Trifolium pratense	Red Clover	Prickly Lettuce	Lactuca serriola
Lamium purpureum	Red Dead-nettle	Prickly Sow-thistle	Sonchus asper
Festuca rubra	Red Fescue	Purple Toadflax	Linaria purpurea
Centranthus ruber	Red Valerian	Purple-loosestrife	Lythrum salicaria
Persicaria maculosa	Redshank	Red Campion	Silene dioica
Plantago lanceolata	Ribwort Plantain	Red Clover	Trifolium pratense
Lychnis coronaria	Rose Campion	Red Fescue	Festuca rubra
Hypericum calycinum	Rose-of-Sharon	Redshank	Persicaria maculosa
Chamerion angustifolium	Rosebay Willowherb	Reflexed Stonecrop	Sedum rupestre
Poa trivialis	Rough Meadow-grass	Ribbed Melilot	Melilotus officinalis
Anagallis arvensis	Scarlet Pimpernel	Ribwort Plantain	Plantago lanceolata
Tripleurospermum	Scentless Mayweed	Rough Clover	Trifolium scabrum

inodorum			
Prunella vulgaris	Selfheal	Rough Meadow-grass	Poa trivialis
Rumex acetosella	Sheep's Sorrel	Salad Burnet	Sanguisorba minor
Festuca ovina	Sheep's-fescue	Sand Spurrey	Spergularia rubra
Capsella bursa-pastoris	Shepherd's-purse	Sheep's Sorrel	Rumex acetosella
Scutellaria galericulata	Skullcap	Sheep's-fescue	Festuca ovina
Trifolium micranthum	Slender Trefoil	Shepherd's-purse	Capsella bursa-pastoris
Urtica urens	Small Nettle	Skullcap	Scutellaria galericulata
Crepis capillaris	Smooth Hawk's-beard	Slender Sandwort	Arenaria serpyllifolia
Poa pratensis	Smooth Meadow-grass	Slender Speedwell	Veronica filiformis
Sonchus oleraceus	Smooth Sow-thistle	Small Nettle	Urtica urens
Antirrhinum majus	Snapdragon	Small Scabious	Scabiosa columbaria
Symphoricarpos albus	Snowberry	Smaller Cat's-tail	Phleum bertolonii
Cirsium vulgare	Spear Thistle	Smooth Hawk's-beard	Crepis capillaris
Medicago arabica	Spotted Medick	Smooth Meadow-grass	Poa pratensis
Potentilla recta	Sulphur Cinquefoil	Smooth Sow-thistle	Sonchus oleraceus
Lobularia maritima	Sweet Alison	Spanish Broom	Spartium junceum
Anthoxanthum odoratum	Sweet Vernal-grass	Spear Thistle	Cirsium vulgare
Festuca arundinacea	Tall Fescue	Spiked Sedge	Carex spicata
Arabidopsis thaliana	Thale Cress	Spotted Medick	Medicago arabica
Veronica serpyllifolia	Thyme-leaved Speedwell	Square-stalked St John's-wort	Hypericum tetrapterum
Lycopersicon esculentum	Tomato	Square-stalked Willowherb	Epilobium tetragonum
Clematis vitalba	Traveller's-joy	St. John's-Wort	Hypericum
Brassica rapa	Turnip	Stinking Iris	Iris foetidissima
Agrostis canina	Velvet Bent	Sweet Vernal-grass	Anthoxanthum odoratum
Hordeum murinum	Wall Barley	Sweet Violet	Viola odorata
Veronica arvensis	Wall Speedwell	Tansy	Tanacetum vulgare
Rumex hydrolapathum	Water Dock	Thale Cress	Arabidopsis thaliana
Azolla filiculoides	Water Fern	Thyme-leaved Sandwort	Arenaria serpyllifolia subsp. serpyllifolia
Scrophularia auriculata	Water Figwort	Timothy	Phleum pratense
Mentha aquatica	Water Mint	Traveller's-joy	Clematis vitalba
Cardamine flexuosa	Wavy Bitter-cress	Upright Brome	Bromopsis erecta
Trifolium repens	White Clover	Upright Chickweed	Moenchia erecta
Lamium album	White Dead-nettle	Vervain	Verbena officinalis
Sedum album	White Stonecrop	Wall Barley	Hordeum murinum
Salvia verbenaca	Wild Clary	Water Chickweed	Myosoton aquaticum
Geum urbanum	Wood Avens	Water Dock	Rumex hydrolapathum
Rumex sanguineus	Wood Dock	Water Mint	Mentha aquatica
Achillea millefolium	Yarrow	Water-pepper	Persicaria hydropiper

Pseudofumaria lutea	Yellow Corydalis
Holcus lanatus	Yorkshire-fog

Water-plantain	Alisma plantago-aquatica
Weld	Reseda luteola
White Bryony	Bryonia dioica
White Clover	Trifolium repens
White Mullein	Verbascum lychnitis
White Stonecrop	Sedum album
Wild Angelica	Angelica sylvestris
Wild Onion	Allium vineale
Wild Privet	Ligustrum vulgare
Wild Teasel	Dipsacus fullonum
Wood Avens	Geum urbanum
Yarrow	Achillea millefolium
Yellow Oat-grass	Trisetum flavescens
Yorkshire-fog	Holcus lanatus
Field Horsetail	Equisetum arvense