

London Wildlife Limited

# BURGESS PARK

## Extended Phase I Habitat Survey Report September 2013



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## **1 Executive Summary**

London Conservation Services (LCS) was commissioned by Southwark Council to undertake an Extended Phase I Habitat Survey of nine separate predominantly wildlife identified areas of Burgess Park. These nine areas are hereafter referred to as parcels.

The survey was required to identify and evaluate the current biodiversity value of the surveyed areas and provide recommendations to improve the grounds for biodiversity while maintaining sufficient infrastructure to maintain current usage.

The survey of the Park was undertaken on 25th April 2013 (with additional visits on 4<sup>th</sup> and 21<sup>st</sup> June) and found that there were ten main habitats present within the surveyed area. The most dominant habitat within the surveyed area is semi-improved grassland with large areas of developing woodland and mature scrub, roughland and amenity grassland habitats. Scattered trees are also frequently distributed across the nine parcels.

Overall the surveyed areas were found to be predominantly of moderate biodiversity value with some areas of low value and others of high value. Given a series of management recommendations in line with biodiversity targets in the Southwark Biodiversity Action most of the parcels could be enhanced to be of a high biodiversity value. To do so the following principal processes need to be undertaken:

- Review and amend mowing regimes on wildlife designated areas so as to help maintain a diversity of grassland, scrub and tall herbs that complement each other and natural succession is somewhat controlled;
- Control and eradicate invasive species and those of particular concern
- Introduce plantings and/or seedlings to enhance current biodiversity;
- Enhance some existing features to be exemplary educational resources;
- Further landscape some areas such as a large pond.
- Introduce biodiversity monitoring to review biodiversity change

## 2 Introduction

### 2.1 Site background

London Conservation Services (LCS) was commissioned by Southwark Council to undertake an Extended Phase I Habitat Survey of nine separate parcels of Burgess Park located between Camberwell, Walworth and Peckham in Southwark, London SE5/17.

Burgess Park itself was named after Camberwell's first woman Mayor, Jessie Burgess, and was developed between the 1950s to the 1980s following proposals first laid out in the 1943 Abercrombie Plan for Open Spaces, so it is a relatively new park in comparison to many other parks in inner London boroughs. A western extension of the Surrey Canal was originally cut into the area, which subsequently became home to a number of factories as well as associated residential streets. During the blitz years of World War II it was heavily bombed, and the Park (together with nearby housing estates) was created out of this and subsequent slum clearance.

Burgess Park was surveyed ecologically as part of the London Wildlife Habitat Survey carried out by London Wildlife Trust in 1984-5 on behalf of the Greater London Council. This led to the Park being identified as a Site of Borough Importance (Grade II) for Nature Conservation in 1989. A further survey of 1994 reaffirmed this status, highlighting that further landscaping would be required if its biodiversity interest was to be significantly enhanced. More recently the Park has undergone a £6m transformation of improvements as the major winner of the Mayor of London's Priority Parks programme. As part of this a full Ecology Report of the Park was undertaken by The Ecology Consultancy in May and June 2009.

The Park boasts a number of listed buildings and structures, a World Garden, holds an annual Latin American carnival, and has a thriving Friends of Burgess Park group that help with the direction and management of the Park and its activities. Other community stakeholders are also involved in the management of the Park.

The parcels surveyed are owned by the London Borough of Southwark and are predominantly managed by Quadron and Friends of Burgess Park. The survey was required to identify and evaluate the current biodiversity value of the areas and provide recommendations to improve the grounds for biodiversity while maintaining sufficient infrastructure to maintain current usage.

The Extended Phase I Habitat Survey was required to assess the extent of semi-natural habitats present by using the GLA Open Space and Habitat Survey for Greater London Methodology (LEU, 1994). The GLA Open Space and Habitat Survey for Greater London methodology is recommended in *The Mayor's Guide to Preparing Open Space Strategies (A London Plan Best Practice Guide)* and is included in *The Mayor's Biodiversity Strategy* (GLA, 2002).

This report is in two sections. The first section summarises the habitat types and significant vascular plant species found at the site and the site evaluation. The appendices comprise all the species, photographic and map data.

## **2.2 Site details**

### **2.2.1 Location**

The survey area was comprised of nine discrete areas of land within the Park hereafter known as parcels. The specific parcels were chosen as the terrestrial areas set aside by the Southwark Council for wildlife improvements in combination with predominantly passive recreational uses. The rest of the Park was not surveyed.

The Park itself is located at TQ 33133 77743 and is approximately 48h in area. The Park consists of predominantly amenity grassland with a path network, several buildings, a garden, a large ornamental lake, sports pitches and children play facilities. It also supports a wide variety of trees of both naturalised and planted origin. It stands within an inner urban neighbourhood of predominantly residential estates with some mixed commercial and retail usage.

### **2.2.2 Topography**

Parcel 3 consists of a raised but flattened mound that drops away to the surrounding pathways particularly the path that runs along its northern boundary it is no more than 2 metres above mean Park level. Parcel 5 consists of a raised mound that comprises the entire northern arm and the eastern edge of the central section which is up to 5 metres above mean park level while the southern arm has some minor undulations on either side of the main path.

The main central section of Parcel 7 is a raised, mostly flat-topped mound, which slopes away to all its boundary edges with a slightly steeper slope towards the southern end. It is no more than 5 metres above mean Park level. The north western and south eastern arms of this parcel are flat. Parcel 8 consists of landscaped wet scrapes and pond hollows and small mounds below 1 metre above or below mean park level and Parcel 9 is a series of landscaped raised mounds with hollows up to 6 metres above and 2 metres below mean park level. All other parcels were relatively flat and level with only minor undulations.

### **2.2.3 Hydrology and soils**

No hydrology or soil surveys have been undertaken on any of the parcels. All are presumed to have very good drainage except the hollows of parcels 8 and 9 which hold some water.

### **2.2.4 Access and usage**

The Park has full public access in respect of the surveyed parcels.

### **2.2.5 Boundaries**

The parcel survey boundaries are delineated by mostly paths and roads or the Park boundaries with neighbouring land ownerships. The surveyed parcels are depicted on the Site Map (Appendix 1).

## 2.3 Aim of the survey

The aims are to:

- Identify dominant, characteristic and otherwise unusual vascular plant species and the chief habitats present using the DAFOR scale<sup>1</sup> for each parcel;
- Determine the importance of these features in a local, regional (London) and national context as noted in Biodiversity Action Plans;
- Determine whether or not the site supports notable, rare and/or protected species;
- Make incidental recording of other fauna sightings;
- Provide recommendations on enhancing the amount and quality of the greenspace for wildlife, improving sustainability and providing a more enjoyable and pleasant environment.

Survey objectives did not include non-vascular plant species (e.g. mosses, algae). Given the broad characteristics of the Park's habitats this is unlikely to be a determinant factor.

## 2.4 Capability statement

### 2.4.1 Company and report information

London Conservation Services is a wholly owned trading subsidiary of the London Wildlife Trust.

The recommendations set out within the report broadly reflect London Wildlife Trust's core principles and objectives.

- The information in this document is, to the best knowledge of the author and London Conservation Services correct at time of writing.
- The ecological recommendations offered in this document are based on known wildlife conservation good practice and where applicable, the current legislation on protected species but should not be treated as legal advice. The report may also contain additional, non-statutory, recommendations with regards to protected species and/or habitats. These are clearly identified as optional where they are offered.
- London Conservation Services does not take any responsibility for future decisions about the site that is the subject of this assessment.

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### 2.4.2 Staff capability

All LCS ecologists are members of the Institute of Ecology and Environmental Management (CIEEM), at the appropriate level, and follow the CIEEM code of professional conduct when undertaking ecological work.

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<sup>1</sup> A standard format for recording relative abundance (Dominant, Abundant, Frequent, Occasional, Rare).

Name and contact details	Role in team	Relevant experience
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<b>Tony Wileman</b> BSc, MCIEEM Tel: 020 7803 4283 Email: <a href="mailto:twileman@wildlondon.org.uk">twileman@wildlondon.org.uk</a>	<i>Senior ecologist</i> Data collection, Site and habitat analysis and evaluation, mapping and report delivery.	20 years' experience of land management, site surveys and developing and implementing management plans. Excellent identification skills for relevant taxa. Competent in all MS Office programs and <i>MapInfo</i> .
<b>Mathew Frith</b> BSc, MCIEEM, CEnv Tel: 020 78034292 Email: <a href="mailto:mfrith@wildlondon.org.uk">mfrith@wildlondon.org.uk</a>	<i>Project advisor</i> Quality control.	25 years' experience of urban nature conservation policy and practice, including land management issues of parks and inner urban sites. Phase 1 survey experience and site assessment. Design Council CABE Enabler and Green Flag Award judge.

## 3 Habitat Survey (Extended Phase 1)

### 3.1 Extended phase 1 survey methodology

A Habitat Survey (Phase I extended) of nine parcels in Burgess was carried out on 25<sup>th</sup> April and 21<sup>st</sup> June 2013 by Tony Wileman (with additional visit on 4<sup>th</sup> June by Mathew Frith). The survey followed standard Phase I habitat survey methodology (JNCC, 1993), as modified for Greater London by the former London Ecology Unit (LEU, 1994) and later adopted by the Greater London Authority. Photographs of the site were also taken on 25<sup>th</sup> April 2013 and can be found in Appendix 4.

Characteristic, rare and interesting species and plant assemblages were evaluated for conservation designations and assessed as to whether they were notable for the Greater London area. Notable is defined as species which were recorded from 15% or fewer of the 400 two-kilometre recording squares (tetrads) in Greater London in the *Flora of the London Area* (Burton 1983).

Complex taxa, such as *Taraxacum* (dandelions) and *Rubus* (brambles) are treated as aggregates as there is little value in distinguishing these for determining habitat types, especially in London.

Casual recording of fauna was attempted throughout the duration of the Habitat Survey (Appendix 5).

### 3.2 Limitations of the survey

#### 3.2.1 Seasonal plants and animals

The timing of the survey visit was considered good to characterise the species and habitats likely to be found present on site. As a result it is probable that most plant species in existence on the site were located but it is possible some summer and autumn flowering plants were not located. The timing of the survey is considered adequate for recording invertebrates and adequate for recording vertebrate fauna. It is considered good for recording breeding bird species and bird species overall. Most species found on site were identifiable to species although some were identifiable to Genus only. Several ornamental shrubs which have been clumped together as ornamentals for purposes of the species lists were not identified.

#### 3.2.2 Access

Full access was obtained to all the parcels except Parcel 8 which was fenced off using chestnut paling. It was easily viewable from its boundaries and most species present within the parcel were identified. Binoculars were used where required.

### 3.3 Plant nomenclature and rarity

The *New Flora of the British Isles* (Stace, 2010), the standard text, was consulted for plant nomenclature. English names have been used in preference to Latin (only quoted in the first instance) in order to facilitate readability of the report.

Any uncommon vascular plant species were identified in the London context using the *Flora of the London Area* (Burton, 1983). For national rarity *The New Atlas of the British & Irish Flora* (Preston, Pearman & Dines, 2002) was referred to (where a taxon appearing in 150 or less 10 x 10km squares was considered rare).



### 3.4 Habitat rarity

The Southwark and London Biodiversity Action Plans were consulted on local and regional habitat rarity, while the UK Biodiversity Action Plan was consulted on national habitat rarity.

### 3.5 Parcel descriptions

A map showing the location of the habitat communities appears in Appendix 1. A full list of plant species recorded in each of the compartments during the Extended Phase I survey, along with an assessment of their abundance using the DAFOR scale appears in Appendix 2. As part of the survey incidental vertebrate and invertebrates were recorded and are fully listed in Appendix 3.

#### 3.5.1 Parcel 1: New Church Road Nature Area

Parcel 1 is bounded along its northern boundary with a wooden post and wire rail fence except for a 2 metre wide opening where access to the parcel can be obtained.

The parcel consists of a developing mosaic of improved and semi-improved grassland at the western end of the site with scattered patches of scrub, young trees and some tall herb stands. There is some evidence of clearance work having been undertaken on some of the scrub and this disturbance has allowed some ephemeral disturbed ground species to become established. The vegetation of this western area is composed of predominantly false oat-grass *Arrhenatherum elatius* and red fescue type grasses *Festuca rubra* spp with frequent grasses of common bent *Agrostis capillaris*, and perennial rye-grass *Lolium perenne* and typical flowers of yarrow *Achillea millefolium*, cleavers *Galium aparine* and ribwort plantain *Plantago lanceolata*. A wide variety of other species are present and include meadow foxtail *Alopecurus pratensis*, cow parsley *Anthriscus sylvestris*, lesser burdock *Arctium minus*, black horehound *Ballota nigra*, creeping thistle *Cirsium arvense*, hemlock *Conium maculatum*, wild carrot *Daucus carota*, dove's-foot crane's-bill *Geranium molle*, hogweed *Heracleum sphondylium*, hoary mustard *Hirschfeldia incana*, Yorkshire-fog *Holcus lanatus*, wall barley *Hordeum murinum*, white and red dead-nettles *Lamium album* and *L. purpureum*, greater plantain *Plantago major*, creeping cinquefoil *Potentilla reptans*, Greek dock *Rumex cristatus*, lesser stitchwort *Stellaria graminea*, dandelion species *Taraxacum* agg., common field speedwell *Veronica persica* and common vetch *Vicia sativa*. Trees and scrub in this area are composed of mainly sycamore, field and Norway maples *Acer pseudoplatanus*, *A. campestre* and *A. platanoides*, hawthorn *Crataegus monogyna*, cherry species *Prunus* sp., field rose *Rosa arvensis*, and bramble *Rubus fruticosus* agg.

The eastern end of the parcel is composed of developing broad-leaved woodland and associated scrub which is composed of predominantly field maple, sycamore, wild privet *Ligustrum vulgare*, blackthorn *Prunus spinosa* and cherry species with a mix of scattered Norway maple, dogwood *Cornus sanguinea*, hawthorn, holly *Ilex aquifolium*, Poplar species *Populus* sp., holm and pedunculate oak *Quercus ilex* and *Q. robur* and rowan *Sorbus aucuparia*. Ground flora is dominated by cow parsley with frequent cleavers. Other ground flora species present include lesser burdock, black horehound, herb-robert *Geranium robertianum*, hogweed, dog rose *Rosa canina*, bramble species and dandelion.

There is plentiful fallen dead wood present and a planted row of sapling beech trees *Fagus sylvatica* running the length of the northern boundary of the western grassland area south of the post and rail boundary fence except in the entrance gap.

At the time of the visit the scrub habitats were particularly attractive to migrant warblers with singing blackcap and whitethroat, with the former having both male and female birds present suggesting they were on breeding territory. Greenfinch was particularly abundant in the taller trees and a couple of male birds were singing and displaying suggesting they were on territory also. Other common garden birds present included blue and great tit. Other fauna observed were a mix of bumblebee species, true flies and other flying invertebrates and the dead wood supported various woodlice.

Current Wildlife Value: Moderate to High

### **3.5.2 Parcel 2: St George's Way west ('Sparrow Meadow')**

This parcel was an area of former amenity grassland that has recently been subject of an RSPB-led project to test the effectiveness of targeted conservation measures for house sparrows in urban parks in London. Burgess Park was one of a number of sites used within the study (from 2009-12), and this plot was used to test responses of vegetation and invertebrate populations to the trial management. Use of habitat plots by house sparrows and other birds was monitored, and local house sparrow populations were surveyed to detect any likely effect of the habitat management on breeding populations.

Consequently the plot has been disturbed and been subject to a more relaxed mowing regime placed upon it. As a result it has developed into an area of semi-improved grassland with ruderal species, consisting of abundant cock's-foot *Dactylis glomerata*, ribwort plantain and hawkweed oxtongue *Picris hieracioides*, with frequent common bent and creeping bent *Agrostis stolonifera*, false oat-grass, red fescue type species and common ragwort *Senecio jacobaea*. Other species present include black horehound, common mouse-ear *Cerastium fontanum*, spear thistle *Cirsium vulgare*, hemlock, wild carrot, hoary mustard, Yorkshire-fog, white dead-nettle, bristly oxtongue *Picris echinoides*, creeping buttercup *Ranunculus repens*, curled dock *Rumex crispus*, Greek dock and common nettle *Urtica dioica*. This is surrounded by a 1-3m wide area of amenity grassland typically dominated by perennial rye-grass with other species consisting of predominantly common bent, daisy *Bellis perennis*, ribwort and greater plantain, annual meadow-grass *Poa annua*, creeping buttercup, dandelion and white clover *Trifolium repens*.

There is a row of planted cherry species along the northern edge and a scattering of other planted trees that includes sycamore, Norway maple and lime *Tilia x europaea*. Some of these trees are mature and sit within shallow hollows at the east and west ends of the parcel. These hollows support a ground flora of taller herbs of black horehound, spear thistle, white dead-nettle and common nettle and some bramble scrub. The area also support several outdoor exercise apparatus

This parcel was less diverse of fauna but at the time of the visit small white butterflies and carrion crow, blackbird and woodpigeon were utilising the space.

Current Wildlife Value: Low to Moderate

### **3.5.3 Parcel 3: Canal Walk banks north**

Parcel 3 is an area of predominantly semi-improved grassland with some ruderal, tall herb and scrub patches and is surrounded by a 1-2m wide amenity grassland strip. The main semi-improved grassland is dominated by false oat-grass with abundant cock's foot. Frequent to occasionally distributed species in the grassland include yarrow, lesser burdock, mugwort *Artemisia vulgaris*, black horehound, common

mouse-ear, creeping thistle, red fescue type species, cleavers, *Galium aparine*, hoary mustard, Yorkshire-fog, white dead nettle, red dead-nettle *Lamium purpureum*, hawkweed oxtongue, ribwort plantain, creeping cinquefoil, field rose, curled dock, Greek dock, white clover, common nettle, and common vetch. The Amenity grassland strips are similar to those of Parcel 2.

At the western and eastern edges of the eastern section of this parcel there is a small wooded copse. These copses differ with the eastern one being composed of London plane *Platanus x hispanica* and Norway maple with a ground flora almost exclusively of cow parsley and occasional ivy *Hedera helix* while the western copse is a more varied mix of Norway maple, sycamore and pedunculate oak with a few shrubs of hawthorn, blackthorn, goat willow *Salix caprea* and elder *Sambucus nigra* and frequent bramble scrub. The ground flora here is more variable with large bare patches as well as stands of common nettle, black horehound, cow parsley and the invasive giant hogweed *Heracleum mantegazzianum*. A row of planted cherry species can be found along the southern edge of this parcel.

This parcel supported a number of bird species including wren, robin, blackbird, carrion crow, starling, blue tit, blackcap and common whitethroat all of which could feasibly breed within this parcel for it has adequate habitat for them to do so. Besides the birds the grassland had a number of large black garden ant nests and was attractive to small tortoiseshell and small white butterflies as well as bumblebees.

Current Wildlife Value: Moderate

#### **3.5.4 Parcel 4: St. George's Way east ('Burgess Common dry grassland')**

This is a mixed parcel of predominantly amenity grassland with two large and three smaller stands of densely planted trees/shrubs with associated ground flora. The amenity grasslands are dominated by perennial rye-grass with frequent yarrow, daisy, ribwort plantain, annual meadow-grass and white clover with lesser amounts of common mouse-ear, red fescue type species, dove's-foot crane's-bill, greater plantain and dandelion. The tree/shrub composition is of field maple, Norway maple, silver birch *Betula pendula*, hornbeam *Carpinus betulus*, hazel *Corylus avellana*, hawthorn, holly, cherry species and elder *Sambucus nigra*. Ground flora under and around the edges of the trees/shrub stands is sparse in places with large areas of bare ground and dead wood material piled up as dead hedging but otherwise consists of frequent cow parsley, common nettle and ivy-leaved speedwell *Veronica hederifolia* with a scattering of lesser burdock, false oat-grass, black horehound, creeping thistle, cleavers, herb-robert, white dead-nettle, dog rose, Greek dock and groundsel.

Birds utilising this parcel were wren, great tit, woodpigeon, blackbird and magpie.

Current Wildlife Value: Low to Moderate

#### **3.5.5 Parcel 5: Surrey Canal Walk north**

A long complex parcel that consists of the northern section of a green walkway space in the southeast of the Park with amenity grassland flanked by strips of rough ground leading southwards to Peckham and a raised bank of rough ground on Glengall Road with adjoining areas of amenity grassland.

The rough ground is composed of a typical roughland habitat; a mosaic of semi-improved grassland, tall herbs and scattered scrub, plus scattered trees. The roughland habitat consists of a complex mix of mostly cow parsley, lesser burdock,

false oat-grass, mugwort, black horehound, cock's-foot, teasel *Dipsacus fullonum*, cleavers, green alkanet *Pentaglottis semperivens*, Greek dock and common nettle with lesser amounts of meadow foxtail, creeping thistle, hemlock, hogweed, white dead nettle, common mallow *Malva sylvestris*, annual mercury *Mercurialis annua*, broad-leaved dock *Rumex obtusifolius* and comfrey species *Symphytum* sp. Shrub species consist of butterfly-bush *Buddleja davidii*, hawthorn, blackthorn, dog rose, bramble and elder. The amenity grassland sections are typical to those of parcels 2 and 4. While trees in this parcel include frequent Norway maple and ash *Fraxinus excelsior* with occasional field maple, silver birch, hornbeam and pedunculate oak. A small stand of Japanese knotweed *Fallopia japonica* is located next to gardens in the northeast corner of the parcel.

This parcel was rather limited for its fauna recording just blackbird, great tit and woodpigeon and small tortoiseshell butterfly.

Current Wildlife Value: Low to Moderate

### **3.5.6 Parcel 6: Crnr Glengall Terrace/Trafalgar Avenue**

This parcel is fenced and has no public access (there is a locked gate within the roadside railings). It consists of two small copses (one north and one south) which are divided by an area of semi-improved grassland and an area of roughland behind the gardens of Glengall Terrace at the western edge.

The northern copse is composed of a dense field maple stand with a few shrubs of wild privet and bramble. Ground flora is almost entirely composed of ivy with a small amount of barren brome and cow parsley towards the southern end of the copse. The southern copse consists of trees of sycamore, Norway maple and lime with a ground flora of mostly cow parsley with occasional garlic mustard, lesser burdock, herb-robert, wood avens, ivy, bramble, and common nettle.

The grassland is relatively diverse, with a mix of wall barley, perennial rye-grass and rough-meadow grass with occasional common bent, soft brome, false oat-grass, cock's-foot and smaller cat's-tail. Frequent herbs include cut-leaved and dove's-foot crane's-bill, ribwort plantain and white clover with lesser amounts of yarrow, hemlock, bramble, common chickweed, and common vetch. The roughland is mostly composed of tall herbs such as cow parsley, and common nettle but also support some ivy, bramble, elder scrub and young ash trees as well as the grasses false oat-grass, cock's-foot, rough meadow-grass. An evergreen spindle *Euonymus japonicus*, has been planted in this area. A very small plant of Japanese knotweed was found near the locked entrance gate.

Vertebrate faunal sightings were limited to a robin in the woodland but the area was attractive to a variety of invertebrates such as bumblebees and true flies.

Current Wildlife Value: Moderate

### **3.5.7 Parcel 7: Waite St-Nile Terrace-Coburg Nature Area ('Pepler Walk')**

This parcel consists of three distinct areas; a southeastern arm of amenity grassland, the main central region of semi-improved grassland with eastern and western boundaries of scrub and tall herb communities and north western small woodland called Coburg Nature Area.

The amenity grassland community is similar to those of parcels 2 and 4 while the main central section semi-improved grassland is composed of abundant false oat-

grass and yarrow with frequent common and creeping bent, cock's-foot, ribwort plantain and white clover with a scattering of Yorkshire-fog and common chickweed plus edge habitats comprising mix of garlic mustard, cow parsley, mugwort, black horehound, white dead-nettle, daffodil species and common nettle with scrub of young ash, honeysuckle *Lonicera periclymenum*, young poplar species, blackthorn, young cherry species, field and dog rose, bramble, elder and the invasive snowberry *Symphoricarpos albus* and Russian-vine *Fallopia baldschuanica*. Scattered trees in this area consist of Norway maple, sycamore, horse-chestnut *Aesculus hippocastanum*, silver birch, ash, poplar species, cherry species, and lime.

Coburg Nature Area consists of a mix of ash, sycamore, Norway maple woodland with some elder and a ground flora almost exclusively composed of cow parsley. The woodland is well managed and has a well maintained distinct path network. There is also a small pond which has some bankside vegetation of soft rush *Juncus effusus* and yellow iris *Iris pseudocorus* and a surface covering of the invasive least duckweed *Lemna minuta*.

Holly blue butterfly was present in Coburg Nature Area along with singing blackcap and willow warbler. Starling and blackbird favoured the central area.

Current Wildlife Value: Low to High

### **3.5.8 Parcel 8: New lake wetlands south**

Parcel 8 consists of an area south of the Park's main lake which has been recently landscaped to create a number of small ponds, swales and scrapes plus raised banks. The area is fenced with chestnut fencing to prevent footfall erosion while the vegetation becomes established.

At the time of the visit the ponds were low in water with some of the scrapes and swales being completely dry. The only wetland vegetation present was some celery-leaved buttercup *Ranunculus scleratus* around the swale, scrape and pond edges while the ponds were developing algal blanket weed. Subsequent to the survey there has been some planted to replace previously lost plantings, including ragged-robin *Lychnis flos-cuculi*.

The mounds and banks of the wetland features have mostly developed into amenity grassland and/or consist of ruderal/disturbed land species consisting of mostly perennial rye-grass, yarrow, shepherd's-purse *Capsella bursa-pastoris*, red dead-nettle, broad-leaved dock, dandelion and white clover with lesser amounts of creeping bent, false oat-grass, black horehound, daisy, hemlock, red fescue, goat's-rue *Galega officinalis*, common mallow, green alkanet, ribwort plantain, weld *Reseda luteola*, groundsel, common chickweed, and common field speedwell. The mounds are also been planted with several grey and goat willow saplings.

Current Wildlife Value: Moderate

### **3.5.9 Parcel 9: Albany Road woodland**

Parcel 9 to the north of the main lake is another area that has been recently landscaped to create a series of mounds and shallows some with swales. There are however some areas of more developed scrub and secondary woodland.

The landscaped hollows including the scrape area appear to have been planted and sown with a mix of species that has not been successful. The only plants that emerged from this mix with any abundance at the time of survey appear to consist of

an unidentified (believed to be common) sedge *Carex sp.*, water mint *Mentha aquatica*, and a campion species *Silene sp.* with a small amount of meadowsweet while ruderals have colonised the area in their stead. These include thale cress *Arabidopsis thaliana*, lesser burdock, creeping thistle, goat's-rue, red dead-nettle, common mallow, hawkweed oxtongue, ribwort and greater plantain, groundsel and common field speedwell. Later planted species to emerge include ragged-robin, red campion *Silene dioica*, and ox-eye daisy *Leucanthemum vulgare*.

The mounds have been covered in a thick layer of woodchip which prohibits vegetational growth but otherwise have been planted with a range of tree and shrub saplings that consist of field maple, alder *Alnus glutinosa*, dogwood, hazel, hawthorn, cherry species, goat and grey willow, rowan, and yew *Taxus baccata* most of which are thriving.

In addition there is a south facing bank of grassland that appears to have been sown with a wildflower mix in which common bent and red fescue is evident along with wildflowers of wild carrot and ox-eye daisy but little else.

The more developed woodland and scrub areas consists of a varied mix of field maple, sycamore, dogwood, hazel, hawthorn holly, poplar species, blackthorn, cherry species, firethorn *Pyracantha sp.*, field and dog rose, bramble, elder and snowberry with a mix of ground flora species consisting of frequent bare ground, cow parsley and hybrid bluebell *Hyacinthoides x massartiana* plus occasional three-cornered garlic *Allium triquetrum*, lesser burdock, mugwort, black horehound, cleavers, herb-robert, ivy and common nettle.

The parcel supported little in the way of birds or other visual invertebrates with just blackbird and carrion crow (common in the Park) recorded.

Current Wildlife Value: Low to Moderate

## 4 Evaluation and Recommendations

### 4.1 Site evaluation

#### 4.1.1 Designations and planning

Burgess Park is the largest park within the London Borough of Southwark and is designated a Protected Public Open Space and as Metropolitan Open Land (MOL). Most of the site is also designated as a Site of Borough Grade II Importance for Nature Conservation (SBI(II) SINC) due to its large size, mix of locally important habitats and its provision as accessible green space to a large predominantly residential area of North Central Southwark.

In the Southwark Core Strategy under Strategic Targets Policy 2 - *Improving places*, Burgess Park forms an intrinsic part of the Aylesbury Action Area and immediately borders the Old Kent Road Action Area, Peckham and Nunhead Action Area and the Camberwell Action Area. Besides these areas being improved for housing and businesses there are plans to provide three new 'green finger' links at the north end of the park providing additional open space for the residential areas and potentially extending the existing green corridor walkway to Peckham as a new 'green link' to join up with Peckham Rye Common. These greenspace improvements along with those already undertaken and any further improvements suggested below will help improve the local area for biodiversity and the health of the residents and the local community as a whole.

#### 4.1.2 Biodiversity Action Plans

As a large park and a SBI(II) SINC, Burgess Park provides plentiful opportunities for delivering proposed targets set out within the 5 broad themes in the *Southwark Biodiversity Action Plan 2013-2018*. Several actions in these broad themes are particularly relevant to the surveyed areas of Burgess Park. These broad themes and their relevant actions and target dates are as follows:

#### Theme 1: *Wildlife and Ecosystem services*

Action	Target
Produce and implement biodiversity chapters for all Green Flag (GF) park management plans, identifying the current biodiversity value and recommended management.	Ongoing
Produce biodiversity management plans for all parks and green spaces declared as Sites of Importance for Nature Conservation (NB there is cross over with action above).	2014
Audit the biodiversity value of all Southwark's parks and green spaces to determine if the suite of SINC's should be reviewed in line with regional guidance.	2015
Monitor invasive species in line with London's Invasive species Initiative and manage accordingly.	Annually
Install 10 bat boxes in parks and public realm per year. Link to GF and SINC biodiversity management plans.	2016
Install new invertebrate loggeries across parks and public realm, link to GF and SINC biodiversity management plans.	2016
Plant nectar, and pollen rich plants in borders and beds in the public realm and parks and open spaces. Target 50% of new planting to	2013

meet these criteria.	
Retain dead wood and retain standing dead wood <i>in situ</i> in parks and green spaces wherever appropriate in parks and public realm. Link to GF and SINC biodiversity management plans.	Annually
Create 6 small butterfly meadows and/or planters.	2015
20% of grassland in parks managed for biodiversity = target of 260,000 M2.	2016
Maintain all House Sparrow meadows in parks and highways	2014
Create 1 ha new wildflower meadow. Species mix to be selected to provide biodiversity habitat and visual interest.	2015
Install 4 new clay lined ponds across the borough.	2016

## **Theme 2: The Urban Forest**

Action	Target
Restock woodland in parks with native climax species. Plant and maintain 20 trees per year.	2016

## **Theme 4: Climate change and sustainability**

Action	Target
Monitor Invasive Species, pests and diseases – continue to eradicate Japanese & giant hogweed.	Ongoing

## **Theme 5: Connecting with nature**

Action	Target
Provide Improved public information on designation of nature areas in parks.	2013
Install interpretive signs for 30% (20 Sites) of all SINC sites.	2016

### **4.1.3 Landscape and wildlife connectivity**

Although the primary function of Burgess Park is recreational amenity usage (and therefore the majority of it is managed with this in mind), the scattering of trees, designated wildlife areas and other small areas that are less intensively managed across the Park provide valuable wildlife habitats. These serve to provide some ecological connectivity across the Park and also provide links to allow mobile species (e.g. bats, birds, butterflies) to move into the wider landscape of the neighbouring environs. These neighbouring environs include the nearby parks; Nursery Row Park, Faraday Gardens, Pasley Park, Surrey Square Park, Sceux Gardens, Central Venture Park, Leyton Square Recreation Ground, Paterson Park, Addington Square, Brunswick Park, Benhill Road Nature Garden, and others, all of which are connected to Burgess Park by adjoining greenspace or green infrastructure within the residential estates or as gardens.

This wider landscape constitutes a fragmented greenspace, which is valuable in providing wildlife corridors and connectivity, particularly for mobile invertebrates and birds, so it is important that these (or parts of them) are also managed with wildlife in mind if Burgess Park is to become an exemplary park for wildlife. This mosaic of greenspace undoubtedly provides Burgess Park with a higher biodiversity value than it would if it was entirely isolated from nearby greenspaces but further improvements within and external of the Park will enhance this further and make it more attractive and accessible to a wider diversity of invertebrates, birds and small mammals.



## 4.2 Parcel evaluation and management recommendations

Each of the parcels surveys is evaluated using Table 1 Habitat Evaluation Criteria below to generate a value for their biodiversity. This is based on ecological standards set out by the Chartered Institute of Ecology & Environmental Management. (CIEEM). In addition, some brief management recommendations are provided on how best to conserve or improve the parcels for biodiversity taking into consideration the relevant proposed actions in the Southwark Biodiversity Action Plan 2012-2018.

Table 1. Habitat Evaluation Criteria

Habitat Evaluation Criteria	Biodiversity Value
Habitat is known to support stable nationally or regionally (county) important species and/or species endangered on a local level (London Borough, district etc) and is managed in a wildlife sensitive way. (For example: SSSI sites, most Sites of Metropolitan Importance for Nature Conservation)	Very High
Habitat is known to support stable locally important species and is managed in a wildlife sensitive way. (For example; most Sites of Borough Importance for Nature Conservation)	High
Habitat has a typical assemblage of species but is not necessarily managed in a wildlife sensitive way and/or habitat would normally be considered good but is isolated from other habitats depriving it of its biodiversity (For example: railway linesides, waste ground areas, ornamental shrubberies, small isolated areas of greenspace)	Moderate
Habitat is limited in its biodiversity usage or is managed in such a way that inhibits its biodiversity value. (For Example: amenity grassland, ornamental gardens with limited 'wild' space)	Low
Habitat has very limited value for wildlife due to lack of vegetation features that may support biodiversity (hard surfaces such as paths, buildings and roads)	Negligible

### 4.2.1 Parcel 1: New Church Road Nature Area

This parcel supports a good variety of flora species and contains the mix of habitats that would occur through natural succession. This diversity of habitats within such a small space makes this particular parcel one of the most biodiverse sections within the park. These habitats are particular attractive to bird species namely migrant warblers such as blackcap and common whitethroat.

Management within this parcel appears to be minimal although there is some evidence of scrub clearance and a row of beech tree saplings have been planted along the northern fenceline. Minimal management is probably the most effective way to manage this parcel although care must be taken to not allow the scrub, tall herb stands or the woodland to become dominant. To do this the most effective management tasks would be:

1. Hemlock must be removed as an urgent priority. This is best undertaken by either pulling them up if they are young or digging up, or treated using a herbicide (glyphosate) through either a weed wipe or stem injection.
2. The presence of the wooden post and rail fencing forming the northern boundary detracts from the wildlife areas being accessible despite the single

gap entrance area. We suggest that it is removed from the parcel except where it currently protects the growth of the recently planted young beech trees. Once the beech trees are of sufficient height and size to form a natural hedge barrier to the area then the remaining fence can be removed. To allow flow through the site it is suggested that some clearance work is undertaken on the edge of the eastern woodland to create an exit/entrance area at this end that links up with the current naturally formed footpath in the wood.

3. Maintain existing bramble patches to their current size by a single (annual or biannual) cut back during the winter months (October-February).
4. Maintain areas of recently cut bramble as open areas by a continued single annual cut during winter months to ensure they are colonised by grasses and other herb species.
5. Maintain grassland areas by a single annual cut in during autumn (September-October) ensuring that the grass is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days. Each extent of grassland should be partitioned into A and B compartments and cut in alternative years (see 4.2.10 below).
6. Maintain tall herb stands by a single biannual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days.
7. Maintain woodland areas by minimal intervention except as required thinning to prevent any areas of the ground from getting too dark due to canopy cover. The control of holm oak should it become too invasive would be beneficial. Dead wood within the woodland should be maintained where possible unless it presents a Health & Safety risk.
8. Opportunities to locate 1 or 2 bird and bat boxes within the woodland and create 1 or 2 loggeries for invertebrates.

The current biodiversity value of this parcel is **moderate** to **high** and through appropriate management would increase to high.

#### **4.2.2 Parcel 2: St. George's Way west ('Sparrow Meadow')**

Parcel 2 is still within a process of natural development from amenity grassland and as a result is somewhat limited in its biodiversity value. However, that said a large area of the parcel has been set aside for relaxed mowing and this can only increase its biodiversity if managed appropriately. Unfortunately herb species are limited, and this may be due to an increasing amount of thatch that is encouraging coarser grasses to become dominant. In addition, the hollows are known to be used as public toilets.

The non-amenity sections of this grassland would ideally be managed as meadows as below:

1. Through annual cutting during autumn (September-October) ensuring that the grass is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days. Each extent of grassland should be partitioned into A and B compartments and cut in alternative years (see 4.2.10 below).
2. An additional spring cut (in March) for the next 3-5 years would be greatly beneficial to help open up the grass sward, reduce coarse grass dominance and allow more herb species to become established. This spring cut should also ensure that the grass is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days. The Spring cut

should be undertaken on the same compartment A or B as the usual Autumn cut (see 4.2.10 below).

3. Small areas of the grassland could be removed from the site and reseeded with an appropriate wildflower mix or wildflower plugs could be planted across the site to encourage an increase in diversity. However, this will only be effective if the mowing regime indicated above is implemented.
4. The scattering of trees should be maintained but further tree planting should be avoided.
5. The tall herb stands located within the hollows should be maintained by biannual cutting during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days.
6. The allowance of the taller herb stands (common nettle) and bramble scrub to develop in the hollows will dissuade people to use them as public toilets as well as benefitting wildlife.

The amenity grassland areas are of **low** value while the larger areas of semi-improved grassland and hollows have a **moderate** biodiversity level with the potential to be increased to high.

#### **4.2.3 Parcel 3: Canal Walk banks north**

Parcel 3 like Parcel 2 has developed from amenity grassland but appears to have had a relaxed mowing regime for longer and is thus more developed as semi-improved grassland than Parcel 2. The presence of some scrub and the two copses make it more attractive to birds including migrant warblers. Current management appears to be much the same as Parcel 2 and it too is suffering from dominance of coarser grasses and an underlying thatch.

The semi-improved grassland area of this parcel would ideally best be managed as indicated in Parcel 2 although damage to the ant nests needs to be avoided. Opportunities to increase its diversity through wildflower seeding or plug planting small areas could also be applied here.

1. Hemlock must be removed as an urgent priority. This is best undertaken by either pulling them up if they are young or digging up, or treated using a herbicide (glyphosate) through either a weed wipe or stem injection.
2. The patch of giant hogweed should be treated as it is highly invasive and presents a health risk to visitors.
3. The woodland copses are best managed by minimal intervention, with occasional clearance work to prevent them developing too much deep shade.
4. The area after its removal could then be planted up with plugs as a woodland edge meadow with such species as primrose, bluebell, snowdrop, or with a more natural woodland mix (e.g. with red campion, foxglove, garlic mustard, etc.) should that be appropriate.

The overall biodiversity value of this parcel is **moderate** with the potential to increase to high.

#### **4.2.4 Parcel 4: St. George's Way east ('Burgess Common dry grassland')**

This parcel has limited biodiversity value mainly because of the intensively managed amenity grassland and lack of ground flora diversity within and surrounding the planted tree/shrub stands. The lack of ground flora is thought to be because of the incorporation of plastic 'weed' control matting present in the soil. Some birds

invariably use the tree/shrub cover for nesting but the lack of ground cover reduces their value, increases their exposure to predators and limits food availability for most bird species.

It is recommended that:

1. Hemlock must be removed as an urgent priority. This is best undertaken by either pulling them up if they are young or digging up, or treated using a herbicide (glyphosate) through either a weed wipe or stem injection.
2. A 1-2 metre wide area of the amenity grassland around the edges of the planted tree/shrub stands has a more relaxed mowing regime to allow the development of a woodland edge flora.
3. This woodland edge flora would then need to be managed by a single biannual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days.
4. The plastic 'weed' control matting is removed
5. Opportunities to locate 1 or 2 bird and bat boxes within the woodland and create 1 or 2 loggeries for invertebrates.

The edge habitat would increase the value of the dense scrub patches which are too small to be thinned to allow ground flora to develop underneath them.

The biodiversity level of this parcel is currently **low** for the amenity grassland to **moderate** for the scrub but the later could be increased to with the adjoining appropriately managed woodland edge habitat.

#### **4.2.5 Parcel 5: Surrey Canal Walk north**

This parcel is a complex mix of habitats varying from intensively managed amenity grasslands through less intensively managed grasslands, tall herbs and scrub plus scattered trees. Like Parcel 1 this variety should make this parcel one of the most biodiverse sections of the park, however the roughland habitat is becoming dominated by large stands of taller herbs while the amount of grasslands is limited and this may partially account for some of the lack of fauna diversity identified during the survey.

It is recommended that this parcel is treated similarly to Parcel 1 to help maintain its diversity and prevent increase succession by:

1. Maintaining existing bramble patches to their current size by a single (annual or biannual) cut back during the winter months (October-February).
2. Maintaining and increasing areas of semi-improved grassland by a single annual cut in during spring and again in autumn ensuring that a 1-2 m wide area of tall herbs adjacent to the existing semi-improved grassland is treated as grassland so as to reduce the tall herb growth and dominance. The cuts should maintain a vegetation height of at least 10cm where the grass is present but can be reduced to near ground level where currently occupied by tall herbs. The cuttings should be removed after being left *in situ* for 1-2 days. Each extent of grassland should be partitioned into A and B compartments and cut in alternative years (see 4.2.10 below).
3. Maintaining required tall herb stands by a single biannual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days.

4. Maintaining shrubs and trees by minimal intervention except as required thinning to prevent any areas of the ground from getting too dark due to canopy cover. Dead wood within the scrub and on scattered trees should be maintained where possible unless it presents a Health & Safety risk.
5. Treating and removing the stand of Japanese knotweed in northeast corner to prevent further spreading. It may also be located in neighbouring gardens so will need to be controlled in them also to ensure it does not return.
6. creating 1 or 2 loggeries for invertebrates within this area and placing between 2-3 bird boxes across the parcel.

In addition a small hollow area in the north of this parcel as been highlighted as a potential site for a new wildlife pond and associated meadow habitat and it is thought that given careful consideration into the flood risk potential due to its proximity to neighbouring residential units and roads that this would greatly enhance its biodiversity value. A pond with both shallow and deeper areas and of a larger size than those recently landscaped in Parcel 8 would be highly beneficial to the Park. This proposed pond with adjoining planted wildflower meadows and other wildlife features could be developed into a feature wildlife garden within the park with interpretation boards and could be used by local schools and community groups etc as a model for producing exemplar wild spaces in small spaces. With such a well managed and resourced feature it would increase the chances of the Park obtaining a Green Flag Award and help fulfil a number of Biodiversity Action Plan targets.

The Parcel can be considered to currently have a **low** to **moderate** biodiversity value but could be improved to with appropriate management.

#### **4.2.6 Parcel 6: Crnr Glengall Terrace/Trafalgar Avenue**

The grassland area at the time of the visit appears to have been infrequently mown and this is encouraging it to develop a good mix of herb species that are tolerant of some cutting and can compete against the coarser grasses. As a result they are more species-rich than in the other shorter grasslands surveyed, with flowering crane's-bills and clover being particularly valuable and attracting a good mix of invertebrates. The taller roughland complements both the grassland and the copses by providing additional cover and attraction to other invertebrates.

Although limited in diversity the small northern copse of field maple provides good breeding habitat for common garden birds because of its lack of disturbance and its high structural density.

The following management recommendations are likely to increase the parcel's biodiversity value:

1. The current mowing regime could be relaxed during the summer months to allow the wildflowers to develop. This is best done by taking a single annual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days. Each extent of grassland should be partitioned into A and B compartments and cut in alternative years (see 4.2.10 below).
2. Removal of bramble in grassland while it is small and easy to manage would be beneficial as would the treatment of the Japanese knotweed.
3. The woodland and edge habitat are maintained by a level of non-intervention unless for health and safety reasons trees or shrubs are required to be removed. This maintains the density so as to benefit breeding birds.

4. The roughland area will require some maintenance so as to prevent it from getting too dense. A single biannual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days should do this.
5. Shrubs in the roughland area could be thinned as required to prevent any areas of the ground from getting too dark due to canopy cover.
6. Dead wood within the scrub and on scattered trees should be maintained where possible unless it presents a Health & Safety risk.
7. Opportunities to locate 1 or 2 bird and bat boxes within the woodland and create 1 or 2 loggeries for invertebrates.

Currently this parcel has a **Moderate** biodiversity value. More appropriate management as above could easily raise it to a moderate to high value.

#### **4.2.7 Parcel 7: Waite St-Nile Terrace-Coburg Nature Area ('Pepler Walk')**

Parcel 7 is another area of the Park with variability and supports a good mix of species. The Coburg Nature Area is of particular value being a well developed area of secondary woodland with a reasonable diversity of ground flora. The small pond within the reserve helps to provide water and adds an extra dimension despite the presence of the invasive least duckweed. The main central area of this parcel holds a good diversity of plants but suffers a little from misuse by dog fouling and littering from neighbouring gardens.

The following management recommendations are likely to increase the parcel's biodiversity value:

1. The areas of semi-improved grassland, tall herbs and scrub should ideally be managed as per Parcel 1 to help maintain their diversity. Like Parcel 2 and 3 small areas of the grassland could be removed from the site and reseeded with an appropriate wildflower mix or wildflower plugs could be planted across the site to encourage an increase in diversity.
2. Hemlock must be removed as an urgent priority. This is best undertaken by either pulling them up if they are young or digging up, or treated using a herbicide (glyphosate) through either a weed wipe or stem injection.
3. Coburg Nature Area should be managed by minimal intervention with some occasional selected thinning if required.
4. Cutting and chemical treatment of snowberry, and occasional cutting of Russian-vine.
5. Opportunities to locate 1 or 2 bird and bat boxes within the woodland and create 1 or 2 loggeries for invertebrates.

The Parcel's biodiversity value is variable across the site with areas of **low** (amenity grassland) through **moderate** to **high** value (Coburg Nature Area). The suggested appropriate management will help to maintain this diversity and prevent it from degrading.

#### **4.2.8 Parcel 8: New lake wetlands south**

Parcel 8 is a recently landscaped area that was formerly part of the lake and adjoining bare artificial path surfaces and now consists of a series of ponds, scrapes and swales and raised mounds. At the time of the survey the wetland areas were largely devoid of wetland plants and some areas had dried up. However, more recently there has been some re-planting and irrigation.

The surrounding mounds and grasslands have developed into predominantly amenity grasslands or are dominated by white clover and although this latter species is valuable for bees its dominance restricts the value of the parcel overall. That said the principle idea of the landscaping is welcome, and with a few selected modifications and plantings the parcel could be a valuable biodiversity area.

The following items of management are recommended to recover this parcel:

1. Plant up the successfully created wetland areas with a diverse mix of wetland plants that includes marginals and floating and submersed plants (NB: this has been recently completed).
2. Reassess the ponds and swales that are drying up; if longer-term irrigation cannot be secured then consider different drier habitat creation.
3. Re-seed or preferably plant with plugs the surrounding mounds and grassland areas with a native diversity of wildflowers being aware that higher areas are drier and will require species that can cope with drier conditions and manage as wildflower meadows see parcel 1 and 4.2.10 below.
4. Opportunity to develop parcel into a wildlife educational area with interpretation boards.

Once established the ponds will need occasional clearance of vegetation to prevent clogging and may require some silt removal and the developing grasslands would need to be cut and managed as meadows.

Parcel 8 is currently of **moderate** biodiversity level but could with the recommendations be of high value.

#### **4.2.9 Parcel 9: Albany Road woodland**

This parcel has also undergone some recent landscaping through the reduction in size of the main lake and the re-alignment of the path network. This landscaping has created a series of raised mounds and hollows that includes a shallow swale. Both the mounds and the lower hollows have been planted/seeded with a variety of plants with some success but unfortunately some aspects of the replanting have not been fully successful or valuable for wildlife.

A large part of the hollows are dry and have been planted with a sedge species that prefers wet conditions; as a result they are showing signs of stress and not thriving. In addition the plantings that have grown and survived are rather sparsely distributed across the landscaped area. The mounds have all been planted with a variety of native trees and shrubs but have been covered in a thick layer of woodchip which was invariably placed there to prevent competition with other plants. Although this has been successful and the trees and shrubs have responded well, it prevents the planted areas from developing into woodland which is what presumably was envisioned considering the plantings.

Given time the woodchip will rot and disperse and eventually will be colonised by plants species it seems unfortunate that this space cannot be utilised better for biodiversity than it has been to date. However, this can be rectified with the following recommendations:

1. Investigate the swale that is drying up. If this is a break in the clay lining then it needs to be repaired. If due to a lack of water availability then it may be better to be re-landscaped into something more appropriate.

2. Incorporate a trail through the area to prevent damage to plantings. The trail should be a clearly defined path network so as to guide people through the site. It can consist of either a boardwalk or a woodchip network similar to that located in the Coburg Nature Area in Parcel 7.
3. Re-assess planting programme.
  - Suggest removal of woodchip, some of which could be used to create a defined contained network of paths through the parcel and other locations within the park.
  - Re-plant/seed areas with more appropriate plantings: wetland plants only immediately adjacent to wet areas known to hold water; majority of area seeded with a combination of some plant plugs to create large areas of wildflower meadows with fine grasses, proposed woodland areas could be seeded/planted with more appropriate shade-tolerant species. Tops of mounds should be planted/seeded with drought-tolerant species. A mix of different plantings according to aspect and water availability would be hugely beneficial.
4. Opportunities to develop the parcel into a wildlife educational feature with interpretation boards, bat and bird boxes, loggeries, etc.

Other recommendations for other existing habitats within the parcel are as follows:

1. Maintain existing bramble patches to their current size by a single (annual or biannual) cut back during the winter months.
2. Maintain and increase areas of semi-improved grassland by a single annual cut in autumn maintaining a vegetation height of at least 10cm. The cuttings should be removed after being left *in situ* for 1-2 days. Each extent of grassland should be partitioned into A and B compartments and cut in alternative years (see 4.2.10 below).
3. Maintain required tall herb stands by a single biannual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days.
4. Maintain shrubs and trees by minimal intervention except as required thinning to prevent any areas of the ground from getting too dark due to canopy cover. Dead wood within the scrub and on scattered trees should be maintained where possible unless it presents a Health & Safety risk.
5. Possible removal of hybrid bluebell and three-cornered leek or prevention of growth in new areas. Could be replaced with native, less invasive, species.
6. Cutting and chemical treatment of snowberry

This parcel has a varied biodiversity value with the majority being of **moderate** level. However the areas that are of concern above could be considered to be of **low-moderate** level. Given the recommended improvements it would be expected the parcel could achieve a high biodiversity level.

#### **4.2.10 Grassland management details**

As stated above the most appropriate way to manage an area of grassland intended to be managed as a wildflower meadow is to reduce the cutting regime to a maximum of 1 (or 2 if a spring cut is recommended also) Autumn cut. In all cases the meadow should not be cut lower than a height of 10cm as this height helps to prevent potential damage to any perennial plants overwintering as basal leaves and also helps to protect them from frost damage over the winter. Once cut it is essential that the cut material is removed as this otherwise this material develops as a thick thatch as it slowly decays increasing shade to the ground (and thus resisting sunlight



stimuli for seed growth) and increases soil nutrient enrichment which encourages more competitive species like bramble, common nettle and coarser grasses to thrive rather than a diverse range of wildflowers and grasses. However, immediately after cutting a host of invertebrates will still be present in the cut material so it is generally considered more beneficial to leave the cut material *in situ* for 1 or 2 days before it is collected up to allow the invertebrates to leave the area. The collected material can be composted if they are available.

#### Compartment cutting

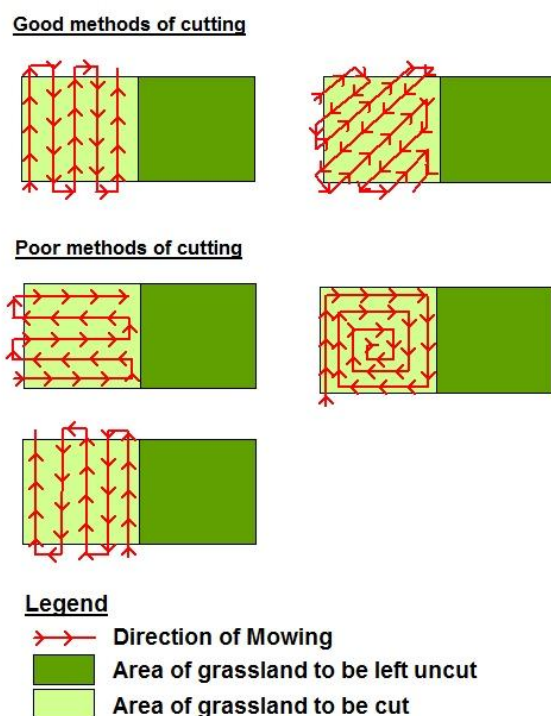
Another beneficial way to manage grasslands is to divide each extent of grassland into two or more compartments and cut them in rotation. The usefulness of this is that many invertebrates rely on overwintering stands of taller grass to hibernate in so the removal of the material in Autumn can have a detrimental and sometimes catastrophic effect on a local population of some species. To avoid this impact it is highly recommended that each area of grassland is divided into 2 compartments (A and B) which are cut in alternative years so only approximately 50% of any extent of meadow grassland is cut in any one year.

#### Cutting process

The way any extent of grassland is divided into compartment to be cut can make a difference on the value of that which is left uncut over the winter. It is known for example that larger squarer blocks of vegetation are of more value than longer narrower blocks of the same size. This is thought to be due to disturbance and the principle that there is less edge area which may be prone. It is therefore more valuable to have larger squarer blocks of habitat than narrower ones. This should be considered when dividing the extents of grassland in each parcel.

In addition to the shape of a piece of uncut grassland the method of cutting any given extent of grassland or any taller vegetation (roughland and tall herbs) can also impact upon its value. As any grassland area is started to be cut then invertebrates, reptiles, amphibians and small mammals present in the grassland will move away from the sounds and vibrations of the mowing machinery as it progresses. Ideally these animals should be forced into safer areas (areas of grass not to be cut or away from the mowers). The Figure 1 shows some good and poor methods of cutting an extent of grassland.

Figure 1. Methods of cutting grassland



### 4.3 Controlling invasive and difficult species

The following species or habitats are currently known to be present on site and are considered to be invasive or have the potential of being problematic on site by potentially having a detrimental effect on the overall biodiversity of the site or part of the site. Recommendations on how best to tackle them are addressed.

#### 4.3.1 *Giant hogweed and Japanese knotweed*

Listed on Schedule 9 of the Wildlife & Countryside Act 1981 (as amended) (WCA 1981) it is considered illegal to plant giant hogweed and Japanese knotweed or encourage them to spread in the wild. These plants and their immediate soils and other material are also generally considered to be controlled waste under the Environmental Protection Act 1990 (EPA 1990) and therefore their removal falls under the Environmental Protection (Duty of Care) Regulations 1991 to ensure they are properly handled and disposed of.

Giant hogweed is of the most concern in the Park because its sap can make human skin more sensitive to sunlight and can lead to severe blistering should it be touched by bare unprotected skin. It is therefore of high priority for removal. It is located within Parcel 3 as a large patch but may be present elsewhere in the Park outside the surveyed area.

Treatment is best undertaken when the plants are young and since the plant typically flowers in June-July it is best treated in May before it flowers. Treatment can consist of using Glyphosate by spraying the growing area or directly using a stem injection method. The latter method is usually more expensive but reduces the impact on other vegetation nearby and any risk to pets and other animals. **This is the only known effective way of removing giant hogweed.**

This latter method is best undertaken when the plant has grown a little higher but before it flowers. As the plant produces many seeds it is likely that treatment will need to continue for several years before eradication is complete.

Japanese knotweed is of lesser concern in the Park but ideally should be removed to prevent further spread. It was located at two locations within the survey area; an already treated patch at the north end of Parcel 5 that will require further treatment and a single plant present on Parcel 6. Treatment is the same as for giant hogweed.

In both methods and for both species the Environment Agency is required to be contacted to issue a licence if there is a chance of herbicide entering a water body and care is required to avoid contact with the plant throughout the process.

#### **4.3.2 Other invasive species**

There are another seven species present on site that are identified on the London Invasive Species Initiative's (LISI) Species of Concern list. These are holm oak, snowberry, butterfly-bush, three-cornered leek, goat's-rue, hybrid bluebell and least duckweed. In addition Russian-vine is also a potential invasive that offers little biodiversity value.

None of these species are currently of particular concern to the overall biodiversity of the site as a whole but are either currently having a localised impact or may become a future problem if not managed effectively.

1. Holm oak has been a regularly planted tree. It can readily spread mostly through deliberate acorn caching by birds such as jay *Garrulus glandarius*. It can also naturally germinate. The young tree growth can become somewhat extensive and because it is evergreen it readily shades out the ground beneath it reducing overall biodiversity. Conversely, it can be a valuable tree for some bird species during the winter months. It is currently occasionally scattered in the woodland of Parcel 1 within the surveyed area and may be present elsewhere in the Park. In Parcel 1 it is having a minor detrimental effect. Eradication is not considered necessary but we recommend that occasional thinning will help to prevent its growth becoming a more serious problem. We also recommend that new plants found outside Parcel 1 are either pulled up (very small saplings) or cut and chemically treated.
2. Snowberry has been a regularly planted shrub and generally spreads vegetatively from its roots forming very dense stands. There are two stands in the surveyed area of Burgess Park; one in Parcel 7 and one in Parcel 9. Both stands consist of several plants with the potential to spread further. Although they may provide some cover to small mammals it is of otherwise little value and ideally should be removed by cutting and then chemically treated to prevent further regrowth.
3. Butterfly-bush (buddleja) is very abundant in London and is particularly prevalent on waste ground, brownfield sites and on buildings and walls. On the latter it can cause structural damage. Whilst it is a good nectar source for some butterflies (mainly Pierids (e.g. large white) and Nymphalids (e.g. peacock) and hoverflies, it can quickly dominate if not managed. Within the surveyed area there are single plants in Parcel 4 and 7 and several plants in Parcel 5. It is expected to be present elsewhere in the Park. It is highly likely that even after eradication further plants are likely to appear because of its widespread wind-assisted distribution throughout London. Therefore,

eradication, management or treatment within the surveyed area is not currently considered to be necessary but its presence should be monitored to ensure it does not spread more extensively particularly in Parcel 5. If required it is best removed by cutting and then chemically treated to prevent further regrowth. Small plants may be pulled or dug up.

4. Three-cornered garlic is a bulb species that can spread locally causing extensive patches devoid of other vegetation. It's damage is otherwise considered negligible. It is, however, listed on Schedule 9 of the Wildlife & Countryside Act 1981 (as amended) (WCA 1981) making it illegal to allow it to spread or plant it deliberately in the wild. A small patch is located within the woodland in Parcel 9 and may be considered by visitors as an attractive flower. Therefore, eradication, management or treatment within the surveyed area is not currently considered to be necessary but its presence should be monitored to ensure it does not spread more extensively. If required it can be dug up to maintain its patch size or even removed entirely and replaced with native non invasive species.
5. Goat's-rue is not nationally considered to be an invasive plant but locally in London can present a problem as it can spread to create extensive stands limiting other species. It is currently scattered in Parcels 8 and 9 and is not currently a problem but may do so. It is recommended that its current distribution is monitored and should it become more prevalent, individual plants can be dug up.
6. Hybrid bluebell is a bulb species with a concern that it can hybridise with the native bluebell which is a culturally important species. However, no native bluebells are known from the survey (although they may be present as planted specimens within the Park). Hybrid bluebell is located as a large patch in Parcel 9 with three-cornered garlic and as several plants in Parcel 4. Like three-cornered garlic it may be considered to be an attractive flower so eradication, management or treatment within the surveyed area is not currently considered to be necessary but its presence should be monitored to ensure it does not spread more extensively. If required it can be dug up to maintain its patch size or even removed entirely and replaced with native non invasive species.
7. Least duckweed is a small plant that floats on the surface of ponds. It is a smaller plant than the native common duckweed and can completely blanket the pond surface reducing light availability to other vegetation. Otherwise it does not present a problem. It is only located on the small pond within the Coburg Nature Area in Parcel 7 but is likely to spread to other ponds on site. This plant is best managed by its removal using a net from the surface of the pond as and when it becomes extensive. Complete eradication is unlikely to be a realistic target.
8. Russian-vine is a scrambling climber that can extensively cover other vegetation shading it out. It is located in Parcel 7 coming from a neighbouring garden. Total removal will not be possible (unless negotiated with owner) but it can be cut during the autumn months where it is covering shrubs and other vegetation to reduce its spread.

In all cases of the use of chemical treatment, work should be undertaken by a qualified person and some areas may be required to be isolated from public usage while treatment is in progress.

#### **4.3.3 Other plants and habitats of concern**

Several other plant species and habitats present additional concerns and should be managed accordingly.

1. Hemlock is **highly toxic, and can cause death** if any parts of the plant (live or dead) are swallowed. In most cases the presence of this plant does not present any problems but due to the very public nature of Burgess Park its toxicity raises concerns. We recommend that the plants which are located in all Parcels except 7 and probably elsewhere in the Park is removed as an **urgent priority**. This is best undertaken by either pulling them up if they are young or digging up or they can be treated using a herbicide (glyphosate) through either a weed wipe or stem injection. In all cases this is best undertaken in the spring before the plants flower so they do not develop seeds which would be readily distributed as they die or are removed.
2. Coarse grasses such as cock's-foot and false oat-grass can have a detrimental effect on overall biodiversity in grasslands if they become too prevalent. This is because they form very tall dense swards, are slow to rot forming a dense thatch which leads to an enrichment of the soil and eventually shades out most meadow flowers significantly reducing the grassland diversity. This is best managed by regular annual or bi-annual cutting combined with the removal of the cuttings. The prevalent presence of these grasses is a successional process which if left will encourage scrub and taller herbs to colonise the grassland
3. Grasslands that are under managed (not mown or grazed regularly) or planted up with trees are likely to decline in their biodiversity value through successional processes. They will soon become dominated by coarser grasses and then tall herbs like hogweed, common nettle, cow parsley and scrub such as bramble. Although these habitats have their own value they can have a negative impact on the overall biodiversity particularly in urban and smaller open spaces. It is therefore important they are managed as edge habitats between areas of woodland and grassland or as patches creating a mosaic of flower rich grasslands, coarser tall grasslands, tall herb stands and scrub patches.

## 4.4 Species indicators

The above recommendations would be expected after five years of implementation to have at the very least be showing signs of biodiversity enhancements. A simple way of indicating this to be the case is to monitor a suite of 'indicator' species that would benefit from the improvements. The species recommended to use as indicators in Table 2 and the reasons why they are chosen is as follows:

Table 2: proposed indicator species

<b>common blue</b> <i>Polyommatus icarus</i>	indicator butterfly of good developing grasslands rich in wildflowers;
<b>speckled wood</b> <i>Pararge aegeria</i>	indicator butterfly of good structural woodland and woodland edge (roughland and tall herb) habitats;
<b>damselflies and dragonflies</b>	various spp. (e.g. <b>southern hawker</b> , <b>common red damselfly</b> ) are indicators of good quality wetlands with adequate vegetation (the more species the better but generally 3-5 species are typically found around good quality urban ponds);
<b>kestrel</b> <i>Falco tinnunculus</i>	presence regularly hunting over grasslands indicates good quality grasslands supporting mammal populations plus adequate areas of trees for breeding;
<b>blackcap</b> <i>Sylvia atricapella</i>	presence in June indicator of good structural woodland and scrub habitats supporting good invertebrate populations and providing cover for breeding birds;
<b>greenfinch</b> <i>Carduelis chloris</i>	presence in June good indicator of tree and woodland quality as these birds breed in trees with good canopy cover and plentiful leaf invertebrates.

The following three monitoring methods are recommended to record these species:

**Butterfly transect:** set up a butterfly transect (as per Butterfly Conservation techniques) across the site taking in areas of woodland, scrub, tall herbs and grasslands that are walked a minimum of twice a month during the months of April to September inclusive. Transects should be undertaken on warm sunny days with little wind.

**Dragonfly monitoring:** Each pond (or collection of ponds with regards to Parcel 8) should be monitored a minimum of twice a month during the months of May to September inclusive for 30 minutes per site and each species and their number should be recorded. The monitoring should be undertaken on warm sunny days with little wind.

**Bird monitoring transect:** using a simple transect route around the site taking in a variety of the habitats a simple breeding bird survey of the Park (similar to the British Trust of Ornithology (BTO) Breeding Bird Survey (BBS) can be undertaken in June every year recording the location of all birds found and whether they were singing, carrying food etc. The transect would be best walked in the early mornings before the Park becomes too busy and certainly should be completed before midday.

## 4.5 Management priorities

All the management recommendations suggested above are prioritised into four categories of importance; **Essential**, **Important**, **Beneficial** and **If possible**.

**Essential** tasks are those that must be undertaken as they present significant risks to the Local Authority and/or users of the Park. **Important** tasks are those that would make a considerable contribution to enhancing the Park for its biodiversity, **Beneficial** tasks are those that although not important will still enhance the biodiversity of the park and **If possible** tasks are those that would contribute to the biodiversity value but are not necessarily required.

### 4.5.1 Essential tasks

1. Maintain trees in a safe and hazard free condition (annual checks) (Parcels 1, 2, 3, 4, 5, 6, 7 and 9).
2. Chemical treatment and removal of giant hogweed (Parcel 2).
3. Chemical treatment and removal of Japanese knotweed (Parcels 5 and 6).
4. Chemical treatment and removal of hemlock (Parcels 1, 2, 4, 5, 6, 8 and 9).

### 4.5.2 Important tasks

1. Maintain grassland areas by a single annual cut in during autumn (September-October) ensuring that the grass is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days (Parcels 1, 2, 3, 5, 6, 7, 8 and 9).
2. Maintain tall herb stands by a single biannual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days (Parcels 1, 2, 3, 5, 6, 7 and 9).
3. Maintain existing bramble patches to their current size by a single (annual or biannual) cut back during the winter months (Parcels 1, 5, 7 and 9).

### 4.5.3 Beneficial tasks

1. Relax mowing on a 1-2 metre wide area of the amenity grassland around the edges of the planted tree/shrub stands to allow the development of a woodland edge flora. This woodland edge flora would then need to be managed by a single bi-annual cut during autumn ensuring that the vegetation is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days. (Parcel 4).
2. Maintain dead wood (fallen) in woodland habitats (Parcels 1, 2, 3, 4, 5, 6, 7 and 9).
3. Maintain woodlands and mature scrub by occasional thinning (Parcels 1, 2, 3, 4, 5, 6, 7 and 9).
4. Plant up the successfully created wetland areas with a diverse mix of wetland plants that includes marginal, floating and submerged plants (Parcel 8).

5. Investigate the ponds and swales that are drying up and rectify or change usage (Parcels 8 and 9).
6. Chemical treatment and removal of snowberry (Parcels 7 and 9).
7. Introduce and undertake the wildlife monitoring transects (all parcels)

#### **4.5.4 If possible tasks**

1. Monitor and manage holm oak growth (Parcel 1).
2. Create stag beetle loggeries (Parcels 1, 4, 5, 6, 7 and 9).
3. Install bird and bat boxes (Parcels 1, 4, 5, 6, 7 and 9).
4. Spring grassland cut (in March) ensuring that the grass is left at a height of at least 10cm and that the cuttings are removed after being left *in situ* for 1-2 days (Parcels 2, 3 and 5).
5. Reseeding of small grassland areas with an appropriate wildflower mix or wildflower plugs to encourage an increase in diversity (Parcels 2, 3 and 8).
6. Creation of new wildlife pond (Parcel 5).
7. Develop area into a wildlife educational feature with interpretation boards (Parcel 8 and 9)
8. Removal of woodchip, some of which could be used to create a defined contained network of paths through the parcel and other locations within the park (Parcel 9)
9. Monitor and control of Russian-vine (Parcel 7).
10. Monitor and control butterfly-bush, three-cornered garlic, hybrid bluebell, goat's-rue and least duckweed (Parcels 4, 5, 7, 8 and 9).

#### **4.6 Five year review**

After five years of the essential, important and beneficial management recommendations being undertaken it would be expected that;

1. the grassland areas would have a more varied diversity of plant species present have reduced levels of the coarser grasses and support a wider range of invertebrates including the indicator common blue butterfly as well as attracting other butterflies;
2. the woodland habitats would be particularly attractive to birds and woodland butterflies such as the indicators blackcap, greenfinch and speckled wood butterfly amongst others. They will also have ;
3. the ponds and the lake would be expected to support between 3-5 dragonfly/damselfly species and have banks that are predominantly vegetated with a variety of plant species as well as having both emergent and floating species present;



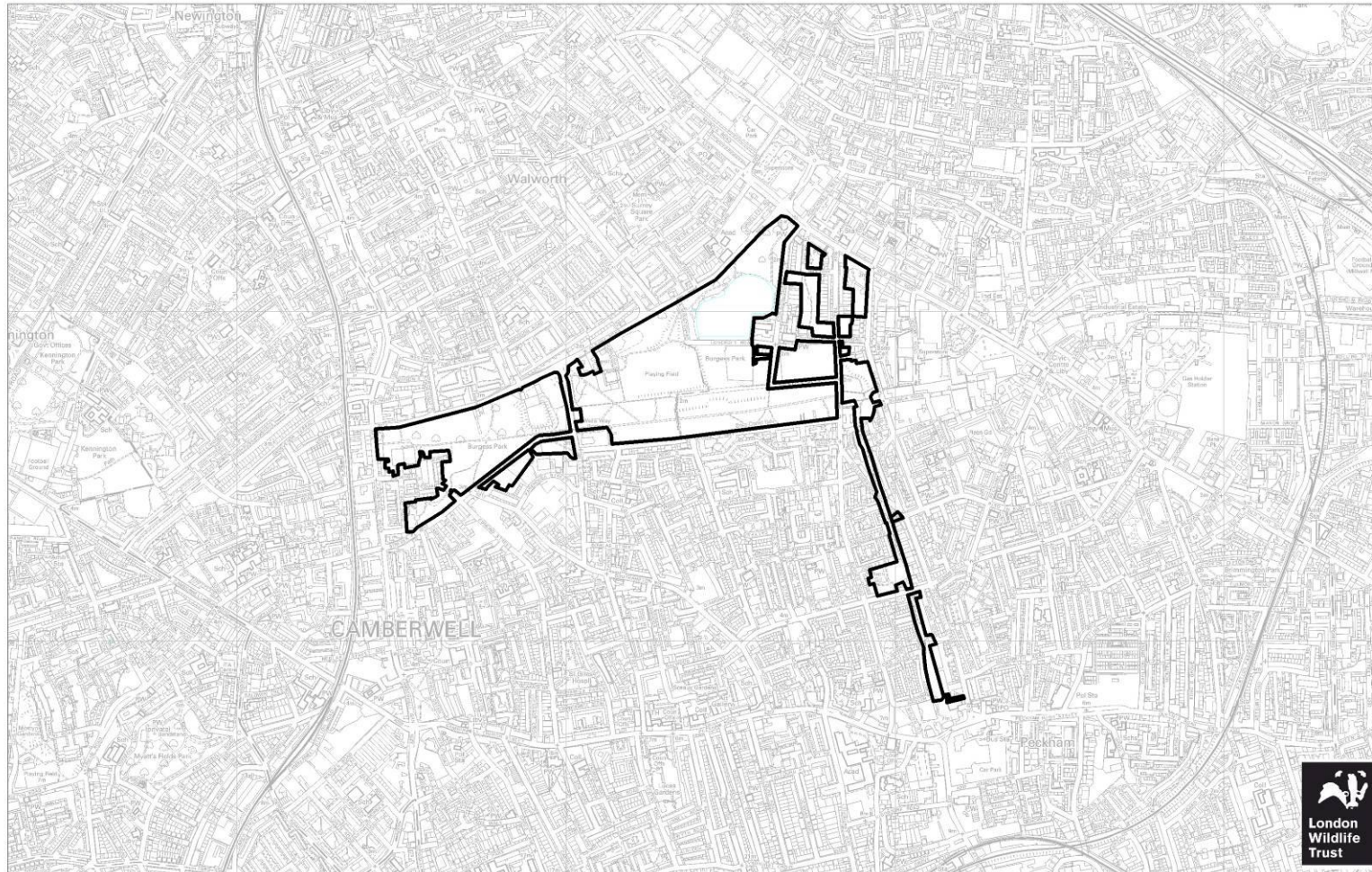
4. there will be a series of edge habitats of at least 1 metre wide consisting of successional ecotones of some scrub, tall herbs and coarser grasses developing around areas where woodlands meet grasslands. In some of the larger parcels these can be as wide as 5 metres but should not be wider than this.
5. populations of particular invasive species, like giant hogweed, Japanese knotweed, and species of concern such as hemlock, are no longer present in the Park or at the very least are significantly under control.

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## **Appendix 1: Location Maps**

## Burgess Park Location Map

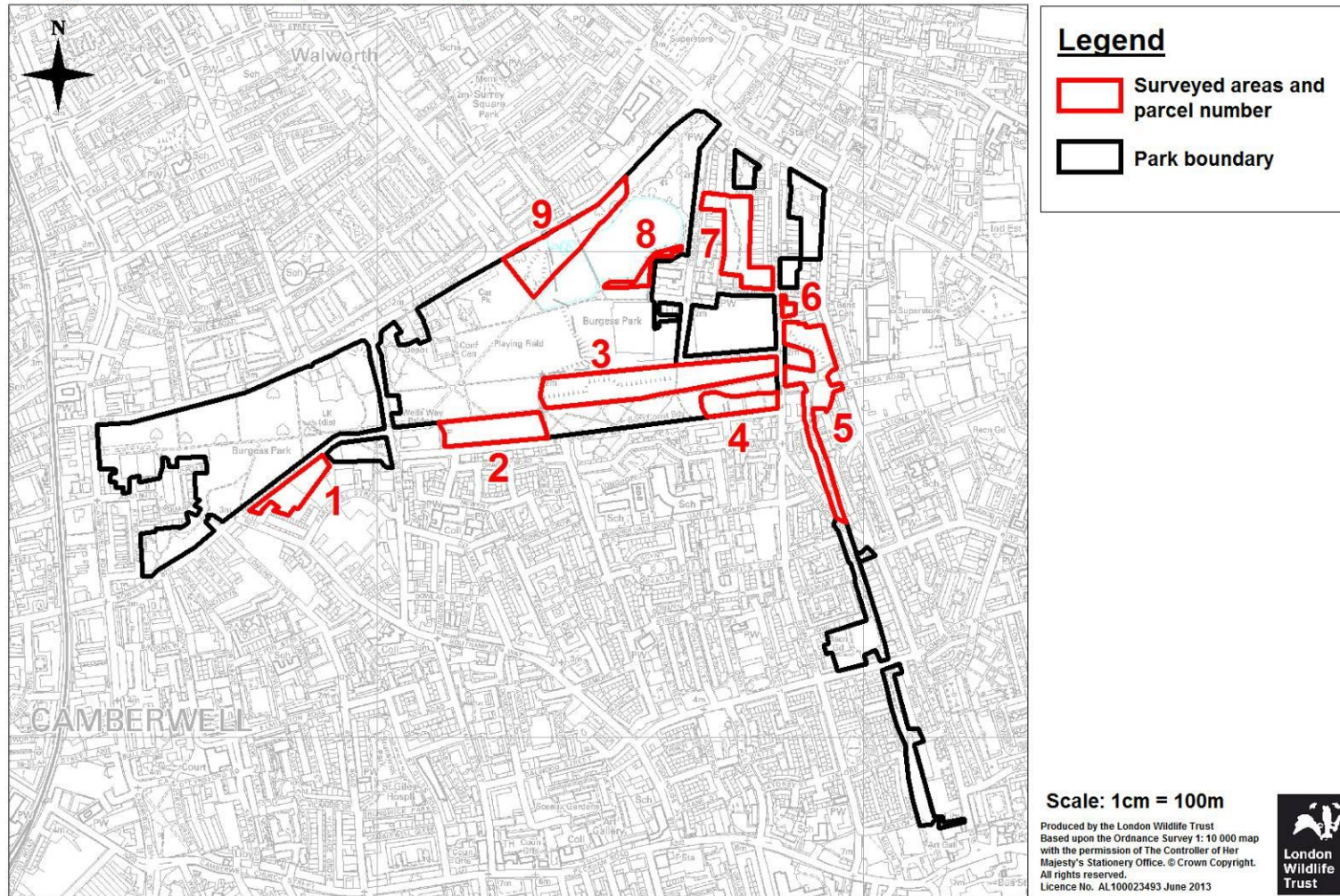


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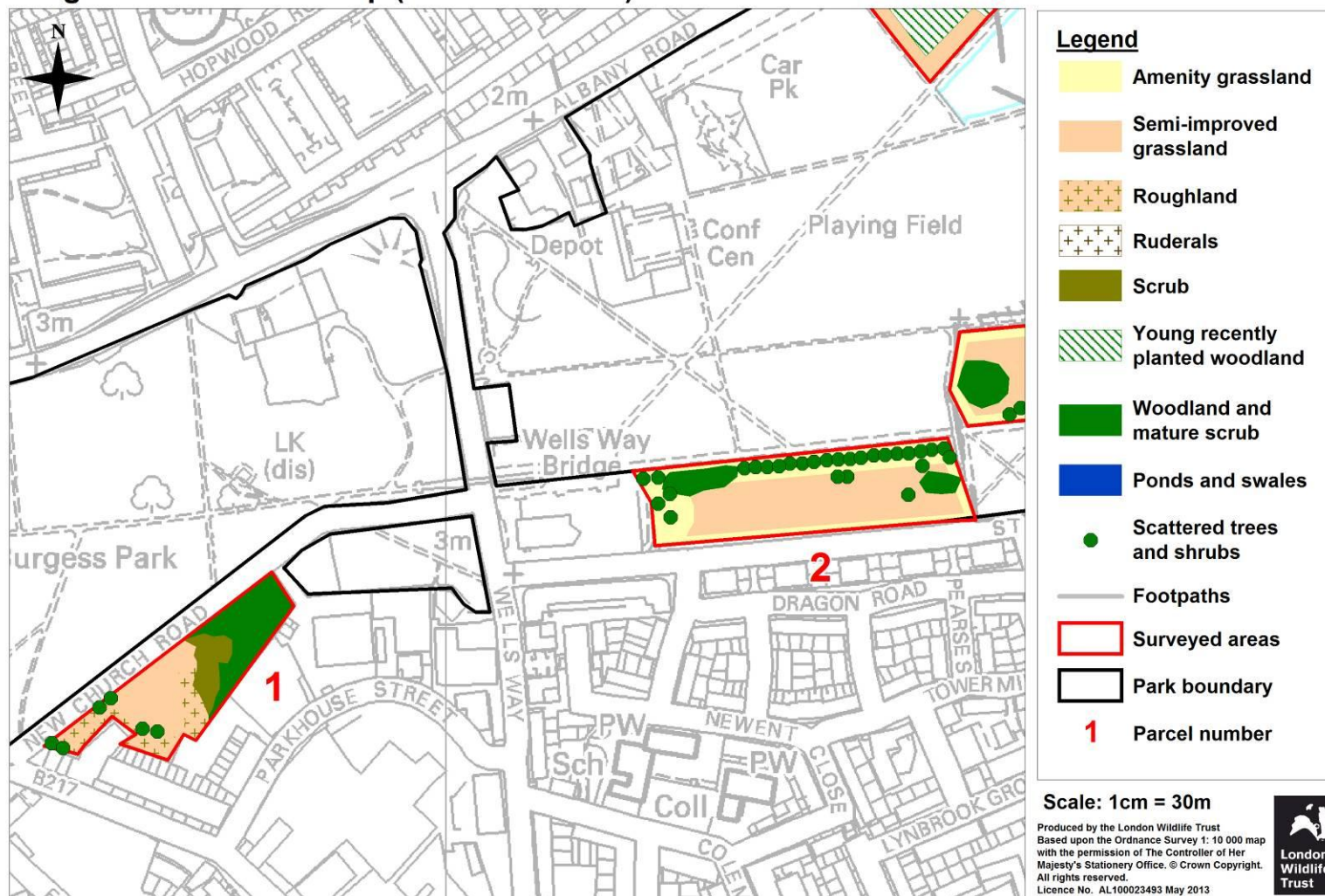
Scale: 1cm = 150m



## Burgess Park Survey Parcel Map

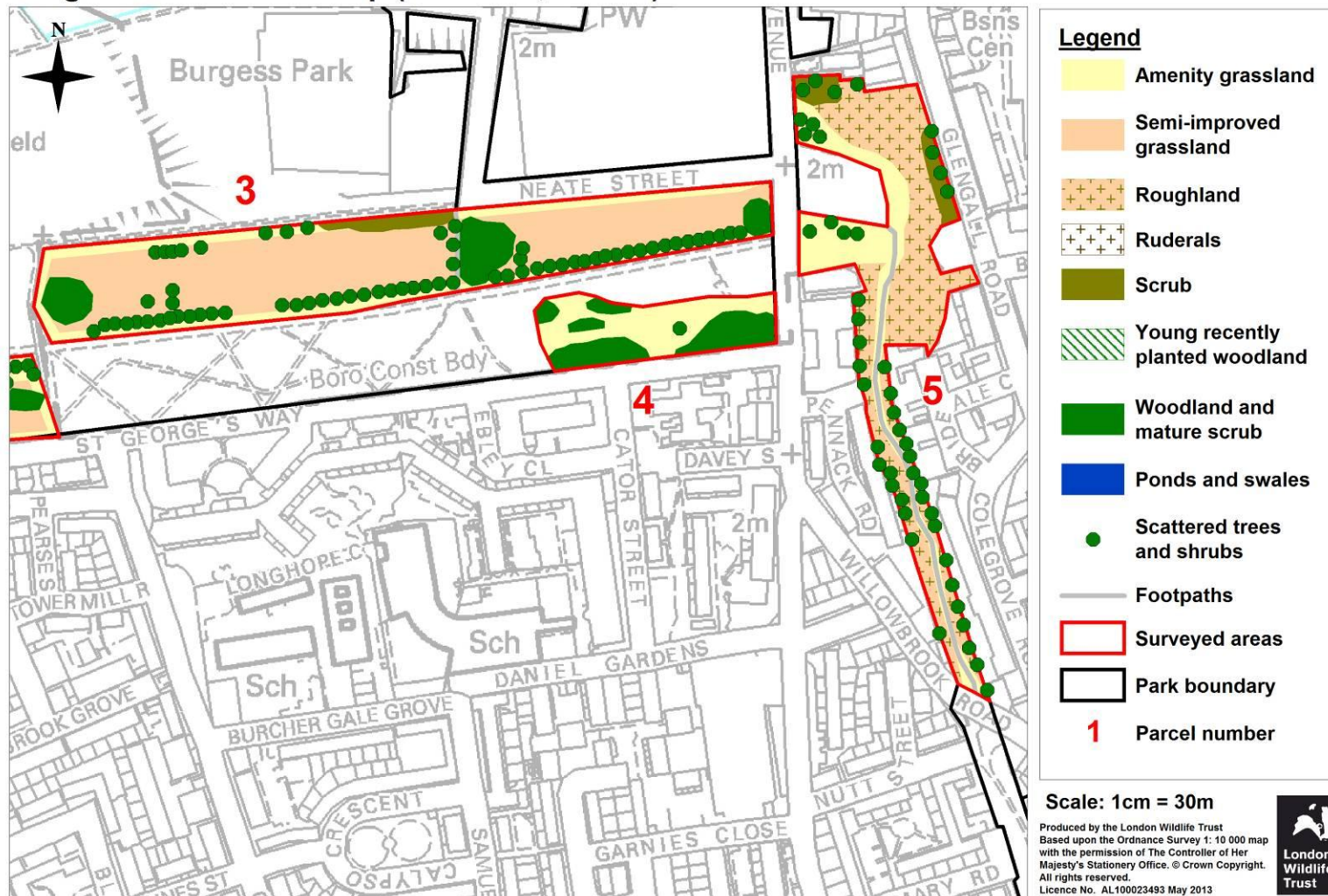


## Burgess Park Habitat Map (Parcels 1 and 2)

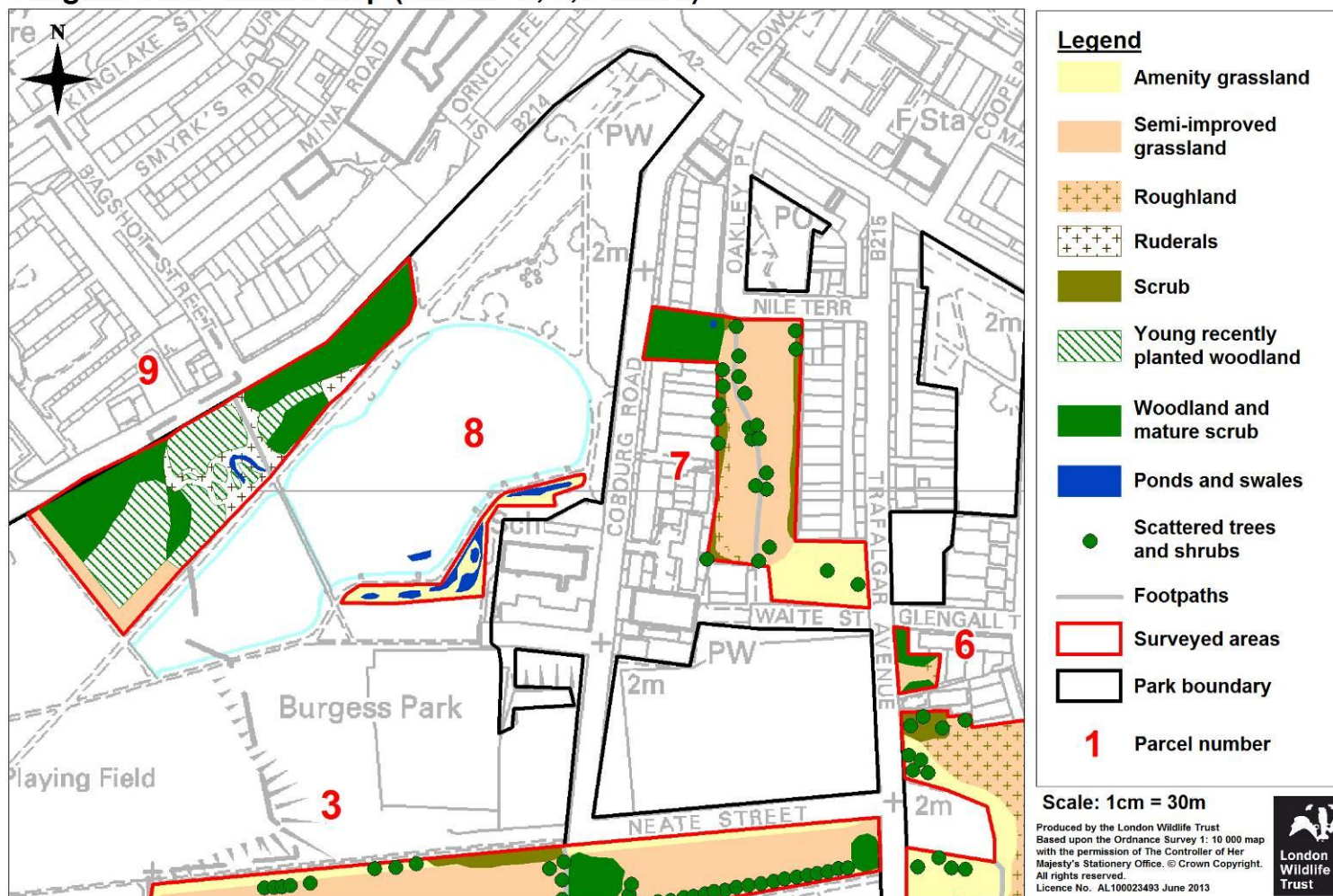




## Burgess Park Habitat Map (Parcels 3,4 and 5)



## Burgess Park Habitat Map (Parcels 6, 7, 8 and 9)





## **Appendix 2: Plant species list**

Scientific name	Common name	Species abundance in each Compartment (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)									Notes
		Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	
<i>Acer campestre</i>	field maple	F			F	O	D			O	
<i>Acer platanoides</i>	Norway maple	O	O	F	F	F	R	O			
<i>Acer pseudoplatanus</i>	sycamore	F	A	O			O	O		O	
<i>Achillea millefolium</i>	yarrow	F		F	F	O	O	A	F		
<i>Aesculus hippocastanum</i>	horse-chestnut	R				R		O			
<i>Agrostis capillaris</i>	common bent	F	F				O	F		O	
<i>Agrostis stolonifera</i>	creeping bent		F					F	O	O	
<i>Alliaria petiolata</i>	garlic mustard	R	R				O	O			
<i>Allium triquetrum</i>	three-cornered garlic									O	Garden origin and invasive
<i>Alnus glutinosa</i>	alder									O	
<i>Alopecurus pratensis</i>	meadow foxtail	O				O					
<i>Anisantha sterilis</i>	barren brome						O				
<i>Anthriscus sylvestris</i>	cow parsley	A		A	F	F	F	F	R	F	
<i>Arabidopsis thaliana</i>	thale cress								R	O	
<i>Arctium minus</i>	lesser burdock	O		O	O	F	O			O	
<i>Arrhenatherum elatius</i>	false oat-grass	A	F	D	O	A	O	A	O	R	
<i>Artemisia vulgaris</i>	mugwort	R	R	F		F		O		O	
<i>Arum maculatum</i>	Lords-and-Ladies	R									
<i>Ballota nigra</i>	black horehound	O	O	O	O	F	R	F	O	O	
<i>Bellis perennis</i>	daisy		F	F	F	O	R	F	O	R	
<i>Betula pendula</i>	silver birch	R			O	O		O			
<i>Brachypodium sylvaticum</i>	false brome						R				
<i>Bromus hordeaceus</i>	soft-brome						O				
<i>Buddleja davidii</i>	butterfly-bush				R	O		R			invasive
<i>Calystegia sepium</i>	hedge bindweed						R				

Scientific name	Common name	Species abundance in each Compartment (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)									Notes
		Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	
<i>Capsella bursa-pastoris</i>	shepherd's-purse								F		
<i>Cardamine flexuosa</i>	wavy bitter-cress	R									
<i>Carex sp.</i>	sedge species									F	
<i>Carpinus betulus</i>	hornbeam	R		R	O	O					
<i>Cerastium fontanum</i>	common mouse-ear		O	O	O						
<i>Cirsium arvense</i>	creeping thistle	O		O	O	O				O	
<i>Cirsium vulgare</i>	spear thistle		O			R	R		R	R	
<i>Conium maculatum</i>	(poison) hemlock	O	R	O	R	O	O		O	O	
<i>Cornus sanguinea</i>	dogwood	O								O	
<i>Corylus avellana</i>	hazel				O					O	
<i>Crataegus monogyna</i>	hawthorn	O		R	F	F	R			O	
<i>Dactylis glomerata</i>	cock's-foot		A	A		F	O	F			
<i>Daucus carota</i>	wild carrot	O	O							O	
<i>Dipsacus fullonum</i>	teasel					F					
<i>Euonymus japonicus</i>	evergreen spindle						R				Garden origin
<i>Fagus sylvatica</i>	beech	F									
<i>Fallopia baldschuanica</i>	Russian-vine							O			Garden origin and invasive
<i>Fallopia japonica</i>	Japanese knotweed					R	R				Invasive
<i>Festuca rubra sp.</i>	red fescue type species	A	F	O	O				O	O	
<i>Ficaria verna</i>	lesser celandine	R		R	R	O				R	
<i>Filipendula ulmaria</i>	meadowsweet									R	
<i>Fraxinus excelsior</i>	ash	R				F	R	F			
<i>Fuchsia sp.</i>	Fuchsia species				R						planted

Scientific name	Common name	Species abundance in each Compartment (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)									Notes
		Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	
<i>Galega officinalis</i>	goat's-rue								O	O	invasive
<i>Galium aparine</i>	cleavers	F		O	O	F	F	R		O	
<i>Geranium dissectum</i>	cut-leaved crane's-bill		R	R			F				
<i>Geranium molle</i>	dove's-foot crane's-bill	O		R	O		F	O	R		
<i>Geranium robertianum</i>	herb-robert	O		R	O		O			O	
<i>Geranium sp.</i>	Geranium species						R	R		R	Garden origin
<i>Geum urbanum</i>	wood avens					O	O				
<i>Hedera helix</i>	ivy	R		O	O		A	R		O	
<i>Hedera sp.</i>	ivy species						O	R			Garden origin
<i>Heracleum mantegazzianum</i>	giant hogweed			O							invasive
<i>Heracleum sphondylium</i>	hogweed	O			R	O		R			
<i>Hirschfeldia incana</i>	hoary mustard	O	O	O		O					
<i>Holcus lanatus</i>	Yorkshire-fog	O	O	F				O	R		
<i>Hordeum murinum</i>	wall barley	O					O				
<i>Hyacinthoides x massartiana</i>	hybrid bluebell				R					F	invasive
<i>Ilex aquifolium</i>	holly	O			O			R		O	
<i>Iris pseudocorus</i>	yellow iris							R		R	
<i>Juncus effusus</i>	soft-rush							R			
<i>Lamium album</i>	white dead-nettle	O	O	O	O	O		F		R	
<i>Lamium purpureum</i>	red dead-nettle	O	R	O		O			F	F	
<i>Lemna minuta</i>	least duckweed							O			invasive
<i>Leucanthemum vulgare</i>	ox-eye daisy									F	

Scientific name	Common name	Species abundance in each Compartment (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)									Notes
		Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	
<i>Ligustrum ovalifolium</i>	garden privet				R						Garden origin
<i>Ligustrum vulgare</i>	wild privet	F				R	O				
<i>Linaria sp.</i>	toadflax species									R	
<i>Lolium perenne</i>	perennial rye-grass	F	A	A	D	A	A	D	A		
<i>Lonicera periclymenum</i>	honeysuckle							O			
<i>Lychnis flos-cuculi</i>	ragged-robin								F	F	planted
<i>Mahonia aquifolium</i>	Oregon-grape			R						R	planted
<i>Malva sylvestris</i>	common mallow	R		R	R	O			O	O	
<i>Mentha aquatica</i>	water mint									O	
<i>Mercurialis annua</i>	annual mercury					O					
<i>Myosotis sylvatica</i>	wood forget-me-not	R									
<i>Narcissus sp.</i>	daffodil species	R			R	O	R	O		R	planted
<i>Pentaglottis semperivens</i>	green alkanet	R				F	R		O		
<i>Phleum bertolonii</i>	smaller cat's-tail						O				
<i>Picea sp.</i>	spruce species					R					planted
<i>Picris echioides</i>	bristly oxtongue		O	R			R		R	R	
<i>Picris hieracioides</i>	hawkweed oxtongue		A	F						O	
<i>Pinus sp.</i>	pine species		R								planted
<i>Plantago lanceolata</i>	ribwort plantain	F	A	F	F	O	F	F	O	O	
<i>Plantago major</i>	greater plantain	O	O		O					O	
<i>Platanus x hispanica</i>	London plane			O	R						planted
<i>Poa annua</i>	annual meadow-grass		F	O	F	F		F			
<i>Poa trivialis</i>	rough meadow-grass						F				
<i>Populus alba</i>	white poplar						R				
<i>Populus nigra italica</i>	Lombardy poplar				R						planted
<i>Populus sp.</i>	poplar species	O		R				O		O	

Scientific name	Common name	Species abundance in each Compartment (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)									Notes
		Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	
<i>Potentilla reptans</i>	creeping cinquefoil	O		O		O					
<i>Prunus domestica</i>	plum						R				
<i>Prunus spinosa</i>	blackthorn	F		R		O	R	O		O	
<i>Prunus sp.</i>	cherry species	F	F	F	O			O		F	
<i>Pteridium aquilinum</i>	bracken							R			
<i>Pyracantha sp.</i>	firethorn species						R			O	
<i>Quercus ilex</i>	holm oak	O									invasive
<i>Quercus robur</i>	pedunculate oak	O	O	O		O		O			
<i>Ranunculus acris</i>	meadow buttercup		R			R					
<i>Ranunculus repens</i>	creeping buttercup	R	O				R		R		
<i>Ranunculus scleratus</i>	celery-leaved buttercup								O		
<i>Reseda luteola</i>	weld								O		
<i>Rhamnus cathartica</i>	buckthorn		R		R			R			
<i>Rosa arvensis</i>	field rose	F		O				O		O	
<i>Rosa canina</i>	dog rose	O			O	O	R	O		R	
<i>Rubus fruticosus agg</i>	bramble species group	O	O	F		O	O	F		O	
<i>Rumex crispus</i>	curled dock	R	O	O					R		
<i>Rumex cristatus</i>	Greek dock	O	O	O	O	F					
<i>Rumex obtusifolius</i>	broad-leaved dock		R			O	R		F		
<i>Salix caprea</i>	goat willow			R					O	F	
<i>Salix cinerea</i>	grey willow	R							O	F	
<i>Sambucus nigra</i>	elder		R	R	F	O	O	F		O	
<i>Senecio jacobaea</i>	common ragwort		F	R			R	R		R	
<i>Senecio vulgaris</i>	groundsel	O			O				O	F	
<i>Silene dioica</i>	red campion									A	
<i>Silene sp.</i>	campion species									F	

Scientific name	Common name	Species abundance in each Compartment (DAFOR Scale: D = Dominant; A = Abundant; F = Frequent; O = Occasional; R = Rare)									Notes
		Parcel 1	Parcel 2	Parcel 3	Parcel 4	Parcel 5	Parcel 6	Parcel 7	Parcel 8	Parcel 9	
<i>Sonchus oleraceus</i>	smooth sow-thistle				R		R				
<i>Sorbus aucuparia</i>	rowan	O		R		R				R	
<i>Sorbus sp.</i>	whitebeam species	R						R			
<i>Sorbus torminalis</i>	wild service tree							R			planted
<i>Stellaria graminea</i>	lesser stitchwort	O									
<i>Stellaria media</i>	common chickweed					F	O	O	O		
<i>Symphoricarpos album</i>	snowberry							O		O	invasive
<i>Symphytum sp.</i>	comfrey species				R	O		R			
<i>Taraxacum sp</i>	dandelion species	O	F	F	O	F		F	F		
<i>Taxus baccata</i>	yew					R				O	
<i>Tilia x europaea</i>	lime		O		R		R	O			
<i>Trifolium pratense</i>	red clover					R					
<i>Trifolium repens</i>	white clover		F	O	F	F	F	F	D	O	
<i>Tulipa gesneriana</i>	garden tulip					R					Garden origin
<i>Tussilago farfara</i>	coltsfoot								R		
<i>Ulmus sp.</i>	elm species	R									
<i>Urtica dioica</i>	common nettle	R	O	O	F	F	O	F	R	O	
<i>Veronica beccabunga</i>	brooklime							R			
<i>Veronica hederifolia</i>	ivy-leaved speedwell		R	O	F	F		O			
<i>Veronica persica</i>	common field speedwell	O		R					O	O	
<i>Vicia sativa</i>	common vetch	O	R	O			O				
<i>Vinca major</i>	greater periwinkle				R						planted
<i>Vinca minor</i>	lesser periwinkle									R	
Unidentified ornamental shrubs and trees					R						planted

## Appendix 3: Fauna list

Species		Notes
Common Name	Scientific Name	
<b>Invertebrates</b>		
<u>Insects</u>		
true flies	<i>Diptera</i>	Several unidentified species at all parcels
small white	<i>Artogeia rapae</i>	
small tortoiseshell	<i>Aglaia urticae</i>	
holly blue	<i>Celastrina argiolus</i>	
black garden ant	<i>Lasius niger</i>	
bumblebees	<i>Bombus sp.</i>	Several unidentified species at most parcels
honey bee	<i>Apis mellifera</i>	
harlequin ladybird	<i>Harmonia axyridis</i>	
<u>Other invertebrates</u>		
Woodlice species	<i>Isopoda sp</i>	
<b>Vertebrates</b>		
<u>Birds</u>		
woodpigeon	<i>Columba palumbus</i>	
feral pigeon	<i>Columba livia (feral)</i>	
dunnoek	<i>Prunella modularis</i>	
robin	<i>Erithacus rubecula</i>	
blackbird	<i>Turdus merula</i>	
willow warbler	<i>Phylloscopus trochilus</i>	
blackcap	<i>Sylvia atricapilla</i>	
common whitethroat	<i>Sylvia communis</i>	
great tit	<i>Parus major</i>	
wren	<i>Troglodytes troglodytes</i>	
blue tit	<i>Cyanistes caeruleus</i>	
carrion crow	<i>Corvus corone</i>	
magpie	<i>Pica pica</i>	
common starling	<i>Sturnus vulgaris</i>	
house sparrow	<i>Passer domestica</i>	
greenfinch	<i>Carduelis chloris</i>	
<u>Mammals</u>		
Grey squirrel	<i>Sciurus carolinensis</i>	



## **Appendix 4: Site photographs**

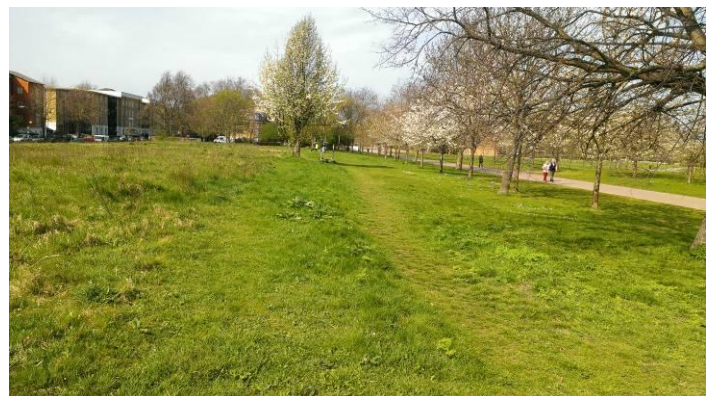
Parcel 1: New Church Road Nature Area; western end semi-improved grassland with scattered scrub and tall herbs



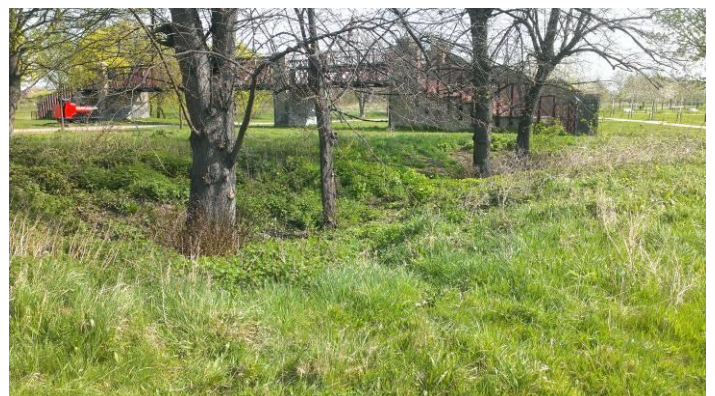
Parcel 1: New Church Road Nature Area; eastern area mixed young secondary woodland



Parcel 2: St George's Way west; showing semi-improved grassland (left side of photograph) and amenity grassland plus row of cherries



Parcel 2: St George's Way west; showing trees and tall herb vegetation in hollow





Parcel 3: Canal Walk banks south;  
showing semi-improved grassland



Parcel 3: Canal Walk banks south;  
showing young tree/shrub growth along  
northern edge



Parcel 3: Canal Walk banks south;  
showing clump of invasive Giant  
Hogweed on edge of copse



Parcel 3: Canal Walk banks south;  
showing wooded copse and mixed  
ground flora.





Parcel 4: St George's Way east;  
showing tree/shrub stand with minimal  
ground vegetation and mown amenity  
grassland up to edge



Parcel 5: Surrey Canal Walk north;  
showing bankside roughland of tall  
herbs and semi-improved grassland



Parcel 5: Surrey Canal Walk north;  
showing bankside developing scrub and  
woodland and semi-improved grassland



Parcel 5: Surrey Canal Walk north;  
Patch of Japanese knotweed (possibly  
dead) in northeast corner of Parcel  
adjacent to residential gardens





Parcel 5: Surrey Canal Walk north;  
showing bankside tall herbs, scattered  
trees and amenity grassland edges to  
footpath



Parcel 5: Surrey Canal Walk north;  
showing good vegetational structure  
from left to right (bare artificial path,  
amenity grassland strip, semi-improved  
grassland and tall herb mosaic, tall herb  
dominance, young scrub and developed  
scrub and young trees).



Parcel 6: Corner Glengall  
Terrace/Trafalgar Avenue; north copse  
of field maple with ivy ground flora





Parcel 6: Corner Glengall Terrace/Trafalgar Avenue; Semi-improved grassland with good herb mix



Parcel 7: Nile Terrace; Patch of dense invasive snowberry and other shrub species



Parcel 7: Nile Terrace; Good structure of trees, bramble scrub and semi-improved grassland with evidence of bramble encroachment into grassland



Parcel 7: Nile Terrace; good quality semi-improved grassland area with scattered trees





Parcel 7: Coburg Nature Area; well managed and accessible secondary woodland



Parcel 7: Coburg Nature Area; small valuable pond in woodland. Least duckweed may potentially become a problem if allowed to persist.



Parcel 8; New lake wetlands south; Newly landscaped ponds and swales which potentially have high value for wildlife. Vegetational diversity however somewhat limited.



Parcel 8; New lake wetlands south; Newly landscaped ponds and which potentially have high value for wildlife. Vegetational diversity however somewhat limited and show signs of drying out





Parcel 9: Albany Road Woodland; Non landscaped areas of scrub and woodland; ground level vegetational diversity is somewhat limited



Parcel 9: Albany Road Woodland; newly created area of semi-improved grassland. Suggestion it is being mown to short and maybe too often for it to flourish



Parcel 9: Albany Road Woodland; newly planted mounds of trees with covering of woodchip which is inhibiting ground flora growth



Parcel 9: Albany Road Woodland; newly planted hollows with wetland and meadow plants. Most appear to be struggling. Wetland areas show signs of drying out.



Parcel 9: Albany Road Woodland;  
Existing area of woodland with ground  
flora patch of the invasive three-  
cornered leek



Parcel 9: Albany Road Woodland;  
Existing area of woodland with ground  
flora patch of the invasive hybrid  
bluebell





## Appendix 5 Annual Work Programme (non survey work)

Key
Essential tasks
Important tasks
Beneficial tasks
Useful tasks

Management task in simplified chronological order	Month	Years	Parcel numbers
Undertake bramble cut to remove horizontal new growth	January (if not undertaken in previous months)	All	1, 3, 4, 5, 6, 7, 9
Undertake tree/shrub thinning in woodlands as required	January (if not undertaken in previous months)	All	1, 3, 4, 5, 7, 9
Undertake tree/shrub thinning in roughland as required	January (if not undertaken in previous months)	All	6
Cut back Russian vine growing from neighbours garden to prevent colonisation of Park	January (if not undertaken in previous months)	All (as required)	7
Create or add too stag beetle loggeries or woodpiles using cut tree material as required	January	All	1, 4, 5, 6, 7, 9
Undertake bramble cut to remove horizontal new growth	February (if not undertaken in previous months)	All	1, 3, 4, 5, 6, 7, 9
Undertake tree/shrub thinning in woodlands as required	February (if not undertaken in previous months)	All	1, 3, 4, 5, 7, 9
Undertake tree/shrub thinning in roughland as required	February (if not undertaken in previous months)	All	6
Cut back Russian vine growing from neighbours garden to prevent colonisation of Park	February (if not undertaken in previous months)	All (as required)	7

Management task in simplified chronological order	Month	Years	Parcel numbers
Create or add too stag beetle loggeries or woodpiles using cut tree material as required	February	All	1, 4, 5, 6, 7, 9
Undertake Annual tree safety checks	March		All
Undertake grass cut of meadow grassland areas (A compartments) leaving a height of at least 10cm of height. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	March	2013, 2015, 2017, 2019	2, 5,
Undertake grass cut of meadow grassland areas (B compartments) leaving at least 10cm. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	March	2014, 2016, 2018, 2020	2, 5,
Sow wildflower seeds or plant plugs of wildflowers as required	March	Any	2, 3, 7, 8, 9
Digging up and removal of hybrid bluebell and three-cornered leek as they become visible and replace with appropriate species	March	Any	9
Chemically treat giant hogweed and remove dead material several days after treatment (cuttings are controlled waste under the Environmental Protection Act 1990 (EPA 1990))	May	All (as required)	3
Chemically treat Japanese knotweed and remove dead material several days after treatment (cuttings are controlled waste under the Environmental Protection Act 1990 (EPA 1990))	May	All (as required)	5, 6
Chemically treat or remove hemlock (through pulling)	June	All	1, 7
Undertake grass cut of meadow grassland areas (A compartments) leaving a height of at least 10cm of height. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	September	2013, 2015, 2017, 2019	1, 2, 3, 5, 6, 7, 8, 9
Undertake grass cut of meadow grassland areas (B compartments) leaving at least 10cm. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	September	2014, 2016, 2018, 2020	1, 2, 3, 5, 6, 7, 8, 9
Undertake tall herb cut leaving a height of at least 10cm. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	September	2013, 2015, 2017, 2019	1, 2, 4, 5, 7, 9
Undertake roughland cut leaving a height of at least 10cm. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	September	2013, 2015, 2017, 2019	6

Management task in simplified chronological order	Month	Years	Parcel numbers
Remove wooden post and rail fencing not protecting sapling beech trees	October	2013	1
Remove wooden post and rail fencing	October	Once beech trees are established	1
Undertake bramble cut to remove horizontal new growth	October	All	1, 3, 4, 5, 6, 7, 9
Undertake grass cut of meadow grassland areas (A compartments) leaving at least 10cm of height. Leave cuttings for 2 days before their collection and removal	October (if not undertaken in previous month)	2013, 2015, 2017, 2019	1, 2, 3, 5, 6, 7, 8, 9
Undertake grass cut of meadow grassland areas (B compartments) leaving at least 10cm of height. Leave cuttings for 2 days before their collection and removal	October (if not undertaken in previous month)	2014, 2016, 2018, 2020	1, 2, 3, 5, 6, 7, 8, 9
Undertake tall herb cut leaving a height of at least 10cm. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	October (if not undertaken in previous month)	2013, 2015, 2017, 2019	1, 2, 4, 5, 7, 9
Undertake roughland cut leaving a height of at least 10cm. Leave cuttings <i>in situ</i> for 1-2 days before their collection and removal	October (if not undertaken in previous month)	2013, 2015, 2017, 2019	6
Remove plastic 'weed' control matting	October	2013	4
Undertake bramble cut to remove horizontal new growth	November ((if not undertaken in previous months)	All	1, 3, 4, 5, 6, 7, 9
Undertake tree/shrub thinning in woodlands as required	November	All	1, 3, 4, 5, 7, 9
Undertake tree/shrub thinning in roughland as required	November	All	6
Remove and chemically treat holm oak if required	November	All	1,

Management task in simplified chronological order	Month	Years	Parcel numbers
Create path entrance and path area linking to current footpath in woodland (tree and shrub removal as required)	November	2013	1
Create or add too stag beetle loggeries or woodpiles using cut tree material as required	November	All	1, 4, 5, 6, 7, 9
Locate new or repair/replace (if necessary) bird boxes as required	November	All	1, 4, 5, 6, 7, 9
Chemically treat snowberry using Glyphosate	November	All (as required)	7
Cut back Russian vine growing from neighbours garden to prevent colonisation of Park	November	All (as required)	7
Undertake bramble cut to remove horizontal new growth	December (if not undertaken in previous months)	All	1, 3, 4, 5, 6, 7, 9
Undertake tree/shrub thinning in woodlands as required	December (if not undertaken in previous months)	All	1, 3, 4, 5, 7, 9
Undertake tree/shrub thinning in roughland as required	December (if not undertaken in previous months)	All	6
Create or add too stag beetle loggeries or woodpiles using cut tree material as required	December	All	1, 4, 5, 6, 7, 9
Locate new or repair/replace (if necessary) bird boxes as required	December	All	1, 4, 6, 7, 9
Chemically treat snowberry using Glyphosate	December (if not undertaken in previous month)	All (as required)	7
Cut back Russian vine growing from neighbours garden to prevent colonisation of Park	December (if not undertaken in previous months)	All (as required)	7
Plant bulbs of wildflowers as required	December	Any	3, 7, 8, 9