

# Appendix 7.24: Phase I Invertebrate Survey Report

**HAMPSTEAD HEATH, CITY OF LONDON**

**PHASE 1 INVERTEBRATE SURVEY**

**Final Document**

May 2013

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## HAMPSTEAD HEATH, CITY OF LONDON

### PHASE 1 INVERTEBRATE SURVEY

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**Map 1** Target Note Locations

**Appendix 1** “Welcome to Hampstead Heath” Map (displaying pond numbers)

## EXECUTIVE SUMMARY

- Ecological Survey and Assessment (ECOSA) Limited have been contracted by the City of London Corporation to undertake a Phase 1 invertebrate assessment to inform development of the Hampstead Heath Flood and Water Quality Management Works scheme and its accompanying Environmental Impact Assessment (EIA).
- Hampstead Heath is a 275 hectare open space located within the London borough of Camden. The site lies within the urban landscape of the city of London surrounded on all sides by residential areas. The Heath represents the largest open space of its kind in the area, supporting a variety of habitats including grassland, wetland areas, mature trees, and woodland. Much of the Heath is used for recreational purposes such as walking, fishing and swimming.
- The survey was carried out late in 2013 and consisted primarily of a walkover assessment of the potential habitat. No attempt was made to identify any invertebrates during these surveys.
- The site was not found to support a high diversity of habitat types likely to support scarce invertebrates and the habitat of greatest value was determined as being the areas of woodland and in particular the abundance of mature/veteran trees and deadwood habitats. A review of existing data from invertebrate surveys carried out in the past shows that a large proportion of rare or scarce species are associated with woodland or deadwood habitats thereby verifying the conclusions of the Phase 1 survey.

## **1.0 INTRODUCTION**

### **1.1 Background**

Ecological Survey and Assessment (ECOSA) Limited have been contracted by the City of London Corporation (CoL) to undertake a Phase 1 invertebrate assessment of land adjacent to waterbodies within Hampstead Heath to inform the Hampstead Heath Flood and Water Quality Management Works and inform the accompanying Environmental Impact Assessment (EIA) for the scheme.

The CoL, as appointed custodian of the Hampstead Heath site, has an obligation to maintain the area for recreational purposes in its preferred natural state. Within their 2007-2017 Hampstead Heath Management Plan (document reference unknown), the corporation's committees have identified various environmental improvement objectives covering a wide range of ecological issues. As part of this, the CoL intends to enhance the conservation value of the Heath's ponds as well as improve flood management and water quality at the site. Plans for the Hampstead Heath Flood and Water Quality Management Works are currently under development by the CoL in consultation with English Heritage, the owners of the northeast Kenwood area of the site. To inform their production, a detailed programme of surveys is needed to develop a comprehensive hydrological management strategy. As part of this, it was deemed necessary to carry out a Phase 1 invertebrate survey at the Hampstead Heath site, to identify potentially important habitat features likely to be affected by hydrological works and help inform the scheme design process.

### **1.2 Aims and Scope of Report**

This report provides an assessment of potentially important invertebrate habitat on land immediately adjacent to the Hampstead Heath ponds under consideration. The assessment was based on features of the habitat itself that may support scarce species or diverse communities of invertebrates. No attempt was made to identify any species present during the survey visits. This report is not an Ecological Impact Assessment (EclA) but will be in support of, and appended to, the EclA, which is being written by others.

### **1.3 Site Setting and Description**

Hampstead Heath comprises a 275 hectare area of open space located within the London Borough of Camden. Immediately to the northeast lies the London village of Highgate. To the north the Heath is bordered by East Finchley and by Golders Green to the northwest. On the western side is Child's Hill. The London village of Hampstead is located adjacent to the southwest

of the site, beyond which lies South Hampstead. Kentish Town borders the southeast of the Heath. Dartmouth Park and Upper Holloway comprise the eastern adjacent areas to the site.

The Hampstead Heath site is set within the predominantly urban landscape of the city of London. Camden is adjoined on three sides by further London Boroughs: Harrow and Brent to the west and Enfield and Haringey to the east. The river Thames runs approximately 8.5 km to the south of the site, beyond the city boroughs of Camden and Westminster. To the north, the city of London extends for at least 10 kilometres before reaching the border towns of Hertford, Cheshunt and St Albans, amongst others. Greenspace areas located within relative proximity to the site include Primrose Hill Park approximately 2 km and Queen Mary's Gardens approximately 2.5 km to the south. Whittington Park and Dartmouth Park lie within 600 m and 1.5 km respectively to the east of the site. Queens Wood and Highgate Wood, to the north of the site, comprise the largest nearby woodland areas. Also to the north is the heavily managed amenity grassland of Highgate Golf Club. Approximately 8km to the west lies Gladstone Park. Few nearby open spaces are of equivalent size to the Heath and most are managed as ornamental parkland.

Hampstead Heath supports a variety of valuable habitats for wildlife such as ancient hedgerows, wetland, grassland, scrub and trees. As a public "park", its primary use is for recreational activities such as walking, angling and cycling. Visitor numbers each year are considered to be around 7 million. The area subject to the Phase 1 invertebrate survey comprises approximately 170 hectares, encompassing parts of the Parliament Hill Fields, Cohen's Fields, East Heath and Vale of Heath.

#### **1.4 Site Proposals**

This report has been provided to inform the Hampstead Heath Flood and Water Quality Management Works scheme, its detailed design and the accompanying EIA. The proposals comprise works to maintain dam structures within the Hampstead Heath site, in the interests of improving flood control such that surrounding residential areas are safeguarded during flooding events. Water quality is also to be improved across the pond system to enhance their ecological value and, for those relevant water bodies, to meet bathing water quality standards.

#### **1.5 Survey Area**

The survey area is defined as up to 250m from the Hampstead Heath and Highgate Chain of Ponds, including the Vale of Heath. The survey area included within the Phase 1 invertebrate survey were pre-determined by CoL as part of the EIA process. The pond numbers as referred to in this report can be seen in **Appendix 1**.

## **2.0 METHODS**

### **2.1 Introduction**

This section provides details of the methodologies employed during the Phase 1 invertebrate survey undertaken by ECOSA in 2013.

### **2.2 Phase 1 Invertebrate Survey Methods**

The Phase 1 invertebrate scoping survey was undertaken on 18<sup>th</sup> October and 19<sup>th</sup> December 2013 and involved a site walkover whereby all areas of the site were investigated and an assessment made of habitat features considered to be of potential importance to invertebrate species. The assessment of habitat for invertebrates is based upon the presence of suitable habitats and features of interest as described in Kirby (2001)<sup>1</sup>. For each broad habitat type, the range of potentially suitable features is described and assessed for the potential to support diverse invertebrate populations or scarce species.

### **2.3 Limitations**

The survey was carried out outside of the invertebrate survey season and therefore the assessment was based on the assessment of habitats that were evident. Clearly, features such as flowering plants which may form important nectaring sources may not be evident later in the year.

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<sup>1</sup> Kirby J (2001) Habitat Management for Invertebrates: A Practical Handbook. RSPB, Sandy.

### 3.0 RESULTS AND EVALUATION

#### 3.1 Introduction

This Area provides the results of the Phase 1 invertebrate survey undertaken within the survey area at Hampstead Heath during 2013 and provides an evaluation of the range of habitat types within the site in terms of their potential to support invertebrate populations. A description is given of the main broad habitat types present within the survey area and an evaluation of their potential to support invertebrates.

#### 3.2 General Habitat Description

The survey area has been divided into two separate areas, the eastern parcel which surrounds ponds 13, 14, 15, 16, 17 and 18 and the western parcel which surrounds ponds 6, 7, 8, 9 and 10. In terms of habitat character the two survey areas are broadly similar being dominated by areas of open grassland and woodland with large water bodies which are mainly fish stocked and used for a variety of amenity purposes. Pond 7 is the most natural pond and is not used for amenity purposes. Tumulus Field Pond located in the northern area of Parliament Field is a conservation pond of relatively recent construction. The woodland across the site is relatively homogeneous being dominated by a mix of beech *Fagus sylvatica*, lime *Tilia* species, sycamore *Acer pseudoplatanus*, ash *Fraxinus excelsior* and oak *Quercus* species with lower lying and wetter areas supporting silver birch *Betula pendula* and alder *Alnus glutinosus*. Other areas have been planted with non-native species such as lime species and London plane *Platanus x acerifolia* often in avenues. There are a number of probable veteran trees across the site, many of these being oak or beech. Grasslands consist of semi-improved to improved grassland swards which are managed by regular mowing and are heavily used by members of the public. Some of these grasslands are managed for conservation through a late summer cut and are allowed to develop during the summer.

#### 3.3 Desk-Based Study

The Invertebrate Review<sup>2</sup> carried out in 2013 identified a range of rare and scarce species that had previously been recorded from Hampstead Heath between 1991 and 2010. These species are considered in the habitat assessment and are shown in **Table 1**. As can be seen, a large proportion of the rare species (approximately 60%) recorded from the site are associated with shrubs, trees or deadwood with a smaller number associated with grassland, herbaceous vegetation and wetland habitats.

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<sup>2</sup> ECOSA Ltd (2014) *Hampstead Heath, City of London – Review of Existing Invertebrate Data*, March 2014



**Table 1** Rare and Scarce Invertebrates Previously Recorded from Hampstead Heath

Order	Scientific Name	Status	Habitat Requirements
<b>Spiders</b> <i>Arachnidae</i>	<i>Argiope bruennichi</i>	Na	Coastal chalk grassland, wasteland, roadside verge.
	<i>Coelotes terrestris</i>	Nb	Woodland, mature heathland, scrub.
	<i>Entelacara congenera</i>	Nb	Heathland, woodland, on pine trees, tall heather, gorse.
	<i>Haplodrassus silvestris</i>	Nb	Woodland, among litter, under bark, stones, heathland, grassland.
	<i>Lepthyphantes insignis</i>	Nb	Dry grassland, occasionally arable land.
	<i>Nigma walckenaeri</i>	Na	Bushes in gardens and parks. Suburban areas.
	<i>Philodromus collinus</i>	Nb	Branches of pine trees, yew and Douglas fir, woodlands and ancient woodland. Broadleaved trees. Suburban areas.
	<i>Philodromus praedatus</i>	Nb	Mature oak trees, wood pastures.
	<i>Tapinocyboides pygmaeus</i>	RDB3	Grass root on chalk and limestone grassland. Grass on boulder clay.
	<i>Tetragnatha pinicola</i>	Nb	Lightly wooded areas on young trees. Woodland clearings and rides.
	<i>Theridion familiare</i>	Nb	Inside houses and out buildings. Gorse, bushes, churchyard walls.
	<i>Zilla diodia</i>	Nb	Tall heather, brambles, bushes. Shady or sheltered areas. Mixed woodlands, old hedgerows, green lanes, gardens.
<b>Beetles</b> <i>Coleoptera</i>	<i>Aderus oculatus</i>	Nb	Woodlands.
	<i>Anacaena bipustulata</i>	Nb	In and at the edge of stagnant water.
	<i>Agrilus angustulus</i>	Nb	Oaks, beeches, hornbeams, hazel.
	<i>Agrilus pannonicus</i>	Na	Thick oak bark.
	<i>Agrilus sinuatus</i>	Na	Rosaceous trees, particularly hawthorn.
	<i>Aleochara brevipennis</i>	Nb	Decomposing matter.
	<i>Aleochara ruficomis</i>	Nb	Decomposing matter.
	<i>Aleochara sthica</i>	Nb	Decomposing matter.
	<i>Anaglyptus mysticus</i>	Nb	Hawthorn, wood of various deciduous trees.
	<i>Cercyon ustulatus</i>	Nb	Dung, compost, waterside debris, decaying organic matter
	<i>Choleva cisteloides</i>	RDKB	Burrows of mice or moles, caves, decomposing matter
	<i>Chrysolina oricalcia</i>	Nb	Wild mint, various herbs, moss, leaf litter
	<i>Cneorhinus plumbeus</i>	Nb	Flowers in woodlands.
	<i>Cossonus linearis</i>	Na	Trunks of poplar and willow trees. Sometimes other deciduous trees.
	<i>Cossonus parallelepipedus</i>	Nb	Trunks of poplar and willow trees. Sometimes other deciduous trees.
	<i>Cryptarcha strigata</i>	Nb	Heathland, wet woodland, freshly cut trees.
	<i>Cryptophagus micaceus</i>	RDBK	Decaying leaves, vicinity of man, barns, cows sheds, animal nests.
	<i>Cryptopleurum crenatum</i>	Nb	Mostly dung.
	<i>Ctesias serra</i>	Nb	Ancient gnarled broadleaf trees.
	<i>Dexiogyia corticina</i>	Nb	Woodland.
	<i>Donacia crassipes</i>	Nb	On plants on water. Bur-reeds, bulrushes, sedges, reed-grass. Aquatic plants.
	<i>Dorcatoma flavicornis</i>	Nb	Hard tree fungi, or in wood containing the mycelia of such fungi
	<i>Dorytomus ictor</i>	Nb	Bark or fallen leaves of willow, poplar or birch trees.
	<i>Eledona agricola</i>	Nb	Tree fungi of various deciduous trees, mostly willows.
	<i>Enicmus brevicornis</i>	Nb	Mould feeder. Tree bark, wood and leave. Hay and straw debris.
	<i>Geotrupes pyrenaicus</i>	Na	Dung, decaying fungi, Woodland.

Order	Scientific Name	Status	Habitat Requirements
	<i>Gnophomya viridipennis</i>	Nb	Fallen willow or poplar trees.
	<i>Grammoptera ustulata</i>	RDB3	Flowers mostly hawthorn.
	<i>Hydroglyphus pusillus</i>	Nb	Aquatic, near water.
	<i>Ischnomera cyanea</i>	Nb	Abundant, very diverse habitats.
	<i>Isochnus populicola</i>	pRDBK	Poplars.
	<i>Leptura scutellata</i>	Na	Flowers, wood of deciduous trees.
	<i>Longitarsus anchusae</i>	Nb	Various plants of Boraginaceae, Schrophulariaceae and Labiatae.
	<i>Longitarsus dorsalis</i>	Nb	Various plants of Boraginaceae, Schrophulariaceae and Labiatae.
	<i>Longitarsus luridus</i>	Nb	Various plants of Boraginaceae, Schrophulariaceae and Labiatae.
	<i>Longitarsus parvulus</i>	Nb	Various plants of Boraginaceae, Schrophulariaceae and Labiatae.
	<i>Lucanus cervus</i>	Nb	Root-stock of deciduous tree stumps, less often conifers.
	<i>Magdalis cerasi</i>	Nb	Branches and young trunks of conifers and deciduous trees.
	<i>Melandrya caraboides</i>	Nb	Fungus infested rotting wood of deciduous trees
	<i>Melasis buprestoides</i>	Nb	Beeches, hornbeams and elms. Deciduous woods.
	<i>Meligethes incanus</i>	Nb	Flowers. Various Cruciferae.
	<i>Mycetophagus piceus</i>	Nb	Wood fungi.
	<i>Notaris bimaculatus</i>	Nb	Near stagnant water. Sedges, reeds and rushes. Under bark or leaves.
	<i>Orchesia micans</i>	Nb	Fungi growing of deciduous trees.
	<i>Pholoiotrya vaudoueri</i>	Nb	Woodland.
	<i>Phytoecia cylindrical</i>	Nb	Roots and stems of various plants. Lithospermum, viper's bugloss.
	<i>Platyderus ruficollis</i>	Nb	Not well documented.
	<i>Platypus cylindrus</i>	Nb	Mostly oak. Other deciduous trees. Goes deep into wood.
	<i>Polydrusus sericeus</i>	Na	Deciduous trees, oaks and birches. Bark and roots of host.
	<i>Pterostichus longicollis</i>	Nb	Damp areas of meadows, fields and footpaths. Under rocks, moss or damp wood.
	<i>Pyrochroa coccinea</i>	Nb	Flowers at the edge of wood. Under bark of dead trees.
	<i>Quedius longicornis</i>	Nb	Ground litter and moss. Wet areas. Decaying fungi, under bark of dead trees.
	<i>Rhynchites cavifrons</i>	Nb	Rosaceous trees, mostly hawthorn. Fruit trees.
	<i>Rhynocillis conicus</i>	Nb	Flower head. Used as biological pest control against noxious thistles.
	<i>Stenus nigrilutulus</i>	Nb	Water side situations. Forest litter, edge of snow fields, heaths, ants nests.
	<i>Taphrorynchus bicolor</i>	Na	Under bark.
	<i>Tomoxia bucephala</i>	Na	Ancient woods, dead trees
	<i>Trichosirocalus horridus</i>	Na	Feeds on rosette of thistles, used as biological control.
	<i>Uleiota planata</i>	Na	Beech trees. Woodland.
	<i>Xyleborus dryographus</i>	Nb	Various trees. Digs galleries in wood, young fallen or damaged trees.
<b>Bees, Wasps and Ants</b> Hymenoptera	<i>Crossocerus congener</i>	RDBK	Woodlands and hedgerows
	<i>Crossocerus distinguendus</i>	Na	Open habitat, scrub, woodland edges. Decayed wood.
	<i>Dolichovespula media</i>	Na	Lowland. Woodland, farmland, towns and parks. Hedgerows and shrubs.
	<i>Gorytes bicinctus</i>	Nb	Woodland and hedgerows
	<i>Hedychridium coriaceum</i>	RDB3	Open, sunny, sandy habitats.
	<i>Heriades truncorum</i>	Nb	Various. Requires dead timber with suitable holes, in

Order	Scientific Name	Status	Habitat Requirements
	<i>Lasius brunneus</i>	Na	the sun with yellow composites (ragwort). Various trees, preferably oak. Also in stumps, timber framed buildings.
<b>Flies</b> <i>Diptera</i>	<i>Brachyopa bicolor</i>	RDB3	Ancient broadleaved woodland, associated with beech and requiring old diseased trees.
	<i>Mallota cimbiciformis</i>	N	Various.
	<i>Orthonevra brevicornis</i>	N	Wooded areas, bramble blossom.
	<i>Solva marginata</i>	N	Associated with poplar trees, under bark, rotting wood.
	<i>Volucella zonaria</i>	N	Parks and gardens.
	<i>Cicones undatus</i>	pRDB1	Strongly associated with sycamore trees.
<b>Grasshoppers crickets and Allies</b> <i>Orthoptera</i>	<i>Metrioptera roeselii</i>	Nb	Peat bogs and damp heath.

### 3.4 Invertebrate Scoping Survey

The following paragraphs describe the range of key habitat features found within the survey area. The major habitat types are described and a description is given of the range of micro-habitats/features considered potentially suitable for supporting invertebrates. Features of interest are given Target Notes (TN) and are shown on **Map 1**.

### 3.5 Woodland and Scrub

Woodland and scrub makes up a significant element of the survey area and is the most notable and diverse element of the site. Much of this woodland is secondary in nature with mature to veteran trees remnants of the former, presumably more open, landscape present. Two main areas of woodland are dense and largely impenetrable (**Figure 1**), these are located to the east of ponds 14 and 15 in the eastern area of the site and east of ponds 8 and 9 north and west to pond 6 (**TN1**). These areas have the canopy dominated by beech, oak, London plane, silver birch and alder. The understorey is dominated by holly *Ilex aquifolium*, bramble *Rubus fruticosus* and common nettle *Urtica dioica*. The woodland areas are well used with regular informal usage such as well-worn paths, tree damage and dropped litter, however, other areas are impenetrable and receive a lower level of usage.



**Figure 1** Dense woodland to east of pond 8



**Figure 2** Open wooded avenue to west of pond 9

There are a number of areas of woodland that are more open in character (**TN2**) and which form avenues of trees (**Figure 2**) or stands of scattered trees, for example to the west of ponds 9 and 10. These trees exhibit a range of rot holes and deadwood habitats.

A large number of mature to veteran trees (**TN3**) are present within the survey area, these consist of oak, willow *Salix* species, beech and London plane. Such trees support a large amount of deadwood, rot holes and sap runs which are likely to be of importance to invertebrates. Deadwood is likely to be of particular importance as it occurs in a range of states from standing to fallen (**Figure 3** and **Figure 4**) and at various stages of decomposition. These are scattered widely across the site with no one area holding an abundance of such trees although the western survey area and particularly in the woodland between ponds 7 and 8. These trees are likely to be of importance to saproxylic invertebrate species which include a range of Diptera, Coleoptera and Hymenoptera.



**Figure 3** Standing deadwood and rot holes



**Figure 4** Fallen deadwood. Both standing and fallen

deadwood is likely to provide habitat for a range of different invertebrate species

Much of the scrub that occurs on the site is relatively species poor and occurs within the shade of the woodland canopy. There are a number of areas of bramble which occur bordering and internal to the woodland, where these occur on sunlit woodland edge these are likely to form an important nectaring source for invertebrates (**TN4**). In places, particularly along the east margin of Pryors Field, the woodland is also bordered by hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa* which when flowering in the spring months are likely to provide an important invertebrate nectaring area (**Figure 5**).





**Figure 5** Flowering *Prunus* species providing early nectaring source  
with bramble to the left providing mid-summer nectaring source

Although any woodland is likely to support characteristic invertebrate species, the majority of these will be generally common and widespread: the true value of woodland habitats is their ability to support specialist species. The woodland habitats within the site are not of sufficient size or quality to support the full range of specialist micro-habitats that larger, ancient woodlands will exhibit. However, key among these habitats is deadwood which, when present in a variety of forms, is likely to support highly-specialised rarities. Kirby describes a total of 16 deadwood types, covering a range from small fallen twigs to standing dead trunks and encompassing the full range of decay stages. The deadwood resource within the survey area encompasses all of these types suggesting that the deadwood invertebrate fauna maybe diverse, this is suggested by the data from the invertebrate review, however, the species lacks many of the classic deadwood species found at sites such as Windsor Great Park. This may be due to a lack of targeted survey effort as much as their genuine absence from the site.

The woodland edges contain a range of food resources in the form of pollen, nectar and fruits which are likely to be valued by a variety of invertebrate species. The woodland margins often also exhibit a complex three-dimensional structure, offering shelter, shade and sunlight which again will be exploited by invertebrates at different times. Nectar-rich woodland edges, and in particular shrubs such as hawthorn and bramble, attract feeding invertebrates from nearby habitats including from the canopy of denser woodlands.

### 3.6 Grassland and Herbaceous Vegetation

The grassland habitats comprise predominantly species-poor, improved to semi-improved grassland, with some swathes of more species-diverse swards present (TN5). The majority of grassland areas comprise typically species-poor swards dominated by coarse grass species such as false oat-grass *Arrhenatherum elatius*, cock's-foot *Dactylis glomerata* and Yorkshire fog *Holcus lanatus*. Several of the fields do support more species-diverse swards containing additional herbaceous species such as ox-eye daisy *Leucanthemum vulgare*, black knapweed *Centaureum nigra*, red clover *Trifolium pratense*, smooth tare *Vicia tetrasperma*, white clover *Trifolium repens*, meadow buttercup *Ranunculus acris*, creeping buttercup *Ranunculus repens* and bird's-foot trefoil *Lotus corniculatus*.

A notable feature of the grasslands is that they are structurally rather homogeneous lacking tussocky structure and a range of sward heights that are typically associated with grazed habitats. This structural homogeneity is as a result of the regime of cutting rather than grazing the sward.

Areas of taller grassland and herbaceous vegetation, especially where found in association with nectar-rich woodland edge, are likely to be attractive to a range of common and widespread lepidopterans such as meadow brown *Maniola jurtina*, gatekeeper *Pyronia tithonus* and small copper *Lycaena phlaeas*, all of which are widespread species associated with the open countryside. Tall herbaceous species such as umbellifers and composites will also undoubtedly attract a variety of species, particularly dipterans such as hoverflies and soldierflies.

The grasslands within the survey area are generally lacking in diverse micro-topographical structure and are of low botanical and structural diversity, thereby offering little in the way of potential for supporting diverse invertebrate populations. The most diverse invertebrate populations will occur on grasslands which exhibit diverse vegetation communities, diverse sward structure, varied topography and a wide range of successional stages: the grasslands at the site do not fulfil these criteria and the invertebrate fauna is unlikely to be especially diverse.

### 3.7 Bare Ground

This is a potentially important invertebrate habitat where it is free draining and sunlit or located beside ponds and watercourses (TN6). Much of the bareground habitat at the site is heavily trampled but human activity and therefore its value as an invertebrate habitat much declined. While there may be occasional areas beside paths that receive less trampling none were identified during the current surveys. In addition, the generally high fertility of the grassland at the site will result in quick colonisation of bare patches by vigorous vegetation. The potential for the bare ground within the site to support established colonies of notable specialist invertebrate

species is therefore considered to be low. Small areas of exposed wet mud occur alongside pond 7 to the north of the viaduct (**Figure 6**) and alongside the stream that flows between pond 7 and 8. However, these areas are likely to be heavily shaded and therefore of reduced value.



**Figure 6** Area of bare mud beside pond 7 to the north of the viaduct

### 3.8 Freshwater

Small streams are present flowing from the south-west into pond 17, from the west into pond 15 and through the woodland between ponds 7 and 8. These are largely shallow and heavily shaded and are likely to be ephemeral. Small numbers of aquatic plant species were recorded including yellow iris *Iris pseudocorus* and brooklime *Veronica beccabunga*. While these watercourses may support a range of associated invertebrates due to their shaded nature diversity is unlikely to be high.

Tumulus Field Pond located in the north of Parliament Fields is a small conservation pond created relatively recently. Water in the pond is highly turbid and little aquatic vegetation is present apart from a small area of yellow flag iris *Iris pseudocorus* and floating sweet-grass *Glyceria fluitans*. The pond is fenced to prevent trampling but is nonetheless subject to frequent disturbance from dogs. While the pond may support a range of common pond species its recent creation and the levels of disturbance are likely to reduce species diversity and the potential for any particularly rare or scarce species to occur.

Marshy vegetation occurs scattered around the main lakes. These areas are often dominated by common reed *Phragmites australis* and are generally species poor. While a number of specialist species may be present the diversity of these communities is likely to be limited due to the limited extent of the habitat present.



These small freshwater streams within the site are intrinsically valuable as a distinct habitat type and may harbour some specialist aquatic species. However, water quality appears to be generally poor and in some places the water is certainly polluted, unaided by an apparently intermittent flow regime. This, coupled with a general absence of any aquatic vegetation, is likely to result in poor-quality invertebrate habitat. Watercourses of this kind will generally support a limited species assemblage characterised by common and widespread species.

### **3.9 Overall Site Assessment for Invertebrates**

Overall the Hampstead Heath survey area is likely to support a good range of invertebrate species particularly for an urban situation although overall habitat diversity and quality is not high. It is considered highly probable that the species groups likely to be of greatest importance are those associated with dead wood habitats i.e. saproxylic species. This micro-habitat type is highly diverse at the site with a wide range of deadwood types from standing to fallen, in a range of states of decay and in a variety of exposures from fully exposed to the sun to fully shaded. Species groups likely to be of importance within this habitat type include Coleoptera, Hymenoptera and Diptera.

## **4.0 RECOMMENDATIONS**

### **4.1 Introduction**

The purpose of these recommendations is to provide broad management recommendations for the site as a whole, designed to ensure that key invertebrate habitat features are either retained or enhanced as part of the proposed works. The sheer number and diversity of invertebrate species within the UK combined with a general lack of field data on distribution and abundance means that species-specific management is impractical. However, given that it is considered likely that the most diverse invertebrate communities at the site are likely to be supported by deadwood and mature/veteran trees these should be carefully considered during the proposed works.

### **4.2 Woodland, Scrub and Trees**

This is the most important habitat for invertebrates at the site and the combination of denser woodland, mature trees, deadwood and flowering trees and shrubs in close proximity is likely to mean that the diversity of invertebrates associated with this habitat is diverse. The most important elements of this habitat are the mature/veteran trees with standing and fallen deadwood in association with nectaring sources such as bramble, hawthorn and blackthorn. However, there are a number of factors that may mean that the diversity is not as high as other similar sites. Foremost amongst these is that the site is located within an urban area where linkage to surrounding sites with diverse communities is limited. Additionally, habitat continuity at the site may not be high, while there are a large number of mature and veteran trees on Hampstead Heath much of the woodland is secondary in nature, i.e. recently formed, such woodlands tend to be less diverse in the fauna than long established ancient woodlands.

Ideally, woodland areas within the site should be retained in their entirety and buffered from any potential adverse impacts resulting from the proposed works. This would require the provision of suitable buffer strips adjacent to the woodland which should be managed with the intention of providing a naturally-graded woodland edge habitat. A well-structured scrubby edge should be encouraged through cessation of grazing or cutting and should include pollen- and nectar-rich species such as hawthorn and bramble. The scrub should be bordered by an herb-rich grass margin to include nectar-rich herbaceous species such as umbellifers, composites and legumes.

Where opportunities exist, it may be possible to provide new woodland habitat as part of the proposed development. Even small woodland blocks or community orchards will provide valuable woodland cover, especially where these are sited in close proximity to existing woodlands. All new

planting stock should ideally be of local provenance or sourced from suppliers within the appropriate Forestry Commission Native Seed Zone.

Where possible, all mature or veteran trees, whether isolated or within woodland, should be retained. Features such as rot holes, crevices, bark fissures and limb stubs are extremely valuable features of such habitats and are impossible to recreate in a short time period. It is important to ensure that a continuity of such habitat is maintained in the long-term through natural regeneration.

The maintenance of deadwood habitat in all its forms is a desirable outcome. The measures detailed above for maintaining mature trees should assist greatly in maintaining deadwood continuity although specific measures are usually necessary in order to ensure that deadwood is not disregarded. Opportunities for deadwood creation are presented where tree or shrub management is undertaken, for instance by stacking cut timber and brash in suitable locations such as scrub edge or woodland. The practice of removing dead tree limbs, or felling trees with some deadwood present, is undesirable unless absolutely necessary on safety grounds.

Where opportunities allow woodland management at the site should be implemented, in particular, there is a need to open areas of woodland to encourage a greater diversity of flowering herbs and shrubs. This can be achieved through mechanical woodland thinning of the canopy and shrub layer to create a more open and heterogenic woodland structure. Clearly, this management work has to be countered against the effects that opening of the woodland has on encouraging increased public access and effects of trampling that results. A simple solution to discourage human access into cleared/thinned areas involves the creation of dead hedging to form a physical barrier to access. This has recently been carried out in woodland to the north-west of pond 7 where gorse *Ulex europaeus* brash has been used to create a dead hedge. Clearings created away from paths through the heath would be further less likely to receive unauthorised access and such habitat creation should be considered as a means of creating openings and diversity within the woodland that would greatly benefit invertebrates.

#### **4.3 Grassland and Herbaceous Vegetation**

Large areas of grassland on the site are species poor and homogeneous in structure due to the mowing regime that they receive and due to enrichment of the sward, mainly due to the presence of large numbers of dogs roaming across the grassland. While some areas of the grassland have a higher density of herb species the sward tends to be uniform in length and rather tall and rank. As a result, the diversity of invertebrates within this habitat type is likely to be low and consist

largely of common and widespread species, however, this does add to the overall diversity of the site.

Management of grasslands for nature conservation interest is best achieved through grazing. However this may not be appropriate at the site and so site-specific management requirements should be devised. The key management objective with any grassland area should be to create structural variability, whether through grazing or cutting. Diversity can be achieved by cutting swards in a less uniform manner, this can be achieved by mowing compartments at varying intervals and at varying times of years or by missing years of mowing in certain compartments. More variation within the mowing regimes at the site would help to increase diversity in sward structure and in invertebrate diversity. In particular, tussocky swards should be achieved as should more open swards with bare ground, this latter type could be achieved through scarification.

#### **4.4 Bare Ground**

Bare ground is an intrinsically ephemeral habitat type and therefore its occurrence at a site is dependent upon the degree of disturbance present. At Hampstead Heath disturbance is due primarily to recreational pressure and as a result this tends to create heavily disturbed compacted or poached surfaces of little value for invertebrates. Perhaps the most valuable bareground habitat at the site occurs alongside the margins of ponds and streams, this is naturally occurring and largely undisturbed. In general it is not necessary to manage the site specifically for bare ground.

#### **4.5 Freshwater**

Given the limited amount of freshwater habitat it is considered that there is unlikely to be a diverse aquatic invertebrate fauna present. If woodland thinning were to be implemented it would be beneficial to open at least one of the watercourses flowing through the current dense woodland so that it receives more sunlight, this is likely to result in an increase in water quality and invertebrate diversity.

If opportunities exist for new pond creation, the most effective strategy is to create a series of small- to medium-sized wildlife ponds throughout the site. The ponds should be of varying depth and exhibit a range of profiles to maximise habitat variability, providing deeper areas alongside shallows. Where achievable, complexes of new ponds will be more ecologically-valuable than providing single isolated waterbodies. New ponds are best left to colonise naturally rather than through plug-planting, thereby providing vital early-succession habitats for the first few years

rather than a ready-made habitat. The presence of bare, occasionally-wet margins is as important as open water. Clearly, these would need to be created where access by dogs is preventable.

**Map 1**      Area and Target Note Locations





HAMPSTEAD HEATH

PHASE 1 INVERETBRATE SURVEY

Map 1 - Target Note Locations

Client: City of London Corporation (CoL)	
Date: March 2014	Status: Draft

KEY

- ① Mature/veteran trees forming avenues or stands
- ② Areas of dense woodland
- ③ Notable individual mature/veteran trees with abundant deadwood
- ④ Stands of bramble/hawthorn/blackthorn likely to be of value for nectaring
- ⑤ More diverse areas of grassland
- ⑥ Bareground
- ⑦ Marsh vegetation



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## **Appendix 1**

“Welcome to Hampstead Heath” Map (displaying pond numbers)



# Welcome to Hampstead Heath

- Car park
- Refreshments
- Toilet, including toilet for disabled people
- Office and Staff Yard
- Selected outstanding views
- Buses serving this point
- Railway station
- London Underground station
- Woodland and scrub
- Hedgerow / thin belt of trees or shrubs
- Made footpaths
- Unmade footpaths
- Cycle paths (shared with pedestrians)
- Horse rides
- Horse rides (permit holders only)
- English Heritage area
- Bowling green
- Cricket pitch
- Football pitch
- Rugby pitch
- Tennis courts
- Play facilities
- Croquet



Green Heritage Site

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- Fishing ponds
- 1 Swan Pond
- 2 Leg of Mutton Pond
- 3 Lily Pond
- 4 Seven Sisters Ponds
- 5 Whitestone Pond
- 6 Vale of Health Pond
- 7 Viaduct Pond
- 8 Mixed Bathing Pond (No 3)
- 9 Hampstead No 2 Pond
- 10 Hampstead No 1 Pond
- 11 Wood Pond
- 12 Thousand Pound Pond
- 13 Stock Pond
- 14 Kenwood Ladies' Bathing Pond
- 15 Bird Sanctuary Pond
- 16 Model Boating Pond
- 17 Highgate Men's Bathing Pond
- 18 Highgate No 1 Pond



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