

Hampstead Heath Ponds Project

Habitat & Invasive Species Survey

Report for City of London Corporation

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	Date	Checked by	Approved by
Initial	30/09/13	TS	JN
Revision			
Revision			

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Executive Summary

- The Ecology Consultancy was commissioned by the City of London Corporation to undertake a Phase 1 habitat and invasive species survey of two areas of Hampstead Heath totalling 92ha. The habitat descriptions and maps will provide baseline information, for example, habitat classification and the value of those habitats that may potentially be affected as part of the reconstruction works required as part of the Hampstead Heath Ponds Project.
- A small part of the survey area (0.4ha) was located within Hampstead Heath Woods SSSI of which also encompasses Ken Wood Ancient Woodland Site. The SSSI is designated for its over mature, high forest stands of acid sessile oak – beech woodland an abundance of dead standing wood and associated rare invertebrates.
- The northern tip of Highgate Valley, including Stock Pond (TN 7), and the woodland and scattered trees along the eastern boundary (including those areas around TN19) are adjacent to the SSSI and therefore provide supporting and/or secondary habitat (CIEEM, 2006) to the ancient woodland habitat. Similar features to both areas are the mature trees and standing dead wood, which may be important for rare invertebrate species.
- The majority of the survey area falls within Hampstead Heath SMI, which has been designated for its unique mix of formal and natural habitats including numerous veteran trees and dead wood habitat, ancient woodlands, acid grassland, a sphagnum bog and numerous ponds and watercourses.
- Habitats mentioned in the citation as qualifying features of the SMI and found within the survey area comprise acid grassland, over-mature trees, dead wood habitat, ponds and watercourses, and a number of rare plants comprising water horsetail, wood club rush and hard fern and heather. The presence of these habitats, habitat features and species represent the intrinsic value of the SMI and should be protected from the development works.
- The survey area covered approximately 92ha of Hampstead Heath SMI and comprised 23 Phase 1 habitat types.
- The site contained nine Habitats of Principal Importance (JNCC 2011), seven London BAP habitats (LBP 2007) and four Camden Local BAP habitats (London Borough of Camden,2010).
- The survey area contained 12 ponds and a Catch pit. In the Highgate Valley, the Stock Pond (TN 7) Bird Sanctuary Pond (TN 9) and Highgate No 1 pond (TN 12) supported the most diverse habitat types within close proximity to the water's edge, including

abundant marginal vegetation, swamp, dense scrub, marshy vegetation, scattered (parkland) trees and semi-natural woodland. In the Hampstead Valley, the Vale of Health Pond (TN 1) and Viaduct Pond (TN 2) were the most diverse, with limited marginal vegetation, dense scrub, acid grassland and semi-natural woodland. The remaining ponds had limited marginal vegetation and were primarily managed for amenity purposes.

- The majority of the survey area was comprised of more recently naturalised semi-natural woodland and species poor semi-improved grassland. The majority of woodland areas contained numerous mature/ ancient trees but were heavily affected by foot traffic and/or were densely shaded. The combination of foot traffic and shading had led to many areas supporting limited understory or ground cover. More structurally diverse areas were centred around TN15, TN16, TN 17, TN 18 and TN 19. Most of the survey area was dominated (in the Highgate Valley) with poor semi improved grassland. However, floristically more diverse grassland, occurred in patches, often around springs within Highgate Valley and Pryor's Field.
- To ensure no detriment to Ancient Woodland, Natural England's Standing Advice is that any development works are to maintain a minimum 15m distance away.

INVASIVE SPECIES

- The survey area contained 46 separate records of invasive plant species listed on Schedule 9 of the Wildlife and Countryside Act. These included eight stands of Japanese knotweed, 37 stands of Himalayan balsam, One stand of giant hogweed, two stands of garden yellow archangel, two stands of montbretia, one stand of Virginia creeper and four stands of cotoneaster.
- The Property Care Association's Code of Practice for the Management of Japanese knotweed (Ver. 2.6, 20/03/2013) should be consulted for advice and guidance on the control and removal of invasive plant species.

1 Introduction

BACKGROUND

- 1.1 The Ecology Consultancy was commissioned by the City of London Corporation (CoLC) to undertake a Phase 1 Habitat Survey and invasive species survey of two areas of Hampstead Heath, London, totalling 92 hectares (ha). The results of the surveys are to inform proposals for major works to the Heath's ponds in order to prevent a one in 10,000 year flooding event.

SCOPE OF THE REPORT

- 1.2 This report utilises the standard Phase 1 survey methodology (JNCC 2010), which is the most widely used and professionally recognised method for initial ecological appraisal of a site. This approach is designed to identify all broad habitat types present at a site, to identify the potential of the habitats present to support protected or ecologically notable species, and to assist in providing an overview of the site's ecological interest.
- 1.3 The invasive species survey for terrestrial plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) utilises the Joint Nature Conservation Committee (2010) survey method for identifying locations of plants using handheld GPS devices.

LEGISLATION AND PLANNING POLICY

- 1.4 Appendix 6 provides details of legislation and planning policy relating to nature conservation, and is provided for general guidance only. The Appendix includes details of relevant national legislation afforded to:
- Statutory designated sites;
 - Non-statutory designated sites;
 - Local planning policy;
 - National planning policy;
 - UK Habitats of Principal Importance for Biodiversity; and
 - Local Biodiversity Action Plans (BAPs).

PROPOSED SITE DEVELOPMENT

- 1.5 The aim of the CoLC project is to prevent the occurrence of a one in 10,000 year flood. This will involve the reconstruction of the earth dams that impound the series of ponds on the Heath. The extent of construction activity is not fully known at this stage, but is likely to be extensive and will include site compounds, access roads, the

creation of borrow pits for site won material, and the creation of an additional dry reservoir within the Hampstead Valley.

- 1.6 This report is to be appended to an Environmental Statement, part of the Environment Impact Assessment (EIA), being undertaken by Atkins on behalf of CoLC. This report presents the results of the Phase 1 habitat and invasive species survey, providing up-to date baseline information on habitat types, and their value to nature conservation.

SITE CONTEXT AND STATUS

- 1.7 Hampstead Heath occupies an area of approximately 317 hectares in north London, in the Boroughs of Barnet, Camden and Haringey and is managed by CoLC. The Ordnance Survey central Grid Reference is TQ 273 866. The survey focussed on two distinct areas, the Hampstead pond chain and the Highgate pond chain, both of which are valleys running approximately north – south. Between them they support 11 large ponds and a smaller water-body, known as the Catch Pit, which is located in the Hampstead Valley.
- 1.8 The area referred to as Highgate Valley is located on the east side of Hampstead Heath and covers 48ha. The Ordnance Survey central Grid Reference is TQ 27585 86494. The area referred to as Hampstead Valley is located on the west side of the Heath and covers 42ha. The Ordnance Survey central Grid Reference is TQ 26962 86294.

2 Methodology

DESKTOP SURVEY

- 2.1 CoLC Hampstead Heath staff provided existing data on habitats and species and known locations of existing stands of invasive plant species.
- 2.2 A internet based desktop study was undertaken of the following websites to provide fuller information on the habitats present and their value to nature conservation:
 - London Borough of Camden (www.camden.co.uk)
 - Multi Agency Geographic Information for the Countryside (www.magic.gov.uk);
 - Nature England (www.naturalengland.co.uk);
 - Joint Nature Conservation Council (www.jncc.gov.uk); and
 - City of London (www.cityoflondon.gov.uk).
 - Greenspace Information for Greater London (www.gigl.org.uk)
 - The London Biodiversity Partnership (<http://www.lbp.org.uk/londonhabsp>)
 - Aerial photographs (www.google.co.uk/maps).

HABITAT SURVEY

- 2.3 The Phase 1 habitat survey of the site comprising the Hampstead and Highgate Valleys was undertaken over seven days during July and August 2013. Habitats were mapped (Figure 1-4, Appendix 1) and described following standard Phase 1 habitat survey methods (JNCC 2010) with target notes (Appendix 2) photographs (Appendix 5) and species lists compiled to provide fuller information on specific features (Appendix 7).
- 2.4 Nomenclature follows Stace (2010) for vascular plant species. Scientific names are given after the first mention of a species, thereafter, common names only are used.
- 2.5 The survey data will also be provided in ArcView format for incorporation into the CoLC database.
- 2.6 The surveys were conducted by suitably qualified and experienced ecologists. Rosie Whicheloe BA MSc is an associate member of the Chartered Institute of Ecology and Environmental Management (ACIEEM) and holds a level 4 Field Identification Skills Certificate (FISC). Annie Chipchase BSc (Hons) has over 10 years ecological

experience in London and is currently recorder for the London Borough of Hackney on the LNHS Greater London Flora project.

- 2.7 A summary table listing habitats that meet the criteria for UK Habitats of Principal Importance, London BAP Priority Habitats and Camden Local BAP habitats present within the survey area is given in Table 2 in Appendix 3.

INVASIVE SPECIES SURVEY

- 2.8 An up-to date survey of terrestrial plant species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) was undertaken at the same time as the Phase 1 habitat survey. The locations of all stands of invasive plants were recorded using handheld GPS devices, as recommended by the Joint Nature Conservation Committee (2010). The location and description of all stands of invasive species are provided on the Phase 1 maps (Figure 1-4, A3 size) in Appendix 1, and brief descriptions of location and number of plants provided in Table 3, in Appendix 4.

LIMITATIONS

- 2.9 The survey effort encompassed 92ha of the 317ha of Hampstead Heath and reflects the information collected from surveying the areas as defined by the red line boundary (Appendix 1) and may not be representative of habitats in other parts of the site.
- 2.10 All areas on the site were accessed, including those that were fenced and locked. However, access in some areas was restricted due to the density of scrub, particularly around the ponds, along Hampstead Brook and along old hedge lines.
- 2.11 The survey was undertaken late in the growing season and for this reason, early flowering species (such as those found in woodlands in spring) may have been under-recorded. In addition, the summer of 2013 was particularly dry, with much of the vegetation on the Heath becoming parched, thus increasing the risk of delicate / low-growing species, such as heath bedstraw and pignut that are known to be present within acid grassland in some parts of the Heath, being overlooked.
- 2.12 It should be noted that the Phase 1 habitat survey does not constitute a full botanical survey, and that whilst every effort has been made to provide a comprehensive description of the site, no investigation can ensure the complete characterisation and prediction of the natural environment.

- 2.13 Despite these limitations, it is considered that this report accurately reflects the habitats present.
- 2.14 Surveys of aquatic plant of the areas of open water were not required as part of the Phase 1 survey. As a result only limited information was collected on submerged or floating aquatic species, whilst all marginal vegetation was recorded.
- 2.15 Due to the density of vegetation it was not possible to survey the entire area for invasive species. It is possible that other stands may become apparent later in the season, when vegetation begins to die down or where vegetation management allows new plants to grow.
- 2.16 Despite this, it is considered that the invasive species mapping accurately reflects the current extent of invasive species on site due to the experience of surveyors and the survey effort, which spanned several consecutive weeks.
- 2.17 The phase 1 habitat types present within the survey area have been assessed in relation to the criteria for Habitats of Principal Importance (JNCC 2011). The guidance in general only provides a broad overview of habitat characteristics. For example some Habitats of Principal Importance have generic descriptions (e.g. hedgerows, reedbeds and ponds) and thus several features within the survey area may fit the criteria but are of limited value due to their size, context and species composition. Other habitat descriptions (e.g. lowland mixed deciduous woodland, wet woodland and wood pasture and parkland) are more prescriptive and limit the inclusion of phase 1 habitat types to those with certain defining features. As such, the Habitats of Principal Importance discussed in this report as being present within the survey area can only be used as a guide and may not qualify depending on more detailed information that was not available at the time of writing this report.
- 2.18 Please note there are a few minor mistakes on the maps as follows:
- Ephemeral /short perennial should be scattered scrub in Hampstead Valley, north of the Ice House / wall.
 - A patch of Japanese knotweed is also located in the Hampstead Valley, just south of the “D” shaped children’s’ playground.
 - The stream in the northern tip of Highgate Valley should be flowing westwards not eastwards.

3 Results

DESKTOP STUDY

- 3.1 The CoLC provided information on the location of certain habitat types (e.g. acid grassland) and notable species (e.g. hard fern).
- 3.2 Literature (paper and GIS format) on the habitats and species present on Hampstead Heath was provided comprising:
- A flora survey undertaken by the London Natural History Society (1997-2003)
 - A vegetation survey of the Heath carried out by Scott Wilson (2008/09); and
 - Maps of the historical locations of Himalayan balsam and locations of Japanese knotweed.

Statutory Sites of Nature Conservation Interest

- 3.3 A small part (0.4ha) of the survey area encompassed the southern tip of Hampstead Heath Woods SSSI). The full citation for these designated sites is given below:
- 3.4 *“Hampstead Heath Woods are examples of long-established high forest woodlands with an exceptional structure comprising an abundance of old and over-mature trees providing dead wood habitat for a range of invertebrate species. The site also includes an adjacent small valley containing an acidic flush with developing bog-moss communities. The woods, comprising North Wood and the much larger Ken Wood to the south, lie on the upper slopes of Hampstead Heath where a residual capping of Bagshot Sands overlies the Claygate Beds. These give rise to acidic sand and loam-based soils which are generally free-draining, although localised impedance occurs particularly in the small valleys. The sandy soils of the Bagshot Beds on the upper slopes of North Wood and to the south west of Ken Wood support stands of acid sessile oak-beech woodland, an uncommon stand-type in Greater London. Lower down on the sandy loam-based soils of the Claygate Beds, and particularly in a series of minor valleys where the drainage is poorer the stands grade into sessile oak woodland. The woods contain a large number of over-mature trees, with maiden stems of considerable girth and height, and an abundance of dead limbs, fallen branches and whole fallen trunks. High forest stands of such over-maturity are nationally uncommon and particularly scarce in Greater London.*

3.5 *“The canopy of both woods is heavily dominated by sessile oak Quercus petraea and beech Fagus sylvatica, although pedunculate oak Quercus robur occurs occasionally and wild service tree Sorbus torminalis, a species associated with ancient woodland rarely. In open areas where trees have fallen young downy birch Betula pubescens is frequent. The shrub layer is dominated by holly Ilex aquifolium with rowan Sorbus aucuparia, hazel Corylus avellana, and the locally abundant introduced shrubs rhododendron Rhododendron ponticum and cherry laurel Prunus laurocerasus. This frequently dense understorey coupled with the acidic soils produces a typically limited ground flora which is dominated by bramble Rubus fruticosus and bracken Pteridium aquilinum. Other species recorded include bluebell Hyacinthoides non-scripta and species indicating long-established woodland such as wood anemone Anemone nemorosa and pignut Conopodium majus. Adjacent to Ken Wood is a small valley containing an acidic flush dominated by softrush Juncus effusus and bog-moss Sphagnum species. Six bog-mosses have been recorded and water horsetail Equisetum fluviatile, a species scarce in Greater London, is also present. The drier fringes of the flush are dominated by grasses such as common bent Agrostis capillaris, creeping soft-grass Holcus mollis and tufted hair-grass Deschampsia cespitosa with scattered silver birch Betula pendula and alder Alnus glutinosa. The abundance of over-mature trees with decaying heartwood and dead standing and fallen timber provides suitable conditions for a specialist invertebrate fauna. Several beetles which are dependent on dead wood have been recorded here, including the nationally rare jewel beetle Agrilus pannonicus whose larvae develop in and under the bark of oak. This species is rare in Britain and is listed as vulnerable in the British Red Data Book.”*

3.6 A condition assessment was undertaken by Natural England in 2012, which identified the woodland unit to be in condition of *“unfavourable recovering”* due to problems with natural woodland regeneration, which in the interim was being partially rectified by a tree planting programme. The current condition of this part of the SSSI in 2013 is unknown.

3.7 Encompassing the same area as the SSSI (within the survey area) is the Ken Wood Ancient and Semi-natural Woodland Site, Theme ID: 243193 (AWS).

Non-Statutory Sites of Nature Conservation Interest

3.8 The majority of the survey area, including Hampstead and Highgate Valleys formed part of the larger Hampstead Heath Site of Metropolitan Importance (SMI). The citation is provided in full below:

3.9 *“Just over six kilometres from central London, this extensive site is well known for its unique mix of semi-natural and formal habitats. Ancient woodlands contain an exceptional number of old and over-mature trees, providing dead wood habitat for a range of specialist invertebrates, including the nationally rare jewel beetle *Agrilus pannonicus*. Another important habitat is the small wet flush (or bog) containing several species of bog-mosses (*Sphagnum* spp). and water horsetail (*Equisetum fluviatile*), all very rare in London. Acid grassland occurs on the upper slopes, supporting heath bedstraw (*Galium saxatile*), pill sedge (*Carex pilulifera*), pignut (*Conopodium majus*) and other characteristic plants. In several places heathland restoration is being attempted, using heathers (*Calluna vulgaris*, *Erica* spp.). Relict heathland invertebrates include the tube-web spider (*Atypus affinis*) at its only known London site. The many ponds and watercourses on the site are of further botanical, entomological and ornithological interest. Other rare plants include creeping willow (*Salix repens*), lemon-scented fern (*Oreopteris limbosperma*) and hard fern (*Blechnum spicant*). One of north London’s most popular open spaces, the Heath has been skillfully managed to integrate wildlife and recreation over the last decade. Owned by the City of London with the exception of the Kenwood Estate, which is owned by English Heritage; part Site of Special Scientific Interest. Hampstead Heath won a Green Flag Award again for 2006/7.”*

Hampstead Heath Management Plan

3.10 The management of Hampstead Heath is guided by the Hampstead Heath Management Plan (2007-2017), produced by Land Use Consultants (2007). This plan provides , inter alia, the following information:

- Broad Habitat Map of the entire Hampstead Heath SMI;
- Veteran tree map;
- Historical maps of the heath including previous extent of woodland and hedgerows.

3.11 The Key Vision for the SMI is: *“Our vision is of a beautiful and accessible piece of countryside in the city, a place with a rich mosaic of habitats, a diverse landscape and a wealth of historic and natural resources”*:

3.12 The primary objective is:” *To manage and preserve the Heath as an open space and maintain its unique wild and natural aspects and its ecology.”*

- 3.13 The overriding objective under 7.2 Natural Landscape is: “*Retain and enhance the Heath’s habitats and natural resources to enable continued quite enjoyment and appreciation of the natural world by its visitors.*”
- 3.14 Fuller information on the Essential Actions of the Management Plan as outlined in section 7.2 Natural Landscape is given in Appendix 6.

PHASE 1 HABITAT SURVEY

Overview

- 3.1 The survey area, covering 92ha in total comprised of two distinct areas referred to in this report as the Hampstead and Highgate Valleys, which have been dammed at their southern ends, to create a series of 11 ponds in total. A further water body, named the Catch Pit, (TN3) constructed to trap silt, is also located in the Hampstead Valley. Both valleys contained numerous ponds, substantial areas of semi-natural woodland, semi-improved grassland, scattered trees, amenity grassland and sports facilities. Both valleys are less formal in their northern halves, containing a mosaic of vegetation types including extensive areas of woodland and grassland, whilst their southern halves are amenity-focused with numerous scattered trees, improved grassland and was more intensively managed. Hampstead Valley was broader and contains the majority of the woodland, forming extensive areas centred on East Heath, whilst the Highgate Valley was longer and narrower and contains the majority of the semi-improved (poor) grassland and amenity grassland dissected by overgrown hedgerows.
- 3.2 The majority of the survey area supported semi-natural woodland, created post 1871 (LUC, 2007) but which contained numerous older, large, trees with native/ naturalised planting beneath. Numerous non-native trees were present many of which were also of significant age and stature with standing dead wood and sizeable limbs. The stand type resembled that of species poor, acidic sessile/pedunculate oak *Quercus petraea/robur* woodland with an understorey dominated by bramble *Rubus fruticosus agg.* and ivy *Hedera helix*.
- 3.3 Ancient woodland indicators were rare but comprised Midland hawthorn *Crataegus laevigata* and wild service tree *Sorbus torminalis*. Other woodland species including guelder rose *Viburnum opulus* and alder buckthorn *Rhamnus frangula* were present but only occasionally. In less trampled, or densely shaded areas, a richer mix of tree and shrubs had developed including silver birch *Betula pendula*, rowan *Sorbus aucuparia*, ash *Fraxinus excelsior* and holly *Ilex aquifolium*. Where public access was greater vegetation growth was notable sparse, particularly around mature specimen trees and close to main paths.

- 3.4 The survey area comprised 11 large ponds most of which supported abundant emergent and marginal vegetation grading into a mosaic of scrub, tall ruderal and woodland. A twelfth pond, known as the Catch Pit is used to trap silt. Public access was generally prohibited (by fencing) around these ponds enabling a dense ground flora and shrub layer to develop, typically dominated by bramble, common nettle *Urtica dioica*, and ivy. Different usages of the ponds for bathing, fishing, model boats or wildlife refuge partially dictated the presence and abundance of marginal vegetation and adjacent habitat. Three of the ponds are used for swimming (Mixed Bathing Pond, Kenwood Ladies' Bathing Pond and Mens only Bathing Pond). Several ponds were in part or entirely concrete-lined and more open with limited marginal vegetation. These are primarily for used for recreation and amenity value (e.g. Model Boating Pond, Highgate No. 2 Pond), with fishing and dog swimming activity causing localised bank erosion.
- 3.5 The survey area contained the southernmost tip of Hampstead Heath SSSI and Ken Wood Ancient Woodland Site. Here the composition was not dissimilar to that found elsewhere on site comprising native and non-native species, mature tree species, with a species poor ground flora. A particularly large, mature horse chestnut cast heavy shade over the paths close to Highgate Gate and holly created a dense understorey. The present of locally frequent coppiced hazel suggested the use of traditional woodland management practices (See photographs 20 and 21).
- 3.6 The majority of the grassland in the survey area was within Highgate valley and comprised of poor semi-improved grassland primarily located within the Highgate Valley, with creeping bent *Agrostis stolonifera* dominant. More floristically diverse grassland was located in isolated patches, often associated with spring lines and comprising semi-improved neutral grassland, and marshy grassland, and including species such as locally frequent soft rush, *Juncus effusus*, black knapweed *Centaurea nigra*, common fleabane *Pulicaria dysenterica*, purple loosestrife *Lythrum salicaria*, yellow flag iris *Iris pseudacorus*, meadow vetchling *Lathyrus pratensis* and ladies bedstraw *Galium verum*, and were often associated with tall ruderal species.
- 3.7 In contrast, the small pockets of grassland habitat in the Hampstead Valley were dominated by semi-improved acid grassland with occasional or locally frequent sheep's sorrel *Rumex acetosella*, slender rush *Juncus tenuis* and occasional red fescue *Festuca rubra*. . The pressure of foot traffic has caused widespread erosion on the grassland in places, severely limiting the condition and composition of the grassland.

- 3.8 Scattered (parkland) trees were numerous within the open grassland of the Highgate Valley and comprised many non-native species, particularly mature Turkey oak *Quercus cerris* and locally abundant sessile oak. Mature London plane *Platanus X acerifolia* and common lime *Tilia x vulgaris* were the most common trees planted along avenues of the main footpaths.
- 3.9 Two streams flowed through the survey area, feeding Kenwood Ladies' Bathing Pond (TN 8) and Stock Pond (TN 9). All other linear, drainage features were dry during the time of survey.
- 3.10 Much of the survey area was frequented by the public with numerous footpaths dissecting the site and, in numerous places, causing substantial erosion off the grassland and woodland habitat, particularly in the Hampstead Valley.

Semi-natural woodland

- 3.11 The majority of the Hampstead Valley and part of Highgate Valley comprised of semi-natural woodland characterised by species typically found on acidic soils including sessile oak and pedunculate oak, which tended to form a high forest canopy. Other locally dominant (and mature) trees included ash, beech *Fagus sylvatica*, hornbeam *Carpinus betulus*, silver birch and sycamore *Acer pseudoplatanus*. The understorey varied considerably due to localised impacts of recreational use including, well-used footpaths and localised focal points beneath over-mature or large trees, rendering the ground bare in places. The ground flora was generally species poor comprising shade-tolerant species including abundant ivy and male fern. Other typical species included frequent wood avens *Geum urbanum* and enchanter's nightshade, *Circaea lutetiana*.
- 3.12 Although it was difficult to distinguish between different areas due to the size and complexity of the site, some parts of the woodland had broadly different characters, which may reflect underlying soil conditions and nutrient availability. Along the northern boundary of the survey area in the Hampstead Valley, woodland areas were characterised by very straight and tall pedunculate oaks (TN16, photograph 16 and 33), with a dense understorey of bramble. Other areas centred around East Heath and south of the Vale of Health (TN15, photograph 15) were more stunted in growth and contained a more varied understorey. However, the majority of the woodland was heavily shaded with an understorey limited to ivy and patches of bramble. This was particularly apparent along the main paths including the Lime Tree Walk (See photograph 31).

- 3.13 In less disturbed areas, species composition was more diverse and included frequent rowan, hawthorn *Crataegus monogyna*, English elm *Ulmus procera*, elder *Sambucus nigra*, blackthorn *Prunus spinosa* and privet *Ligustrum vulgare*, with rare hazel *Corylus avellana*. An area of woodland of particular note for its diverse structure and fallen dead wood habitat was that around TN19 (See photograph 19 and 33).
- 3.14 Natural regeneration varied across the site, but was more prevalent in less disturbed areas, such as the wet woodland in the valley bottoms or within the fenced enclosures around the ponds.
- 3.15 Old boundary hedgerows in the Highgate Valley had developed into linear woodlands. Woodland tree species were present along with frequent shrub species comprising wild cherry *Prunus avium*, bird cherry *Prunus padus*, field maple, elder, blackthorn and hawthorn, and the ancient woodland indicator species wild service tree *Sorbus torminalis* and Midland hawthorn. A large specimen of wild service tree was noted along the footpath north east of Stock Pond See TN19, photograph 19).
- 3.16 Smaller areas of wet woodland occurred along the Hampstead Brook (TN18), around localised spring lines and hollows and within Bird Sanctuary Pond (TN 9), and were dominated by mature crack willow, goat and grey willow *Salix cinera* scrub, scattered alder *Alnus glutinosa* and tall ruderal herbs. These areas were frequently impenetrable with fallen tree trunks and tangled undergrowth and numerous male fern, pendulous sedge *Carex pendula*, and common nettle *Urtica dioica* (See photograph 18 and 9).
- 3.17 Hampstead Heath SSSI and Ken Wood Ancient Woodland Site within the survey comprised a varied mix of species including frequent pedunculate, sessile oak hazel, ash, silver birch, hawthorn, and locally abundant holly. Non native trees were also present and comprised Turkey Oak and an over mature Horse chestnut. The footpaths were fenced off from the main interior of the woodland enabling natural regeneration, but this was generally sparse and limited to low growing shrubs of bramble. A small patch (5m x 5m) of bracken *Pteridium aquilinum* was located at the southern corner of the woodland and was the only stand within the survey area. (See photographs 20 and 21).
- 3.18 The presence of non-native or exotic tree and shrub species was a frequent occurrence through many areas of woodland, such as around TN 17, photograph 17). Many were present in the form large mature trees and included species such as Turkey oak *Quercus cerris*, pin oak *Quercus palustre* were particular frequent species

as was false acacia *Robinia pseudoacacia* and Horse Chestnut. Shrub species often included the Highclere holly. The ground flora was also often dominated by large patches of small balsam *Impatiens parviflora* with few other species present.

Plantation woodland

3.19 In spite of the large number of non-native or exotic tree species recorded from the survey area, only four plantation woodlands (defined as having greater than 30% of non-native species within the canopy) were present across the two valleys (JNCC 2010). At the north-west end of Hampstead Valley, a strip of woodland comprised sycamore, pedunculate oak, false acacia, tree of heaven *Ailanthus altissima*, sweet chestnut *Castanea sativa* and holly, with an understorey including cherry laurel *Prunus laurocerasus* and rhododendron *Rhododendron ponticum*. To the south of the Ice House, a small area was dominated by mature tall horse chestnut *Aesculus hippocastanum* with bare ground beneath. In the Highgate Valley to the east of Kenwood Ladies' Bathing Pond and the Bird Sanctuary Pond enclosures were two areas of tall, etiolated horse chestnut with an understorey dominated by holly, yew *Taxus baccata* and ivy (See photograph 28).

Dense /scattered scrub

3.20 Dense scrub was found as a transitional habitat between woodland and grassland areas, and typically comprised dense bramble with locally frequent hawthorn, blackthorn, elder, English elm, goat and grey willow. Scrub was also present towards the periphery of more managed areas, within enclosed areas around the ponds, below the high tree canopy in woodland and below individual trees.

Scattered (parkland) trees

3.21 Scattered mature trees, consisting of a range of species both native and exotic, were present in both valleys but were more abundant in the extensive open grassland areas of the Highgate Valley. Frequent species included pedunculate and sessile oak, hornbeam, Turkey oak, holm oak, copper beech *Fagus sylvatica 'purpurea'*, crack willow, weeping willow *Salix x sepulchralis 'Chrysocoma'*, hybrid black poplar *Populus x canadensis* and London Plane. Younger specimens included Lombardy poplar *Populus nigra italica*, Scot's pine *Pinus sylvestris*, Corsican pine *Pinus nigra* and Indian bean tree *Catalpa bignonioides*.

3.22 Locally abundant, densely scattered, mature, sessile oaks created a distinctive linear feature along the western boundary of the Highgate valley between the SSSI/ AWS and TN19. The steeply sloping bank, and wide spreading form of the oaks created a

more wooded character with sparse bramble scrub and semi-improved grassland beneath (See photograph 26).

3.23 New tree planting has also taken place in the southern half of Highgate Valley around Dukes Field, adjacent to the bowling green and children's enclosure and included alder, grey alder *Alnus incana*, crack willow and field maple.

3.24 Avenues of mature trees are a feature of Hampstead Valley, where the Lime Avenue of tall common lime, virtually bisects this site, London plane and common lime line the main path, and Norway maple *Acer platanoides* and weeping willow *Salix x sepulchralis* 'Chrysocoma' line South End Road adjacent to the car park.

3.1 At the entrance to the site, near to Hampstead Heath overground station At the southern end of Hampstead Valley, adjacent to the avenue of trees linking the Heath to South End Road, scattered trees were dominated by London Plane, common lime and Highclere holly *Ilex x altaclarensis* with an understorey including elder, forsythia *Forsythia* sp., garden privet *Ligustrum ovalifolium* 'Aureum' and spotted laurel *Aucuba japonica*.

Semi-improved acid grassland

3.2 Five areas of acid grassland were recorded in Hampstead Valley, four of which were along the route of well-worn paths that are subject to regular trampling and erosion and are less intact as a result. The fifth area was located within the Viaduct Pond enclosure. The dominant species in these grasslands were common bent with slender rush and occasional or locally frequent sheep's sorrel and red fescue. More intact grassland occurred around ant hills (adjacent to scrub and tall ruderal within Pryor's Field) and on steeper slopes where a population of common tormentil *Potentilla erecta* was found (TN14). The area adjacent to the Vale of Health Pond (TN1) was slightly different, being wetter in character. Here a few plants of hard fern *Blechnum spicant* were identified with locally frequent purple moor grass *Molinia caerulea* and rare wavy hair grass *Deschampsia flexuosa*. This area was also affected by trampling related to fishing activity. A few individual heather *Calluna vulgaris* plants were noted on a steep sandy bank, within the enclosed area surrounding Viaduct Pond (TN2). These are likely to have been planted, and were surrounded by tall ruderal and scrub vegetation. (See photographs 1,2,14, 24, 27, 29, 32).

Semi-improved neutral grassland

- 3.3 Semi-improved neutral grassland occurred primarily in the Highgate Valley with five small patches present. Much of this was on sloping ground in the vicinity of spring-lines. Frequently occurring species included soft rush, meadow foxtail *Alopecurus pratensis*, red fescue, common cat's-ear *Hypochaeris radicata*, common knapweed, meadow vetchling, wild carrot *Daucus carota*, Ladies bedstraw and goat's-beard *Tragopogon pratensis*. Typically these areas were located within larger patches of tall ruderal vegetation, dominated by creeping thistle *Cirsium arvensis*, common nettle and great willowherb *Epilobium hirsutum*. Within Hampstead Valley, a single area of Semi improved neutral grassland was present. Another area was located in the Hampstead Valley, on the eastern edge of Pryor's Field. Here hogweed *Heracleum spondylium* was a conspicuous component of an area of grassland that consisted of frequent, locally abundant meadow vetchling, occasional bird's-foot trefoil, bloody crane's-bill *Geranium pratensis*, and black knapweed, amongst tall ruderal vegetation and numerous anthills.

Marshy grassland

- 3.4 Five areas of marshy grassland were identified and these were entirely located within the northern half of Highgate Valley, associated with spring-lines within the poor semi-improved grassland and waterlogged soils adjacent to Stock Pond (TN7) and Bird Sanctuary Pond (TN9). Abundant, dominant species were soft rush with frequent hairy sedge *Carex hirta* and common fleabane. Water mint *Mentha aquatic*, yellow flag iris, agrimony *Agrimonia eupatoria*, marsh foxtail *Alopecurus geniculatus*, pendulus sedge *Carex pendula* and ladies bedstraw were also locally frequent (See photograph 23).

Poor Semi-improved grassland

- 3.5 The majority of grassland within the Highgate valley comprised poor semi-improved grassland, which was dominated for the most part by creeping and common bent. Other species that were also frequent throughout included false oat-grass *Arrhenatherum elatius*, Yorkshire fog *Holcus lanatus*, smaller cat's-tail *Phleum bertolonii*, white clover *Trifolium repens*, and creeping buttercup *Ranunculus repens*. Other species that were locally rare included wild carrot and black knapweed.

Tall ruderal

- 3.6 Tall ruderal vegetation occurred in abundance throughout the site often associated with more species-rich grassland patches, perhaps retained as a deterrent / buffer between more intensively trampled grassland. It also occurred as a transitional habitat between mature woodland, dense scrub and open grassland. Abundant and

frequently occurring species included rosebay willowherb, common ragwort *Senecio jacobaea*, Oxford ragwort *S. squalidus*, creeping thistle, mugwort *Artemisia vulgaris*, common nettle and false oat-grass.

Swamp

- 3.7 Stands of emergent vegetation were limited within the survey area and only occurred at Stock Pond (TN 7, photograph 7) and Bird Sancturay Pond (TN9 photograph 9). The approximate size of these stands ranged from 5-8m². Species present included abundant common reed *Phragmites australis*, greater reedmace *Typha latifolia* and reed sweet grass *Glyceria maxima*. Smaller stands are described in the target notes for each pond as marginal vegetation.

Marginal vegetation

- 3.8 Most of the ponds supported marginal vegetation as a result of the gently sloping banks and restricted public access. However, this was generally limited in extent due to adjacent woodland, amenity grassland habitats and dense overhang of trees. Where ponds were concrete-edged, there had been an attempt to encourage the growth of marginal habitat by the provision of rafts. Species typically included comoon reed, greater reedmace, yellow flag iris, purple loosestrife, reed sweet grass *Glyceria maxima* and pendulous sedge. Further information is given in respect of each pond in target notes 1-12 in Appendix 2 and photographs in Appendix 5.

Standing Open Water

- 3.9 A series of six ponds (>2ha) are present in the Highgate Valley, running north-south. These ponds were originally reservoirs for storing drinking water from the River Fleet. Two of these ponds, the Stock Pond (TN7, photograph 7 and 30) and the Bird Sanctuary Pond (TN9, photograph 9) were enclosed by fencing and not accessible to the public. These enclosed areas both support scrub and semi-natural woodland, with reed swamp and tall ruderal herbs here the canopy was more open. Kenwood Ladies' Bathing Pond (TN8, photograph 8) and Highgate Men's Bathing Pond (TN11, photograph 11) were both enclosed but accessible to swimmers. The Kenwood Ladies' Bathing Pond was surrounded by trees and woodland, with two areas of improved grassland used for sunbathing. Planted shrubs and flowers were located along paths and amenity areas. Highgate Men's Bathing Pond was flanked on two sides by narrow strips of woodland, whilst improved grassland with concrete lined banks bordered the pond to the north and south.

- 3.10 The Model Boating Pond (TN 10, photograph 10) was unfenced and surrounded for the most part by improved grassland with numerous scattered, mature trees. Marginal vegetation was limited due to it being entirely concreted-edged. The east side of Highgate No. 1 Pond (TN12, photograph 12) was fenced and overhung by scrub and trees, whilst the west side supported several small stands of reed and other marginal plants, as well as scattered trees and scrub. A small stand of the rare wood club-rush *Scirpus sylvaticus* was located in the south-west corner of Highgate No 1 Pond (12a).
- 3.11 A small pond (>0.01ha), recently created on a spring-line in the grassland to the west of the Bird Sanctuary Pond, supports a number of wetland species surrounded by tall ruderal, scattered trees and scrub (TN 13, photograph 13).
- 3.12 Hampstead Valley supported five ponds and the Catch Pit. The Viaduct Pond (TN2, photograph 2) was two-thirds enclosed by semi-natural woodland and scrub, except for its southern end, which was concrete edged where the dam was located. The Mixed Bathing Pond (TN4, photograph 4) was bordered by semi-natural woodland to the west and north, and was screened by a wide border of trees and shrubs, both native and exotic, along its eastern side. Hampstead No. 1 and 2 Ponds (TN 6 & 5, photographs 6 and 7) were both readily accessible on their western sides, with marginal vegetation being limited to relatively small stands. A small stand of the rare wood club-rush was located in the south-east corner of Hampstead No. 1 Pond (6a).
- 3.13 The less disturbed eastern sides of both ponds support a greater extent of marginal habitat. Sheet piling lined the southern end of Hampstead No. 1 Pond, and the north end was concrete lined. The surrounding banks supported improved grassland with scattered trees, many of which overhung the pond edges. The Catch Pit (TN3, photograph 3) was a small, concrete-edged pit surrounded by semi-natural woodland and willow scrub.

Running water

- 3.14 Streams in the Hampstead Valley contained no running water at the time of survey. This may have been partly due to dense vegetation or intermittent flow pattern of the streams. In the Highgate valley, one stream was noted flowing into the Stock Pond from the north-west. Here the stream bed supported abundant water horsetail and wood club-rush, both rare London species, with dominant bramble scrub on the banks, along with tall herbs including great willowherb. Overhanging trees included frequented sessile oak. The only other stream was one that flowed into the Kenwood Ladies' Bathing Pond also from the north-west. Here, the stream was culverted

adjacent to residential properties before emerging below the path, at which point it was obscured from view below dense, tall nettles before flowing into the pond (See photograph 22 and 25)

Amenity / Improved grassland

- 3.15 Amenity / improved grassland was concentrated towards the southern end of both valleys, where the main entrances onto the Heath are located along with a number of recreational facilities, and in close proximity to Hampstead Heath station and Gospel Oak overground stations. Amenity grassland dominated the children's play area, the bowling green, the playing field behind William Ellis School, the area around the southern tennis courts and petanque pitch, and a large proportion of Dukes Field. These grasslands were typically dominated by perennial rye-grass *Lolium perenne* with frequently occurring grasses including annual meadow-grass *Poa annua*, cock's-foot *Dactylis glomerata* and Yorkshire fog *Holcus lanatus*, along with white clover, broad-leaved plantain *Plantago major* and creeping buttercup. In places, a more relaxed mowing regime was in operation towards the periphery of close-mown improved grassland, allowing areas of semi-improved grassland to develop.

Ephemeral /short perennial

- 3.16 Three areas had been sown or had regenerated naturally with short-lived species, possible as a result of recent management activity. The largest area was the Fairground Site, to the north-east of Hampstead No. 1 Pond, where frequently occurring species included greater plantain, knotgrass *Polygonum aviculare*, swinecress *Lepidium squamatus*, dandelion *Taraxacum* agg. and pineappleweed *Matricaria discoidea*. Two other areas of ephemeral / short perennial were present in Highgate Valley. At the northern end of the grassland between Dukes Field and the houses to the north, a small area of land had been sown with a 'cornfield mix', in which corn marigold *Chrysanthemum segetum*, corncockle *Agrostemma githago* and cornflower *Centaurea cyanus* were present. On the hill immediately to the north of the cafe, a large area of grassland had been rotovated in preparation for seeding with wildflowers. The species present had presumably been sown and included cornflower, oxeye daisy *Leucanthemum vulgare*, musk-mallow *Malva moschata* and red campion *Silene dioica* – along with abundant many-seeded goosefoot *Chenopodium polyspermum*, common orache *Atriplex patula* and curled dock *R. crispus*.

Introduced shrub

- 3.17 Introduced shrub was present around the changing facilities of the bathing ponds and at the southern end of Highgate Valley along the entrance off Highgate Road, including the garden of the small house (close to the Secret Garden) and around the

sports and amenity facilities. Species present included mock orange *Philadelphus coronarius*, lilac *Syringa vulgaris*, rhododendron, broad-leaved cockspurthorn *Crataegus persimilis*, spotted laurel, *Cotoneaster sp.*, bay *Laurus nobilis*, Bull bay *Magnolia grandiflora* and Irish yew *Taxus baccata* var. *fastigiata*.

Native species-rich hedgerow with trees

- 3.18 A recently planted (post 1866) (LUC, 2007) native species-rich hedgerow with young trees was located along the edge of survey area at the southern end of Highgate Valley. Species included frequent hazel, blackthorn, pedunculate oak, field maple, guelder rose, hawthorn, ash and cherry *Prunus cerasifera* spp. Recently planted species-rich hedgerows around the northern end of the tennis courts, contained similar species, with the addition of bird cherry and birch.

Native species-poor hedgerow

- 3.19 Single species hedgerows (hawthorn) were located around the southern end of the tennis courts and the enclosure, which included the petanque court.

Wall

- 3.20 A low brick wall, located to the south of the ice house, appeared to function as a retaining wall where the ground dropped away suddenly. It was heavily shaded by trees and did not support any rare lichen or bryophyte communities nor any other species.

Dry Ditch

- 3.21 Dry ditches were a noticeable feature of Highgate Valley where they ran eastwards from Parliament Hill towards the ponds to the east, and were delineated by former hedgerow boundaries. Many of these ditches were enclosed by dense scrub and trees with no ground flora except abundant ivy.

Buildings

- 3.22 The buildings present on site were associated with public facilities and ground operations. A number of buildings, of fairly recent origin, were located at the south end of Highgate Valley. In addition, there were buildings associated with all three bathing ponds. A small, two-storey brick house was located at the entrance to Hampstead Heath off Highgate Road (close to the Secret Garden), as was a second further north, which was located along the footpath leading from the bus terminus. A small garage-type building was located a little further west along this footpath.

Hard-standing

- 3.23 Hard-standing comprised the numerous paths throughout both valleys, small areas associated with the bathing ponds, a seating area on the south side of the cafe in Highgate Valley and the car park in Hampstead Valley.

Bare ground

- 3.24 High levels of pedestrian recreational use accounted for much of the bare ground within the survey area. This was particularly noticeable on the sandier soils in Hampstead Valley, where paths criss-crossed Pryor's Field or under dense woodland canopy, where the compacted ground supported very limited ground vegetation. There was localised poaching around several ponds, notably Hampstead No 1 and 2 Ponds, Highgate No.1 Pond and Vale of Health Ponds where public access for fishing

or dog swimming had created localised soil compaction and erosion of adjacent vegetated banks.

INVASIVE SPECIES

3.25 Most of the Japanese knotweed *Fallopia japonica* plants recorded were of small stature and difficult to detect. Seven stands were located in the Highgate Valley and one stand in Hampstead Valley in areas of low bramble often growing under trees. 27 stands of Himalayan balsam *Impatiens glandulifera* were located in the Hampstead Valley and ten stands within the Highgate Valley, most often growing with tall ruderal vegetation along the ditches. A single large specimen of giant hogweed *Heracleum mantegazzanum* was recorded in the Highgate Valley within the Bird Sanctuary Pond enclosure. Three patches, two of which were quite large (5x5m) of garden yellow archangel *Lamium galeobdolon argentatum* were recorded in woodland in Hampstead Valley (south-east edge of the Playing Field and southwest of the Viaduct Pond), with the small patch located within the gardens of Kenwood Ladies' Bathing Pond. Two small areas of montbretia *Crocsmia paniculata* were recorded, one on the north-west bank of Hampstead No.2 Pond and the other within the gardens of Kenwood Ladies' Bathing Pond. A single patch of Virginia creeper was present in the Hampstead Valley at its western end, adjacent to a private property garden. A total of four plants of *Cotoneaster horizontalis* were located in the survey area. Two in the Highgate valley, within a private garden and east of Men's Only Bathing Pond and the other two in the Hampstead Valley, one being on the edge of Hampstead No 1 Pond and within the gardens of the Mixed Bathing Pond.

4 Conclusions

HABITAT SURVEY

- 4.1 The majority of the survey area falls within Hampstead Heath SMI, which has been designated for its unique mix of formal and natural habitats including numerous veteran trees and dead wood habitat, ancient woodlands, acid grassland, a sphagnum bog and numerous ponds and watercourses.
- 4.2 Habitats mentioned in the citation as qualifying features of the SMI and found within the survey area include acid grassland, over-mature trees, dead wood habitat, ponds and watercourses, and a number of rare plants comprising water horsetail, wood club rush and hard fern. These habitats, habitat features and species are considered of Metropolitan importance as they represent the intrinsic value of the SMI.
- 4.3 The survey area covered approximately 92ha of Hampstead Heath SMI and comprised 23 Phase 1 habitat types. These are listed below in order of approximate abundance.
- Semi-natural woodland
 - Poor semi-improved grassland
 - Standing water
 - Amenity grassland
 - Plantation woodland
 - Dense/scattered scrub
 - Semi-improved acid grassland
 - Semi-improved neutral grassland
 - Bare ground
 - Marshy grassland
 - Tall ruderal herb
 - Swamp
 - Scattered (parkland trees)
 - Marginal vegetation

- Ephemeral / short perennial
- Hardstanding
- Introduced shrub
- Buildings
- Species-rich hedgerow
- Species-poor hedgerow
- Ditch
- Running water
- Wall

4.4 The site contain nine Habitats of Principal Importance (JNCC 2011)¹, seven London BAP habitats (LBP 2007) and four Camden Local BAP habitats (London Borough of Camden,2010). These are listed in Table 2, Appendix 3 and summarised below using JNCC habitats types only:

- lowland mixed deciduous woodland;
- wet woodland;
- wood pasture & parkland
- hedgerows;
- lowland dry acid grassland
- lowland meadow
- pond;
- reedbed; and
- river.

4.5 The survey area contained 12 ponds and a Catch pit. In the Highgate Valley, the Stock Pond (TN 7) Bird Sanctuary Pond (TN 9) and Highgate No 1 pond (TN 12) supported the most diverse habitat types within close proximity to the water's edge, including abundant marginal vegetation, swamp, dense scrub, marshy vegetation, scattered (parkland) trees and semi-natural woodland. In the

¹ The JNCC guidance on Habitats of Principal Importance do not contain enough information to determine qualifying features of a particular habitat. As such, leading to inclusion of habitats (e.g. hedgerows that may not be particularly species rich or ancient). In this report, they are given as a guide only.

Hampstead Valley, the Vale of Health Pond (TN 1) and Viaduct Pond (TN 2) were the most diverse, with limited marginal vegetation, dense scrub, acid grassland and semi-natural woodland.

- 4.6 The majority of Highgate Valley was dominated by poor semi-improved grassland, which contained pockets of floristically more diverse grassland comprising four pockets of semi-improved neutral grassland and five areas of marshy grassland. The large open areas throughout the valley supported numerous mature scattered (parkland) trees of native and non-native origin. Semi-natural woodland tended to be linear in character (overgrown hedgerows) that dissected the valley in an east-west orientation. Dense/scattered scrub, tall ruderal herb typically bordered the woodland edges.
- 4.7 The majority of Hampstead Valley was dominated by semi-natural woodland, which varied in openness, structural complexity and tree species. The more structurally diverse, less eroded areas were centred in woodland at TN15, TN16, TN17 and TN 18. The majority of grassland centred in Pryor's Field contained a large expanse of semi-improved acid grassland with scattered, mature (parkland) trees, with a smaller patch of semi-improved neutral grassland and poor semi-improved grassland. Other areas of acid grassland were found in four smaller areas centred around TN 1, TN 14 and TN 2.
- 4.8 A small part of the survey area (0.4ha) was located within Hampstead Heath Woods SSSI of which most is Kenwood Ancient Woodland Site. The SSSI is designated for its over mature, high forest stands of acid sessile oak – beech woodland an abundance of dead standing wood and associated rare invertebrates.
- 4.9 The northern tip of Highgate Valley, including Stock Pond (TN 7), and the woodland and scattered trees along the eastern boundary (including those areas around TN19) are adjacent to the SSSI and therefore provide supporting and/or secondary habitat (CIEEM, 2006) to the ancient woodland habitat. Similar features to both areas are the mature trees and standing dead wood, which may be important for rare invertebrate species.

INVASIVE SPECIES

- 4.10 The invasive species survey mapped 46 individual localities of invasive species across the survey area. These comprised:

- Japanese knotweed: seven stands in the Highgate Valley and one stand in Hampstead Valley;
- Himalayan balsam: 27 stands in the Hamstead Valley and ten stands in the Highgate Valley;
- giant hogweed: 1 plant in the Highgate Valley;
- Montbretia: 1 stand in the Highgate Valley and 1 in the Hampstead Valley;
- garden yellow archangel: Two stands in the Hampstead Valley and one in the Highgate Valley;
- Virginia creeper: In one location in the Hampstead Valley; and
- Cotoneaster: Two plants found in the Highgate Valley and two found in the Hampstead Valley.

4.11 From previous surveys, the size of Japanese knotweed and Himalayan balsam stands has decreased substantially as a result of activity to control the species. As such, the remaining areas are small and isolated. However, it is still possible that future management activities could disturb the soil leading to spread of these species.

5 Recommendations

Recommendations

- 5.1 Features, for which the Heath has been designated, including mature, old trees, acid grassland, woodland, ponds and watercourses, and rare plant species, should be protected from any proposed development works.
- 5.2 Remnant pockets of semi-improved acid grassland, neutral and marshy grassland should be retained where possible to maintain habitat diversity. In particular, those areas that are in good condition and supporting rare species including anthills should be conserved.
- 5.3 To ensure there are no detrimental impacts to Ancient Woodland, Natural England's Standing Advice is: any development works are to maintain a minimum 15m distance away.
- 5.4 The Hampstead Heath SMI Management Plan recognises the potential for enhancing biodiversity on the Heath with particular reference to expanding areas of reed bed (NL20), scrub and bramble (NL18) enlarging the West Heath sphagnum bog, (located outside the survey area) (NL19) and to consider the re-introduction of grazing as a management tool (NL23). The development proposals should consider the aspirations of the Management Plan in safeguarding and/ or expanding existing features where possible.
- 5.5 Due to the low nutrient levels of the poor semi-improved grassland compared to amenity or improved areas, there is potential scope to restore floristically more diverse grassland habitat post construction.

Invasive Species

- 5.6 The Property Care Association's *Code of Practice for the Management of Japanese knotweed* (Ver. 2.6, 20/03/2013) should be consulted for advice and guidance on the control and removal of invasive plant species.

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