The Ecology Consultancy

Catchpit, Hampstead Heath / Invertebrate Assessment / City of London

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Invertebrate Assessment

City of London

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Contents

Executive Summary

An inverterbrate assessment was commissioned to assess the impacts of constructing an earth dam through part of the Catchpit area on Hampstead Heath, as part of the overall propsals to reduce the flood risk in the event of heavy rainfall.

Five visits were undertaken between June and September 2014 by an experienced entomologist.

Hampstead Heath as a whole is of national importance for invertebrates. A high proportion of the important species are likely to be present in the Hampstead Heath Wood SSSI, primarily dead wood beetles utilising veteran and over-mature trees.

The woodland and woodland edge of the Catchpit are considered to be of low ecological value in terms of the dead wood habitat and the asbence of a gradual transition between woodland and open habitats. Surveys identified only a single species of conservation concern, the rufous-shouldered longhorn *Anaglyptus mysticus,* which is considered to be Nationally Notable B (the lowest category for species of conservation concern). This species feeds on the dead and moribund branches of hawthorn and is likely to be widespread on Hampstead Heath. Other dead wood species were recorded but all are considered widespread, such as bees and wasps which utilise dead timber for nesting.

The wetland areas are likewise considered to be of low value, having little marginal vegetation and without the features often used by invertebrates in shaded conditions, such as saturated wood.

In isolation it is considered that the Catchpit is of District value for invertebrates only. It is not considered to be 'supporting habitat' for invertebrates on the Hampstead Heath Woods SSSI.

It is not considered that any species are restricted to the Catchpit and it is therefore considered that the imapcts of the embankment will be minor at the population level.

1 Introduction

BACKGROUND

1.1 The Ecology Consultancy was commissioned by the City of London to undertake an invertebrate assessment of the Catchpit area of Hampstead Heath as part of the baseline data collection for the assessment of the Hampstead Heath Ponds Project. This project intends to undertake engineering works to make the overflow structures and dam walls safer in the event of heavy rain and flooding. The proposal of relevance to this study is the construction of a reinforced earth embankment at the southern end of the Catchpit.

STUDY SCOPE

1.2 The aims of the study are to:

- Provide a visual appraisal of the site in terms of the invertebrate micro-habitats present.
- Identify, as far as feasible, the presence or likely presence of invertebrates of conservation concern, including rare (Red Data Book), scarce (Notable/Scarce), species of principal importance (Biodiversity Action Plan priority species) or otherwise important invertebrates.
- Identify the presence of species with high levels of habitat specificity and interpret their presence in terms of habitat quality.
- Provide an objective assessment of overall site quality and that of individual habitat areas using relevant methods and indices, including species quality scores and the 'Colin Plant Criteria' for identifying sites of significance for invertebrates.
- Provide additional advice and guidance on mitigation and enhancement measures.

SITE CONTEXT

1.3 The Catchpit survey area lies towards the south-west corner of Hampstead Heath, lying at the northern end of the Mixed Bathing Pond and Hampstead No. 1 and 2 Ponds. It comprises a small watercourse flowing south and the adjacent 'valley sides'. The 'Catchpit' itself is a concrete lined channel.

1.4 As viewed on Google Earth the area has developed a tree cover in recent decades, with a more open canopy in 2005 than at present. The 1945 RAF photograph shows what appears to be more heath-like vegetation with low scrub interspersed by isolated trees.

1.5 Part of the northern end of the heath, some 300m north of the Catchpit, is the Hampstead Heath Wood SSSI. This is 16ha in area and is designated for a high forest habitat with over-mature trees with an abundance of decaying heartwood and dead standing trees (Nature Conservancy Council, 1990). Richmond Park and Wimbledon Common Special Areas of Conservation (SAC) are approximately 13km south and the Epping Forest SAC is 15km north-east, all three of which are designated for stag beetle *Lucanus cervus* as Annex II qualifying criteria.

1.6 Hampstead Heath as a whole is a well-studied locality for insects and invertebrates and a review of previous work on the Heath has been prepared as part of this project. The data included in this review are considered further here in 'section 3.0. Results'.

LEGISLATION AND PLANNING POLICY

1.7 Many invertebrates are listed as UK Biodiversity Action Plan (UK BAP) priority species and as species of principal importance (Section 41) of the Natural Environment and Rural Communities Act 2006 (abbreviated as NERC-S41). Although such species do not receive protection under criminal law their presence is a material planning consideration, consequently (following Natural England, 2010):

- Regional Planning Bodies and Local Planning Authorities will use the Section 41 list to identify the species and habitats that should be afforded priority when applying the requirements of the National Planning Policy Framework (NPPF) (DfCLG, 2012) to promote the "*protection and recovery of priority species populations*"

- Local Planning Authorities will use it to identify the species and habitats that require specific consideration in dealing with planning and development control, recognising that under NPPF the aim of planning decisions should be to minimise impacts to biodiversity.

1.8 Of wider relevance to Environmental Impact Assessment in particular is the presence of other rare and scarce invertebrates, of which potentially there are several thousand in the United Kingdom. These species comprise the majority of invertebrate diversity and conservation value, and although their significance is poorly defined within legislation and planning policy, case law does appreciate their significant contribution within the assessment of biodiversity and relevant impacts.

2 Methods

DESK STUDY

2.1. Previous survey work on Hampstead Heath was accessed via the review of previous studies prepared by ECOSA (2014). This summarises previous work and lists the species of conservation concern recorded from the Heath.

VISUAL APPRAISAL

2.2. At a generic level the criteria for classifying the habitat units are presented below (Table 1). For dead wood the scheme proposed by Hubble and Hurst (2007) is used to provide a semi-quantitative measure of dead wood quality, in terms of volume, diversity and continuity.

Table 1. Criteria used to appraise the likely quality of semi-natural habitats for important invertebrates.

Category	Definition
Excellent	Semi-natural habitat with extensive areas of key micro-habitats with a range of variation within these micro-habitats
High	Semi-natural habitats with most of the key micro-habitats associated with important invertebrates in that habitat present
Medium	Semi-natural habitats present with at least some of the micro-habitats associated with important invertebrates in that habitat present
Low	Semi-natural habitats present but the micro-habitats specifically associated with important invertebrates missing or limited in extent
Negligible	Semi-natural habitat missing or very small in extent and key micro-habitats absent

FIELD SAMPLING

2.3. As justified later (see 'Results') three broad habitats were recognised within the Catchpit (Appendix 1: Figure 1) and sampling was divided accordingly: woodland edge, shaded woodland with dead wood, and aquatic and wetland (for photographs see Appendix 2).

2.4. Sampling of each area therefore comprised approximately 90-minutes in each area on each visit using a combination of hand techniques. The woodland edge sampling included the outside edges of the woodland and also some areas adjacent to a path on the north edge of the wood, which were sampled mainly by spot and sweep netting. The shaded woodland sampling included sweep netting in the interior of the woodland and also hand searching of dead wood. The aquatic sampling was undertaken in the actual concrete channel using a standard pond net, and included 20 minutes of sampling undertaken on each occasion, with the remainder of the time spent sampling the inflow channel and its wetland vegetation by sweep netting and also 'puddling' of the margins to displace species in the leaf litter.

2.5. The survey visits were on: 26 June, 14 July and 14 August, 3 September and 22 September 2014, by Dr Graham Hopkins MCIEEM FRES.

HABITAT ASSOCIATIONS: ISIS ANALYSIS

2.6. Natural England have created a database-driven computer package to facilitate the analysis of invertebrate inventory data, namely the Invertebrate Species-habitat Information System (hereafter 'ISIS') (Drake et al., 2007). This package provides standardised descriptions for a species habitat requirements:

- Broad Assemblage Type (BAT) describing the broad association of a species, and
- Specific Assemblage Type (SAT) for species with greater specialisation, which are only found in a specific sub-set or type of a BAT (although the majority of species are generalists and do not have a SAT).

SPECIES OF CONSERVATION CONCERN

2.7. Species of conservation concern are defined as: protected species, those satisfying rare or scarce criteria, and/or those listed as species of principal importance:

- Nationally Notable. Species known or likely to be present within 16 to 100 10-km squares of the National Grid; for a number of species this is further refined as –A or –B according to range: –A is assigned to species thought to occur in 30 or fewer 10-km squares of the National Grid; and –B for species thought to occur in 31 to 100 10-km squares of the National Grid. The following abbreviations are used: Nationally Notable is abbreviated as Notable; Nationally Notable A as Notable-A and Nationally Notable B as Notable-B.
- Nationally Scarce. A term now largely superseding Nationally Notable and defined as species in 16-100 10-km squares of the National Grid. Nationally Scarce A and B are divided on the same basis as Notable-A and Notable-B. Nationally Scarce is abbreviated as NS, with Nationally Scarce A as NS-A and Nationally Scarce B as NS-B.

- Red Data Book species – species occurring in fewer than 16 10-km squares of the National Grid, divided as: Endangered (Red Data Book 1),for species known from a single population or in continuous recent decline and now known from five or fewer 10-km squares; Vulnerable (Red Data Book 2), likely to become Endangered (Red Data Book 1) if causal factors continue; Rare (Red Data Book 3), species at risk but not qualifying as Vulnerable; and Red Data Book K, species Insufficiently Known but likely to qualify at least as Rare. These are respectively abbreviated as RDB1, RDB2, RDB3 and RDBK.
- Species of Principal Importance as listed on Section 41 of the National Environment and Rural Communities Act, 2006. These are abbreviated as NERC-S41. This criterion largely replaces the term 'Biodiversity Action Plan (BAP) priority species' and in practice includes these species, although the term BAP priority species is still widely used.

EVALUATION

2.8. Evaluation of the terrestrial fauna follows the criteria proposed by Colin Plant Associates (2006) to define the significance of invertebrate habitats (Table 2). Also available is the output from ISIS, which provides scores for broad and specific assemblage types with thresholds for determining 'favourable' status which is broadly equivalent to assemblages of SSSI quality or national value.

Table 2. The criteria used to define significance of invertebrate habitats.

Significance	Description	Minimum qualifying criteria
National	UK important site	Achieving SSSI invertebrate criteria (NCC, 1989) **or** containing RDB2 (Vulnerable) **or** containing viable populations of RDB 3 (Rare) species **or** containing viable populations of any species protected under UK legislation **or** containing habitats that are threatened or rare nationally (Great Britain).
Regional	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in south-east England	Habitat that is scarce or threatened in the region **or** which has, or is reasonably expected to have, the presence of an assemblage of invertebrates including at least ten Nationally Notable species **or** at least ten species listed as Regionally Notable for the *English Nature* region in question in the Recorder database or elsewhere **or** a combination of these categories amounting to ten species in total.

Significance	Description	Minimum qualifying criteria
County	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the county in question	Habitat that is scarce or threatened in the county **and/or** which contains or is reasonably expected to contain an assemblage of invertebrates that includes viable populations of at least five Nationally Notable species **or** viable populations of at least five species regarded as Regionally Scarce by the county records centres and/or field club.
District	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the administrative District	A rather vague definition of habitats falling below county significance level, but which may be of greater significance than merely Local. They include sites for which Nationally Notable species in the range from 1 to 4 examples are reasonably expected but not yet necessarily recorded and where this omission is considered likely to be partly due to under-recording.
Local	Site with populations of invertebrates or invertebrate habitats considered scarce or rare or threatened in the affected and neighbouring Parishes	Habitats or species unique or of some other significance within the local area.
Low Significance	–	Although almost no area is completely without significance these are the areas with nothing more than expected “background” populations of common species and the occasional Nationally Local species.

3 Results

DESK STUDY DATA

3.1. The list of rare and scarce species known from Hampstead Heath, irrespective of location, was processed through ISIS to generate a list of important Broad Assemblage Types and Specific Assemblage Types (Table 3). The majority of species are associated with the broad terrestrial habitats of grassland and woodland, with a number of beetles from pond and pond edge habitats (mineral marsh and open water) and a hoverfly from wet meadows (permanent wet mire).

3.2. The more specialist species (those with a Specific Assemblage Type) are predominantly beetles associated with dead wood or moribund timber including associated fungi. Of the other habitats they are predominantly grassland, either disturbed and with a short sward or otherwise with scrub. The two wetland species of 'open water on disturbed mineral sediments) are found in the marginal areas of ponds.

3.3. Of particular note in this analysis is the condition assessment that 'wood decay' including the Specific Assemblage Types of 'heartwood decay' and 'bark and sapwood decay' are in favourable condition, and, as is consistent with the SSSI designation, is of national importance for dead wood beetles. It should be noted, however, that this assessment is not based on an ISIS-compliant sample.

Table 3. Desk study data: Broad and Specific Assemblage Types.

Assemblage name	Assemblage code in ISIS	Number of species	Condition Assessment
Broad Assemblage Type			
Wood decay	A2	39	**Favourable**
Grassland & scrub matrix	F2	13	
Arboreal canopy	A1	10	
Unshaded early successional mosaic	F1	9	
Mineral marsh & open water	W2	7	
Shaded field & ground layer	F3	1	
Permanent wet mire	W3	1	
Specific Assemblage Type			
Heartwood decay	A 211	15	**Favourable**
Open water on disturbed mineral sediments	W 211	2	
Bark & sapwood decay	A 212	21	**Favourable**
Fungal fruiting bodies	A 213	2	
Bare sand & chalk	F111	3	
Scrub edge	F001	1	
Open short sward	F112	1	

FIELD SURVEY

Overview

3.4. An invertebrate walkover appraisal of Hampstead Heath in relation to the wider programme of pond works considered the Catchpit area to have the following features of potential value: avenue of trees, bare ground (presumably shaded), a specimen veteran tree (probably a large partially moribund willow) and patches of flowering shrubs (ECOSA,2 013).

Woodland Edge

3.5. The woodland edge habitat as considered here includes the south, east and west perimeters of the woodland and also the areas of more open and tall herb vegetation in the north adjacent to the lime avenue. In general the transition between the woodland and open conditions of amenity grassland or tracks was sharp with only a very narrow strip of scrub vegetation in sunlight, with only a few nectar plants including elder *Sambucus nigra* and bramble *Rubus fruticosus,* and along the north edge there were some tall flowering herbs such as hogweed *Heracleum sphondylium* and lower growing herbs such as enchanter's nightshade *Circaea lutetiana.* The woodland edge was considered to be of low potential value due to the lack of a gradual transition and its limited area in total.

3.6. Many of the species recorded were widespread and common species found ubiquitously on flower-rich vegetation, such as *Eristalis* hoverflies (Diptera: Syrphidae), but there were a number of taxa with Specific Assemblage Type Associations (Table 4). A small number of woodland edge specialists were recorded, namely the robberfly *Dioctria baumhaueri*, the gatekeeper *Pyronia tithonus* and speckled wood *Pararge aegeria.* The other suite of specialist species were those associated with 'bark and sapwood decay', mainly represented by bees and wasps which nest in the vacant burrows of beetles and other small cavities in dead wood, such as *Megachile centuncularis* (Hymenoptera: Megachilidae) and *Ectemnius continuus* (Hymenoptera: Crabronidae). A number of dead wood beetles utilising bark and sapwood decay were also recorded, including the longhorn beetle *Leiopus nebulosus* and *Grammoptera ruficornis* (Coleoptera: Cerambycidae) and the hoverfly *Xylota sylvarum* (Diptera: Syrphidae). The single heartwood decay specialist was the widespread hoverfly *Myathropa florea* (Diptera: Syrphidae). An inventory for the Catchpit is provided in Appendix 3.

Table 4. Broad and Specific Assemblage Types represented in the woodland edge areas.

Assemblage name	Assemblage code in ISIS	Number of species	Condition Assessment
Broad Assemblage Type			
Grassland & scrub matrix	F2	63	
Wood decay	A2	16	
Arboreal canopy	A1	12	
Unshaded early successional mosaic	F1	11	
Permanent wet mire	W3	9	
Shaded field & ground layer	F3	8	
Mineral marsh & open water	W2	6	
Flowing water	W1	2	
Specific Assemblage Type			
Bark & sapwood decay	A 212	8	
Heartwood decay	A 211	1	

3.7. Two species of conservation concern were recorded, although the hoverfly *Volucella zonaria* probably no longer justifies the status (see 'Species of Conservation Concern' below). The two species identified at this stage as being of conservation concern are:

- The rufous-shouldered longhorn beetle *Anaglyptus mysticus* (Coleoptera: Cerambycidae), which is a member of the bark and sapwood decay Specific Assemblage Type.

- The hornet hoverfly *Volucella zonaria* (Diptera: Syrphidae), which is found in scrub type habitats and is a cleptoparasite of social wasps.

Woodland Interior and Dead Wood

3.8. The main block of woodland was relatively young in age with a closed canopy for much of its extent. As noted above the location was much more open and of an apparent heathland character with only scattered trees in the 1940s. Narrow-leaved willows *Salix* spp are the most conspicuous species but the woodland is diverse with non-native trees including London plane *Platanus x acerifolia,* false acacia *Robinia* sp, and a number of natives including oak *Quercus robur,* lime *Tilia* sp, ash *Fraxinus excelsior* and silver birch *Betula pendula*, and some patches of scrub including hawthorn *Crataegus monogyna* and elder. The ground and herb flora is sparse, with sparse bramble, nettle *Urtica dioica* and snowberry *Symphoricarpos albus.* To the south-west is a large poplar, probably a hybrid *Populus* sp.

3.9. The extent of dead wood was limited, and assessed using the Hubble and Hurst (2007) scheme was rated as 'poor' for volume, diversity and continuity. The most conspicuous dead wood was associated with a small number of large willows where limbs or trunks had broken off, exposing the interior. There were few large timbers overall on the ground or subterranean dead wood, which would be of importance for stag beetles. A list of dead wood types noted is given in Table 5. The woodland interior was appraised to be of low potential value.

Table 5. Qualitative description of the different dead wood types (following the classification of Hubble and Hurst, 2007).

Type of dead wood	Comment
Present	
Fine branches and twigs (on the ground, below 5 cm diameter)	Occasional branches on the floor but surprisingly scarce and infrequent
Large fallen timber (above 5 cm diameter)	A few large stems of willow, lying adjacent or still attached to living trees
Dead outer branches (still attached to the tree)	A small number of mainly small <10cm diameter branches attached to trees, but such large branches were absent
Sun-baked wood	
Rotten heartwood	Some limited amount of rotten heartwood in either moderately shaded or open locations, mainly associated with the sheared limbs of large willow trees
Absent / not apparent	
Rot-holes	
Fungus-infected bark	
Birds' nest holes.	
Bracket fungi	
Hollow trees (can be whole trunks or single branches)	
Burnt wood	
Standing dead trunks	
Roots showing signs of decay	
Standing dead trunks	
Wet fallen wood (if in long-term water features, not temporary puddles)	

3.10. The majority of species recorded were relative generalists of shaded and woodland habitats, including generalist dead wood feeders, and also some true wetland species as vagrants (Table 6). Two specialists were recorded, both dead wood species: the hoverfly *Myathropa florea* (Diptera: Syrphidae) associated with heartwood decay and the beetle *Pyrochroa serraticornis* (Coleoptera: Pyrochroidae) associated with bark and sapwood decay.

Table 6. Broad and Specific Assemblage Types represented in the woodland edge areas.

Assemblage name	Assemblage code in ISIS	Number of species	Condition Assessment
Broad Assemblage Type			
grassland & scrub matrix	F2	8	
shaded field & ground layer	F3	3	
wood decay	A2	2	
permanent wet mire	W3	2	
unshaded early successional mosaic	F1	1	
arboreal canopy	A1	1	
flowing water	W1	1	
Specific Assemblage Type			
heartwood decay	A 211	1	
bark & sapwood decay	A 212	1	

Aquatic and Wetland

3.11. The Catchpit itself is a concrete lined channel, with vertical sides. Over the summer it developed a cover of duckweed *Lemna minor,* with vegetation on the banks above the concrete sides including yellow flag *Iris pseudacorus* and large tussock-forming sedges *Carex* sp. On moving upstream the channel has a more natural character with a soft, silty substrate and gentle water flow, overtopped for much of its length by sedges and yellow flag. It is heavily shaded and only the northern end receives full sunlight for extended periods.

3.12. This survey area was appraised to be of low potential value for invertebrates, due to its limited structural variation and the absence of some important microhabitats such as submerged or saturated dead wood and extensive areas of wet marginal vegetation.

3.13. The species recorded are generalists of a wide range of aquatic and wetland habitats (Table 7), with very few specialists and the only species associated with a Specific Assemblage Type being the water beetle *Hydroglyphus geminus* (Coleoptera: Dytiscidae), which is typically found in sparsely vegetated, silty water bodies.

Table 7. Broad and Specific Assemblage Types represented in the woodland edge areas.

Assemblage name	Assemblage code in ISIS	Number of species	Condition Assessment
Broad Assemblage Type			
Mineral marsh & open water	W2	12	
Flowing water	W1	1	
Specific Assemblage Type			
Open water on disturbed mineral sediments	W 211	1	

SPECIES OF CONSERVATION CONCERN

3.14. Two species of conservation concern were recorded, of which one probably no longer justify the status afforded. The species which is considered to now be common is:

- The hoverfly *Volucella zonaria* (Diptera: Syrphidae), formerly considered Notable (Falk, 1991) but which has undergone a range expansion in recent decades (Morris and Ball, 2003) such that its distribution (Buglife, 2014; Nature Spot, 2014b) probably exceeds the threshold to be considered Nationally Scarce.

3.15. The single species of conservation concern was:

- Rufous-shouldered longhorn beetle *Anaglyptus mysticus* longhorn beetle (Coleoptera: Cerambycidae), afforded the status of Nationally Notable B (Hyman, 1992). Although recent distribution maps suggest it is more widespread than considered by Hyman (loc cit) this status is retained here. This species is a member of the bark and sapwood decay Specific Assemblage Type, feeding as a larva on the dead and dying limbs of hawthorn, both on the tree and on the ground. As adults it feeds on pollen. It was recorded from blossom on the south edge of the main Catchpit woodland (Appendix 1: Figure 1) on the 26 June 2014. Although there was no hawthorn apparent in the location where it was recorded, hawthorn is present on the north edge of the Catchpit.

3.16. The review of rare and scarce invertebrates (ECOSA, 2014) did not include many of the widespread moths which are afforded the status of 'specifies of principal importance due to recent population declines rather than actual rarity (Butterfly Conservation, 2007). Many of these species are likely to be present locally, following Plant (1993), including within the Catchpit, as this suite of species includes some with very broad habitat and food plant requirements.

4 Evaluation

LEGAL ASSESSMENT OF VALUE

4.1. Only a few invertebrates receive legal protection and none were recorded during the surveys. It is very unlikely that any such species will be present.

BIODIVERSITY ASSESSMENT OF VALUE

4.2. Hampstead Heath as a whole is clearly of national importance for invertebrates, with its long inventory of rare and scarce species being considered 'favourable' using the ISIS analysis for dead wood species and also against the Colin Plant (2006) scheme. This interest is presumably centred on the Hampstead Heath Wood SSSI, with its high forest and veteran trees.

4.3. In visual terms the Catchpit however has few of the features associated with such dead wood invertebrates, lacking veteran trees and scoring poorly for dead wood volume diversity and continuity. As far as can be determined from aerial photographs the woodland has largely developed from heathland with scattered trees since the 1940s. The wetland areas are likewise visually appraised to be of low quality, with few of the microhabitats associated with rich wetland faunas (such as marginal vegetation in shallow water) or the rare species found in shaded situations (such as saturated dead wood).

4.4. The species recorded during these surveys reflect the poor quality of the microhabitats, with relatively few species associated with Specific Assemblage Types. Where species do have Specific Assemblage Type Associations they tend to be widespread where the microhabitat occurs, such as many of the bees and wasps which nest in deadwood but forage widely. The only species of conservation concern found was the rufous-shouldered longhorn *Anaglyptus mysticus* which is relatively widespread and in the lowest category of concern, namely Nationally Notable B. Although it was not found elsewhere on the Heath during the current survey work, it is likely to be widespread.

4.5. As such it is considered that in isolation against Colin Plant Associates (2006) the Catchpit would be of District importance for invertebrates based on the presence of a single scarce species. It is considered unlikely that additional recording or survey methods such as moth trapping would revise this assessment. Within the broader context of Hampstead Heath it is considered that the Catchpit is of limited value as supporting habitat for the invertebrates otherwise found on the Hampstead Heath Woods SSSI, lacking the microhabitats or conditions required by those species.

5 Discussion

IMPACTS

5.1. The proposals are for the creation of a soil embankment dam at the southern edge of the survey area, with the loss of trees, associated woodland and wetland within the footprint. It is considered unlikely that any species recorded during this survey work or otherwise present within the Catchpit are restricted to the area of works. As such the impacts will be minor and population level impacts will be minor or negligible.

MITIGATION AND ENHANCEMENTS

5.2. The general ecological mitigation identified within the available engineering proposals are the creation of wetland scrapes within the channel south of the Catchpit and the sowing of the completed embankment with native seed mix.

5.3. As specific points relevant to invertebrates the following are recommended:

- Wetland scrapes. These should be as large as possible within design constraints and ideally include areas of permanent shallow water and also some areas liable to experience 'draw down', to create seasonally inundated areas. Such habitat is particularly important for some flies.

- Embankment vegetation. Although it is appreciated there may be engineering constraints to the vegetation to be supported on the embankment, in ecological terms there would be particular value for creating short sward grassland with, if possible, areas of bare and disturbed substrates using a free-draining acidic soil as found naturally in the area. Such conditions generate hot microclimates appropriate for the species requiring the Specific Assemblage Type of open short sward grassland and bare sand and chalk.

5.4. Where any additional tree planting to be undertaken then it should aim to allow trees to develop open growth forms typical of traditional parkland, with such trees able to provide a long-term continuity of dead wood as they develop into veteran specimens in the long term.

CONCLUSIONS

5.5. The proposed embankment is to be built on an area of woodland and wetland considered to be of low ecological value, the Catchpit is considered to be of District significance as a

whole. Within the wider context of Hampstead Heath, the Catchpit is considered to be of limited value as supporting habitat for the nationally important fauna of the Hampstead Heath Woods SSSI. It is considered unlikely that any species are restricted to the Catchpit, and therefore the population-level imapct on invertebrates will be minor.

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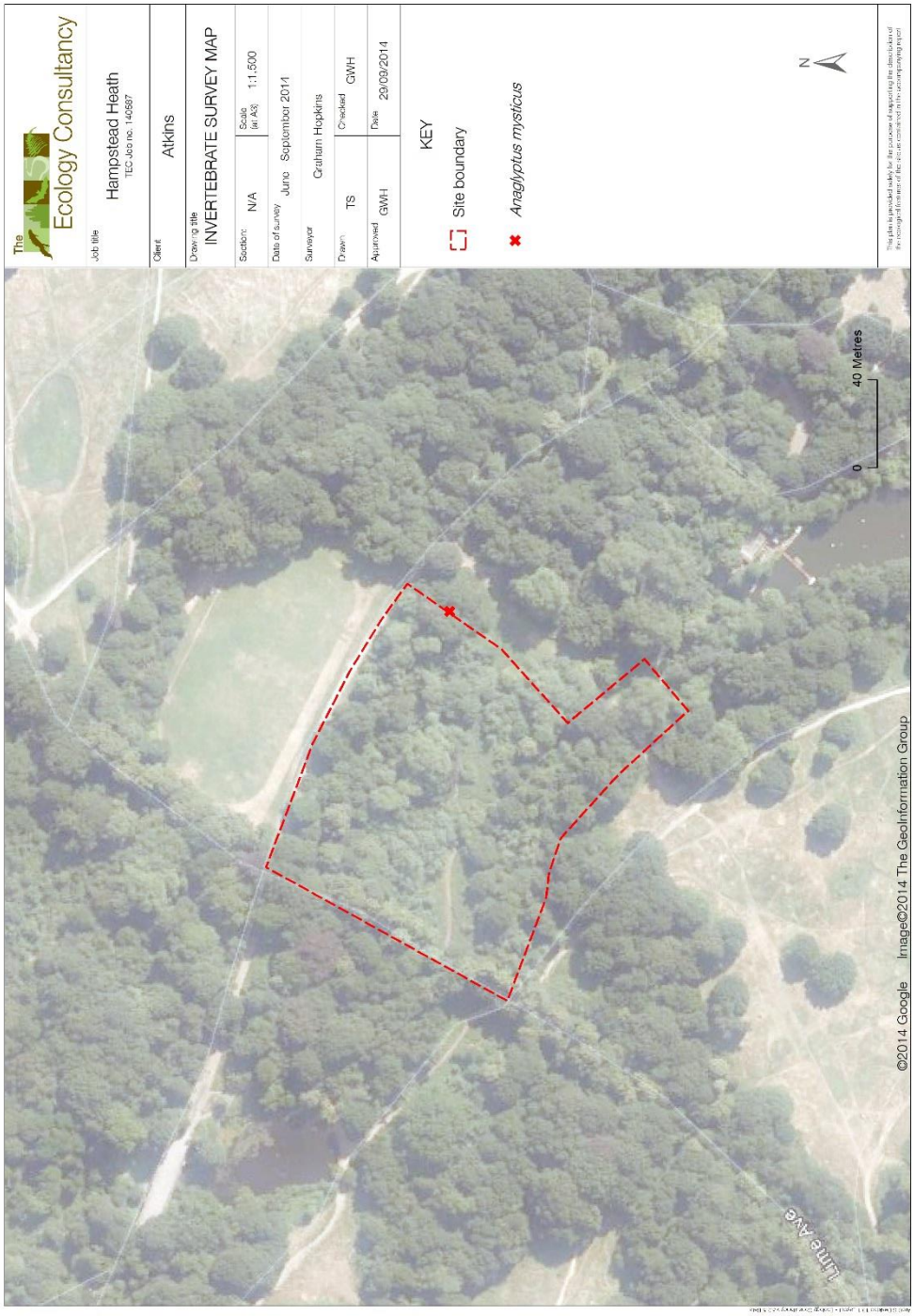
Appendix 1: Site Plan

Figure 1. Site layout.



Appendix 2: Photographs

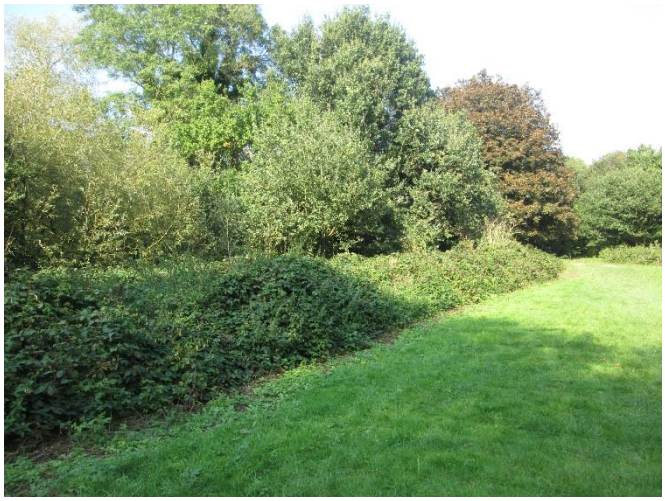


Figure 2.
Woodland edge area on the south side.

Figure 3.

Moribund willow with fallen limbs showing rotten heartwood.

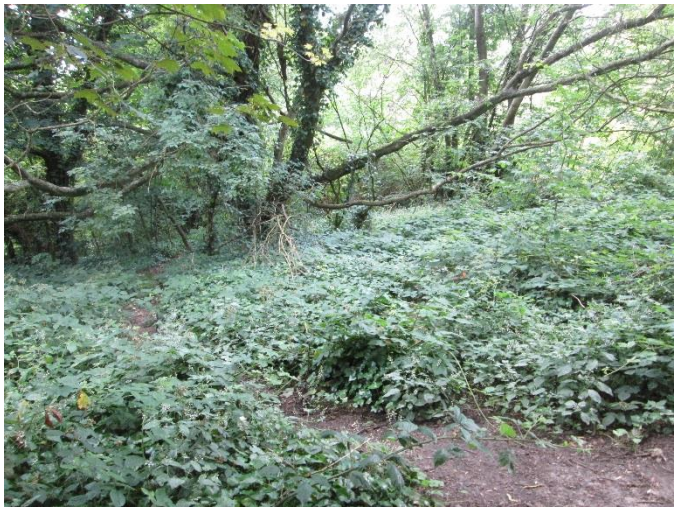


Figure 4.

Woodland interior understorey.

Figure 5.

Woodland interior understorey.

Figure 6.

The concrete channel of the Catchpit.

Figure 7.

Unshaded channel at the north end of the Catchpit.

Appendix 3: Species Inventory

Table 8. Site inventory. See text for definition of Broad and Specific Assemblage Type codings.

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Araneae	Amaurobiidae	*Coelotes terrestris*	NB	F3		X			
Araneae	Anyphaenidae	*Anyphaena accentuata*		A1			X		
Araneae	Araneidae	*Araneus diadematus*		0			X		
Araneae	Araneidae	*Araneus diadematus*		0			X		
Araneae	Araneidae	*Argiope bruennichi*	NA	F2		X			
Araneae	Araneidae	*Zilla diodia*	NB	A1		X			
Araneae	Clubionidae	*Clubiona lutescens*		0			X		
Araneae	Dictynidae	*Lathys humilis*		A1			X		
Araneae	Dictynidae	*Nigma walckenaeri*	NA	A1		X			
Araneae	Gnaphosidae	*Haplodrassus silvestris*	NB	F2		X			
Araneae	Linyphiidae	*Entelecara congenera*	NB	A1		X			
Araneae	Linyphiidae	*Lepthyphantes flavipes*		F3			X		
Araneae	Linyphiidae	*Lepthyphantes insignis*	NB	F2		X			
Araneae	Linyphiidae	*Lepthyphantes tenuis*		0			X		
Araneae	Linyphiidae	*Lepthyphantes zimmermanni*		0			X		
Araneae	Linyphiidae	*Linyphia hortensis*		F3			X		
Araneae	Linyphiidae	*Linyphia triangularis*		0			X		
Araneae	Linyphiidae	*Neriene peltata*		A1			X		
Araneae	Linyphiidae	*Tapinocyboides pygmaeus*	RDB3	F2		X			
Araneae	Lycosidae	*Pardosa amentata*		W3			X		
Araneae	Lycosidae	*Trochosa ruricola*		0			X		
Araneae	Philodromidae	*Philodromus cespitum*		A1			X		
Araneae	Philodromidae	*Philodromus collinus*	NB	A1		X			
Araneae	Philodromidae	*Philodromus praedatus*	NB	A1		X			
Araneae	Tetragnathidae	*Metellina mengei*		0			X		
Araneae	Tetragnathidae	*Tetragnatha montana*		W3			X		
Araneae	Tetragnathidae	*Tetragnatha pinicola*	NB	F2		X			
Araneae	Theridiidae	*Anelosimus vittatus*		A1			X		
Araneae	Theridiidae	*Enoplognatha ovata*		F2			X		

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Araneae	Theridiidae	*Theridion familiare*	NB	0		X			
Araneae	Theridiidae	*Theridion sisyphium*		F2			X		
Coleoptera	Aderidae	*Aderus oculatus*	NB	A2	A 21 1				
Coleoptera	Anobiidae	*Dorcatoma flavicornis*	NB	A2	A 21 1	X			
Coleoptera	Attelabidae	*Rhynchites cavifrons*	NB	A1		X			
Coleoptera	Buprestidae	*Agrilus angustulus*	NB	A2	A 21 2				
Coleoptera	Buprestidae	*Agrilus pannonicus*	NA	A2	A 21 2	X			
Coleoptera	Buprestidae	*Agrilus sinuatus*	NA	A2	A 21 2	X			
Coleoptera	Byrrhidae	*Byrrhus pilula*		F1				X	
Coleoptera	Calliphoridae	*Lucilia caesar*		0			X		
Coleoptera	Cantharidae	*Cantharis nigra*		F2			X		
Coleoptera	Cantharidae	*Cantharis nigricans*		F2			X		
Coleoptera	Cantharidae	*Cantharis pellucida*		F2			X		
Coleoptera	Cantharidae	*Cantharis rustica*		F2			X		
Coleoptera	Cantharidae	*Rhagonycha lignosa*		A1			X		
Coleoptera	Cantharidae	*Rhagonycha limbata*		F2			X		
Coleoptera	Carabidae	*Notiophilus biguttatus*		0			X		
Coleoptera	Carabidae	*Platyderus ruficollis*	NB	F1		X	X		
Coleoptera	Carabidae	*Poecilus versicolor*		F2			X		
Coleoptera	Carabidae	*Pterostichus longicollis*	NB	W2		X			
Coleoptera	Carabidae	*Pterostichus madidus*		F2			X	X	
Coleoptera	Carabidae	*Pterostichus melanarius*		F2				X	
Coleoptera	Cerambycidae	*Anaglyptus mysticus*	NB	A2	A 21 2	X	X		
Coleoptera	Cerambycidae	*Grammoptera ruficornis*		A2	A 21 2		X		

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Coleoptera	Cerambycidae	*Grammoptera ustulata*	RDB3	A2	A 21 2	X			
Coleoptera	Cerambycidae	*Leiopus nebulosus*		A2	A 21 2		X		
Coleoptera	Cerambycidae	*Leptura scutellata*	NA	A2	A 21 1	X			
Coleoptera	Cerambycidae	*Phytoecia cylindrica*	NB	F2		X			
Coleoptera	Chrysomelidae	*Altica lythri*		F2			X		
Coleoptera	Chrysomelidae	*Chrysolina oricalcia*	NB	F2		X			
Coleoptera	Chrysomelidae	*Chrysolina polita*		F2			X		
Coleoptera	Chrysomelidae	*Donacia crassipes*	NB	W2	W 21 2	X			
Coleoptera	Chrysomelidae	*Longitarsus anchusae*	NB	F1	F 11 2	X			
Coleoptera	Chrysomelidae	*Longitarsus dorsalis*	NB	F1	F 11 1	X			
Coleoptera	Chrysomelidae	*Longitarsus luridus*	NB	F2		X			
Coleoptera	Chrysomelidae	*Longitarsus parvulus*	NB	0		X			
Coleoptera	Chrysomelidae	*Longitarsus suturellus*		F2			X		
Coleoptera	Coccinelidae	*Coccinella septempunctata*		0			X		
Coleoptera	Coccinelidae	*Propylea quattuordecimpunctata*		0			X		
Coleoptera	Coccinellidae	*Adalia bipunctata*		U			X		
Coleoptera	Coccinellidae	*Adalia decempunctata*		A1			X		
Coleoptera	Coccinellidae	*Coccidula rufa*		W3			X		
Coleoptera	Coccinellidae	*Harmonia quadripunctata*		A1			X		
Coleoptera	Coccinellidae	*Rhyzobius litura*		F2			X		
Coleoptera	Colydiidae	*Cicones undatus*	pRDB 1	A2	A 21 2	X			
Coleoptera	Cryptophagidae	*Cryptophagus micaceus*	RDBK	A2	A 21 1	X			
Coleoptera	Curculionidae	*Barypeithes pellucidus*		F2	0		X		

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Coleoptera	Curculionidae	*Ceutorhynchus obstrictus*		F2	0		X		
Coleoptera	Curculionidae	*Ceutorhynchus pallidactylus*		F1			X		
Coleoptera	Curculionidae	*Cionus scrophulariae*		F2			X		
Coleoptera	Curculionidae	*Cneorhinus plumbeus*	NB	F2		X			
Coleoptera	Curculionidae	*Cossonus linearis*	NA	A2	A 21 1	X			
Coleoptera	Curculionidae	*Cossonus parallelepipedus*	NB	A2	A 21 1	X			
Coleoptera	Curculionidae	*Dorytomus ictor*	NB	A1		X			
Coleoptera	Curculionidae	*Isochnus populicola*	pRDB K	A1		X			
Coleoptera	Curculionidae	*Notaris bimaculatus*	NB	W2		X			
Coleoptera	Curculionidae	*Polydrusus sericeus*	NA	A1		X			
Coleoptera	Curculionidae	*Rhinocyllus conicus*	NB	F1	F 111	X			
Coleoptera	Curculionidae	*Sciaphilus asperatus*		F2			X		
Coleoptera	Curculionidae	*Sitona lineatus*		F2			X		
Coleoptera	Curculionidae	*Sitona suturalis*		F2					
Coleoptera	Curculionidae	*Trichosirocalus horridus*	NA	F1		X			
Coleoptera	Dermestidae	*Ctesias serra*	NB	A2	A 21 1	X			
Coleoptera	Dytiscidae	*Agabus bipustulatus*		W2					X
Coleoptera	Dytiscidae	*Hydroglyphus geminus*		W2	W 21 1				X
Coleoptera	Dytiscidae	*Hydroglyphus pusillus*	NB	W2	W 21 1	X			
Coleoptera	Dytiscidae	*Hydroporus angustatus*		W2			X		
Coleoptera	Dytiscidae	*Hydroporus planus*		W2			X		
Coleoptera	Elateridae	*Agriotes acuminatus*		F2			X		
Coleoptera	Elateridae	*Athous haemorrhoidalis*		F2			X		

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Coleoptera	Elateridae	*Athous haemorrhoidalis*		F2			X		
Coleoptera	Elateridae	*Denticollis linearis*		A2			X		
Coleoptera	Eucnemidae	*Melasis buprestoides*	NB	A2	A 21 2	X			
Coleoptera	Geotrupidae	*Geotrupes pyrenaeus*	NA	F1		X			
Coleoptera	Heteroceridae	*Heterocerus fenestratus*		W2			X		
Coleoptera	Hydraenidae	*Ochthebius minimus*		W2					
Coleoptera	Hydrophilidae	*Anacaena bipustulata*	NB	W2	W 21 1	X			
Coleoptera	Hydrophilidae	*Cercyon convexiusculus*		W2					X
Coleoptera	Hydrophilidae	*Cercyon ustulatus*	NB	W2		X			
Coleoptera	Hydrophilidae	*Cryptopleurum crenatum*	NB	F2	F 21 1	X			
Coleoptera	Hydrophilidae	*Enochrus testaceus*		W2					X
Coleoptera	Lathridiidae	*Enicmus brevicornis*	NB	A2	A 21 2	X			
Coleoptera	Leiodidae	*Choleva cisteloides*	RDBK	0		X			
Coleoptera	Leiodidae	*Choleva jeanneli*		0			X		
Coleoptera	Lucanidae	*Lucanus cervus*	NB	A2	A 21 1	X			
Coleoptera	Melandryidae	*Melandrya caraboides*	NB	A2	A 21 1	X			
Coleoptera	Melandryidae	*Orchesia micans*	NB	A2	A 21 3	X			
Coleoptera	Melandryidae	*Phloiotrya vaudoueri*	NB	A2	A 21 2	X			
Coleoptera	Mordellidae	*Tomoxia bucephala*	NA	A2	A 21 1	X			
Coleoptera	Mycetophagidae	*Mycetophagus piceus*	NB	A2	A 21 1	X			
Coleoptera	Nitidulidae	*Cryptarcha strigata*	NB	A2	A 21 2	X			

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Coleoptera	Nitidulidae	*Meligethes incanus*	NB	A1			X		
Coleoptera	Oedemeridae	*Ischnomera cyanea*	NB	A2	A 21 1	X			
Coleoptera	Oedemeridae	*Oedemera nobilis*		F2			X		
Coleoptera	Platypodidae	*Platypus cylindrus*	NB	A2	A 21 2	X			
Coleoptera	Pyrochroidae	*Pyrochroa coccinea*	NB	A2	A 21 2	X			
Coleoptera	Pyrochroidae	*Pyrochroa serraticornis*		A2	A 21 2			X	
Coleoptera	Scolytidae	*Taphrorychus bicolor*	NA	A2	A 21 2	X			
Coleoptera	Scolytidae	*Xyleborus dryographus*	NB	A2	A 21 2	X			
Coleoptera	Silvanidae	*Uleiota planata*	NB	A2	A 21 2	X			
Coleoptera	Staphylinidae	*Aleochara brevipennis*	NB	W2		X			
Coleoptera	Staphylinidae	*Aleochara ruficornis*	NB	0		X			
Coleoptera	Staphylinidae	*Aleochara stichai*	NB	0		X			
Coleoptera	Staphylinidae	*Dexiogyia corticina*	NB	A2		X			
Coleoptera	Staphylinidae	*Quedius longicornis*	NB	F2		X			
Coleoptera	Staphylinidae	*Stenus fulvicornis*		F2			X		
Coleoptera	Staphylinidae	*Stenus nigritulus*	NB	0		X			
Coleoptera	Staphylinidae	*Tachinus rufipes*		F2				X	
Coleoptera	Tenebrionidae	*Eledona agricola*	NB	A2	A 21 3	X			
Crustacea	Asellidae	Asellus aquaticus		W2			X		
Diptera	Asilidae	*Dioctria baumhaueri*		F2	F 21 2		X		
Diptera	Asilidae	*Dioctria rufipes*		F2			X		
Diptera	Baetidae	*Cloeon dipterum*		W2					X
Diptera	Bibionidae	*Bibio johannis*		F2			X		
Diptera	Bibionidae	*Bibio marci*		F2			X		
Diptera	Dolichopodidae	*Dolichopus trivialis*		0			X		
Diptera	Dolichopodidae	Dolichopus ungulatus		W2					X

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Diptera	Empididae	*Empis livida*		0			X		
Diptera	Empididae	Rhamphomyia flava		F2			X		
Diptera	Hybotidae	Hybos femoratus		F2			X		
Diptera	Hybotidae	Platypalpus candicans		F3			X		
Diptera	Limoniidae	Austrolimnophila ochracea		A2			X		
Diptera	Limoniidae	Epiphragma ocellare		A2			X		
Diptera	Limoniidae	*Gnophomyia viridipennis*	NB	A2	A 21 2	X			
Diptera	Limoniidae	Ilisia occoecata		W1			X		
Diptera	Limoniidae	Limonia nubeculosa		F3			X		
Diptera	Limoniidae	Limonia phragmitidis		F3					
Diptera	Limoniidae	Molophilus appendiculatus		W1			X		
Diptera	Pallopteridae	Palloptera saltuum		F2			X		
Diptera	Ptychopteridae	*Ptychoptera albimana*		W1					X
Diptera	Rhagionidae	Chrysopilus cristatus		W3				X	
Diptera	Rhagionidae	*Rhagio scolopaceus*		F2				X	
Diptera	Rhagionidae	Rhagio scolopaceus		F2				X	
Diptera	Stratiomyidae	*Beris chalybata*		W2			X		
Diptera	Stratiomyidae	*Beris vallata*		F2			X		
Diptera	Stratiomyidae	*Microchrysa polita*		F2			X		
Diptera	Syrphidae	*Baccha elongata*		F3			X		
Diptera	Syrphidae	*Brachyopa bicolor*	RDB3	A2	A 21 2	X			
Diptera	Syrphidae	*Cheilosia albitarsis*		F2			X		
Diptera	Syrphidae	*Cheilosia bergenstammi*		F2			X		
Diptera	Syrphidae	*Cheilosia illustrata*		F2			X		
Diptera	Syrphidae	*Cheilosia pagana*		F2			X		
Diptera	Syrphidae	Cheilosia variabilis		F3			X		
Diptera	Syrphidae	*Chrysotoxum bicinctum*		F2			X		
Diptera	Syrphidae	*Episyrphus balteatus*		0			X		
Diptera	Syrphidae	*Eristalis pertinax*		W3			X		

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Diptera	Syrphidae	*Eristalis tenax*		W3			X		
Diptera	Syrphidae	*Helophilus parallelus*		0			X		
Diptera	Syrphidae	*Helophilus pendulus*		W3			X	X	
Diptera	Syrphidae	*Leucozona lucorum*		F3			X		
Diptera	Syrphidae	*Mallota cimbiciformis*	N	A2	A 21 1	X			
Diptera	Syrphidae	*Melanostoma mellinum*		0			X		
Diptera	Syrphidae	*Melanostoma scalare*		0		X	X		
Diptera	Syrphidae	*Metasyrphus luniger*		F1			X		
Diptera	Syrphidae	*Myathropa florea*		A2	A 21 1		X	X	
Diptera	Syrphidae	*Neoascia podagrica*							X
Diptera	Syrphidae	*Neoascia tenur*		W3			X		
Diptera	Syrphidae	*Orthonevra brevicornis*	N	W3		X			
Diptera	Syrphidae	*Pipizella varipes*		F2			X		
Diptera	Syrphidae	*Platycheirus albimanus*		0			X		
Diptera	Syrphidae	*Platycheirus angustatus*		F2			X		
Diptera	Syrphidae	*Platycheirus clypeatus*		F2			X		
Diptera	Syrphidae	*Scaeva pyrastri*		F1			X		
Diptera	Syrphidae	*Sphegina clunipes*		A2			X		
Diptera	Syrphidae	*Syritta pipiens*		F2			X		
Diptera	Syrphidae	*Volucella pellucens*		F2			X		
Diptera	Syrphidae	*Volucella zonaria*	N	F2		X			
Diptera	Syrphidae	*Xylota segnis*		A2			X		
Diptera	Syrphidae	*Xylota sylvarum*		A2	A 21 2		X		
Diptera	Tipulidae	*Nephrotoma appendiculata*		F2			X		
Diptera	Tipulidae	Nephrotoma quadrifaria		F3				X	
Diptera	Tipulidae	*Nephrotoma quadrifaria*		F3			X		
Diptera	Tipulidae	*Tipula confusa*		F2			X		
Diptera	Tipulidae	*Tipula lunata*		F3				X	

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Diptera	Tipulidae	*Tipula marmorata*		F2			X		
Diptera	Tipulidae	Tipula scripta		F3				X	
Diptera	Tipulidae	Tipula unca		W1				X	
Diptera	Xylomyiidae	*Solva marginata*	N	A2	A 21 2	X			
Eristalis intricarius	W3100	*Eristalis intricarius*		W3			X		
Eristalis nemorum	W3100	*Eristalis nemorum*		W3			X		
Hemiptera	Anthocoridae	*Anthocoris nemorum*					X		
Hemiptera	Cercopidae	*Cercopis vulnerata*		F2			X		
Hemiptera	Cicadellidae	*Idiocerus rutilans*		A1			X		
Hemiptera	Ciidae	*Cis boleti*		A2	A 21 3				
Hemiptera	Coreidae	*Colletes daviesanus*		F1			X		
Hemiptera	Corixidae	*Sigara distincta*		W2			X		
Hemiptera	Gerridae	*Gerris thoracicus*		W2					X
Hemiptera	Lygaeidae	*Scolopostethus thomsoni*		F2			X		
Hemiptera	Miridae	*Capsus ater*		F2			X		
Hemiptera	Miridae	*Harpocera thoracica*		A1			X		
Hemiptera	Miridae	*Liocoris tripustulatus*		F2			X		
Hemiptera	Miridae	*Notostira elongata*		F2			X		
Hemiptera	Miridae	*Stenodema calcaratum*		F2			X		
Hemiptera	Miridae	*Stenodema laevigata*		F2			X		
Hemiptera	Nabidae	*Nabis rugosus*		F2			X		
Hemiptera	Notonectidae	*Notonecta glauca*		W2					X
Hemiptera	Tingidae	*Tingis ampliata*		F2			X		
Heteroptera	Acanthosomatidae	*Acanthosoma haemorrhoidale*		A1			X		
Heteroptera	Pentatomidae	*Neottiglossa pusilla*		F2			X		
Heteroptera	Pentatomidae	*Palomena prasina*		F2			X	X	
Hymenoptera	Apidae	*Bombus lapidarius*		F1			X		
Hymenoptera	Apidae	*Bombus pascuorum*		F2			X		

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Hymenoptera	Apidae	*Bombus terrestris*		F1			X		
Hymenoptera	Chrysididae	*Hedychridium coriaceum*	RDB3	F1	F111	X			
Hymenoptera	Colletidae	*Colletes daviesanus*		F1			X		
Hymenoptera	Colletidae	*Hylaeus hyalinatus*		A2	A212		X		
Hymenoptera	Crabronidae	*Passaloecus gracilis*		A2	A212		X		
Hymenoptera	Formicidae	*Formica fusca*		F1			X		
Hymenoptera	Formicidae	*Lasius brunneus*	NA	A2	A211	X			
Hymenoptera	Formicidae	*Lasius niger*		F1			X		
Hymenoptera	Megachilidae	*Anthidium manicatum*		0			X		
Hymenoptera	Megachilidae	*Heriades truncorum*	RDB3	A2	A212	X			
Hymenoptera	Megachilidae	*Megachile centuncularis*		A2	A212		X		
Hymenoptera	Sphecidae	*Crossocerus congener*	RDBK	A2	A212	X			
Hymenoptera	Sphecidae	*Crossocerus distinguendus*	NB	F1		X			
Hymenoptera	Sphecidae	*Ectemnius continuus*		A2	A212		X		
Hymenoptera	Sphecidae	*Lestiphorus bicinctus*	NB	F1		X			
Hymenoptera	Sphecidae	*Stigmus pendulus*	RDBK	A2	A212	X			
Hymenoptera	Vespidae	*Dolichovespula media*	NA	A1		X			
Isopoda	Armadillidiidae	*Armadillidium vulgare*		U				X	
Isopoda	Oniscidae	*Oniscus asellus*		U				X	
Isopoda	Philosciidae	*Philoscia muscorum*		U				X	
Isopoda	Porcellionidae	*Porcellio scaber*						X	

Higher taxon	Family	Species	Conservation status	BAT	SAT	ECOSA (2014)	Wood. edge	Woodl. interior	Aquatic and
Lepidoptera	Arctiidae	*Spilosoma luteum*		0			X		
Lepidoptera	Nymphalidae	*Polygonia c-album*		F2			X		
Lepidoptera	Nymphalidae	*Vanessa atalanta*		0			X		
Lepidoptera	Pieridae	*Melanargia galathea*		F2			X		
Lepidoptera	Pieridae	*Pieris napi*		0			X		
Lepidoptera	Satyridae	*Maniola jurtina*		F2			X		
Lepidoptera	Satyridae	*Pararge aegeria*		F2	F212		X		
Lepidoptera	Satyridae	*Pyronia tithonus*		F2	F212		X		
Mecoptera	Panorpidae	*Panorpa germanica*		F2				X	
Mollusca	Clausiliidae	Clausilia bidentata		0				X	
Mollusca	Helicelidae	*Helix aspersa*		0			X	X	
Mollusca	Helicidae	*Trichia hispida*		F2				X	
Mollusca	Limnaeidae	*Lymnaea peregra*		W2					X
Mollusca	Limnaeidae	*Lymnaea stagnalis*		W2					X
Mollusca	Planorbidae	*Planorbarius corneus*		W2					X
Mollusca	Planorbidae	*Planorbis vortex*		W2					X
Mollusca	Succineidae	*Succinea putris*		W3					
Mollusca	Zonitidae	*Oxychilus alliarius*		F0000				X	
Neuroptera	Chrysopidae	*Chrysopa perla*		A1				X	
Oligochaeta	Erpobdellidae	Erpobdella octoculata		W2					X
Orthoptera	Tettigoniidae	*Metrioptera roeselii*	NB	F2					

The Ecology Consultancy

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