Pinkham Way Borough Grade 1 Site of Importance for Nature Conservation (SINC), (aka Former Friern Barnet Sewage Works SINC), London Borough of Haringey N11 3UT

Preliminary Ecological Appraisal

Report for: Pinkham Way Alliance

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Date: October 2013

Reference No: 2013_012

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Executive Summary

An ecological appraisal of the Pinkham Way Site of Importance for Nature Conservation (SINC) (aka Former Friern Barnet Sewage Works SINC), London N11 3UT was carried between 3rd June and 18th July 2013 to assess the ecological value of the site. Online data sources (Magic and NBN Gateway), the London Bat Group as well as publicly available reference sources (Haringey Council 2009, Jacobs 2009a-e, Arup 2011) were consulted to provide baseline information about protected sites and species that are known to occur in the locality of the site. An extended Phase 1 Habitat and Protected Species Assessment was completed at the site in addition to a preliminary bat assessment. The main findings of the surveys are as follows:

- The site is designated a Borough Grade I Site of Importance for Nature Conservation (SINC).
- One hundred and thirteen vascular plant species were recorded during the habitat survey.
- The principle habitats on site comprised secondary woodland and scrub, tall ruderal vegetation, rough grassland and areas of disturbed ground which are characteristics of open mosaic habitat.
- Features of ecological significance include: the mature Lombardy poplars *Populus nigra* and oaks *Quercus robur* at the boundary of the site (T6), many of which supported cavity features suitable for nesting birds and roosting bats; transitional habitats (P1, P4), wet depressions (T2 & P2) and areas of disturbed ground (P5) that offer shelter, foraging and basking sites for invertebrates and reptiles; and woodland, scrub, rough grassland (T1 & P4) and tall ruderal vegetation (P6) which provides nesting habitat for birds, foraging habitat for birds and bats and potential nesting sites for hedgehogs.
- Giant hogweed *Heracleum mantegazzianum* and Japanese knotweed *Fallopia japonica* (T5) were identified on site, but there was evidence of on-going control of these invasive species.
- The site is used as a breeding site by no less than six notable bird species (UK BAP Priority Species or RSPB Red or Amber Status)(current survey, Arup 2011). It also provides breeding and foraging habitat for a diversity of widespread and common bird species.
- Slow worm occur at the site (T7 & P7) and transitional vegetation, areas of disturbed ground and wet depressions offer potential habitat for other reptiles such as grass snake.
- Mature trees at the boundary of the site have the potential to support roosting bats (T6). An early record for common pipistrelle *Pipistrellus pipistrellus* before sunset suggests a roost may occur on site. The site also provides foraging and commuting habitat for common pipistrelle and noctule *Nyctalus noctula* bats (current survey, Arup 2011, Jacobs 2009b). Higher levels of bat activity at the southern and western boundaries of the site suggest that these habitats offer a flight line between the adjacent Muswell Hill Golf Course and Hollickwood Park.

- Transitional vegetation and areas of disturbed ground in the north-western part of the site provide suitable habitat for common invertebrates. Caterpillars of UK BAP Priority Species Cinnabar moth were also recorded. It is possible that other notable invertebrate species occur within these habitats and a comprehensive invertebrate survey is recommended.

Recent surveys confirm that the site continues to support habitats that are characteristic of London Priority Habitat 'Wasteland' (London BAP) and UK Priority Habitat Open Mosaic Habitat on Previously Developed Land (UK BAP). The site has high biodiversity value within the context of the local area and therefore continues to qualify as a Borough Grade I SINC. However, management in the form of rotational clearance of woodland and scrub, infrequent cutting of tall ruderal vegetation and rough grassland and the creation of scrapes to expose areas of bare ground and wet depressions is required to maintain and enhance the biodiversity interest of the site in the long-term.

In the event that development is permitted at the site, any development proposal would need to include an appropriate mitigation strategy.

Habitat mitigation measures should ideally include:

- The retention, protection and management of mature trees of ancient character;
- The designation and management of an appropriate area of the site as open mosaic habitat;
- The provision of adequate screening of areas of the site which are to be retained, enhanced and managed for conservation purposes;
- The creation of biodiverse green roofs; and
- Continued habitat connectivity with the adjacent greenspaces and the railway corridor.

Species mitigation measure should include:

- Further survey work prior to the clearance of vegetation;
- The appropriate timings of works to avoid adverse impacts to hibernating or breeding species;
- The translocation of species such as reptiles to appropriate receptor sites; and,
- The provision of bird and bat boxes as well as the creation of suitable refuges for other fauna notably; invertebrates, reptiles and hedgehogs.

1 Introduction

BACKGROUND

1.1 There has recently been a proposal to provide a waste plant and refuse vehicle depot at the Pinkham Way Site of Importance for Nature Conservation (SINC) (aka Former Friern Barnet Sewage Works SINC) in the London Borough of Haringey London N11 3UT. The local community are opposed to such development and in response they formed a campaign group - the Pinkham Way Alliance (PWA) - in 2011. An ecological assessment was commissioned by the PWA to determine the ecological value of the site and the potential impact of development on habitats and species which are legally protected or have conservation value.

SITE DESCRIPTION AND CONTEXT

1.2 The site is situated in the London Borough of Haringey. It is approximately 6.8 hectares (ha) in size and the National Grid Reference for the centre of the site is TQ288916. The site is bounded to the north by the North Circular Road (A406) and to the south is Muswell Hill Golf Course which is designated as a SINC and Metropolitan Open Land. Hollickwood Park, also a SINC, lies immediately west of the site. A railway line and cutting that demarcates the eastern boundary forms part of a designated ecological corridor (Haringey Council 2009). The surrounding area is urbanised, comprising residential properties and associated gardens to the west of the site, Bounds Green Industrial Estate on the eastern side of the railway line and the Friern Bridge Retail Park on the northern side of the North Circular Road.

1.3 Historically the site was a sewage treatment works that was operational until 1963. It was then used for landfill by the London Borough of Barnet (LBB) up until 1980. Since this time, the site has been left derelict and has become naturally colonised by secondary woodland, scrub, ruderal vegetation and rough grassland. Remnants of structures from its past use as a sewage works, as well as more recent disturbances associated with its use as a landfill site, the construction of the Pegasus Way Roundabout and illegal fly tipping (including abandoned and burnt out vehicles), are still evident at the site although mostly buried in vegetation.

1.4 The site was wholly owned by the London Borough of Barnet (LBB) up until 2009 when LBB sold part of the site to the North London Waste Authority (NLWA), whilst still retaining ownership of the other part. The site is not in active use and management is currently limited to the mandatory control of invasive species; giant hogweed and Japanese knotweed and tree management works. There is no public access to the site.

1.5 The biodiversity value of the 'Wasteland' habitat at the site is of nature conservation value and the site is designated a Borough Grade I SINC (Haringey Council, 2009).

1.6 Statutory and non statutory sites that occur within a 2 kilometre (km) search radius of the site include Local Nature Reserves: Coppetts Wood and Glebelands; and Sites of Importance for Nature Conservation: Parklands Walk, Bluebell Wood and Muswell Hill Golf Course, Alexandra

Park, Coldfall Woods and Hollickwood Park. (Alexandra Park, Coldfall Wood and Muswell Hill Golf Course are also designated MOL and Alexandra Park is listed on the National Register of Parks and Gardens of Special Historic interest). These sites, together with the Pinkham Way SINC form part of an ecological corridor that offers refuges for wildlife within an otherwise heavily urbanised area of north London.

DEVELOPMENT PROPOSALS

1.7 Developments recently proposed for the Pinkham Way site were a joint development by NLWA and LBB for a Mechanical Biological Treatment (MBT) waste plant handling 300,000 tonnes per annum together with the relocation of LBB's Refuse Transport Depot, including parking; maintenance; washing; and fuelling facility for LBB's refuse vehicles. This was later revised to: Delivery, sorting and transfer point for recyclable material and other waste that is collected from local households. These proposals were linked to a NLWA Procurement project which has recently been terminated. NLWA issued a statement in September 2013 to the effect that it has no immediate plans to develop the Pinkham Way site in Haringey for such use but confirmed that "Pinkham Way will remain an asset due to its strategic location and planning designation as a potential employment site" (NLWA 27 September 2013).

PREVIOUS ECOLOGICAL SURVEYS

1.8 The LBB commissioned Jacobs UK Ltd in 2009 to undertake extensive ecological assessments at the site which included botanical and protected species surveys (bats, badgers, great crested newts and reptiles). Further ecological surveys (completed by ARUP Ecology) were commissioned by NLWA in 2011. Notable records from these surveys are included in the Desktop Study.

SCOPE OF THE REPORT

1.9 This report is based on standard Extended Phase 1 Habitat and Protect Species Assessment methodology (JNCC, 2010) and comprised a desktop study, habitat survey and protected species assessment.

1.10 A desktop study was undertaken to provide baseline information about the ecological value of the site and surrounding areas. It comprised a review of on-line resources (Magic and NBN Gateway), a data search from the London Bat Group and publicly available reference sources (Jacobs 2009a-e, Arup 2011) of all known habitat and species records within the vicinity of the site.

1.11 A habitat assessment was completed on the 3rd June and 12th July 2013. The objectives of the survey were to:

- Identify dominant, characteristic and otherwise unusual vascular plant species and the principal habitats present;
- Identify and map the habitat communities present within the survey area;

- Evaluate the importance of these features at a local, regional (London) and national context;
- Assess whether or not the site supports notable, rare and/or protected species; and
- Compile a list of incidental recording of other fauna sightings.

1.12 The survey objectives did not include non-vascular plant species (e.g. mosses, algae).

1.13 The protected species assessment was based on the suitability of these habitats for protected species, evidence of protected species discovered during the survey (e.g. sightings, droppings, feeding remains, nests/burrows/diggings etc) and information revealed from the data search.

1.14 A separate bat survey was also completed. This comprised a data search from the London Bat Group, walkover survey of the site and the deployment of automated bat detectors at four locations.

EXPERIENCE OF ECOLOGICAL SURVEYORS

1.15 The habitat survey was completed by Denis Vickers CMIEEM. Denis has over 20 years of experience of working in the field of ecology and conservation. He worked as a Senior Ecologist for the multinational green design company EDAW plc between 2007 and 2009 and was the Habitat Survey Manager for London Wildlife Trust between 2001 and 2007 when he was responsible for supervising and carrying out habitat surveys for the Greater London Authority. Between 1994 and 2003 Denis managed the Ripple Nature Reserve and Dagenham Parish Churchyard in L B Barking and Dagenham for the Trust.

1.16 The bat assessment was carried out by Class 2 Bat Licensee Huma Pearce CMIEEM. Huma has 7 years experience of bat survey and mitigation work. She has worked as a consultant ecologist specialising in bats since April 2007 and prior to this as an Assistant Conservation Officer for Natural England where her principal role was to review protected species planning case-work and European Protected Species Mitigation (EPSM) licence applications.

2 Methodology

DESK STUDY

2.1 Online resources Magic and the NBN Gateway were consulted and publicly available reports (Jacobs 2009a-e, ARUP, 2011) on the site were reviewed to provide some baseline data on protected sites and species known to occur within the area. A data search of all known bat records (roost and field records) that occur within a 4 x 4 km square centred on the site was also requested from the London Bat Group. The Biodiversity Action Plan for Haringey (Haringey Council 2009) was consulted to obtain data regarding Sites of Importance for Nature Conservation (SINCs) that occur in the vicinity of the Pinkham Way SINC.

2.2 The search of the NBN Gateway returned a species list for the 10 kilometre grid square TQ29. A large variety of species records were returned by the data search, including species which are unlikely to occur on the Pinkham Way SINC given its context and the habitats present. Therefore only key protected species records that were considered potentially relevant to the site have been extracted and provided.

HABITAT ASSESSMENT

2.3 A habitat survey of the site was carried out on the 3rd June and 12th July 2013. Habitats were described and mapped following standard Phase 1 survey methodology (JNCC 2010) modified using London Ecology Unit methodology which was updated by the GLA (2002). A list of plant species found to occur within the survey area was compiled. Nomenclature followed Stace (2010) for vascular plant species. The site was also checked for the presence of invasive plant species as defined by Schedule 9 of the Wildlife and Countryside Act, 1981, as amended.

2.4 A habitat map of the survey area is provided in Appendix 1 and photographs to illustrate key habitat features within the site are presented in Appendix 2. The location of key habitat features (T1-T8) and photographs (P1-P8) is shown on the habitat map.

2.5 A full list of vascular plant species identifiable at the time of survey is provided in Appendix 3.

2.6 A list of incidental fauna sightings was also compiled and these are documented in the results section.

PROTECTED AND NOTABLE SPECIES ASSESSMENT

2.7 The protected species assessment was based on two sources of information:

1) The results of the desktop study which provided baseline information on the species known to occur at the site and/or within the immediate surrounding area;

2) The findings of the habitat survey, notably an assessment of the suitability of the habitats on site to provide shelter, food or breeding opportunities for protected species; and, any fauna or evidence observed during the course of the survey.

2.8 The site was inspected for indications of the presence of protected species as follows:

Birds

2.9 All bird species heard or seen, either perching or in flight across the site were recorded. In particular, breeding bird observations were recorded of male birds in song holding territories; active nest sites and juvenile birds, possibly indicating breeding at the site.

2.10 Subsequently information recorded for the site was assessed against the following data/references:

- Records gathered by Arup (2011).

- London Biodiversity Partnership (2007). London Biodiversity Action Plan – Species of Conservation Concern and Priority Species for Action.
- UK Biodiversity Partnership (2010). UK Biodiversity Action Plan.
- JNCC (2013). Population Status of Birds in the UK.

2.11 Species that pass the thresholds for at least one of the following criteria where highlighted as significant:

- Species where there is a decline in population and range
- Rare breeding species
- Localised breeding species
- International importance, and
- Global and European conservation status

Bats

2.12 A data search for all known bat records within a 4 x 4 km square centred on the site was requested from London Bat group. The purpose of the survey was to determine whether there was any historical evidence of a roost within or near to the site and to ascertain the species of bat known to be present within the immediate surrounding area.

2.13 A walkover survey was completed on the 12th July 2013. The purpose of this survey was to assess the potential value of the site for bats and identify suitable locations for surveying the site using remote bat detectors (SM2BAT bat detector, Wildlife Acoustics).

2.14 Four remote SM2 bat detectors were deployed at the site between the 12th and 18th July 2013 (6 nights). They were positioned along habitat features that offered potential bat flight-lines and foraging habitat notably along woodland edge habitat – along footpaths (T1) and at the edge of clearings (T2) - and near to or along mature tree lines at the site boundary (T3 and T4). The detectors were set to be active between sunset minus 30 minutes and sunrise plus 30 minutes. The gain was set at 48db to avoid the collection of overloaded calls (which are difficult to analyse accurately due to call distortion). All bats recorded would have been flying within close proximity to the microphone and therefore travelling along the habitat feature and inside the boundary of the site. Analysis was undertaken using 'Batsound' and 'AnalookW' software together with reference sources (personal bat call library and Russ 2012).

Other fauna

2.15 Potential reptile refugia (already occurring on site) e.g. logs pieces of plywood etc, and suitable amphibian sites were examined for the presence of the animals.

2.16 The presence of mammal scats, runs, diggings and/or nests was searched for and any evidence of mammals was reported.

2.17 Any incidental records of invertebrates were noted. The presence of habitats of suitability to invertebrates e.g. deadwood and habitats that provided suitable nectar sources was reported.

2.18 The likelihood of occurrence of any given protected species was based on the criteria outlined in Table 1 below.

Table 1: Criteria for assessing the likelihood of the occurrence of protected/notable species.

Potential	Criteria
Present	A given species/species group is confirmed to occur at the site either from: Direct observation during the habitat survey.
High	The site is located within the known geographical range of a given species/species group. The habitat on site is considered to be of high suitability (offers shelter, food and breeding opportunities) for a given species/species group. Aerial photographs confirm that suitable habitat also occurs within the surrounding area and that these habitats are well connected to the site.
Moderate	The site is located within the known geographical range of a given species/species group. The habitat on site is considered to be of moderate suitability (offers some shelter, food and/or breeding opportunities) for a given species/species group. Aerial photographs of the site identify suitable habitat within 2km of the site but connectivity is suboptimal due to habitat severance or disturbance. The site supports only a small habitat area.
Low	The site is located within the known geographical range of a given species/species group The habitat on site is considered to be of poor suitability (offers limited shelter, foraging and/or breeding opportunities) for a given species/species group. The site is small and/or isolated from similar habitats. Disturbances occur at the site and/or immediate surrounding area.
Negligible	The site is located within the known geographical range of a given species/species group but the habitat on site is considered to be of poor suitability (offers limited or no shelter, foraging and/or breeding opportunities) for a given species/species group. No suitable habitat is identified within the surrounding area from aerial photographs. The site is located outside or on the periphery of the known geographical range of a given species/species group

SITE EVALUATION

2.19 The site evaluation was based on guidance issued by the Chartered Institute of Ecology and Environmental Management (CIEEM 2006 and 2012). The generic criteria upon which this assessment was made are summarised in Table 2 below. These are based on the criteria for the selection of Sites of Importance for Nature Conservation (London Wildlife Sites Board 2013) as set out in Mayor of London's Biodiversity Strategy (2002) combined with professional experience to evaluate regional/district/local significance.

Table 2: Criteria used to assess the ecological value of the site

Criteria	Description
Representation	Sites which represent the best examples of habitat types. Where a habitat is not extensive in the search area it will be appropriate to conserve all or most of it, whereas where it is more extensive a smaller percentage will be conserved.
Habitat rarity	Presence of habitats that are rare or threatened or in decline in a national, regional or local context as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, UK BAP and Local BAP
Species rarity	Presence of animal or plant species that are rare or threatened or in decline in a national, regional or local context as defined in Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006, UK BAP and Local BAP
Habitat richness	Sites that support a rich diversity of habitats and/or support species rich plant or animal communities and/or have secondary or supporting value such as connectivity and therefore provide a wider landscape function. Protecting a site with a rich selection of habitat types not only conserves those habitats, but also the wide range of organisms that live within them and the species that require more than one habitat type for their survival. Rich sites also afford more opportunities for enjoyment and educational use.
Species richness	Sites that support a rich diversity of plants and animals or the composition of plant and animal communities present are representative of a habitat type .
Size	Large sites are usually more important than small sites since they are more likely to support a rich diversity of habitat types and are usually less vulnerable to small-scale disturbance.
Important populations of species	Sites which hold a large proportion of the population of a species for the search area (eg waterfowl populations or colonial birds such as herons or jackdaws).
Ancient character	Sites that have valuable ecological characteristics derived from long periods of traditional management, or even a continuity in time to the woodlands and wetlands which occupied the London area before agriculture. Ancient woodlands, old parkland trees and traditionally managed grasslands tend to have typical species that are rare elsewhere.
Recreatability	Habitats vary in the ease with which they can be recreated and the length of time required. The more difficult it is to recreate a site's habitats the more important it is to retain it.
Typical urban character	Features such as canals, abandoned wharves, walls, bridges, tombstones and railway sidings colonised by nature often have a juxtaposition of artificial and wild features. Some of these habitats are particularly rich in species and have rare species and communities of species. Their substrates may have a particular physical and chemical nature which allows species to thrive that are rare elsewhere. They may also have particular visual qualities. Such areas are often useful for the study of colonisation and ecological succession.
Cultural or historic character	Sites such as historic gardens with semi-wild areas, garden suburbs, churchyards and Victorian cemeteries which have reverted to the wild may have a unique blend of cultural and natural history.

Criteria	Description
Geographic position	Sites of importance to a particular defined geographic area. This use of search areas is an attempt, not only to protect the best sites in London, but also to provide each part of London with a nearby site, so that people are able to have access to enjoy nature.
Access	Access is an important consideration, especially in areas where there may be few places for large urban populations to experience the natural world. Some access is desirable to all but the most sensitive of sites, but direct physical access to all parts of a site may not be desirable.
Use	The importance of a site can include its established usage (eg for education, research, or quiet enjoyment of nature).
Potential	Where a site can be enhanced given modest changes in management practices for nature conservation, educational or amenity use. Where such potential could remedy a deficiency, or is readily capitalised, it is considered important.
Aesthetic appeal	Factors which contribute to the enjoyment of the experience of visiting a site, as seclusion, views, variety of landscape and habitat structure, colour, and natural sounds and scents.
Geodiversity interest	Where a site has a geological interest which has educational, scientific, historical or aesthetic interest.

LIMITATIONS

2.20 The ecological appraisal does not constitute a full botanical survey; however every effort has been made to provide a comprehensive description of the habitats on site.

2.21 A data search from a local Biological Records Centre was not conducted as part of the ecological appraisal. This data can reveal current and historical evidence of protected species occurring within or near to a site, and give an indication of the likelihood of a species occurring at a site. The appraisal of the likelihood of impacts on protected species and habitats is therefore based on the habitat survey, analysis of aerial photographs of habitats in the surrounding area and any data that could be obtained from the online resources Magic and NBN Gateway and publically available reports on the site. NBN Gateway provided records to 10km resolution only.

2.22 The protected species assessment provides a preliminary view of the likelihood of protected species occurring on the site. It is based on the suitability of the habitat on-site and in the surrounding area and any direct field evidence found during the habitat survey. It should not be taken as providing a full and definitive survey of any protected species group. At the time the survey was carried out the assessment was valid. Subsequent surveys may be needed to update the information.

2.23 Despite these limitations, it is considered that this report reflects accurately the habitats present, their biodiversity value, and the potential of the site to support protected and notable species.

3 Results

DESK STUDY

Nature conservation designations

3.1 The search of online resources revealed that:

- The site is designated a Borough Grade I SINC (Haringey Council 2009).
- Two statutory designated sites occur within a 2km search radius of the site. These include Coppetts Wood & Glebelands Local Nature Reserve (LNR), located approximately 1 kilometre (km) to the west and Parkland Walk LNR, located 2km south of the site. Both sites are also designated SINC's. Coppetts Wood & Glebelands Local Nature Reserve (LNR) is designated for its ancient woodland, ponds and grassland habitats which are a remnant of Finchley Common. Parkland Walk LNR forms part of an important green corridor which connects to ancient woodland sites and SINCs; Queen's Wood and Highgate Wood.
- In addition to the above named sites, other SINCs occuring within a 2km search radius include Hollickwood Park (immediately west of the site), Bluebell Wood and Muswell Hill Golf Course (immediately south of the site), Parkland Walk, Queens Wood and Highgate Woods (1.36km, south-east), and Coldfall Wood (1.7km south-west).

Protected species

3.2 The NBN Gateway returned a large volume of species records for the 10km grid square TQ29. Key species/species groups that were identified from the data search are listed in Table 3 below, together with data provided by the London Bat Group. Species recorded on site by Arup (2011) and Jacobs (2009b-e) are noted. Notable bird species confirmed to be breeding on site by Arup (2011) are marked with an asterisk (*).

Table 3: Summary of protected species records returned by the data search.

Group/taxon	Species	Common name	Source information
Bird	*Columba palumbus*	Common Wood Pigeon	
	Streptopelia decaocto	Eurasian Collared Dove	
	Athene noctua	Little Owl	
	Strix aluco	Tawny Owl	Arup (2011)
	*Picus viridis**	Green Woodpecker*	Arup (2011)
	Dendrocopos major	Great Spotted Woodpecker	Arup (2011)
	Dendrocopos minor	Lesser Spotted Woodpecker	Arup (2011)
	Alauda arvensis	Sky Lark	
	Anthus trivialis	Tree Pipit	

Group/taxon	Species	Common name	Source information
	Motacilla cinerea	Grey Wagtail	
	Troglodytes troglodytes	Wren	
	Erithacus rubecula	European Robin	
	Phoenicurus phoenicurus	Common Redstart	
	Turdus merula	Common Blackbird	
	*Turdus philomelos**	Song Thrush*	Arup (2011)
	Turdus viscivorus	Mistle Thrush	
	Sylvia curruca	Lesser Whitethroat	
	Sylvia communis	Common Whitethroat	
	Sylvia borin	Garden Warbler	
	Sylvia atricapilla	Blackcap	
	Phylloscopus sibilatrix	Wood Warbler	
	Phylloscopus collybita	Common Chiffchaff	
	*Phylloscopus trochilus**	Willow Warbler*	Arup (2011)
	Regulus regulus	Goldcrest	
	Muscicapa striata	Spotted Flycatcher	
	Aegithalos caudatus	Long-tailed Tit	
	Poecile montanus	Willow Tit	
	Periparus ater	Coal Tit	
	Cyanistes caeruleus	Blue Tit	
	Parus major	Great Tit	
	Sitta europaea	Wood Nuthatch	
	Certhia familiaris	Eurasian Treecreeper	
	Garrulus glandarius	Eurasian Jay	
	Corvus monedula	Eurasian Jackdaw	
	Corvus frugilegus	Rook	
	Corvus corone	Carrion Crow	
	Sturnus vulgaris	Common Starling	Arup (2011)
	Passer montanus	Eurasian Tree Sparrow	
	Fringilla coelebs	Chaffinch	
	Carduelis chloris	European Greenfinch	
	Carduelis carduelis	European Goldfinch	
	*Pyrrhula pyrrhula**	Common Bullfinch*	Arup (2011)
	*Prunella modularis**	Dunnock*	Arup (2011)
	Falco tinnunculus	Common Kestrel	Arup (2011)
	Larus fuscus	Lesser black headed gull	Arup (2011)
	Columba livia	Feral pigeon	Arup (2011)
	Psttacula krameri	Ring-necked parakeet	Arup (2011)

Group/taxon	Species	Common name	Source information
	Apus apus	Swift	Arup (2011)
	Passer domesticus	House sparrow	Arup (2011)
Bats	*Myotis daubentonii*	Daubenton's bat	Roost and flight
	Nyctalus noctula	Noctule	Roost and flight Flight - Arup (2011)
	Pipistrellus pipistrellus	Common pipistrelle	Roost and flight Flight -Arup (2011); Jacobs (2009b)
	P. pygmaeus	Soprano pipistrelle	Roost and flight
	P nathusii	Nathusius' pipistrelle	
	Eptesicus serotinus	Serotine	
	Myotis sp	Unidentified Myotis species	
	Plecotus auritus	Brown long-eared bat	
	N. leislerii	Leisler's bat	
	M. nattereri	Natterer's bat	
Reptiles	*Anguis fragilis*	Slow worm	
	Vipera berus	European adder	
	Natrix natrix	Grass snake	
Amphibians	*Triturus cristatus*	Great crested newt	
	Bufo bufo	Common toad	
	Lissotriton helveticus	Palmate newt	
	Lissotriton vulgaris	Smooth newt	
	Rana temporaria	Common frog	Jacobs (2009e)
Notable mammals (excluding bats)	*Erinaceus europaeus* *Meles meles*	European hedgehog European badger	
Notable Invertebrates	*Lucanus cervus* *Tyria jacobaeae*	Stag beetle Cinnabar moth	

HABITAT SURVEY

3.3 One hundred and thirteen vascular plant species were noted during the habitat survey. These are listed in Appendix 3.

3.4 A description of the key habitats within the survey area is provided below and a map of these habitats is presented in Appendix 1 together with the location of notable features (T1-T8). Photographs are provided in Appendix 2 and their location is also shown on the habitat map (P1-P8).

Woodland and scrub

3.5 The central and eastern parts of the site supports secondary woodland and scrub which accounts for approximately 60 % (4 ha) of the total site area. This comprises a mixture of mature and semi-mature sycamore *Acer psuedoplatanus* and ash *Fraxinus excelsior* with occasional apple *Malus domestica*, crab apple *Malus sylvestris* and wild cherry *Prunus avium* and a dense scrub understorey of blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna* and bramble *Rubus fruticosus agg* with occasional elder *Sambucus nigra* and dog rose *Rosa canina.* Ivy *Hedera helix* is also prevalent.

3.6 Herbaceous species: notably stinging nettles *Urtica dioica*, cleavers *Galium aparine*, creeping cinquefoil *Potentilla reptans*, rosebay willowherb *Chamerion angustifolia*, great willowherb *Epilobium hirsutum*, cow parsley *Anthriscus sylvestris*, garlic mustard *Alliaria petiolata,* goat's rue *Galega officinalis* and wood avens *Geum urbanum;* and grasses: creeping bent *Agrostis Stolonifera,* false oat grass *Arrhenatherum elatius,* Yorkshire fog *Holcus lanatus,* wood meadow grass *Poa nemoralis* and cock's-foot *Dactylis glomerata* occur along the edge of the woodland; along the paths and within clearings (Appendix 2, Photograph 1). Hairy sedge *Carex hirta* and pendulous sedge *C. Pendula* were present within a clearing in the north-eastern part of the site suggesting that this area holds water for at least part of the year (Appendix 2, Photograph 2).

3.7 Large mature tree species are mostly present at the boundaries of the site. At the southern boundary is line of mature Lombardy poplars *Populus nigra* (located at the boundary of the adjacent golf course) and several mature oaks *Quercus robur*. The eastern and western boundaries are dominated by willow Salix sp. and hybrid black poplars *Populus canadensis*. Mature oaks, ash and poplars occur along the northern boundary and a number of these trees are likely to be remnants of ancient woodland habitat.

3.8 There was evidence of recent control of invasive species giant hogweed and Japanese knotweed from within the woodland (Appendix 2, Photograph 3). A small stand of Japanese knotweed was identified at the northern end of the western boundary (T5).

Rough grassland and disturbed ground

3.9 The north-western part of the site is more open and supports rough grassland comprising rough meadow grass *Poa trivialis*, cock's foot, creeping bent, barren brome *Anisantha sterilis*, false oat-grass, and Yorkshire fog *Holcus lanatus* as well as common bent *Agrostic capillaries* and smooth meadow-grass *Poa pratensis*. Herbaceous species become increasingly abundant on areas of higher ground and include Michaelmas daisy, *Aster* sp., black medick *Medicago lupulina*, wild carrot *Daucus carota*, yarrow *Achillea millefolium*, nipplewort *Lapsana communis*, ribwort plantain *Plantago lanceolata*, oxeye daisy *Leucanthemum vulgare*, common vetch *Vicia sativa*, common mouse-ear *Cerastium fontanum*, bristly oxtongue *Picris echioides*, hawkweed oxtongue *P. hieracoides*, white clover *Trifolium repens* and goat's-rue (Appendix 2, Photograph 4). Bare ground occurs in more disturbed areas, particularly near to the entrance of the site (Appendix 2 Photograph 5). Characteristic pioneer species of disturbed ground such

as common mallow *Malva sylverstris*, barren brome, bristly oxtongue, prickly sow-thistle *Sonchus asper* and common ragwort *Senecio jacobaea* are present within and at the periphery of these areas.

Tall ruderal vegetation

3.10 The south-western part of the site supports tall ruderal vegetation dominated by comfrey *Symphytum officinale*. Wild carrot, teasel *Dipsacus fullonum* creeping thistle *Cirsium arvense,* hoary mustard *Hirschfeldia incana*, common ragwort, St John's-wort *Hypericum perforatum,* cat's-ear *Hypochaeris radicator,* stinging nettle and cow parsley are common, together with creeping bent, false oat grass, cock's-foot, couch grass *Elytrigia repens* and barren brome (Appendix 2, Photograph 6). Bramble at the southern boundary of the site is encroaching onto this habitat, and several saplings of oak, ash and silver birch *Betula pendula* are also present.

PROTECTED AND NOTABLE SPECIES ASSESSMENT

Birds

3.11 The site was found to provide suitable nesting and foraging habitat for a variety of common and widespread birds and species considered to be of nature conservation importance (Table 4 below). Out of a total of sixteen bird species recorded, eight species were confirmed as breeding of which two were species of importance to nature conservation. This included song thrush (UK BAP Priority/RSPB Red-list species) and whitethroat (RSPB Amber-list species). The site also provided a foraging resource for RSPB Amber-list species swift.

Table 4: Bird species recorded on site on the 3rd June and 12th July 2013

Species	Common Name	Breeding	RSPB	UK BAP Priority Species
Turdus merula	Blackbird	*	Green	
Sylvia atricapilla	Blackcap	*	Green	
Cyanistes caeruleus	Blue tit		Green	
Corvus corone	Carrion crow		Green	
Phylloscopus collybita	Chiffchaff	*	Green	
Columba livia	Feral pigeon			
Parus major	Great tit		Green	
Carduelis chloris	Greenfinch	*	Green	
Sylvia curruca	Lesser Whitethroat	*	Green	
Pica pica	Magpie		Green	
Erithacus rubecula	Robin		Green	
Turdus philomelos	Song thrush	*	Red	*
Apus apus	Swift		Amber	
Columba palumbus	Woodpigeon		Green	
Sylvia communis	Whitethroat	*	Amber	
Troglodytes troglodytes	Wren	*	Green	

Bats

3.12 Records revealed from the London Bat Group data search are summaried in Table 3. Summer roost sites for Daubenton's bat *Myotis daubentonii*, noctule *Nycatlus noctula*, common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *P. pygmaeus* and one common pipistrelle hibernation site are known to occur within a 4 x 4 km square centred on the site. The majority of roost records were from Highgate Woods (30%) and the New River (30%) which are 2km south and 1.7km east of the site respectively. The nearest known summer roost is c.610m from the site; the hibernation roost is c. 875m from the site.

3.13 One hundred and eighty three field records (i.e. bat flight records) were revealed from the data search. These included records for common pipistrelle, soprano pipistrelle, noctule, Daubenton's bat, serotine *Eptesicus serotinus*, brown long-eared bat *Plecotus auritus*, Leisler's bat *Nyctalus leislerii*, Natterer's bat *Myotis nattereri*, unidentified *Myotis* species and Nathusius' pipistrelle *Pipistrellus nathusii*.

3.14 Low numbers of common pipistrelle and noctule bats have been recorded at the site (Jacobs 2009b; Arup 2011). Records for common pipistrelle were noted by Arup 2011 in the latter part of the emergence period (20-30 minutes after sunset) and it was considered likely that roost site for this species occurs within the vicinity of the site.

3.15 Potential roost sites identified from the walkover survey were mostly at the boundary of the site where a number of mature oak and poplar trees with cavity features of HIGH and MEDIUM potential to support a bat roost occur (T6). Ivy clad trees within the main area of woodland also offer LOW potential roosting habitat of value to single or low numbers of bats.

3.16 The site was assessed as supporting habitats of potential value to both edge (e.g. *Pipistrellus* sp.) and open feeding bat species (e.g. noctule). Notable edge habitat features included the woodland paths and clearings and the boundary treelines. The more open areas of the site - rough grassland and tall ruderal habitat- offer suitable foraging habitat for large bat species such as noctule. The suitability of these habitats is likely to be seasonal and determined by the emergence of prey items e.g. the emergence of chafers in the spring.

3.17 Four static bat detectors were deployed at the site in July 2012 for a period of 6 nights at locations that supported edge and/or more open habitat features (see Appendix 1, Plan 1 for location of the detectors). The results of the survey are provided in Appendix 4.

3.18 Suitable weather conditions were reported during the survey period; minimum night time temperatures were 12^{o}C or above (Appendix 4, Figure 1) and no rain was reported (Appendix 4, Figure 2).

3.19 Low numbers of common pipistrelle bats were recorded during the survey.

3.20 One record was obtained at 8 minutes before sunset from the detector deployed along the woodland path (T1). This record suggests that a roost site is likely to occur within the

woodland. Bat foraging activity (identified from consecutive records and confirmed feeding buzzes) was also reported here on the night of the 16th of July.

3.21 Higher numbers of records were retrieved from detectors located along the western and southern boundary, (although the overall number of records was still low). These were mostly single passes and therefore indicative of commuting behaviour. It is therefore likely that these features provide a bat flight path between the adjacent Muswell Hill Golf Course and Hollickwood Park sites.

3.22 No bat records were obtained from the detector at the edge of the clearing (T3).

Other fauna

3.23 Species (excluding birds and bats) that were recorded on site during the habitat survey are listed in Table 5 below.

Table 5: Summary of protected species recorded at Pinkham Way SINC (excluding birds and bats).

Species Group	Species	Common name	Species of Principal Importance
Butterflies	*Anthocharis cardamines*	Orange tip	
	Inachis io	Peacock	
	Pieris rapae	Small White	
	Maniola jurtina	Meadow brown	
	Aglais urticae	Small tortoiseshell	
	Thymelicus sylvestris	Small skipper	
Moths	*Tyria jacobaeae*	Cinnabar moth caterpillars (See Appendix 1, Plan 1 ; T8 & Appendix 2, Photograph 7)	*
Dragonflies	*Libellula depressa*	Broad bodied chaser	
Reptiles	*Anguis fragilis*	Slow worm (Under reptile felt at TQ287915) (See Appendix 1, Plan 1 ; T7 & Appendix 2, Photograph 8)	*
Mammals	*Vulpes vulpes*	Fox	

3.24 Table 6 below provides an evaluation of the protected species or groups which were selected for further consideration because the survey area was considered to provide potentially suitable supporting habitat, records were returned from NBN Gateway and London Bat Group data search, and/or evidence of the species was recorded during the course of the habitat survey and bat survey.

Table 6: Assessment of potential presence of protected species at the Pinkham Way SINC.

Species group	Main legislation and policy (see Appendix)	Reason for consideration	Likelihood of occurrence
Bats	Schedule 2 of the Conservation of Habitats and Species Regulations 2010. Wildlife and Countryside Act 1981 (as amended) Schedule 5.	The site contains mature trees with cavity features offering potential roosting habitat. The site supports a gradation of habitats that includes mature tree lines, secondary woodland, woodland edge, scrub, tall ruderal vegetation, clearings and wet grassland areas that offer potential foraging and commuting habitat.	MEDIUM for roosting, foraging and commuting bats. Mature oaks and poplars support cavity features of HIGH/MEDIUM potential to support roosting bats. An early record for common pipistrelle before sunset suggest a roost is likely to occur on or near to the site. Rough grassland, ruderal vegetation, woodland and edge habitats offer foraging and commuting habitat and the site is well connected to Muswell Hill Golf Course and Hollickwood Park. Only low numbers of common pipistreles and noctule bats have been recorded at the site (Arup 2011, Jacobs 2009 and current survey).
Breeding birds	Wildlife and Countryside Act 1981 (as amended).	The site contains suitable breeding habitat for birds i.e. secondary woodland, scrub, tall ruderal vegetation and rough grassland of potential value to a variety of common bird species.	HIGH for breeding, foraging and roosting birds: Surveys have confirmed breeding by six notable species (Arup 2011 and current survey). The site contains mature trees with cavities as well as secondary woodland, scrub, tall ruderal vegetation and rough grassland which provide nesting and foraging opportunities for a variety of widespread and common species.
Reptiles	Wildlife and Countryside Act 1981 (as amended) Schedule 5. The sand lizard Lacerta agilis and smooth snake receive full protection under the Act, and are also protected under Schedule 2 of the Conservation	The site supports a diversity of suitable refugia as well as transitional habitats, areas of bare ground and wet depressions which offer potential shelter, foraging opportunities and basking sites for reptiles.	PRESENT Slow worm occur at the site. Suitable habitat for other reptile species such as grass snake occurs at the site.

Species group	Main legislation and policy (see Appendix)	Reason for consideration	Likelihood of occurrence
	(Natural Habitats &c.) Regulations, 2010 (Regulation 41).		
Amphibians	Wildlife and Countryside Act 1981 (as amended) Schedule 5. *G*reat crested newt *Triturus cristatus* receive full protection under the Act, and are also protected under Schedule 2 of the Conservation (Natural Habitats &c.) Regulations, 2010 (Regulation 41).	Ponds are located immediately adjacent to the site at Hollickwood Park and Muswell Hill Golf Course. The woodland and wet areas within the site offer suitable shelter and foraging habitats for amphibians.	HIGH for common species. Common frog were found at the site in 2009 (Jacobs 2009e). Surveys completed in 2009 found no evidence of Great Crested Newts within ponds located 500m from the site (Jacobs 2009c).
Hedgehog	Wild Mammals (Protection) Act 1996 (as amended).	Woodland edge, scrub, grassland and ruderal vegetation offer suitable shelter and foraging habitat for hedgehog.	HIGH for foraging hedgehog. Although no evidence of hedgehog was discovered during the survey, suitable habitat occurs on site and within the adjacent sites Muswell Golf Course and Hollickwood Park.
Badger	Protection of Badgers Act 1992	The site offers suitable shelter and foraging habitat.	LOW/NEGLIGIBLE No evidence of badger was discovered during the survey. Surveys undertaken in 2009 found no badger evidence (Jacobs 2009d).
Invertebrates	Various e.g. Stag beetle Schedule 5 of the Wildlife and Countryside Act 1981 (as amended)	Woodland edge, scrub, grassland, ruderal vegetation and bare ground offer suitable shelter and foraging habitat for a diversity of invertebrate species. There is a large amount of standing and fallen deadwood on site that has good potential for invertbrate species including Stag Beetle which are a UK BAP species	PRESENT Cinnabar moth caterpillars were found during the survey. Six common species of butterfly were also identified. MODERATE-HIGH Records for stag beetle occur within a 5km search radius of the site (NBN Gateway).

4 Site evaluation

4.1 This section assesses the value of the site, in terms of potential for biodiversity, support of protected species and habitats, and the contribution the site makes as part of the wider landscape. The ecological evaluation followed the guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM 2006 & 2012) using the recommended geographic frame of reference as well as the criteria and process for selecting Sites of Importance for Nature Conservation in the Greater London Area as set out in the Mayor of London's Biodiversity Strategy (2002).

4.2 Table 7 below evaluates the ecological value of the site based on the criteria and process for selecting Sites of Importance for Nature Conservation in the Greater London Area which was produced by the London Wildlife Sites Advice Board in March 2013. The evaluation of the site is based on data collected during the field survey in 2013 as well as information contained in the data search.

Table 7: Site evaluation

Criteria	Remarks
Representation	The composition of the habitats on site meet the criteria for UK BAP habitat Open Mosaic Habitat on Previously Developed Land . The site also represent 'Wasteland' habitat as defined in the London BAP. However, due to a lack of disturbance and management, early successional communities are becoming encroached by tall ruderal and scrub vegetation and the extent of unvegetated loose bare ground is diminishing. Secondary woodland habitat is common in the borough and the species present at the site are commonplace.
Habitat rarity	'Wasteland' habitat is becoming increasingly uncommon in the borough due to pressures from development. As such the habitats on site should be regarded as being of borough significance. The composition of the habitats on site meet the criteria for UK BAP habitat Open Mosaic Habitat on Previously Developed Lane, albeit of small extent. The site supports c. 4ha of woodland which is listed as a priority habitat in the UK BAP. Due to its recent age, limited extent and low species composition, it does not represent a significant example of this habitat type. Mature trees at the boundary of the site should however be regarded as being of local significance due to their ancient character.
Species rarity	The site is used as a breeding site by no less than six notable bird species (UK BAP Priority Species or RSPB Red or Amber Status). Priority species, Slow worm and Cinnabar moth caterpillars were also identified. The site is likely to provide roost sites for common pipistrelle bats and mature trees at the boundary of the site have the potential to provide roost sites for a diversity of bat species.

Criteria	Remarks
Habitat richness	A moderate range of habitats are found on site, i.e. secondary woodland, scrub, tall ruderal vegetation, rough grassland, mature trees, and habitat characteristic of open mosaic habitats notably bare ground, pioneer successional communities and ephemerally wet areas. However, 60% of the site is covered by woodland and scrub.
Species richness	The number of species occurring on site is relatively high considering the size of the site and habitats present. Given the geographical context of the site which is situated in a heavily urbanised area, the number of notable species recorded is considered significant.
Size	The site area is small (6.6ha) . The extent of the site that is occupied by open mosaic habitat is likely to be at the lowest area threshold according to criteria described in the UK BAP Priority Habitat Description (2011)
Important populations of species	Several uncommon species such as Bee orchid and nationally scarce golden dock have in the past been recorded at the site. Although these species were not discovered during recent surveys, conditions at the site may no longer be suitable due to a lack of disturbance and natural succession but the site is likely to remain a seed bank for these species.
Ancient character	Mature oaks at the boundary of the site are likely to be remnant of ancient woodland habitat.
Recreatability	Mature oak trees at the boundary of the site are likely to exceed 200 years in age. To recreate the woodland could take up to 50 or so years to re-establish, Other early successional habitats are relatively easily re-creatable. However, opportunities for Wasteland habitats to become established are limited in the London Borough of Haringey due to pressures from development. Furthermore, the site is positioned along an ecological corridor and offers an important greenlink between other sites. This is noteworthy within the context of inner London where well connected sites are becoming increasingly rare.
Typical urban character	The site comprises a former sewage works that has become colonised by communities charcteristic of ecological succession, notably woodland, scrub, tall ruderal, rough grassland, pioneer species and areas of bare ground. It supports a rich diversity of species given its small extent with 113 vascular plants identified during the habitat survey and no fewer than 8 species of Principle Importance recorded at the site since 2009. The composition of the substrate in addition to disturbances associated with industrial activities are likely to be (in part) significant factors for the past occurence of uncommon species Bee orchid and nationally scarce golden dock.
Cultural or historic character	None
Geographic position	Hollickwood Park SINC and Bluebell Wood and Muswell Hill Golf Course SINC are located at the western and southern boundaries of the site. The railway line and cutting that demarcates the eastern boundary of the site is part of a designated ecological corridor.
Access	There is no public access to the site.
Use	The site is not in active use.

Criteria	Remarks
Potential	The control of natural succession of the open mosaic habitat to woodland and scrub is required if the site is to maintain its biodiversity interest. Management in the form of rotational clearance of woodland and scrub, infrequent cutting of tall ruderal vegetation and rough grassland and the creation of scrapes to expose areas of bare ground and wet depressions are recommended. The implementation of such management is likely to enhance the biodiversity value of the site in the longterm. A culverted watercourse runs beneath the site and the practicability of reinstating this stream should be explored. If current conditions allow, the reinstatement of this watercourse would further enhance the biodiversity value of the site.
Aesthetic appeal	Despite being located off the A406 which receives high traffic densities, mature trees at the boundaries of the site as well as woodland habitat provide screening from traffic noise and disturbance which creates a feeling of being outside an urban area. Views over the adjacent Muswell Hill Golf Course can be seen from areas of higher ground, towards the southern boundary. The diversity of bird and invertebrate species in particular butterflies as well as the rich diversity of wildflowers adds to the aesthetic appeal of the site.
Geodiversity interest	None known.

5 Conclusions and recommendations

CONCLUSIONS

5.1 The site is designated a Borough Grade I Site of Importance for Nature Conservation (SINC).

5.2 Despite a lack of management, it continues to support habitats and species indicative of 'Wasteland'; a target habitat in the London BAP. The composition of habitats present also meets the criteria for UK BAP habitat 'Open mosaic habitat on previously developed land' as described in UK BAP Priority Habitat Descriptions (2011) for the following reasons:

- The area of open mosaic habitat present is ≥ 0.25ha, albeit at the lower end of the area threshold.
- The site has a known history of disturbance associated with its past use as sewage works and landfill site. Extraneous materials/substrates were deposited at the site when it was operational and some evidence of this is still present in the form of remnants of buried structures and foundations, spoil heaps associated with landfill and rubble piles and material associated with fly-tipping and the construction of the Pegasus Way Roundabout.
- The site supports species typical of early successional communities including annuals, ruderals, a diverse community of grasses and wildflowers as well as species indicative of ephemerally wet areas. Further surveys would be required to fully assess the diversity of mosses and lichens present.

- Bare ground occurs in the north-western part of the site and there are areas within the site which hold water for at least part of the year (e.g. the clearing in the north-eastern part of the site).
- At least 0.25ha of land within the north-western part of the site supports areas of bare ground, early successional pioneer species as well as more established areas of rough grassland, herbaceous species, tall ruderals and scrub and thus spatial variation of successional communities.

5.3 'Wasteland' habitats that support open mosaic habitats are becoming increasingly uncommon within the London Borough of Haringey due to development pressures (Haringey Council, 2009) and therefore the site is of borough importance.

5.4 One hundred and thirteen vascular plant species were recorded at the site which is noteworthy for a site of relatively small extent located within inner London.

5.5 The site was confirmed to provide breeding sites for no less than six notable bird species (UK BAP Priority Species or RSPB Red or Amber Status) as well as slow worms and cinnabar moth caterpillars which are species of Principal Importance (NERC 2006). Six species of butterfly were also identified and it is likely that the habitats on site support a diversity of other invertebrate species. A comprehensive survey is recommended to fully assess the invertebrate interest. Mature trees at the boundary may also be remnant of ancient woodland.

5.6 Notable habitats should be protected and appropriately managed to ensure the biodiversity interests of the site are maintained. In particular, management to control natural succession of the remaining areas of open mosaic habitat is needed to maintain the biodiversity interest of the site in the long-term. Management should include rotational clearance of woodland and scrub vegetation, infrequent cutting of tall ruderal vegetation and rough grassland and the creation of scrapes to expose areas of bare ground and to establish wet depressions.

HABITAT MITIGATION

5.7 The ecological assessment concluded that the site is worthy of designation as a Borough Grade I Site of Importance for Nature Conservation. In the event that development is permitted, any development proposals for the site would need to include a substantial mitigation strategy that adequately compensates for any biodiversity losses.

On-site mitigation

5.8 An appropriate area of the site should be retained, enhanced and managed for conservation purposes.

5.9 Boundary habitats, specifically mature trees which are likely to be ancient in character and which offer potential roost sites for bats and suitable nest sites for birds, should be retained. Retained trees should be protected during the construction phase in accordance with British Standards (BS) 5837:2012 Trees in relation to design, demolition and construction.

5.10 No less than 0.25ha of the land area designated for conservation purposes should be managed as open mosaic habitat in order to minimise biodiversity losses (see Section 5.6). The retention or creation of woodland and scrub around this area and at the boundary of the site is recommended to provide a buffer against noise and disturbance during the constructional and operational phases of the development. If planting is required, suitable native trees and shrubs should be selected that provide pollen, nectar and berries. Examples include rowan, silver birch, alder buckthorn *Frangula alnus*, dogwood *Cornus sanguinea*, crab apple and wild plum *Prunus domestica*. Additional screening could also be provided by the planting of climbers, for example honeysuckle *Lonicera periclymenum* or hops *Humulus lupulus,* along fencing to provide a green façade of potential value to foraging birds and insects.

5.11 Green roofs can be designed to mimic conditions of wasteland and brownfield sites. They should therefore be included within the mitigation strategy for any development proposal at the site in order to compensate for the loss of wasteland habitat. Green roofs could be included within the design plans for any flat roof buildings that form part of a development proposal or where this is not possible, more suitable sites should be identified within the vicinity of the site. Extensive green roofs can be created using recycled aggregate and seeded with a local wildflower mix to provide habitat for insects and other wildlife such as bats and birds, which feed on insects. Features such as substrate mounds, dead wood piles and rubble mounds should be included within the designs since these provide micro-climates and shelter for plants and invertebrates and perching posts for birds.

5.12 Any redevelopment should seek to retain as much connectivity as possible with the adjacent green spaces (Muswell Hill Golf Course and Hollickwood Park) and the railway corridor e.g. through the retention of boundary habitats and the creation of new treelines and hedgerows.

SPECIES MITIGATION

Bats

5.13 Hollows in trees are used by a wide variety of bat species and natural cavities can be used by bats as a gathering site in spring, a maternity roost in summer, a mating place in autumn and a hibernation site during the winter. Tree roost sites are a limited resource and generally habitat features of high value to roosting bats are formed over a long period of time. Consequently, they cannot be readily replaced. Several mature trees located at the boundary of the site were found to support cavity features of HIGH/MEDIUM potential to support a bat roost and where possible steps should be taken to ensure that these are not destroyed. Furthermore, ivy clad trees within the main area of woodland offer potential roost sites for single or low numbers of bats. Data retrieved from the static detector surveys suggest that roost sites are likely to occur within this habitat.

5.14 Where tree works cannot be avoided, the following procedures should be followed in order to avoid impacts to roosting bats:

- Any trees that support HIGH/MEDIUM potential roost features should be climbed or reached by a suitable working platform to allow all potential roost features to be inspected by endoscope by a Class 2 licensed bat ecologist. Dusk and dawn surveys should also be completed where roost sites are confirmed or suspected. Any works to trees that are confirmed to support a bat roost and which are likely to adversely impact bats or their roost sites, can only be legally carried out under licence from Natural England.
- Tree works should ideally be carried between mid-September and the 1st November or during the month of April to avoid the bat breeding and hibernation seasons. Works should only proceed under dry conditions and when day and nightime temperatures are 10°C or above.
- Tree surgeons should be briefed on bats and their field signs, features that offer possible bat habitat and the bat legislation prior to the commencement of works. The contact details of a licensed bat ecologist should be made available. Works to trees that support features of HIGH and MEDIUM potential value as a roost, but where roost sites have not been confirmed from endoscope and dusk/dawn surveys, should be supervised by a licensed bat ecologist.
- Any loose bark, splits, fissures and cavities associated with stems >10cm diameter should be re-inspected by endoscope for the presence of bats prior to the commencement of works. This should carried out by a licensed bat ecologist certified in tree climbing and aerial rescue operations.
- If ivy is present this should be cut at the base and the tree should be inspected following die back. If this is not possible (e.g. due to time constraints), a finger tip search should be carried out during climbed inspections to assess the occurrence of crevice/cavity features behind the ivy. If any significant cavity features are discovered i.e. which are not exposed to rainwater ingress and so offer potential shelter to bats, the option to retain the tree should be considered. Works must only proceed if no bats are discovered.
- Trunks or stems that have cavity features should be sectioned at least 500mm above and below the cavity so that it remains intact. Sections should be lowered to the ground, rather than clear felled, and left on site in an upright position for at least 48 hours with the cavity unobstructed so that bats can escape at dusk unharmed. Ideally, a tree within the immediate vicinity that will not be affected by the works should be selected as a surrogate roost site and the section should be ratchet strapped on to this tree at approximately the same height and altitude to how it was originally found.
- Split limbs that are under tension should be wedged open during works to prevent their closure when pressure is released.
- All branches should be sectioned and lowered to the ground, rather than clear felled to minimise potential disturbances and damage to the surrounding habitat. Removed branches should ideally be left on site to provide deadwood habitat for invertebrates.

- Minor stems <10cm diameter are unlikely to be of value to bats and the overall impacts associated with their removal are considered negligible.
- If bats are discovered during works, further works to the tree must stop immediately and advice should be sought from a licensed bat ecologist on how best to proceed.
- If tree works occur between February and August, a search for active bird nests, within a five metre radius of the area, would need to be completed by a suitably qualified ecologist prior to the commencement of works. If nesting birds are found, tree removal within this part of the site would have to be postponed until the young have fledged.

5.15 Artificial bat roosting habitat should be provided within or adjacent to the site to compensate for the loss of potential roost sites. Bat boxes could be erected onto any mature trees retained at the boundary of the site and/or mature trees within the adjacent Muswell Hill Golf Course and Hollickwood Park. Schwegler 1 FF boxes, which have an open bottom and therefore require less management, are recommended. In order to minimise competition of use of bat boxes by nesting birds, it is also recommended that bird boxes are erected alongside bat boxes (Meddings et al 2011). Bat boxes should be installed at between 2 and 5 metres above ground level and unobstructed by foliage to ensure a clear bat entry/exit path. They should be located away from artificial lighting. Any artificial roost sites should ideally be monitored annually by a suitably qualified bat ecologist and this data should be made available to the local records centre.

Birds

5.16 Six notable bird species as well as a diversity of widespread and common bird species were confirmed to be breeding on site. Woodland, scrub, tall ruderal and grassland vegetation all offer suitable bird nesting habitat. Any vegetation clearance works undertaken at the site should therefore be completed during the period of September to February, which is outside the main bird nesting season (NB: some birds may nest outside this core period and therefore due care and attention should be given when undertaking potentially damaging works at any time of year). If this is not possible, then all potential nesting habitat should be checked by a suitably qualified ecologist no longer than 24 hours prior to vegetation clearance works. If nesting birds are found, further works or vegetation clearance in this part of the site should be postponed until the young have fledged.

5.17 The inclusion of bird nesting boxes on mature trees and/or on screening walls covered in climbers could benefit a variety of common breeding birds. Boxes should be located out of direct sunlight, ideally more than two metres above ground, facing easterly or westerly and a suitable distance from the works area to minimise potential disturbances. Woodcrete bird boxes are recommended as they include a broad range of designs, are long-lasting compared to wooden boxes and insulate occupants from extremes of temperature and condensation.

Reptiles

5.18 Slow worms were confirmed to be present at the site. Comprehensive surveys commissioned by NLWA were underway at the site during 2013 and should provide an estimate of the population size and if other reptile species are also present. Any reptiles would have to be translocated to a suitable receptor site prior to the commencement of any development activities. The preferred option would be to translocate animals within areas of the site which are to be retained, enhanced and managed for conservation purposes. The removal of animals from within the development area should only occur once the receptor site has been identified and prepared. If animals are moved to alternative areas within the site, reptile fencing will need to be erected to prevent animals from entering the development area. Ideally the translocation should commence in the spring.

5.19 A watching brief over any earth works would be necessary given the extent of suitable refugia present at the site. Such works should not occur between October and March inclusive, when reptiles will be hibernating.

Invertebrates

5.20 Although stag beetles are not confirmed to be present on site, they are known to occur within a 5km radius of the site (NBN Gateway) and suitable habitat is present. Therefore precautionary measures are advisable. The stumps of any mature trees should be removed using a mechanical digger and excavated to a depth of approximately 0.6 meters to protect any larvae that may occur within the buried stump and root remains. The excavated stump should then be repositioned as near to its original location (as allowed by the development) within a newly excavated hole approximately the same depth as the old, so that the stump is half buried as before. When moving the stump, any larvae seen should be collected up and released to a place of safety i.e. under/in the repositioned stump.

5.21 As much as possible of the dead wood already present on site should be retained. Any logs collected from tree management/felling activities should be kept on site to provide additional habitat for stag beetle. Ideally, these should be placed in an upright position and partially buried within a shallow excavation of approximately 60 cm depth.

5.22 The provision of a designated area within the site that is managed as open mosaic habitat would provide suitable habitat for the diversity of invertebrates that occur at the site. The creation of dedicated refugia are however also recommended such as the provision of bee hotels for solitary bees, spoil heaps for miner bees, and deadwood piles.

Other mammals (excluding bats)

5.23 The site supports a diversity of suitable habitat for nesting and hibernating hedgehogs. Although hedgehogs were not confirmed to be present at the site, there are confirmed records within 4km of the site (pers. observ. by author). Due care should be taken during vegetation clearance works. Any leaf or log piles should ideally be cleared by hand and all materials

should be kept on site to provide potential nesting and hibernation sites. In summer hedgehogs often nest in long grass, so care should also be taken during strimming or mowing activities associated with the clearance of rough grassland and tall ruderal vegetation. The creation of extensively managed grassland/meadow habitat within areas of the site which are to be retained, enhanced and managed for conservation purposes is recommended to provide suitable cover and potential nesting sites for hedgehogs during the summer months. Any logs or brush collected from tree management/clearance activities should be piled up in undisturbed areas of the site to provide potential hibernation sites.

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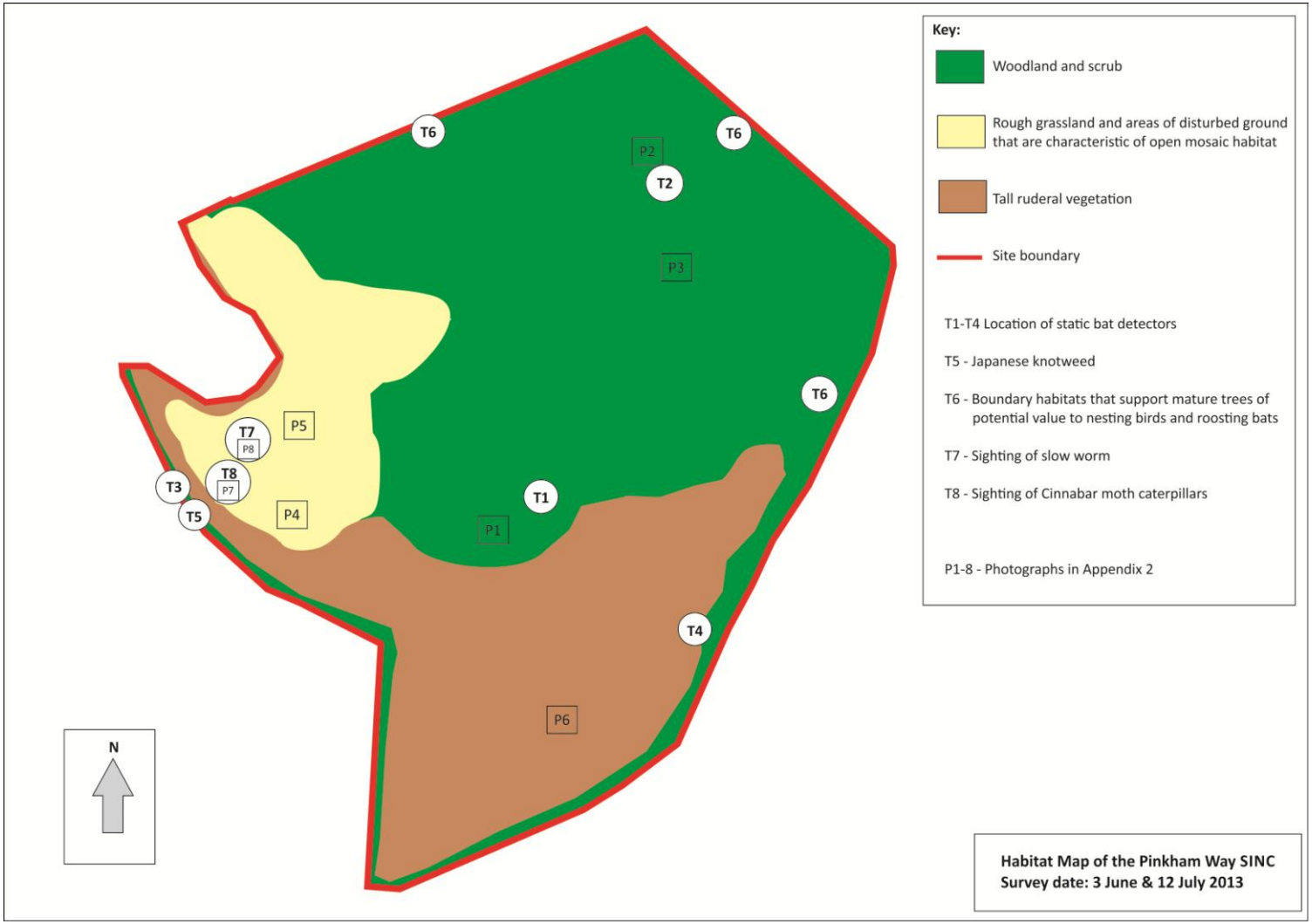
Appendix 1: Habitat Map

Plan 1: Habitat map of Pinkham Way Site of Importance for Nature Conservation.



Appendix 2: Photographs

Photograph 1

Less densely shaded areas associated with pathway through the woodland were found to support a rich diversity of herbaceous flowering plants and grass species.

Photograph 2

Clearing in the north-eastern part of the site. This is an ephermerally wet area and species tyical of wet habitats - Hairy sedge *Carex hirta* and pendulous sedge *C. Pendula* - were noted.

Photograph 3

Evidence of control of invasive species

Photograph 4

Rough grassland habitat found in the north-western part of the site. A

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Photograph 5

Areas of bare ground that occur in the north-western part of the site.

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Photograph 6

Tall ruderal vegetation dominated by comfrey.

Photograph 7

Cinnabar moth caterpillars found in the north-western part of the site.

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Photograph 8

Slow worm found under reptile felt in the north-western part of the site.

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Appendix 3: Habitat Survey Species List

Plant Species List for Pinkham Way SINC, compiled from the habitat survey carried out on the 3rd June and 12th July 2013.

Abundance was estimated using the DAFOR scale as follows: D = dominant, A = abundant, F = frequent, O = occasional, R = rare.

Qualifiers: S=Sapling, Y=Young tree, T=Tree (mature), C=Clumped, E=Edge, W=Wet, D=Dry, bare habitat

VASCULA PLANTS	Common name	DAFOR	Qualifiers
Acer psuedoplatanus	Sycamore	O	S, T
Achillea millefolium	Yarrow	O	
Aesculus hippocastanum	Horse-chestnut	O	T, Y
Agrostis capillaris	Common Bent	O	
Agrostis stolonifera	Creeping Bent	F	W
Alliaria petiolata	Garlic Mustard	O	
Anisantha sterilis	Barren Brome	F	
Anthriscus sylvestris	Cow Parsley	D	
Antirrhinum majus	Common Snapdragon	R	E
Arctium minus	Lesser Burdock	R	
Armoracia rusticana	Horse-radish	O	
Arrhenatherum elatius	False Oat-grass	F	
Artemisia vulgaris	Mugwort	O	
Aster sp.	Michaelmas Daisy	F	
Ballota nigra	Black Horehound	O	
Bellis perennis	Daisy	R	
Betula pendula	Silver Birch	F	S, Y
Brassica rapa	Field Mustard	O	
Bromus hordeaceus	Soft Brome	F	
Bryonia dioica	White Bryony	R	
Buddleja davidii	Buddleia	O	
Calystegia sepium	Hedge Bindweed	O	
Cardamine flexuosa	Wavy Bittercress	O	
Carex hirta	Hairy Sedge	O	W
Carex pendula	Pendulous Sedge	R	W
Cerastium fontanum	Common Mouse-ear	O	
Chamerion angustifolia	Rosebay Willowherb	O	
Cirsium arvense	Creeping thistle	F	
Conium maculatum	Hemlock	O	
Cornus sanguinea	Common Dogwood	R	
Corylus avellana	Hazel	O	S
Crataegus monogyna	Hawthorn	O	
Crepis capillaris	Smooth Hawksbeard	R	
Crepis vesicaria	Beaked Hawkbeard	O	
Dactylis glomerata	Cock's-foot	F	
Daucus carota	Wild Carrot	F	
Dipsacus fullonum	Teasel	O	
Elytrigia repens	Couch-grass	F	
Epilobium hirsutum	Great Willowherb	O	
Euphorbia helioscopia	Sun Spurge	R	
Fallopia japonica	Japanese Knotweed	O	
Festuca arundinacea	Tall Fescue	R	

VASCULA PLANTS	Common name	DAFOR	Qualifiers
Festuca rubra	Red Fescue	F	
Foeniculum vulgare	Fennel	R	
Fraxinus anomala	Single-leaved Ash	R	T
Fraxinus excelsior	Common Ash	O	S, Y, T
Galega officinalis	Goat's-rue	O	
Galium aparine	Cleavers	F	W
Geranium dissectum	Cut-leaved Crane's-bill	F	
Geranium robertianum	Herb Robert	O	
Geum urbanum	Wood Avens/Herb Bennet	O	
Glechoma hederacea	Ground Ivy	O	
Hedera helix	Ivy	O	
Helminthotheca echioides	Bristly Oxtongue	O	
Heracleum mantegazzianum	Giant Hogweed	O	C
Heracleum spondylium	Hogweed	O	
Hirschfeldia incana	Hoary Mustard	O	
Holcus lanatus	Yorkshire Fog	F	
Hypericum perforatum	St. John's-wort	F	
Hypochaeris radicator	Cat's-ear	O	
Juncus inflexus	Soft Rush	O	C
Laburnum anagyroides	Common Laburnum	R	Y
Lactuca serriola	Prickly Lettuce	R	
Lamium album	White Dead-nettle	R	
Lapsana communis	Nipplewort	O	
Lathyrus latifolius.	Broad-leaved Everlasting-pea	R	
Lepidium draba	Hoary Cress	F	
Leucanthemum vulgare	Oxeye-daisy	O	
Lotus corniculatus	Bird's-foot Trefoil	R	
Malus pumila	Apple	O	Y
Malus x purpurea	Crab apple	O	T
Malva sylvestris	Common Mallow	R	
Matricaria chamomilla	Scented Maywed	O	
Medicago lupulina	Black Medick	A	
Melilotus officinalis	Common Melilot	O	
Myosotis scorpiodes	Forget-me-not	R	
Pentaglottis sempervirons	Green Alkanet	R	
Picris hieracoides	Hawkweed Oxtongue	O	
Plantago lanceolata	Ribwort Plantain	O	
Poa nemoralis	Wood Meadow-grass	O	E
Poa pratensis	Smooth Meadow-grass	O	
Poa trivialis	Rough Meadow-grass	A	
Populus x *canadensis*	Hybrid Black Poplar	O	E, T
Potentilla reptans	Creeping Cinquefoil	A	
Prunus avium	Wild Cherry/Gean	R	S
Prunus cerasifera pissadii	Pissard or Purple Plum	R	
Prunus spinosa	Blackthorn	O	Y
Quercus robur	Pedunculate Oak	O	Y, T, E
Ranunculus repens	Creeping Buttercup	F	
Robinia pseudoacacia	False Acacia	R	E, Y, T
Rosa canina	Dog Rose	O	
Rubus fruticosus agg.	Bramble	D	
Rumex conglomeratus	Clustered Dock	R	
Rumex objusifolius	Broad-leaved Dock	O	

VASCULA PLANTS	Common name	DAFOR	Qualifiers
Salix caprea	Goat Willow	O	T, Y
Salix cinerea	Grey Willow	O	Y
Salix fragilis	Crack Willow	O	T, Y
Sambucus nigra	Elder	O	E
Senecio erucifolius	Hoary Ragwort	R	
Senecio jacobaea	Common Ragwort	F	
Silene latifolia	White Campion	O	
Sonchus asper	Prickly Sow-thistle	R	
Sorbus intermedia	Swedish Whitebeam	R	E, T
Stachys sylvatica	Hedge Woundwort	O	C
Symphoricarpus albus	Snowberry	R	
Symphytum officinale	Comfrey	D	
Taraxacum sp.	Dandelion	O	
Trifolium campestre	Hop Trefoil	O	
Trifolium pratense	Red Clover	R	
Trifolium repens	White Clover	F	
Urtica dioica	Stinging Nettle	F	
Veronica chamaedrys	Germander Speedwell	R	
Vicia sativa	Common Vetch	O	

Appendix 4: Bat Survey Results

RESULTS OF THE AUTOMATED BAT DETECTOR SURVEY UNDERTAKEN AT THE SITE BETWEEN THE 12TH AND 18TH JULY 2013.

Figure 1: Minimum temperatures reported in the London Area during July 2013. Records relating to the survey period are boxed in red.

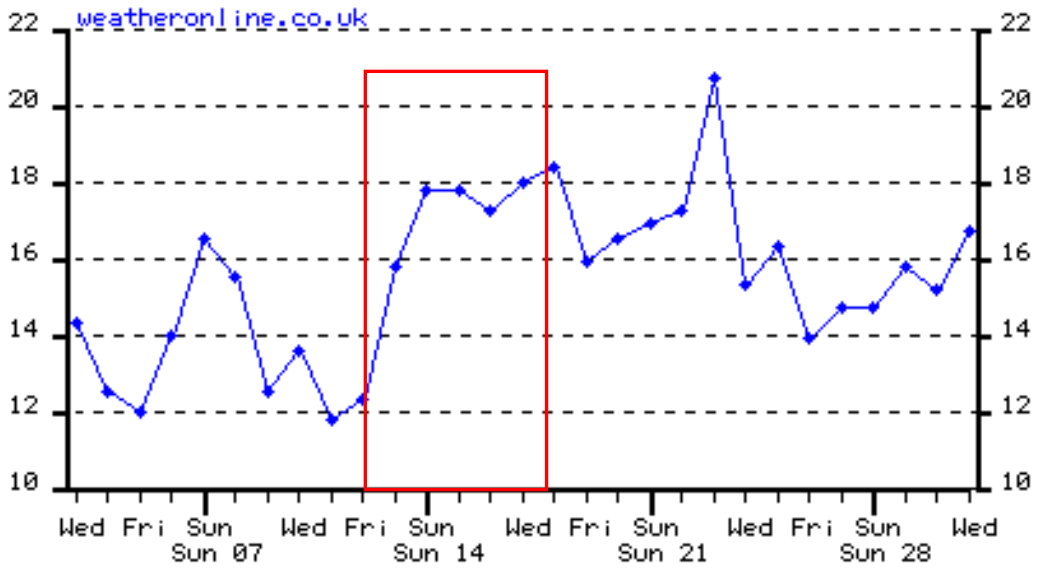
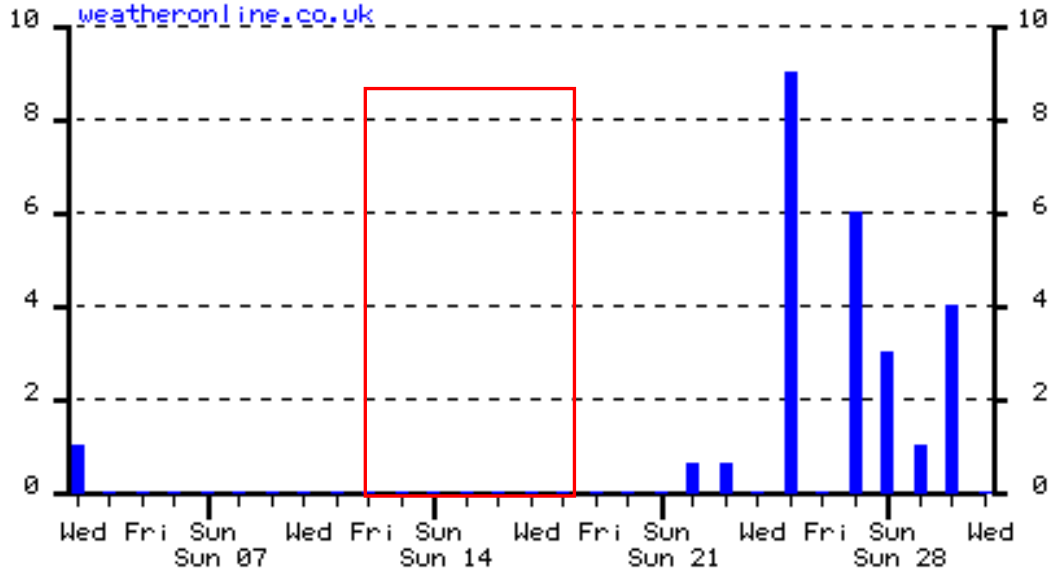


Figure 1: Preciptation reported in the London Area during July 2013. Records relating to the survey period are boxed in red.



Data retrieved from Detector (T1) located along the woodland path

Night	Time	Species	Sunset/Sunrise times	Comments
14/07/2013	01:25:24	Common pipistrelle	Sunset : 21:12 Sunrise : 04 :59	
	02:59:26	Common pipistrelle		
	03:02:51	Common pipistrelle		
16/07/2013	03:15:59	Common pipistrelle	Sunset : 21:10 Sunrise : 05 :01	
	03:16:05	Common pipistrelle		
	03:16:08	Common pipistrelle		
	03:16:13	Common pipistrelle		
	03:20:37	Common pipistrelle		
17/07/2013	21:02:41	Common pipistrelle	Sunset : 21 :09 Sunrise : 05 :03	8 minutes before sunset - possible roost site
	02:55:47	Common pipistrelle		

Data retrieved from Detector (T3) located along the western boundary by Hollickwood Park

Date	Time	Species	Sunset/Sunrise times	
12/07/2013	23:24:49	Common pipistrelle	Sunset: 21:15 Sunrise : 04 :57	
	00:38:05	Common pipistrelle		
	01:58:34	Common pipistrelle		
	02:21:03	Common pipistrelle		
	02:42:00	Common pipistrelle		
13/07/2013	21:45:01	Common pipistrelle	Sunset : 21 :13 Sunrise : 04 :58	
	03:11:36	Common pipistrelle		
	03:40:32	Common pipistrelle		
	04:10:25	Common pipistrelle		
14/07/2013	03:50:35	Common pipistrelle	Sunset : 21:12 Sunrise : 04 :59	
15/07/2013	22:14:19	Common pipistrelle	Sunset : 21:11 Sunrise : 05 :00	
	00:28:21	Common pipistrelle		
	03:45:33	Common pipistrelle		
	04:16:00	Common pipistrelle		
	04:16:03	Common pipistrelle		
16/07/2013	22:12:17	Common pipistrelle	Sunset : 21:10 Sunrise : 05 :01	
	23:48:29	Common pipistrelle		
	04:25:45	Common pipistrelle		
17/07/2013	04:21:17	Common pipistrelle	Sunset : 21:09 Sumrise : 05 :03	

Data retrieved from Detector (T4) located near to the southern boundary

Date	Time	Species	Sunset/Sunset times	Comments
12/07/2013	22:58:43	Common pipistrelle	Sunset : 21:15 Sunrise : 04 :55	
	03:58:38	Common pipistrelle		
14/07/2013	21:54:49	Common pipistrelle	Sunset : 21:12 Sunrise :04 :59	
	22:09:59	Common pipistrelle		
	22:32:18	Common pipistrelle		
	03:57:27	Common pipistrelle		
	03:58:54	Common pipistrelle		
	04:02:30	Common pipistrelle		
16/07/2013	21:58:53	Common pipistrelle	Sunset : 21:11 Sunrise : 05 :00	
	22:44:51	Common pipistrelle		
	23:52:07	Common pipistrelle		
17/07/2013	21:54:17	Common pipistrelle	Sunset : 21:10 Sunrise : 05 :01	
	02:31:38	Common pipistrelle		
	04:11:29	Common pipistrelle		

No data was retrieved from detector T3.

Appendix 5: Legislation and Planning Policy

NATIONAL LEGISLATION AFFORDED TO SPECIES

Several habitats and species receive legal protection in the UK under various pieces of legislation. These include:

- The Conservation of Habitats and Species Regulations 2010;
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act (2000); and
- The Natural Environment & Rural Communities (NERC) Act 2006.

The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 transposes into UK law the EU Habitats Directive which conserves various species of plant and animal which are considered rare across Europe.

The Wildlife and Countryside Act 1981 (as amended) implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and species protection obligations of Council Directive 2009/147/EC on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Other legislative Acts affording protection to wildlife and their habitats include:

- Deer Act 1991;
- Protection of Badgers Act 1992:
- Wild Mammals (Protection) Act 1996.

Species and species groups regulated under domestic and European legislation that are most likely to be affected by development activities include herpetofauna (amphibians and reptiles), badger, bats, birds, dormouse, invasive plant species, otter, plants, red squirrel, water vole and white clawed crayfish.

Bat legislation

All bat species in the UK are fully protected under The Conservation (Natural Habitats, &c.) Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)
- Deliberate disturbance of bat species as:

  a) to impair their ability:

  - (i) to survive, breed, or reproduce, or to rear or nurture young;
  - (ii) to hibernate or migrate[3]

  b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

All bat species in the UK are also protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, it is an offence to:

- Intentional or reckless disturbance (at any level);
- Intentional or reckless obstruction of access to any place of shelter or protection:
- Selling, offering or exposing for sale, possession or transporting for purpose of sale.

Birds

All birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to kill, injure or take any wild bird, or to take or destroy their eggs. It is also an offence to take, damage or destroy the nest of any wild bird while it is in use or being built. Certain species receive additional special protection under Schedule 1 of the Act.

- Intentional or reckless disturbance while it is building a nest or is in, on or near a nest containing eggs or young;
- Intentional or reckless disturbance of dependent young of such a bird.

Species listed under Annex 1 of the European Community Directive on the conservation of Wild Birds (79/409/EEC) qualify sites for designation as a Special Protection Area (SPA) if certain selection criteria are met, such as a site supports internationally important populations of an Annex 1 species.

Amphibians and Reptiles (herptofauna)

All native herpetofauna are listed on Schedule 5 of the Wildlife and Countryside Act, 1981 (as amended). The sand lizard *Lacerta agilis*, smooth snake *Coronella austriaca*, natterjack toad *Bufo calamita* and great crested newt *Triturus cristatus* receive full protection under the Act, and are also protected under Schedule 2 of the Conservation (Natural Habitats &c.) Regulations, 2010 (Regulation 41). This prohibits the intentional killing, injuring or taking of animals; intentional disturbance whilst occupying a place used for shelter; the destruction of these places; and the sale of animals.

The adder *Vipera berus*, grass snake *Natrix natrix*, common lizard *Lacerta vivipara* and slow-worm *Anguis fragilis* receive protection against deliberate killing, injuring and sale under subsections 9(1) and 9(5) of the Wildlife and Countryside Act, whilst common frog *Rana temporaria*, common toad *Bufo bufo*, smooth newt *Triturus vulgaris* and palmate newt *T. helveticus* are protected from sale only.

Licences are only required for works affecting fully protected species of amphibian and reptile, but mitigation measures may be required to prevent the deliberate killing or injury of adder, grass snake, common lizard and slow worm.

Badger legislation

Badgers and their setts are protected under the Protection of Badgers Act 1992, which makes it illegal to kill, injure or take badgers or to interfere with a badger sett. The term 'badger sett' is normally understood to mean the system of tunnels and chambers, in which badgers live, and their entrances and immediate surrounds. The 1992 Act specifically defines a sett as "any structure or place which displays signs indicating current use by a badger". Interference with a sett includes blocking tunnels or damaging the sett in any way.

There is, however, provision within the legislation to permit activities affecting badgers or their setts where there is suitable justification and a problem cannot be resolved by alternative means.

Hedgehog legislation

The hedgehog is listed on Schedule 6 of the Wildlife and Countryside Act, 1981 (as amended), which prohibits the taking or killing of these animals and by The Wild Mammals (Protection) Act, 1996 which makes it an offence to kick, mutilate, burn or otherwise cause deliberate cruelty to wild mammals. The hedgehog was added to the list of UK Biodiversity Action Plan (BAP) species in 2007 and is on the Biodiversity Lists for England and Wales (listed as a Species of Principal Importance under the NERC Act (2006)).

Stag Beetle Legislation

The stag beetle is protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) but only to prevent trade. It is also listed on Appendix III of the Bern Convention on the Conservation of European Wildlife and Natural Habitats, 1979 and Appendix 2 of the Habitats Directive. The latter requires the UK to designate Special Areas of Conservation (SAC) specifically to protect the stag beetle.

The presence of stag beetles is not an obstacle to development, but as a priority Biodiversity Action Plan species in the UK, sympathetic measures should be taken to accommodate their needs, where possible.

NATIONAL AND EUROPEAN LEGISLATION AFFORDED TO HABITATS

The main European and National habitat designations applied in England are Special Protection Areas (SPA's), Special Areas of Conservation (SAC's), Ramsar Sites and Sites of Special Scientific Interest (SSSI's). The legislation that provides for their identification, designation and protection includes:

- The Conservation of Habitats and Species Regulations 2010;
- The Conservation of Wild Birds Directive 2009/147/EC;
- The Wildlife and Countryside Act 1981 (as amended);
- The Countryside and Rights of Way (CRoW) Act (2000).

Statutory Designations: Local

Under the National Sites and Access to the Countryside Act 1949 Local Nature Reserves (LNRs) may be declared by local authorities after consultation with the relevant countryside agency. LNRs are declared for sites holding special wildlife or geological interest at a local level and are managed for nature conservation, and provide opportunities for research and education and enjoyment of nature.

Non-Statutory Designations

Areas considered to be of local conservation interest may be designated by local authorities as a Wildlife Site, under a variety of names such as County Wildlife Sites (CWS), Sites of Biological Importance (SBIs), or Sites of Importance for Nature Conservation (SINCs). The criteria for designation may vary between regions.

The Hedgerow Regulations 1997

The Hedgerow Regulations 1997 are intended to protect 'important' countryside hedgerows from destruction or damage. A hedgerow is considered important if (a) has existed for 30 years or more; and (b) satisfies at least one of the criteria listed in Part II of Schedule 1 of the Regulations.

Under the Regulations, it is against the law to remove or destroy certain hedgerows without permission from the local planning authority. Hedgerows on or adjacent to common land, village greens, SSSIs (including all terrestrial SACs, NNRs and SPAs), LNRs, land used for agriculture or forestry and land used for the keeping or breeding of horses, ponies or donkeys are covered by these regulations. Hedgerows 'within or marking the boundary of the curtilage of a dwelling-house' are not.

NATIONAL PLANNING POLICY

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) (2012) sets out the Government's national policies on different aspects of planning in England. Section 10 paragraphs 109 to 125 detail planning policies on the conservation and enhancement of the natural environment. Circular 06/2005 provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

In summary, it states that the planning system should contribute to and enhance the natural and local environment by: *'minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.'* It promotes '*...opportunities to incorporate biodiversity in and around developments should be encouraged*'.

The NPPF notes that the planning system should contribute to and enhance the natural and local environment by:

- protecting and enhancing valued landscapes, geological conservation interests and soils;
- recognising the wider benefits of ecosystem services; and
- minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

The Natural Environment and Rural Communities (NERC) Act 2006 and The Biodiversity Duty

Part 3, Section 40 of the NERC Act 2006 states that 'every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity', otherwise known as the Biodiversity Duty. Under Section 41 of the Act, the Secretary of State must publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity. This list is based on those species listed in the UK Biodiversity Action Plan (BAP) as priority species. The S41 list replaces the list published under Section 74 of the Countryside and Rights of Way (CRoW) Act 2000. Under the Act these habitats and species are regarded as a material consideration in determining planning applications. A developer must show that their protection has been adequately addressed within a development proposal.

UK BAP

In 1994 the UK Government published its response to the Convention on Biological Diversity that it signed along with over 150 other nations at the Rio Earth Summit in 1992. Biodiversity – the UK Action Plan (HM Government 1994) and subsequent publications (e.g. UK Steering Group 1995) set out a programme for the national Biodiversity Action Plan (BAP), including the development of targets for biodiversity, and the techniques and actions necessary to achieve them. UK BAP priority habitats were those that were identified as being the most threatened and requiring conservation action under the UK Biodiversity Action Plan (UK BAP). The UP BAP priority species were those that are of conservation concern, either because they are rare in an international or national context or have undergone serious declines in their populations in recent years. The original lists of UK BAP priority habitats and UK BAP priority species was created between 1995 and 1999, and was revised in 2007, following publication of the Species and Habitats Review Report. Following this review, the list of UK BAP priority habitats increased from 49 to 65 and te list of UK BAP priority species increased from 600 to 1150.

As a result of devolution, the UK BAP is now focussed at a country-level rather than a UK-level. However, the UK list of priority habitats and species, remains an important reference source and still form the basis of much biodiversity work in the countries.

UK BAP priority habitats which are of relevance to the site include:

- Lowland Mixed Deciduous Woodland
- Open Mosaic Habitat on Previously Developed Land

UP BAP priority species which are of relevance to the site include:

- Song thrush *Turdus philomelos*
- Common bullfinch *Pyrrhula pyrrhula*
- Slow worm *Anguis fragilus*
- Noctule *Nyctalus noctula*
- Cinnabar moth *Tyria jacobaeae*

REGIONAL AND LOCAL PLANNING POLICY

The London Plan: The Mayor's Spatial Strategy for Greater London (2011) deals with matters of strategic importance for London. Chapter 7 – London's Living Places and Spaces sets out the policy areas that impact amongst other factors the quality and function of green infrastructure and biodiversity. Policies 7.16 – Green Belt, 7.17- Metropolitan Open Land, 7.18 – Protecting local natural space and addressing local deficiency address the proposals relating to these factors.

Policy 7.18: Protecting local open space and addressing local deficiency

LDF preparation

A: When assessing local open space needs LDFs should:

a) include appropriate designations and policies for the protection of local open space

b) *identify areas of public open space deficiency, using the open space hierarchy set out in Table 7.2 as a benchmark for all the different types of open space identified in the hierarchy*

c) *ensure that future open space needs are planned for in areas with the potential for substantial change such as Opportunity Areas, Regeneration Areas, Intensification Areas and other local areas.*

D: Use the CABE Space/Mayor of London Best Practice Guidance 'Open Space Strategies' as guidance for developing policies on the proactive creation, enhancement and management of open space.

Policy 7.19: Biodiversity and access to nature

E: When considering proposals that would affect directly, indirectly or cumulatively a site of recognised nature conservation interest, the following hierarchy will apply:

1. *Avoid adverse impact to the biodiversity interest;*
2. *Minimize impact and seek mitigation;*
3. *Only in exceptional cases where the benefits of the proposal clearly outweigh the biodiversity impacts, seek appropriate compensation.*

Connecting with London's Nature: The Mayor's Biodiversity Strategy (GLA, 2002) includes a number of policies and proposals for protecting green spaces and important species that are relevant to the site.

Proposal 3: Conserving species through the planning system states that:

''The Mayor will and boroughs should resist development that would have a significant adverse impact on the population or conservation status of protected species or priority species.

Proposal 6: Greening new developments states that:

"The Mayor will and boroughs should ensure that new development capitalises on opportunities to create, manage and enhance wildlife habitat and natural landscape. Priority should be given to sites within or near to areas deficient in accessible wildlife sites, areas of regeneration, and adjacent to existing wildlife sites".

A recent technical report (GLA, 2008) on living roofs and walls has been published to support the London Plan (2009) and the new London BAP habitat – Built Structures. In outline, it includes the following key policies;

''The major will and boroughs should expect major developments to incorporate living roofs and walls where feasible and reflect this principle in LDF policies. It is expected that this will include roof and wall planting that delivers as many of these objectives as possible;

- Accessible roof space
- Adapting to and mitigating climate change
- Sustainable urban drainage
- Enhancing biodiversity
- Improved appearance

Boroughs should also encourage the use of living in smaller developments and extensions where the opportunity arises''.

Haringey's Local Plan: Strategic Policies 2013 – 2026 March 2013 includes a number of local policies that are relevant to the site. Specifically, these can be found in Chapter 6.3: Open space and biodiversity.

SP13: Open space and biodiversity

New development shall protect and improve Haringey's parks and open spaces. All new development shall:

- Protect and enhance, and when and where possible, extend the existing boundaries of the borough's Green Belt, designated Metropolitan Open Land, designated Open Spaces, Green Chains, allotments, river corridors and other open spaces from inappropriate development.

All development shall protect and improve sites of biodiversity and nature conservation, including private gardens through its:

- Contribution to wildlife and ecological habitats and, where possible, include green and brown roofs, rainwater harvesting, green walls, bird and bat nesting/roosting opportunities;
- Protection, management and maintenance of existing trees and the planting of new trees where appropriate; and,
- Protection, enhancement and creation of Sites of Importance for Nature Conservation (SINCs) and Local Nature Reserves (LNRs).

REGIONAL AND LOCAL BAPs

The London Biodiversity Action Plan contains 11 Habitat Action Plans (HAPs) and 8 Species Action Plans (SAPs). Specific HAPs and SAPs listed in the London LBAPs which are of potential relevance to this site include:

- Wasteland;
- Woodland;
- Reptile;
- Bats; and
- Stag beetle.

The Haringey Biodiversity Action Plan (2009) aims to improve biodiversity value across the Borough and support the priorities and targets of both the London and UK plans. Section of the Haringey BAP that are of paticular relevance to the site include:

Section 8: Biodiversity Infrastructure in Haringey

- 8.1 - Sites of Importance for Nature Conservation
- 8.4 - Green Chains and Ecological Corridors

- 9.1.4 - Woodland Habitat Action Plan

  Target 1: To increase the extent of woodland habitat in Haringey by 0.5 hectares by 2015.

  Target 4: To protect and conserve Haringey's veteran trees.

- 9.3.1 - Waste Land

  Sub Para 3: 'Waste land provides important open spaces for local people in the urban environment. These sites are often the truly 'wilde' city spaces, and there is great potential to make them more accessible, safe and enjoyable through positive management.'

  Sub para 4: 'Due to the rapid rate of development many of Haringey's best waste land sites have been lost however it is hoped that where they have been designated as Sites of Importance for Nature Conservation that they can be protected and managed in favour of wildlife.'