MEPC Hillington Park -
Ecological Survey Report

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Ecological Survey Report

Prepared for MEPC Ltd.

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1. INTRODUCTION

1.1 Background

1.1.1 MEPC Hillington Park General Partner Ltd. (hereafter known as MEPC) commissioned MBEC in May 2013 to carry out ecological surveys of Hillington Park, within Hillington Industrial Estate, Renfrewshire. The purpose of the surveys was to determine the presence / likely absence of specially protected species (i.e. those native species which are threatened and vulnerable and have special legal protection), and to map and describe habitats of nature conservation interest. This was to inform the process of obtaining Simplified Planning Zone (SPZ) status for Hillington Park.

1.2 Site Context

1.2.1 The site is situated in the Hillington Industrial Estate, the majority of which is in Renfrewshire although the east of the site falls within the Glasgow City council area (centred on National Grid Reference NS 516 655, 5 m above sea level). The site is c. 198 hectares and broadly comprises offices and light industrial buildings, car parks and roads, amenity shrub and grass, semi-improved neutral grassland, amenity grassland, broad-leaved plantation woodland, scattered trees and marshy grassland. The industrial estate is bordered by the M8 (Junction 26) to the north, the railway line to the east and south, and Penilee Road to the west.

1.3 The Simplified Planning Zone Application

1.3.1 MEPC is proposing to formally request that Renfrewshire Council and Glasgow City Council prepare a Simplified Planning Zone (SPZ) for Hillington Park. A SPZ would facilitate the future redevelopment and rationalisation of existing structures and the expansion of the estate over a 10-year period, without the need for individual planning applications. It is intended that a series of specific development parameters will apply to the SPZ and that the provisions of the SPZ will not supersede the requirements for compliance with all other relevant legislation and controls. The objective of the SPZ is not to allow wholesale redevelopment of the site. It is intended that development would be piecemeal over the life of the SPZ and would include the refurbishment of some of the higher quality existing buildings, rather than their demolition.

1.3.2 There will also be design guidance that will accompany the SPZ which will set out a series of landscape parameters to improve the site's hard and soft landscaping. Opportunities for ecological enhancement of the landscaping proposals are outlined in the recommendations section of this report.

1.3.3 Further detail on the proposed development parameters is provided in the SPZ.

1.4 Scope of this Report

1.4.1 MBEC were tasked to complete an updated desk study and various field surveys including an extended Phase 1 habitat survey and protected species surveys for bats, badger, invasive species and reptiles. These surveys were intended to update previous ecological surveys completed by MBEC for approximately the same area in 2007. Previous surveys did not identify any waterbodies on or adjacent to the site and this was confirmed during the 2013 surveys. Therefore, no specific surveys were

completed for protected species associated with waterbodies (e.g. water vole, otter or great crested newt).

1.4.2 In this study particular consideration has been given to habitats and species of relatively high conservation concern and / or subject to special legal protection these include:

- Habitats of conservation value such as those identified within the local Biodiversity Action Plan, the Scottish Biodiversity Strategy and / or those listed on Annex I of Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora;
- Fauna subject to special legal protection, for example, through their inclusion on Schedule 5 of the Wildlife & Countryside Act 1981 (as amended) or Schedule 2 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland);
- Fauna which are identified within the local Biodiversity Action Plan or Scottish Biodiversity Strategy as requiring species conservation measures;
- Flora of conservation value or special legal protection (e.g. plant species listed on Schedule 8 of the Wildlife & Countryside Act 1981, as amended or Schedule 4 of the Conservation (Natural Habitats, &c.) Regulations 1994 (as amended in Scotland); and
- Consideration of the risk of spread of any non-native invasive plant and animal species which may be present in the area.

1.4.3 In summary, this report provides the following:

- Ecological desk study findings;
- Details of relevant designated sites;
- Extended Phase 1 habitat survey results;
- Protected species walkover survey results;
- Bat activity survey results;
- Reptile surveys results;
- Preliminary evaluation of the nature conservation importance; and
- Conclusions and recommendations.

1.4.4 In compiling this report the authors have taken into account all relevant wildlife protection legislation and nature conservation policy. This includes relevant national and European environmental legislation, National and Local nature conservation policy and biodiversity action plans (see Section 2 for further details).

2. RELEVANT LEGISLATION & POLICY

2.1 Legislation Relating to Relevant Protected Species

2.1.1 There are several pieces of legislation protecting certain vulnerable and / or rare species in Scotland. In many cases it is an offence to kill or capture animals, including birds, and certain species are also protected from disturbance or harassment, or disturbance of their nests or resting places. The key pieces of legislation of potential relevance to this study are as follows:

- Wildlife & Countryside Act 1981 (as amended);
- The EC Habitats Directive (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora) and UK Habitats Regulations (The Conservation (Natural Habitats, &c.) Regulations 1994, as amended in Scotland); and
- The Protection of Badgers Act 1992.

2.1.2 Further detail on relevant species-specific legal protection is provided in Section 4 of this report.

2.2 Invasive Plant Species

2.2.1 Non-native invasive plant species were searched for and were recorded during the Phase 1 habitat survey. Consideration was given to the Scottish Government Code of Practice On Non-Native Species (made by the Scottish Ministers, under section 14C of the Wildlife and Countryside Act 1981, and which came into effect on the 2nd July 2012). The issue of the impacts of non-native plant species on native flora and fauna is also a key focus of the Scottish Biodiversity Strategy (see section 2.3 below). The following terrestrial invasive plant species were considered to be of greatest potential concern in relation to their presence in the region and potential to be spread by landscaping or construction works:

- Japanese knotweed (*Fallopia japonica*);
- Giant hogweed (*Heracleum mantegazzianum*); and
- Himalayan balsam (*Impatiens glandulifera*).

2.2.2 For frequently encountered non-native naturalised species associated with amenity planting (e.g. dogwoods (*Cornus* spp., rhododendron (*Rhododendron ponticum*), cotoneaster (*Cotoneaster* spp.); Japanese rose (*Rosa rugosa*); Snowberry (*Symphoricarpos* spp.) these were not always target noted but their presence and general frequency of occurrence was recorded.

2.3 UK & Scottish Biodiversity Strategy

2.3.1 The Convention on Biological Diversity was signed and approved by the European Union following the Earth Summit in Rio de Janeiro in 1992. The Convention expressed the need for the sustainable use of ecosystems and species in a manner that does not lead to the long-term decline of biological diversity. The Convention also requires all parties to prepare national biodiversity strategies and to ensure that these

strategies are incorporated into the planning of all activities that can have an impact (positive and negative) on biodiversity.

2.3.2 The UK produced its first national biodiversity action plan (the UK BAP), in response to the Convention on Biological Diversity, in 1994 and was the first country to do so. The UK BAP included action plans for the most threatened species and habitats with the overall aim of making significant progress towards halting biodiversity loss.

2.3.3 The process of devolution in the UK between 1998 and 1999 led to the establishment of parliaments and assemblies for Scotland, Northern Ireland and Wales each developing their own strategies for biodiversity and the environment. The original Scottish Biodiversity Strategy was published by the Scottish Government in May 2004. The strategy has recently been updated by the "2020 Challenge for Scotland's Biodiversity" which was published in June 2013. The 2020 Challenge is Scotland's response to the European Biodiversity Strategy for 2020 and the 'Aichi' targets of 2010. The 2020 Challenge, alongside the original 2004 Strategy, comprise the current Scottish Biodiversity Strategy. The aims of the Scottish Biodiversity Strategy are summarised as follows:

- Protect and restore biodiversity on land and in our seas, and to support healthier ecosystems;
- Connect people with the natural world, for their health and wellbeing and to involve them more in decisions about their environment; and
- Maximise the benefits for Scotland of a diverse natural environment and the services it provides, contributing a sustainable economic growth.

2.3.4 The current Scottish Biodiversity Strategy has a key focus on landscape-scale nature conservation (i.e. the 'ecosystem approach') with a particular effort directed towards addressing the key factors in biodiversity loss such as climate change, invasive non-native species, habitat fragmentation and diffuse pollution.

2.3.5 The Scottish Biodiversity List (SBL) is an important measure related to the Scottish Biodiversity Strategy. The SBL, which was published in 2005 to satisfy a provision under the Nature Conservation (Scotland) Act 2004, is a statutory list of animals, plants and habitats considered to be most important for conservation in Scotland. The SBL is intended to help public bodies meet their Biodiversity Duty under the Nature Conservation (Scotland) Act 2004 and help set priorities for the conservation of Scottish species and habitats.

2.3.6 There remains a collective UK approach on common goals for the conservation of biodiversity at the UK government level. This is set out in the 2007 document 'Conserving Biodiversity – the UK Approach' and more recently updated in the 'UK Post-2010 Biodiversity Framework' (July 2012). These approaches respond to updates to strategic biodiversity targets agreed following various EU and UN conferences and agreed strategies on the conservation of biological diversity since Rio de Janeiro (e.g. at Gothenburg in 2001, Nagoya in 2010, EU Biodiversity Strategy in 2011).

2.4 Planning Policy Context

Scottish Planning Policy

2.4.1 Scottish Planning Policy (SPP) expresses the Scottish Government's policy on nationally important land use planning matters and since 2010 has superseded the previous individual documents of National Planning Policy Guidelines. The subject polices of the SPP of potential relevance to this site are related to 'Landscape & Natural Heritage' and 'Protected Species'.

2.4.2 Under the 'Landscape & Natural Heritage' policy the SPP states that…

"All public bodies, including planning authorities, have a duty to further the conservation of biodiversity under the Nature Conservation (Scotland) Act 2004, and this should be reflected in development plans and development management decisions."

2.4.3 In relation to protected species the SPP states that…

"If there is evidence to suggest that a protected species is present on site or may be affected by a proposed development, their presence must be established, the requirements of the species factored into the planning and design of the development and any likely impact on the species fully considered prior to the determination of the planning application."

2.4.4 Also that…

"Planning permission must not be granted for development that would be likely to have an adverse effect on a European protected species unless the planning authority is satisfied that: there is no satisfactory alternative, and the development is required for preserving public health or public safety or for other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. In no circumstances can development be approved which would be detrimental to the maintenance of the population of a European protected species at a favourable conservation status in its natural range."

2.4.5 Also that…

"Planning permission must not be granted for development that would be likely to have an adverse effect on a species protected under the Wildlife and Countryside Act 1981 unless the development is required for preserving public health or public safety. For development affecting a species of bird protected under the 1981 Act there must also be no other satisfactory solution."

Strategic Conservation Policy from the Glasgow and the Clyde Valley SDP

2.4.6 The Scottish Ministers approved the Glasgow and the Clyde Valley Strategic Development Plan (SDP) in May 2012. The SDP is intended to provide an overall geographical framework for sustainable development in the Clyde Valley. The SDP is intended to assist the eight constituent local authorities in devising LDPs and assessing planning applications and proposals.

2.4.7 The Central Scotland Green Network (this is a National Development as identified in National Planning Framework 2) is the main element of the SDP which is of potential

relevance to the Hillington Park site. Strategic opportunities to enhance and expand the Green Network within the Renfrewshire Council area have been identified. Proposed "hotspots" include Renfrew Waterfront and Braehead, but this does not appear to include the Hillington Park site per se.

East Renfrewshire, Renfrewshire & Inverclyde Local Biodiversity Action Plan

2.4.8 Renfrewshire Council has contributed jointly with Inverclyde and East Renfrewshire Councils to the creation and implementation of a Local Biodiversity Action Plan (LBAP). The LBAP was first published in 2004 and included 7 habitat action plans and 11 species action plans.

2.4.9 Habitat action plans of potential relevance to the Hillington Park site include:

- Unimproved grasslands (neutral grassland); and
- Urban habitats.

2.4.10 Species action plans of potential relevance include:

- Pipistrelle bats.

2.4.11 Actions for these plans were updated in 2009 and published in the document 'the Update Report and Rolled Forward Actions for 2008 - 2011'. Several new action plans were proposed at that time, however none of these are considered to be of particular relevance to this site.

2.5 Nature Conservation Policy from the Renfrewshire Local Plan

2.5.1 The Renfrewshire Local Plan (adopted 7 March 2006) identifies Hillington Industrial Park for business development, specifically the M8 frontage area. The relevant aspect of planning policy for this development, from a nature conservation perspective, falls under Policy IB4 (b), about which the following is stated in the Local Plan:

"Development sites should have a generous area allocated to high quality soft landscaping, particularly on development frontages, to provide a high quality setting to the building and to reflect the general layout and design approach of the site as a whole. Native trees and plant species should be incorporated wherever possible."

2.5.2 There are more general policy statements within the Local Plan that have potential relevance to the Hillington Park proposals. For example, biodiversity (covered within the Renfrewshire LBAP); bats; trees (guides to the protection of trees, and tree preservation orders applied throughout the region); nature conservation (applied to statutory and non-statutory designated sites important for nature conservation throughout the region); and greenspace (the work of the Carts Greenspace organisation to promote, transform and improve greenspaces within Renfrewshire, East Renfrewshire and south-west Glasgow).

2.5.3 Policy F3 within the Renfrewshire Local Plan requires that developments should make satisfactory provision for sustainable drainage systems (SuDS); or where SuDS solutions are not possible, to demonstrate and adopt a method which gives the best environmental practice available at the site.

2.6 Nature Conservation Policy from the Glasgow Local Plan

2.6.1 Glasgow City Local Plan (adopted 7 December 2009) aims to enhance biodiversity where possible. The most relevant aspect of planning policy for this development, from a nature conservation perspective, falls under Policy 5.32 (ii), about which the following is stated:

"All development proposals have due regard to: the protection of landscape features and habitats, including trees and woodlands; the network of designated Sites of Importance for Nature Conservation (including wildlife corridors); legally protected species and listed species of conservation concern; and the appropriate habitat and species plans of Glasgow's Local Biodiversity Action Plan."

2.6.2 There are more general policy statements within the Local Plan that have potential relevance to the SPZ and future re-development proposals. For example, biodiversity (covered within Policy ENV 6) and trees, woodlands and hedgerows under ENV 8. The importance of integrating Sustainable Design and Construction objectives for new development is set out in Policies DES 2 and DES 4 (Sustainable Design and Construction, Protecting and Enhancing the City's Natural Environment).

3. METHODS

3.1 Desk study

3.1.1 An ecological desk study was completed for the site boundary plus an additional 500 m (see Figure 2 for the site boundary). Ecological records were reviewed from the National Biodiversity Network (NBN) Gateway (http://www.nbn.org.uk/). This included the 10x10 km British Ordnance Survey (OS) National Grid hectads that contained Hillington Industrial Estate (NS46 and NS56). The NBN database holds historical species records supplied by a wide range of organisations at resolutions from 10km^2 grid squares down to six figure National Grid References for some species and groups. It should be noted, however, that the NBN database relies on third-party data submissions and therefore only provides an indication of the species present in a given area, if data has been submitted (i.e. the absence of records does not necessarily mean that a species does not occur in any given area).

3.1.2 Based on initial scoping visits to the site and from reviewing the previous survey results, the general variety of habitats / features and potential for protected species could be assessed. This provided a preliminary indication of where best to focus survey effort.

3.1.3 A summary of the desk study findings is provided in Appendix 1. Mapped results are shown on Figure 2. Records dated prior to 1990 are not included in the results. Also records that have a spatial resolution at the hectad scale (10x10km OS Grid square) or greater are not shown on Figure 2.

3.2 Field Surveys

3.2.1 Prior to carrying out all survey work, access permission was sought from and agreed with all relevant parties.

3.2.2 The extended Phase 1 habitat survey, invasive species and preliminary protected species surveys were completed by two qualified and suitably experienced ecologists on the 8th May and 26th June 2013. A further Phase 1 habitat, invasive and

preliminary protected species survey was completed on the 11th and 12th December 2013 by two ecologists. This was to assess the eastern periphery, around the SPZ, as this area had not previously been part of the agreed survey area.

3.2.3 Reptile habitat suitability assessment and presence / likely absence surveys were completed from the 26th June to the 1st of October with a total of 8 visits. Bat activity transects (driven) and deployment of automatic bat detectors and recorders were completed once per season (spring, summer and autumn).

3.3 Phase 1 Habitat Survey

3.3.1 The majority of the extended Phase 1 habitat survey was completed within the optimum period to carry out botanical surveys, i.e. at a time of year when the majority of plant species are in flower and trees are in full leaf.

3.3.2 The additional Phase 1 habitat survey, which only covered a small area around the edge of the development site took place later in the year in December. This was a sub-optimal time of year as plants are not in flower or leaf. However, there had been no hard frosts prior to the survey so sufficient species were still identifiable to enable Phase 1 classification of habitats.

3.3.3 The habitats within the site (the red line boundary as shown on Figure 3) were surveyed and plotted on a 1:10,000 scale map according to the methods described in the Phase 1 Habitat Survey Handbook (JNCC 2010). A summary of the results from the Phase I habitat survey is provided in section 4.3. Nomenclature for vascular plants recorded during the survey follow those given in Stace (2010).

3.3.4 Target notes, giving details of plant species composition, any notable habitats, species and features too small to map were produced. The location of the target notes is shown on Figure 3. The target notes and a list of all vascular plant species recorded during the survey is provided in Appendix 2.

3.4 Protected Species

3.4.1 Walkover surveys were undertaken to assess habitat suitability and presence / likely absence of species which have enhanced legal protection in the UK. Surveys focused on bats, in addition any suitable habitat for or evidence of water vole, otter, badger or great crested newt was searched for and systematically recorded. Any evidence of any protected species observed during the Phase 1 habitat surveys was also noted.

3.4.2 A handheld Global Positioning System (GPS) was used to record, to within approximately +/- 6 m accuracy (although this could be greatly increased under a closed plantation canopy) important features and any field signs. Particular emphasis was placed on determining the status of these species in areas where direct disturbance due to development may occur.

3.4.3 A summary of the protected species survey methodology is outlined below. All surveys were focused on potentially suitable habitats within the proposed development site area (see Figure 3).

Bats

3.4.4 The approach adopted for bat surveys was intended to provide an initial assessment of habitat suitability and potential for the site to support bat roosts. A detailed assessment and survey for evidence of existing bat roosts for all buildings was not undertaken at this time. This approach is considered to provide a suitable level of detail to inform an assessment of any possible risk to bats from the redevelopment of the site in the context of a SPZ being implemented (i.e. at a stage before any detailed proposals for any of the buildings are considered). It is therefore recommended (see Section 7 below) that, should a SPZ be approved, there be suitably worded conditions to ensure that the potential risk to bats and their roosts are fully considered before works commence on any of the buildings within the Park.

3.4.5 The methodology used for the bat surveys involved daytime assessments of buildings and trees for roosting potential, including highlighting potentially good quality foraging areas and commuting routes. Driven transects and deployment of automated bat detectors were also used to sample bat activity across the site. Daytime bat roost surveys were completed on the 24th May 2013 and the 11 - 12th December 2013 to assess buildings and trees for their potential to support a bat roost. Automated bat surveys and driven transects were completed throughout the survey season (spring, summer and autumn). All survey methods were based on current best practice guidance from the following sources:

- Bat Conservation Trust (2012) Bat Surveys - Good Practice Guidelines 2nd edition; and
- Bat Workers Manual by the Joint Nature Conservation Committee (JNCC, 2004).

Daytime Roost Suitability Surveys - Buildings,

3.4.6 A preliminary bat roost potential assessment was undertaken for all accessible and potentially suitable features and buildings within the survey area (see Figure 4). This was not a detailed external and internal inspection of the buildings for evidence of use by bats. During the survey, any potential bat roosting sites, safely accessible within the survey area, were recorded and systemically evaluated. This was undertaken by eye or with binoculars, scanning from ground level. Features recorded included spaces around boarded up windows, missing or loose slates, gaps in mortar or spaces behind guttering which allowed entry into the building. The buildings that were accessible were externally checked for any bat droppings, feeding remains, scratch marks, urine stains and actual sightings.

3.4.7 Buildings were assigned a qualitative rating of Very low (VL), Low (L), Moderate-Low (ML), Moderate (M), Moderate-High (MH), High (H) or Very High (VH) based on this preliminary inspection and professional judgement (see Table 1). In some cases buildings could be assessed in groups and were therefore assigned a single collective rating.

Table 1: Building assessment methodology for bat roost potential

Bat building assessment category		Description	Evidence
CONFIRMED	Day / maternity / hibernation / mating roost	Buildings / man-made structures with direct evidence of current use by bats.	Sighting / hearing of bats (including emergence). Presence of fresh droppings / staining.
	Night roost	Buildings / man-made structures with direct evidence of current use by bats. Structure more open with less refuge than a day roost.	Sighting / hearing of bats (including emergence). Presence of fresh droppings / staining.
POTENTIAL	Very High (VH)	Potential staining, droppings or bat evidence identified or visible. Large and complicated roof. Loose or gaps in roof timbers, mortise joints, cracks and holes. Access points into roof void / walls. Hanging tiles or weatherboards. Large gaps in brickwork. Entrance into eaves, windows. Loose or gaps in fascia boards and barge boards. Low disturbance levels.	Multiple entry points into buildings. Evidence of staining.
	High (H)	Same as VH, although no current suggestive evidence of bats.	Many entry points into buildings.
	Moderate / High (MH)	Same as H, although a lower number or less suitable access points.	Some entry points into buildings.
	Moderate (M)	Same as MH, although only a small number (>1) of access points into the building.	Few entry points into buildings.
LOW POTENTIAL	Moderate / Low (ML)	Same as L. Although any entrances are unlikely to be suitable for bats. This may indicate that in the future they may become suitable for bats.	Entry points are currently unsuitable.
	Low (L)	Same as VL. Except, any entrances present are unsuitable for bats and are unlikely to be used in the near future.	No visible suitable entrance points to bats.
	Very Low (VL)	No entrance points into the building. High disturbance levels. High levels of lighting. Prefabricated steel and sheet metal.	No opportunities for access by bats.

Daytime Roost Suitability Surveys - Trees

3.4.8 Trees with features that may provide opportunities for roosting bats were systematically graded for their potential suitability following the method detailed in Hundt (2012). Any of the features listed below which could potentially support roosting opportunities for bats were noted:

- Splits / fissures in the trunk due to injury / damage or rot;
- Splits/ fissures in the branch(s) due to injury / damage or rot;
- Large hole/ cavity in the trunk due to injury / damage or rot;

- Large hole / cavity in the branch(s) due to injury / damage or rot;
- Woodpecker hole;
- Hollow trunk due to rotting heartwood;
- Loose / lifting bark;
- Branch socket cavity / hole due to a branch falling from the tree and forming an entry point into a cavity / hole; and
- Dense ivy coverage.

3.4.9 The trees were also assessed at ground level for any evidence of bat droppings; feeding remains; scratch marks caused by bat claws; staining around a hole caused by natural oils in the bat's fur; urine stains; audible squeaking from within a cavity / hole; insects (notably flies) around a hole and actual sightings. Trees with features that may provide opportunities for roosting bats were systematically graded. A summary of the method is defined in Table 2 below. Grid references and field notes were taken of any / all suitable trees.

Table 2: Tree assessment methodology for bat roost potential

Tree category	Description
Known or confirmed roost	Tree with a roost. Sighting / hearing of bats (including emergence). Presence of fresh droppings / staining.
1*	Trees with multiple, highly suitable features capable of supporting larger roosts.
1	Trees with definite bat potential, supporting fewer features that category 1* trees or with potential for use by single bats.
2	Tree with no obvious potential, although the tree size is of an age that elevated surveys may result in cracks and crevices being found; or the tree supports some features which may have limited potential to support bats.
3	Tree with no potential to support bats

Daytime Roost Suitability Surveys - Habitat Suitability

3.4.10 Any areas of woodland and / or scrub on site which could provide commuting routes and potential foraging sites were assessed during the day. Notes were also taken during the emergence surveys of any foraging and / or commuting activity and the directions of flights.

Bat Activity - Driven Transects Surveys

3.4.11 Dusk and dawn bat activity transects were undertaken to cover the entire proposed development site and connectivity between the different areas of the proposed site. During the transect, several three-minute recording locations (listening stations) were selected where foraging and / or commuting activity would be likely to occur; for example, in areas close to scattered trees. At these listening stations, the surveyor stopped and made notes of what bat activity they heard during the three minute period.

3.4.12 Transects, were rehearsed in daylight in order to ensure that the grid references for the start, end and listening stations were entered into a hand-held GPS and to ensure that the surveyor was familiar with the transect.

3.4.13 The route was completed both forwards and in reverse order during different times of the survey season. This allowed for a more comprehensive coverage of the bat activity on the site as it allowed coverage of different areas at different times.

3.4.14 Following the BCT 2012 Guidelines and site assessments, the development site was graded as having 'low' habitat quality and was therefore surveyed on a seasonal basis, i.e. in spring, summer and autumn.

3.4.15 The transect surveys were undertaken by two surveyors. Handheld bat detectors with broadband capabilities (either a Pettersson D230 / D240x and / or a Batbox Duet), were used to monitor bat passes. A Marantz PMd620 MP3 solid state recorder was connected to the detector and used to record bat passes so that any calls that could not be reliably identified in the field could be later analysed using software. The bat detector and recorder were switched on continually to allow all commuting / foraging bats to be recorded.

3.4.16 Each transect route was driven slowly (no faster than 15 mph). Dusk surveys started at sunset and lasted 2-3 hours. Dawn surveys end at sunrise and last 2 hours.

3.4.17 Bat passes were identified to species level where possible and call types were recorded as commuting passes, foraging passes or social calls.

Automated Detector Surveys

3.4.18 The use of automated bat detectors can achieve a higher level of survey intensity in comparison to manual bat detector surveys because they can sample bat activity for the complete sunset to sunrise period and over many consecutive nights.

3.4.19 For the automated bat activity survey Song Meter 'SM2BAT+' ultrasonic detectors were used (these are referred to as 'SM2s'). Six SM2 locations were established (see Table 3) and were surveyed on a seasonal basis (i.e. sampling over three periods in spring, summer and autumn) as the site was deemed to be of relatively low habitat quality for bats (following BCT Guidelines, 2012).

3.4.20 The SM2s were deployed at a particular sampling point for five consecutive nights. However, in some cases the SM2s were run for shorter or longer periods due to access and technical issues. Bat echolocation calls were recorded onto memory (SD) cards within the SM2s. These data were later downloaded and analysed using computer software such as AnaLook (version 3.8.19) and SonoBat (version 2.9.7). Call characteristics and metrics determined by the bat analysis software could be used to determine species or genus of the bats. Bat calls were all interpreted using libraries of recorded calls of known species and various guidance materials to assist with call identification. Any recordings where species identification was not possible were noted in the results tables.

Table 3: Locations of the six SM2s Sampling Points (see Figure 5)

SM2 No.	Grid Reference	Site No.	Location / Direction	Description
1	252683 665240	7	East	Waste ground (tall herb and grass) next to woodland.
2	252642 665198	18	South East	Small area of waste ground and scrub in compound.

SM2 No.	Grid Reference	Site No.	Location / Direction	Description
3	252018 665298	22	South	Small corner of tall nettles and thistles and scrub in compound.
4	251607 665498	24	South West	Urban gardens. Small stand of birch woodland and some fruit trees.
5	251191 666018	17 (West)	North West	Scattered trees in area of amenity grassland.
6	251463 666098	17 (East)	North East	Scattered trees in area of amenity grassland. Close to scrub and tall herb.

Badger

3.4.21 All potential habitats within the proposed site area were checked for signs of badger. Field signs of badger include: setts / holes, prints, paths, latrines, feeding signs (e.g. snuffle holes) and badger hairs. Field signs are described in detail Neal & Cheeseman (1996) and Bang & Dahlstrøm (2001).

Reptiles

3.4.22 The methodology for reptile surveys in areas of marginal habitat, which encompassed the majority of the development area, was a mixture of visual surveys and natural and artificial refugia searches. All surveys were completed using professional judgement and the following best practice guidance:

- Froglife Advice Sheet 10 (Nov 1999);
- Reptile Habitat Management Handbook (2010); and
- Draft survey protocols for the British herpetofauna (Dec 2012).

Reptile Habitat Suitability

3.4.23 All areas of site which had the potential to support reptiles were target noted, grid referenced and assessed by a qualified ecologist. These included basking areas such as bare rocks or areas of bare ground or piles of brash or vegetation used as a refugia.

Reptile Presence / Likely Absence Survey

3.4.24 Artificial refugia (carpet tiles - dimensions 0.5 x 0.5m) were placed in locations likely to be used by reptiles, for example tussocky grassland, stone walls and hedgerows with south-facing aspect. They were placed onto vegetation with the black backing facing up and weighted with stones where there was a risk of the tiles being lifted by the wind. Tiles were also preferentially placed in locations unlikely to be disturbed by the public.

3.4.25 Approximately 50 tiles were placed per hectare of suitable habitat. This resulted in c. 80 tiles being placed in suitable locations across the development area. These tiles were left to “bed in” for a minimum of 10 days before monitoring commenced. Tile

locations were recorded using a map and hand-held GPS. Tiles were only placed in locations were it is possible to access safely during the daytime.

3.4.26 Any existing artificial or natural refuges already in place were recorded and also monitored (e.g. logs, fallen branches, metallic waste, stone piles etc).

3.4.27 The artificial and natural refugia were checked for reptiles for a minimum of 7 separate occasions during the survey period during suitable weather conditions i.e. air temperature between 9-18°C, avoiding wet and / or windy conditions. The searches were preferably completed between 0830 and 1100 and 1600 to 1830.

Other Protected Species

3.4.28 No waterbodies had been found on site or within the immediate surrounding area by the surveys completed by MBEC in either 2007 or 2013. Therefore, no surveys were completed for water vole, otter or great crested newt.

3.4.29 There was also considered to be no likely potential for the site to support nesting birds with enhanced protection (i.e. those species listed on Annex I of the EC Birds Directive or Scedule1 of the Wildlife & Countryside Act 1981).

3.5 Nature Conservation Evaluation

3.5.1 Ecological receptors (i.e. habitats and species of conservation interest) are assigned a nature conservation value based on evaluation criteria adapted from Ecological Impact Assessment guidelines (e.g. CIEEM 2005 guidelines, SNH EIA guidelines 2011) and based on experienced professional judgement.

3.5.2 Table 4 provides a description of the level of values and criteria that are used as a guide in the evaluation process. Nature conservation evaluation takes into account a wide range of factors. However in practice relative rarity at varying geographic scales is one of the most important considerations.

Table 4: Nature Conservation Value of ecological features (habitats and populations)

Value	Examples
Exceptional (International importance)	• Habitats or species that form part of the cited interest of an internationally protected site or candidate site (e.g. SPA, pSPA, SAC, cSAC, pSAC, Ramsar site).
High (National importance)	• A site that includes significant viable areas of European habitat (i.e. habitat types listed in Annex I of the Habitats Directive) or smaller areas of such habitat which are essential to maintain the viability of a larger whole. • A nationally designated site (SSSI, ASSI, NNR, MNR) and the habitats and species that form its cited interest. • Regularly occurring rare bird species (e.g. < 300 breeding pairs in the UK). • Birds present in nationally important numbers (e.g. > 1 % of the UK population). • A site that provides critical habitat for any regularly occurring population of national importance which is threatened or rare in the UK.

Value	Examples
Moderate (Regional importance)	• A viable area of a priority habitat identified as of critical importance in the UK BAP or smaller areas of such habitat which are essential to maintain the viability of a larger whole. • A regularly occurring population of priority species identified as of critical importance in the UK BAP. • Sites which exceed the Local-level designations but fall short of SSSI selection guidelines. • Any regularly occurring population of a nationally important bird species which is threatened or rare in the region (e.g. > 1 % of the regional population). • Regularly occurring population of bird species listed on the current UK Red-Amber list. • Bird species listed on Annex I of the EC Birds Directive and Schedule I of the Wildlife and Countryside Act (may be considered High value depending on numbers and proportions of regional / national population). • Species or habitats within a nationally or internationally designated site which are not crucial to the integrity of that site.
Low (Local importance)	High: • Sites meeting the criteria for Scottish Council area designation (such as Site of Importance for Nature Conservation (SINC), Wildlife Sites, which may include amenity and educational criteria in urban areas. Designated Local Nature Reserves. • Sites containing viable areas of any priority habitat identified in the UK BAP or Scottish Council LBAPs. Sites supporting viable breeding populations of species known to be Scottish Council rarities (e.g. included in the LBAP), and / or supplying critical elements of their habitat requirements. Any regularly occurring, locally significant population of bird species.
	Moderate: • Features / habitats or species which are not considered to qualify for non-statutory designation but which provide locally important semi-natural habitats (i.e. approx. 10 km radius from the site). • Populations of any species conservation importance in the context of the local area (i.e. approx. 10 km radius from the site).
	Low: • Features / habitats or species which are not considered to qualify for non-statutory designation but which provide locally important semi-natural habitats in the context of the immediate surrounding area (e.g. species-rich hedgerows, small ponds, etc.). • Populations of any species of conservation importance in the context of the immediate surrounding area.
Negligible	• A commonplace habitat / feature of little or no nature conservation significance. Loss of such a feature would not be seen as detrimental to the ecology of the area.

**Where species or habitats occur in more than one level the highest value is normally applicable. These examples are for guidance only; in practice nature conservation evaluation includes the assessment of a wide range of criteria and the application of professional judgment.*

4. DESK STUDY RESULTS

4.1 Designated Sites

4.1.1 There are no statutory or non-statutory sites designated for nature conservation within or directly adjacent to the site boundary.

4.1.2 The nearest Sites of Importance for Nature Conservation (SINC) are the River Clyde, Cardonald Place Farm and the White Cart Water. These are approximately 0.25 km east, 1.8 km south and 3.5 km west of Hillington Industrial Estate respectively.

4.1.3 There are eight areas within Hillington Park which are covered by the Central Scotland Green Network - Integrated Habitat Network (CSGN-IHN). Six of these areas are classified as woodland network and are found around the peripheral of the south, east and west of Hillington Park. Two of these areas are neutral grassland, which cover the north-east and north-west corners of Hillington Park (see Figure 3).

4.2 Protected Species

Mammal Records

4.2.1 The following is a brief summary of records collated during the desk study. Summary tables of the records are provided in Appendix 1 and the results for key species only (i.e. species of conservation concern with special statutory protection) are shown on Figure 2.

4.2.2 There are 19 records of water vole (*Arvicola amphibious*) within c. 3 km of the site from 2006. The specific location is not provided but appears to be associated with the Black Cart Water.

4.2.3 There are a number of bat species records within 2 km of the site, however none located within the site boundary. Thirty of these records from 2011 are not specific as to the species and have just been recorded as Chiroptera. In addition Daubenton's bat (*Myotis daubentonii*) has been recorded 48 times with the last record dating from 2011. Soprano pipistrelle (*Pipistrellus pygmaeus*) have been identified 15 times with the most recent record from 2010.

4.2.4 There are three records of badger (*Meles meles*) for the study area with the most recent record from 1994. No specific location was provided.

4.2.5 Otter (*Lutra lutra*) have been recorded 34 times within the study area with the last record from 2007. No specific location was provided.

Other Species

4.2.6 There are a number of bird records relevant to the study area, these are shown on Figure 2.

4.2.7 There were no records of any specially protected reptile, amphibian, invertebrate, plant or fungi identified during the desk study.

Relevant Legislation - Bats

4.2.8 Following the findings of the desk study and field survey (see below) bats are considered to be the only specially protected mammal species which are likely to be present within the site.

4.2.9 All species of bat in the UK and their roost sites are fully protected under UK law. All of Britain's bat species are 'European Protected Species' and are listed on Annex IV of the EC Habitats Directive, and fully protected in Scotland through The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended). In summary, the Regulations make it an offence to deliberately or recklessly:

- kill, injure or capture (take) bats;
- deliberately disturb bats (whether in a roost or not);
- harass a wild bat or group of bats; and/or
- damage, destroy or obstruct access to bat roosts (any structure or place it uses for shelter or protection), whether or not bats are present at the time, and disturb a hibernating or migrating bat.

4.2.10 This legislation confers full legal protection to bats in Scotland. Any planned activity which may affect bats or their roost sites requires prior consultation with the appropriate statutory nature conservation organisation (i.e. Scottish Natural Heritage, SNH). Licences may be granted by SNH for certain activities that would otherwise be illegal. Such activities might include: building alteration or maintenance work; re-roofing; remedial timber treatment; rewiring or plumbing in roofs; and demolition. Typically the presence of a bat roost does not prevent works to buildings from proceeding providing the potential impacts can be successfully mitigated. For example, through measures such as timing the key elements of the works affecting the roost to less sensitive times of year when bats are not present and ensuring that access to the roost site and the environmental conditions that bats depend upon are fully considered and incorporated into the plans.

4.2.11 Under Regulation 44 (2e) of the Conservation (Natural Habitats, &c.) Regulations 1994, licences may be granted for, among other purposes, preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. A licence will not be granted unless, under Regulation 44 (3), the appropriate licensing authority is satisfied there is no satisfactory alternative and that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

4.2.12 It is Scottish Government policy (and this is applicable to all planning authorities in Scotland) to ascertain the risk to bats from works associated with any planning application before granting consent.

Relevant Legislation - Birds

4.2.13 All wild birds in the UK are protected under the Wildlife & Countryside Act 1981 (as amended). Certain rarer species, or those that are vulnerable to disturbance or persecution receive further protection through their listing on Schedule 1 of the Act. Under the Wildlife & Countryside Act it is an offence to intentionally or recklessly:

- kill, injure or take a wild bird;
- take, damage, destroy or interfere with a nest of any wild bird whilst it is in use or being built (or at any time for a nest habitually used by any bird listed in Schedule A1);
- obstruct or prevent any wild bird from using its nest;
- take or destroy an egg of any wild bird;
- disturb any wild bird listed on Schedule whilst it is building a nest or is in, on, or near a nest containing eggs or young, or whilst lekking;
- disturb the dependent young of any wild bird listed on Schedule;
- harass any wild bird listed on Schedule 1A.

4.2.14 There are additional offences in relation to use of prohibited methods of killing or taking wild birds (listed on Schedule 3 of the Act). There are a number of exceptions to these offences including shooting outside of the closed season for certain species (listed on Schedule 2 of the Act).

4.2.15 In relation to the Hillington Park site it is considered unlikely that any species listed on Schedule 1 is breeding within the site. There is the potential for species such as peregrine (*Falco peregrinus*) and barn owl (*Tyto alba*) to occasionally pass through and possibly to hunt in the area. Although no incidental evidence of these species was noted during the desk study and field surveys no specific surveys or detailed desk study for these species has been undertaken at this time.

4.3 Watercourses and Water Quality

4.3.1 There are no water bodies or watercourses within or adjacent to the site.

5. FIELD SURVEY RESULTS

5.1 Survey Limitations

5.1.1 As is the case with all such ecological surveys undertaken over a relatively short period of time there are some generic limitations which are important to be aware of. For example, such surveys do not account for any seasonal or annual changes in use of an area. The absence of evidence of any species does not confirm that the species is not present but, subject to the inherent limitations of the particular methods followed, may give an indication of likely absence or a low population density. In addition there were a number of survey specific constraints outlined in the following paragraphs.

5.1.2 A detailed bat activity survey and survey for evidence of existing bat roosts was not undertaken at this time. The surveys which were completed were intended to provide an initial broad appraisal bat activity and roost potential for the Hillington Park site. The assessment of buildings was by necessity preliminary as access to inspect the exterior and interior of each building was not possible or considered to be appropriate given the objectives of this survey. It is recommended in Section 7 below that should a SPZ be granted that there are suitably worded conditions incorporated into the SPZ

documentation to ensure that the potential risk to bats and their roosts are fully considered in advance of any significant works on any of the buildings within the Park (i.e. not only those buildings / structures which have been provisionally rated to have some potential to support roosting bats, as shown on Figure 4).

5.1.3 In some locations access for the Phase 1 habitat and bat roost potential survey was restricted due to high security fences. Towards the north-east of the site, the railway yard had restricted access and surveys were completed by looking through and over fences and reviewing available aerial photography (e.g. as provided on https://maps.google.co.uk/).

5.1.4 Art of the Phase 1 habitat survey was completed in December 2013 (this was for an additional survey area along the eastern edge of the site) at a sub-optimal time of year for such surveys. December is well outside the flowering period of most plants and the aboveground growth of many herbaceous plants will have died back by this time. The optimal time to survey grasslands, which is the predominant habitat type, is mid-summer (JNCC, 2003). However, given the nature of the habitats present within this part of the survey area it was still possible to accurately determine and map the Phase 1 habitat type, even though a more detailed plant species list was not possible to record at that time.

5.1.5 Tree inspections for bat roosting potential were limited in certain cases due to access and health and safety concerns (trees growing in enclosed or cordoned off areas or close to unstable buildings). Further, full inspection from the ground was often limited (notably in the May 2013 surveys) due to any suitable feature in the tree being obscured by either foliage or vegetation (notably ivy).

5.1.6 The automated bat activity sampling points 1 and 5 had to be moved approximately 15 m from their position in the spring and summer recording periods. Point 1 was moved due to fly tipping on the location where it had been previously positioned for the Spring survey period. The decision to move Point 5 was made due to an increased level of disturbance and possible vandalism at the first location.

5.1.7 Fly tipping in the same location affected the reptile tile checks as some of the tiles had been buried under the rubble. The tree line near Napier Road in the northern part of the site had had some branches and vegetation cut. This had been piled up and covered some of the reptile tiles. Towards the north-western section of the site two tiles had been damaged by fire and four disappeared during the course of the survey.

5.2 Habitats and Flora

5.2.1 Table 5 provides a complete list of the Phase I habitats recorded within the site and their approximate total extent, from greatest to the least. A full habitat map is shown in Figure 3 with field target notes provided in Appendix 2.

Table 5: Phase 1 Habitat type, area and percentage cover within the survey area

Habitat Type	Total Area (ha)	Cover (%)
Roads, car parks and other hard-standing	96.92	48.80
Buildings	52.79	26.57
Amenity grassland	12.27	6.18

Habitat Type	Total Area (ha)	Cover (%)
Semi-improved neutral grassland	12.80	6.44
Amenity grassland / Introduced shrub	6.43	3.24
Bare ground	5.35	2.70
Marsh / marshy grassland	4.51	2.27
Ephemeral, short perennial	3.95	1.99
Broad-leaved plantation woodland	2.82	1.42
Introduced scrub	0.56	0.28
Garden	0.23	0.12
Mixed scattered trees	0.01	0.01
Total	198.64	100.00

5.2.2 Hillington Park is typical of most industrial estates in that buildings and hard-standings comprise the majority of the land cover (i.e. c. 75%). Amenity grassland (i.e. regularly mown, species-poor lawns) and planted non-native amenity shrubs are the dominant vegetation cover. However, some grasslands are present within the site that have not been subject to intensive mowing regimes and are more semi-natural in character. These support a relatively species-rich sward compared to the managed amenity grasslands. Such habitats were recorded as semi-improved neutral grassland. For a relatively species-rich example see target note 8, Appendix 2.

Amenity grassland & Introduced Shrub

5.2.3 After buildings and hard-standings, amenity grassland and introduced shrub is the most frequent habitat type. Strips of amenity-managed grassland are present along road side verges along Hillington Road and to a lesser extent along Montrose Avenue. Grass species present include perennial rye-grass (*Lolium perenne*), crested dog's-tail (*Cynosurus cristatus*) and Yorkshire-fog. Daisy (*Bellis perennis*) and white clover (*Trifolium repens*) are also present occasionally. Most of this habitat is close-cut, with longer grass and a higher diversity of broad-leaved species occurring on some sloping ground.

5.2.4 Scattered trees such as lime (*Tilia* x *vulgaris*) and pedunculate oak (*Quercus robur*) with a typical spacing of 10-15 m have been planted along strips of amenity grassland such as along part of Montrose Avenue, Queen Elizabeth Avenue and Watt Road.

5.2.5 Elsewhere within the survey area, amenity grassland occurs in landscaping associated with industrial buildings and south of an area of introduced scrub in the far north of the site. This is maintained at a short height and is dominated by grass species, particularly perennial rye-grass and crested dog's tail.

5.2.6 Areas of amenity grassland / introduced shrubs occur scattered throughout the site with the largest areas of this habitat occurring at the far north, close to the M8 and along the edge of Earl Haig Road. These are amenity grassland dominated with perennial rye grass dominating and to a lesser extent crested dog's-tail and common bent. Introduced scrub primarily consists of ornamental (non-native) shrub species with occasional native tree species such as rowan, Scots pine and silver birch.

5.2.7 The largest area of introduced shrub is found at the far north of the site along the M8. This is mostly ornamental (non-native) species including butterfly bush (*Buddleja sp*.) and cotoneaster. This area is overgrown with brambles and creeping thistle are found growing around the edges of these stands.

5.2.8 Large areas of amenity grassland have been established within the railway compound towards the north-east of the site. In addition, a relatively large area of amenity grassland has been established towards the south-west of the site with lines of trees planted along the edges and through the middle of this grassland area.

Semi-improved neutral grassland

5.2.9 Areas of semi-improved neutral grassland occur in six main locations. At the far northern end of the site, close to the M8, there are four areas of this habitat. Paths have been mown through this area. Towards the northeast, this vegetation is quite damp, with an abundance of species such as common bent (*Agrostis capillaris*), creeping buttercup (*Ranunculus repens*) and Yorkshire-fog (*Holcus lanata*), with the dominance across the site varying between the main grass species.

5.2.10 Towards the southeast, near Johnstone Avenue and Nasmyth Road south there are seven small areas of neutral grassland. Towards the southwest there are two areas of semi-improved neutral grassland along Montrose Avenue. Dominant species include cock's foot (*Dactylis glomerata)* with occasional germander speedwell (*Veronica chamaedrys),* crane's bill *(Geranium sp.)* and meadow foxtail (*Alopecurus pratensis).* Cuckoo flower (*Cardamine pratensis)* and soft-rush *(Juncus effusus)* are locally frequent.

5.2.11 Towards the south-eastern area of the site there are two extensive areas of semi-improved neutral grassland. The dominant species in the area to the far south near Carnegie Road were cock's-foot and meadow foxtail with yarrow (*Achillea millefolium*), creeping soft grass (*Holcus mollis*) and white clover (*Trifolium repens*) occasional. There were also stands of willow (Salix sp.), soft-rush, bramble (Rubus fruticosus) and rosebay willow herb (*Chamerion angustifolium*). In addition there was a small area (approximately 10 x 10 m) with common spotted orchid (*Dactylorhiza fuchsia*) plants towards the west of this area indicating the likelihood that this area is locally species rich (TN 38).

5.2.12 The area of semi-improved neutral grassland towards the north-west is a mix of introduced scrub, birch (*Betula* sp.) and willow to the eastern edge. In addition there was also a small stand of common spotted orchid (approximately 4 x 4 m) towards the western edge of this area (e.g. TN 36).

Broad-leaf plantation woodland

5.2.13 To the south-east of the survey area are two areas of broad-leaved plantation woodland. The most southern area was inaccessible; however the other was surveyed and was found to be of mature trees, mainly sycamore (*Acer pseudoplatanus),* willow *(Salix sp.)* and horse-chestnut *(Aesculus hippocastanum)* with a thin scattering of herbaceous species amongst fly-tipped rubbish.

5.2.14 An area to the east of the site is dominated by aspen and poplar with regeneration of white poplar. The more open canopy to the east allows for a more grass-dominated understorey. A small stand adjacent to the roundabout contains Scots pine along with ornamental shrub planting.

5.2.15 The north-western corner of the woodland has a more open canopy and therefore supports a more species-rich ground flora. This leads on to an overgrown rubble bank that supports a small area of common ruderal species and calcareous herbs. Spanish bluebells, an invasive species, were found in this woodland (target notes 3 and 4) along with a few native bluebells. Standing between the two broad-leaved plantation woodlands in this south-eastern corner of the survey area is a notably large black poplar (*Populus nigra var spp. betulifolia*) on amenity grassland.

5.2.16 The north-eastern woodland strip is predominately planted common lime with scattered alder found in the more marshy areas to the north of this woodland.

5.2.17 There is a thin strip (1 - 3 tree deep) of planted broad-leaved woodland growing along Johnstone Avenue to the eastern side of the site, shielding the railway. This is a mix of horse-chestnut, oak, ash, and willow.

Scattered trees

5.2.18 There are lines of planted trees along most of the main roads within the Estate. The densest lines of planted trees are along Kelvin Avenue, Carlyle Avenue, Watt Road and Hillington Road. Most trees are of a similar age (approximately 10 - 20 years old). The most common species are lime (*Tilia europaea*), rowan, poplar and whitebeam (*Sorbus aria*). There is further a line of planted maple along the northern side of Deanside Road (TN 27).

Ephemeral / short perennial

5.2.19 There are two areas of the site dominated by ephemeral / short perennial vegetation. The vegetation towards the northern end of the site has sparsely colonized an area of thin bare ground, where once there may have been a building or car park. The most common species found are common bent, creeping bent, lesser knapweed, cock's-foot, oxeye daisy, common dandelion and common groundsel.

5.2.20 The northern end of the second area has been developed into an urban garden, while the southern end is still undergoing development into an extension to the garden with the construction of a poly tunnel. The vegetation around the flower and vegetable beds is a mix of grass species including Yorkshire fog and crested dog's-tail. There is also a small line of birch trees, which have self-seeded around the fence line.

Marsh / marshy grassland

5.2.21 There are three areas of fairly extensive marshy grassland towards the northern end of the site, in the M8 Frontage area. These areas are significantly damper than the surrounding semi-improved neutral and amenity grasslands. The area south of Mossland Road appeared to be waterlogged for most of the year.

5.2.22 The dominant species in these areas are soft-rush (*Juncus effusus*) with some occasional Yorkshire-fog, creeping buttercup, eared willow (*Salix aurita),* broad-leaved willowherb (*Epilobium montanum)* and tufted hair-grass (*Deschampsia cespitosa*). The mosses *Rhytidiadelphus squarrosus* and *Calliergonella cuspidate* were also present occasionally and rarely. Alder and an apple tree were found to be growing in the middle of the most southerly area of marshy grassland.

Invasive plants

5.2.23 Two stands of giant hogweed were identified in the south-east of the site (TN 19 and 20).

5.2.24 A single stand of Japanese knotweed was located towards the south-eastern part of the site within an area of semi-improved neutral grassland close to the railway line (TN 40).

5.2.25 A large number of non-native species were present on site, the majority of which are associated with amenity shrub planting and in community gardens such as dog rose and cotoneaster.

Broad-leaved helleborine

5.2.26 No broad-leaved helleborine (*Epipactis helleborine*) was identified during the May and June 2013 surveys. This is outwith the main flowering period for this orchid species. Subsequent checks for broad-leaved helleborine in the period July to September, during the reptile survey visits, did not result in any plants being found. However, it is considered possible that this species is still present within the site, in the M8 Frontage area where it was recorded in 2007. Broad-leaved helleborine is a relatively common orchid species in suitable habitats in Glasgow and the central belt; however it is relatively rare in Scotland outside of this region.

Bluebell

5.2.27 Three remnant populations of what appeared to be native bluebell (*Hyacinthoides non-scripta*) were identified in the survey area. However, the invasive Spanish bluebell (*Hyacinthoides hispanica*) was also noted in one of the woodlands where native bluebell was found. The native bluebell is protected against sale under Schedule 8 of the Wildlife & Countryside Act 1981.

5.3 Protected Species

Bats - tree roost potential

5.3.1 Walkover surveys were undertaken in May and June 2013 for the majority of the survey area in order to provisionally assess the potential for trees within the site to support bat roosts. A further survey was completed in December 2013 for the additional eastern section of the survey area. Forty seven trees were found to have some potential suitability for roosting bats. Five trees were rated as having a high suitability (rating scale 1). Thirty seven trees were given a moderate rating (rating scale 2) for their suitability (see Figure 4). Target notes from tree roost potential survey are given in Appendix 3.

5.3.2 An area of woodland towards the south east of the site had seven trees that had features with potentially suitable roost sites for bats (T1-T7). Two trees (a horse chestnut with a deep long split and a dead standing tree with rot holes) offered high potential for roosting bats with suitable roosting features including loose flaking bark; long deep split continuing into the core of the tree; rot holes and standing dead wood.

5.3.3 Two trees were identified at the north of the site adjacent to the M8 Frontage, one hollow lime tree with a hole at 1 m (target number: T14), and a second tree with a bird box that may provide roosting potential for bats (target number: T15).

5.3.4 Two lines of trees along the north section of Montrose Avenue and the southern end of East Haig Road offered potential for roosting bats (target numbers: T8-T13 and T16-T30). Thick ivy was present on the majority of trees which may offer potential for night roosts.

5.3.5 There were a further eleven trees identified (T31 - T42) in an area of semi-improved neutral grassland towards the south - east corner of the site near the railway line. These were all graded as having medium potential due to their age (rating 2). This stand of trees were predominately a mix of ash, common lime and willow.

Bat - building roost potential

5.3.6 A preliminary assessment of the potential for buildings and other man-made structures within the site to support roosting bats was undertaken in May and June 2013 for the majority of the survey area (please note the important limitations of this initial assessment as detailed in Section 5.1). A further survey was completed in December 2013 for the additional eastern section of the survey area. Target notes from each assessed building are provided in Appendix 3 and results displayed on Figure 4. In general, due to the nature of the buildings (i.e. offices and light industrial buildings which are predominantly modern, well-maintained, flat-roofed constructions with very few potentially suitable features) the roosting opportunities for bats are relatively poor across the site. Particularly in relation to the potential for the site to support any nursery colonies (i.e. where females bats, primarily, roost communally and rear their pups during the summer months). There is greater potential, with some of the structures, for small numbers of bats to roost during transitional periods (i.e. during movements between summer and winter roosts) and temporarily between foraging bouts at night.

5.3.7 The majority of suitable access points across the site were associated with broken brickwork, gaps in fascia boards, abandoned buildings, outbuildings, gaps in doorways and venting, and access points into roof spaces.

5.3.8 One building or group of buildings was considered to have a relatively high potential, 4 medium-high, 11 medium and 10 medium-low. The vast majority of buildings present on site were categorised as low to very low potential. Several buildings in the south-east of the site had potential to support roosting bats (target notes: 1, 5, 6, 10 and 13). Also, several buildings and abandoned buildings in the west to north-west of site had features with some moderate potential (e.g. target notes: 75, 78, 79, 80 and 83). Buildings with low to very low bat roost potential were distributed fairly evenly across the site.

Bat Activity Survey - Driven Transects

5.3.9 The results of the bat activity surveys are summarised on Figure 5. Very low levels of bat activity were recorded during the transect surveys with a total of 6 bat passes for the survey period as a whole.

5.3.10 During the Spring bat activity transect, no bat activity was recorded.

5.3.11 There were five pipistrelle bat passes recorded during the Summer transect (see Table 6 below). These were all recorded towards the west to north - western boundary of the site. Of these five passes, three were noted as foraging passes. The only species of bat identified from the recordings was common pipistrelle (*Pipistrellus pipistrellus*). All the locations, where bats were recorded, were near to rows of trees

with the exception of Baird Avenue and Lothian Street. This point was near an area of semi-improved neutral grassland and no trees directly nearby. The first bat recorded was approximately 1 hour after sunset. There was no activity recorded at site 17, close to the M8 nor was there any activity recorded from transect routes in the western part of the site.

5.3.12 During the Autumn transect (which was completed prior to dawn) there was one soprano pipistrelle pass recorded. This bat was recorded towards the middle of the site at the junction of one of the main roads through the Industrial Estate. A row of trees have been planted along this road, which the bat may have been using as a commuting route. The recordings were approximately 1.25 hours before sunrise. There was no other activity recorded during this transect.

Table 6: Summary results of the Spring, Summer and Autumn driven transects (only locations were bat passes were recorded are included in this table)

Listening station (locations are shown on Figure 5)	No. of *Pipistrellus sp.* Passes		
	Spring Transect	Summer Transect	Autumn Transect
Corner of Barrie Road and Watt Road (no. 11)	0	1	0
On Huntly Road at end of Dalziel Road (no. 15)	0	1	0
Arrol Street and Baird Avenue at junction (no. 17)	0	1	0
Baird Avenue and Lothian Street (no. 18)	0	1	0
Westbound on Mossland Drive (no. 27)	0	1	0
Corner of Montrose Avenue and Huntly Road (no. 16)	0	0	1

Automated Detector Surveys

5.3.13 The results from the six automatic bat activity sampling points, for each part of the survey season, are summarised in table 7 below and illustrated on Figure 5 (further detail is provided in Appendix 4).

5.3.14 The automated detectors continuously monitor for bat echolocation calls over several consecutive nights and therefore recorded a higher number of bat passes than were recorded during the transect surveys. However the two species identified from the automated detector monitoring (common and soprano pipistrelle) were the same as noted during the driven transects. The frequency of bat passes was relatively low for most sampling points, broadly consistent with the findings of the driven transects, taking into consideration the greater length of the total monitoring period. The exception to this was a high concentration of bat passes recorded during the summer monitoring period at sampling point 5.

Table 7: Summary of Automated bat activity survey results

SM2 sampling point no.	No. of *Pipistrellus sp.* passes			Time of first bat pass (time after sunset in hours and minutes)		
	Spring	Summer	Autumn	Spring	Summer	Autumn
1	17	7	0	23:20 (01:13)	22:31 (01:11)	-
2	70	9	8	22:51 (00:44)	22:13 (00:53)	19:44 (-00:01)
3	5	0	0	00:01 (01:56)	-	-
4	0	11	5	-	22:18 (00:58)	22:50 (03:05)
5	0	835	15	-	21:40 (00:20)	20:15 (00:30)
6	-	39	13	-	21:14 (-00:06)	19:46 (-00:01)

5.3.15 Sampling point 5 was located close to the M8 corridor just north of Mossland Road (see Figure 5). This area was a mix of semi-improved and amenity grassland with beds of introduced scrub and scattered trees. The high number of SM2 bat passes recorded during the summer monitoring period at point 5 were all quite close in time in the same evening. The relatively high number of passes does not necessarily equate to a high number of individual bats. This level of activity could be generated by a small number of individuals exploiting a local concentration of insects near to the SM2 detector over a relatively short period of time. There is also the possibility that there is a roost site near to this location.

5.3.16 The SM2 positioned at the eastern end of the M8 corridor strip (site 6) during the summer period recorded 39 bat passes in total. This location was fairly overgrown, near Mossford Road roundabout, and with bare ground in the middle of the site with very little vegetation cover.

5.3.17 Notably, at locations 5 and 6 in particular, the timing of the first bat passes relative to sunset and typical roost emergence times of pipistrelle bats further suggests that a bat roost may be close by and potentially somewhere within this part of the site.

5.3.18 The second highest number of bat passes recorded during the monitoring periods was from sampling point 2 in the Spring. This area is a compound with bare ground, scattered scrub and rank vegetation around the periphery.

5.3.19 Low numbers of bat passes were recorded at sites 3 and 4 respectively. Both these locations were within locked compounds. Site 3 has a row of trees just outside the compound and the area was very well lit with street lighting. Site 4 was in an area developed as an urban garden. This area did have a small number of silver birch trees and some amenity grassland and vegetable plots.

5.3.20 The pattern of activity across the survey area differed between the two survey methods. The automated detectors recorded greater levels of activity at the sampling points associated with the semi-natural habitats around the periphery of the industrial estate. During the driven transects the limited amount of bat activity recorded was primarily from within the site; although the very low number of bat passes recorded (6 in total) limits the extent to which any conclusions can be drawn about the distribution of bat activity across the survey area based on the transect data alone.

Reptiles

5.3.21 Two areas of the site offered potentially suitable habitats for reptiles. The M8 Frontage Site has a mixture of habitats including marshy grassland, ephemeral / short perennial, semi-improved neutral grassland, amenity grassland, introduced shrubs and broad-leaved plantation woodland. A second area of land in the south-east of the site has a mixture of habitats including broad-leaved plantation woodland, semi-improved neutral grassland, semi-improved calcareous grassland on a bank of crushed stone, dense / continuous scrub and bare ground. There are also a large numbers of potential hibernacula located in discarded railway concrete structures and within thick gorse and leaf-litter.

5.3.22 A total of 80 artificial refugia (carpet tiles) were placed evenly between both areas and were checked for reptiles a total of 8 times between April and October 2013. In addition any other artificial refugia such as pieces of plywood, old tins or pieces of plastic were also checked for evidence of reptiles on the 8 visits made to site. Records of each visit are provided in Appendix 3. No evidence or sightings of any reptiles were made during any of the visits to the site.

5.4 Birds

5.4.1 A breeding bird survey was not completed in 2013. Two records of bird nests on site (TN16 and 17) were made during the walkover protected species survey.

5.5 Other Protected Species

5.5.1 No evidence was found indicating the presence within the site of any other specially protected fauna (e.g. badger, otter, great crested newt or water vole) during the 2013 surveys.

6. PRELIMINARY NATURE CONSERVATION EVALUATION

6.1 Introduction

6.1.1 The assessment of nature conservation value is based on a systematic evaluation of the importance of the site (populations and habitats) in an international, national, regional and local context. The evaluation criteria are outlined and described in Table 4 Habitats and Flora

6.1.2 The habitats present within the survey area have been assessed as having a nature conservation value of **Low (Local Moderate)** (i.e. of value in a local context only). The overall nature conservation evaluations of the individual habitat types is provided below.

Amenity grassland & introduced shrub

6.1.3 The majority of the vegetation cover within the survey area was amenity grassland and introduced shrub. This is generally a species-poor habitat that has a **Negligible** nature conservation value as it is a commonplace feature of little or no nature conservation importance. Introduced shrub is dominated by non-native species, thereby providing fewer opportunities for native species. In addition these introduced planted areas tend to have less associated invertebrate life than native plant species.

Semi-improved (neutral) grassland

6.1.4 This is the second most abundant vegetated habitat within the survey area. Although not particularly species-rich or notable in a national or regional context, this type of relatively unmanaged habitat can provide important habitats for birds, small mammals and invertebrates. In the context of the surrounding developed area (i.e. motorway and industrial park) the relative importance of this habitat is increased. On this basis this habitat is considered to be of **Low (Local Moderate)** value.

Amenity grassland / introduced scrub mosaic

6.1.5 The survey area includes areas of amenity grassland and introduced scrub, which is generally a species-poor habitat that has a **Negligible** nature conservation value as it is a commonplace feature of little or no nature conservation importance.

Broad-leaved plantation woodland

6.1.6 The broadleaf plantation is considered to have a **Low (Local Low)** nature conservation value due to its importance within the local context. This habitat provides nesting and foraging opportunities for a number of species within a semi-urban environment. Additionally, some of the broad-leaved woodland appears to be long-standing, including a mixture of mature native and non-native species; the ground flora in places is also relatively diverse in an urban context.

Scattered trees / Parkland

6.1.7 The parkland within the site boundary is considered to be of **Low (Local Low)** nature conservation value due to its importance on a local level. The site is situated within a semi-urban environment, thereby meaning that mature trees, such as those found within the parkland, are less common within the landscape. These trees could also provide an important habitat for a number of species, as well as supporting invertebrate populations that offer a food source for foraging bats and birds.

Ephemeral / short perennial

6.1.8 Areas of vegetation (i.e. tall vegetation comprised of species associated with waste ground) are of limited extent within the survey area. Such areas are commonplace along roadsides, railways and areas of waste ground, and within the survey area are considered to have a **Low (Local Low)** nature conservation value.

Marshy grassland

6.1.9 The area of marsh / marshy grassland is considered to have a **Low (Local Moderate)** nature conservation value due to its importance in the local landscape. This type of grassland can provide a valuable foraging source for a number of invertebrate, mammal and bird species.

6.2 Protected Species

Mammals

6.2.1 Within the industrial estate there were twenty four trees and five buildings with high to moderate potential to support a bat roost. No detailed surveys were completed for these trees (or buildings) to confirm the presence or absence of a bat roost as this was outwith the scope of this study. The automated bat activity surveys and driven transects identified two bat species (common and soprano pipistrelle) present within the site. Overall, the bat activity across the site was low with the sampling indicating

localised areas with relatively high foraging activity during certain times of the year (e.g. associated particularly with the northern fringe of the site where there is the most extensive area of semi-natural grassland and plantation scrub and woodland habitat). However, overall the results of the bat activity survey and preliminary roost potential assessment of the buildings support the initial assessment of the majority of site as being of relatively low value to bats as foraging habitat or roosting .

6.2.2 Due in part to the nature of the wider context of the site, i.e. providing some semi-natural foraging habitats within a very urbanised setting, the site as a whole is provisionally considered to have a **Low (Local Moderate)** nature conservation value for bats as a group.

6.2.3 The only other mammal species recorded on site were field vole and rabbit. These species are not of any particular nature conservation interest and not specially protected. Brown rat was also recorded within the Industrial estate.

Reptiles

6.2.4 Although there were suitable habitat for reptiles, no reptiles were recorded during the tile search surveys throughout the season. This indicates that reptiles are unlikely to be present on site. Therefore the site is currently considered to be of **negligible** nature conservation value for reptiles.

Birds

6.2.5 A comprehensive breeding bird survey would be necessary to make an assessment, however it is considered unlikely that the site supports anything other than an assemblage of species which is of importance at a local level only.

7. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

7.1.1 The surveys completed in 2013 indicate that the site is unlikely to support any specially protected species with the possible exception of bats. Overall, the results of the bat activity survey support the initial assessment of the majority of site being of relatively low value to bats as foraging habitat. The activity surveys and provisional roost habitat assessment suggest that the likelihood of there being significant bat nursery colonies within the site is low. The potential for small non-breeding *Pipistrelle* spp. roosts (e.g. male summer roosts, transitional roosts) to be present within the site can certainly not be ruled out. The results of the bat activity surveys indicate that bats (soprano and common pipistrelle bats) use parts of the Hillington Park site for both commuting and foraging, particularly the northern and south-eastern periphery where there is more extensive woodland and scrub habitat in comparison to the rest of the site.

7.1.2 The habitats present within the survey area have been assessed as having an overall nature conservation value of **Low (Local Moderate)** (i.e. of value in a local context only). There are habitats / features that have a relatively greater conservation value in the context of the site and that have the potential, under appropriate management, to develop greater value. For example, the planted broad-leaved woodland, and the semi-improved neutral grassland.

7.1.3 There are no statutory or non-statutory designated sites within or immediately adjacent to Hilliington Park. The nearest Sites of Importance for Nature Conservation is approximately 0.8 km to the west (i.e. the River Clyde).

7.1.4 Broad-leaved helleborine was not identified during the 2013 surveys but had been recorded during surveys in 2007. However, it is possible that a remnant population does still exist. Three small populations of native blue bell were identified on site.

7.1.5 Two stands of the invasive plant giant hogweed and one of Japanese knotweed have been recorded within the site.

7.2 Recommendations

7.2.1 Detailed bat roost surveys are recommended prior to any proposal being taken forward that would affect the trees and buildings, in particular those which have been identified as having features suitable to support a bat roost. This would involve a suitably qualified licensed bat worker (and tree climber if appropriate) completing detailed daytime external and internal surveys to check for evidence of the presence of bats. If, following these surveys, roosting bats are found to be present (or cannot be ruled out from being present) it will be necessary to undertake further surveys to establish the species and number of bats using the roost and what type of roost it is.

7.2.2 For any works that have the potential to adversely affect a bat roost a licence will be needed. A licence will only be granted by SNH if there is no satisfactory alternative, and the development is required for preserving public health or public safety or for other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment. Works will not be licensed which would be detrimental to the maintenance of the population of the species affected at a favourable conservation status in its natural range. In most cases it is possible to develop appropriate mitigation to address potential adverse effects on bat roosts without prejudicing the future development of a development site. Based on the findings of the surveys in 2013 this site appears to only supports very low bat activity and as such it is anticipated at this stage that there is a relatively low risk to bats from the re-development of the site or individual buildings within the site. However, given the provisional nature of the surveys and assessments completed in 2013 and the long-term nature of the SPZ plans for the site it is important that the risk to bats is assessed in detail prior to any significant works or demolition of any buildings within the site.

7.2.3 It is also recommended that for any proposed redevelopment under the SPZ, which could adversely affect any areas which are not managed as amenity grassland or introduced shrub planting (e.g. areas of unmanaged semi-improved and marshy grassland, areas of plantation woodland), an extended Phase 1 habitat survey should be carried out prior to commencement of development at the latest, and ideally prior to or during the development design phase so that the survey findings can inform the site development plansin advance of proposals being finalised. The purpose of this is to ensure that any impacts on habitats of nature conservation value are fully considered for each development within the SPZ and are based on current information to determine the need, type and extent of any mitigation which may be appropriate.

7.2.4 Considering the presence of potentially valuable habitats (broadleaved plantation woodland and mature trees) within the site, it is recommended that a breeding bird survey is carried out prior to any works resulting any loss of these habitats. All wild birds, their nests, eggs and young, are protected under the Wildlife & Countryside Act 1981 (as amended). Construction works, and in particular vegetation clearance, should be undertaken outside the bird breeding season. However, if this is not possible, a survey for breeding birds and active nests should be carried out prior to any works that could potentially affect vegetation (scrub, trees, grassland) during the bird breeding season (April to August inclusive) to ensure that no active bird nests are disturbed or destroyed as a result of the works. Woody material that is cleared should not be left on the site in piles for later removal within the breeding season as some bird species may use such material as a nest site. All surveys should be undertaken by a suitably qualified and experienced ecologist.

7.2.5 It is recommended that a control plan for giant hogweed and Japanese knotweed is developed and implemented. Advice should be sought from an appropriately experienced person as to eradication and the most effective means of avoiding the spread of these highly invasive alien species within the site.

7.3 Habitat Enhancement Opportunities

7.3.1 The following provides an outline of opportunities to improve the nature conservation value and biodiversity of some areas of the site. Detailed input from a qualified and experienced ecologist should be sought in the development of detailed enhancement plans to ensure that the features of interest are protected, important linkages maintained and that opportunities for enhancement are fully considered.

- The nature conservation value of the semi-natural broad-leaved woodland could be improved by removing non-native species and either replacing with native species, or allowing existing native species to regenerate naturally.

- Piles of garden waste should also be removed from semi-natural grassland and broad-leaved woodland areas and placed in a specifically allocated part of the site for compost, which could be used in the community garden and allotments.

- Areas that are typically more intensively managed as public amenity space could be managed in a way that allows for greater benefit for native plants and animals (i.e. avoiding the use of non-native hard landscape planting and large areas of frequently mown amenity grassland).

- Within the woodland area fly tipping areas should be cleared and where possible litter removed and small fires prevented. Any piles of deadwood, along with standing dead trees, should be retained. These provide valuable habitat for a number of species, e.g. nesting birds, invertebrates and fungi. A buffer strip should be allowed for, along the edge of the woodland to protect it from development or expansion.

- In areas identified for less intensive management the grassland should be cut once in the late summer, after the plants have set-seed, and the cuttings should be removed in order to allow a more species-rich unimproved grassland to develop.

- Measures should be put in place for any existing buildings which are proposed to be refurbished / renovated to ensure that enhancing biodiversity is considered. Where appropriate nest boxes for birds and bat bricks / boxes for bats could be included in any design. Consideration could also be given to inclusion of green roofs or ledges / window boxes and planters.

- Bat boxes should be positioned 4 to 5 m above ground in a south or south west sheltered aspect in order for the box to be in sunlight (and warmth) for at least part of the day.

- Bat bricks could also be included in the design of any newly constructed buildings or renovation buildings. However, it is important to ensure that suitable connected habitat (i.e. tree lines) are maintained for commuting and foraging bats.

- New lighting proposals around the development areas or during the construction phase should be discussed with a qualified ecologist before implementation in order to minimise the potential impact on wildlife and bats in particular.

- There is potential for the implementation of a soft SUDS (Sustainable Urban Drainage System) scheme within the site, which would also provide opportunities to increase the diversity of habitats present within the site and thereby increase species richness. A varied species composition of moderate to tall grasses surrounding the waterbody edge would provide colour and structural diversity for aesthetic appeal while also attracting of a small number of insects and potential providing feeding areas for birds and bats.

- Maintaining and encouraging participation in the urban gardens project in the centre of the site could also be of some benefit to wildlife and the community. Within this area native tree and scrub species could be planted around the peripheral fence line.

- There are opportunities to make a contribution to the Clyde Valley Green Network and Integrated Habitat Networks. Consideration should be given to linking areas managed primarily for wildlife value within the M8 Frontage area with similar habitat in the surrounding area (however any proposal will need to take into consideration existing planning permissions for the development of the M8 frontage area, ref 012/0154/PP). By attempting to link similar habitats, this has the potential to create wildlife corridors which can enable movement by species which are susceptible to the effects of fragmentation of their habitats. Smaller garden birds are likely to use these green corridors and stay close to trees and shrubs.

- Habitat connectivity could be improved within and around the fringes of the site in order to provide un-broken commuting routes for bats. Bat boxes could be installed within the site, especially near the woodland edges towards the south east and northern parts of the site.

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FIGURES

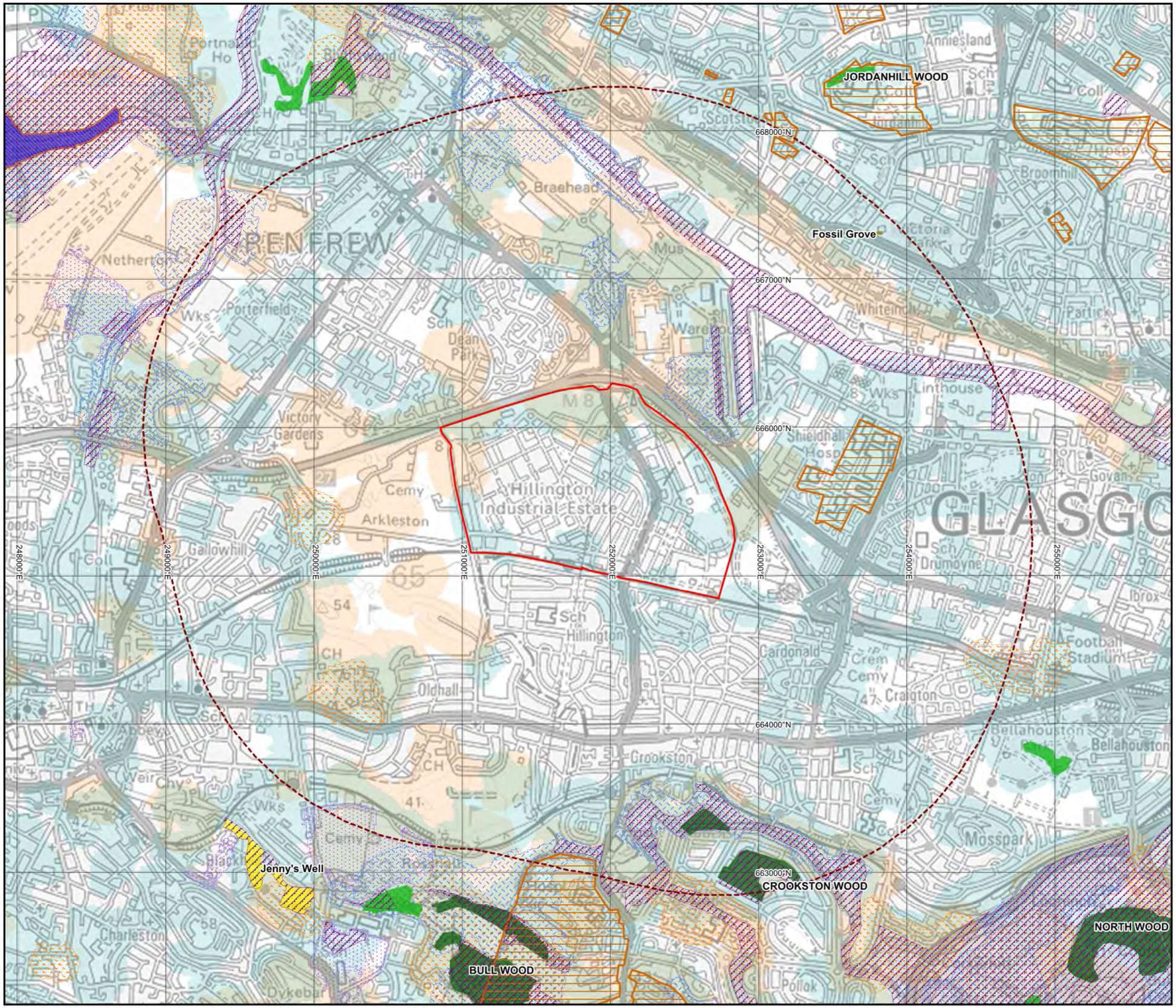

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FIGURE 1
Designated Sites and Integrated Habitat Networks

- Site boundary
- 2 km site boundary buffer
- Special Protection Area (SPA)
- Local Nature Reserve (LNR)

Site of Special Scientific Interest (SSSI)
- Biological
- Geological

Ancient Woodland Inventory (AWI) Site
- Ancient (of semi-natural origin)
- Long-established (of plantation origin)

- Site of Imporatnce for Nature Conservation (SINC)
- Tree Preservation Order (TPO) (City of Glasgow Council only)

Central Scotland Green Network - Integrated Habitat Networks (CSGN-IHN) (core and non-core areas)
- Woodland network
- Neutral grassland network
- Acid grassland network
- Heathland network
- Wetland network

Original A3 plot scale 1:25,000

Client / Project No.		MEPC / 049.003	
Rev. By	CR	Drg. No.	###-00#
Chk. By	NE	Date	04/02/2014
Appr. By	PB	Layout	N/A

Figure 1

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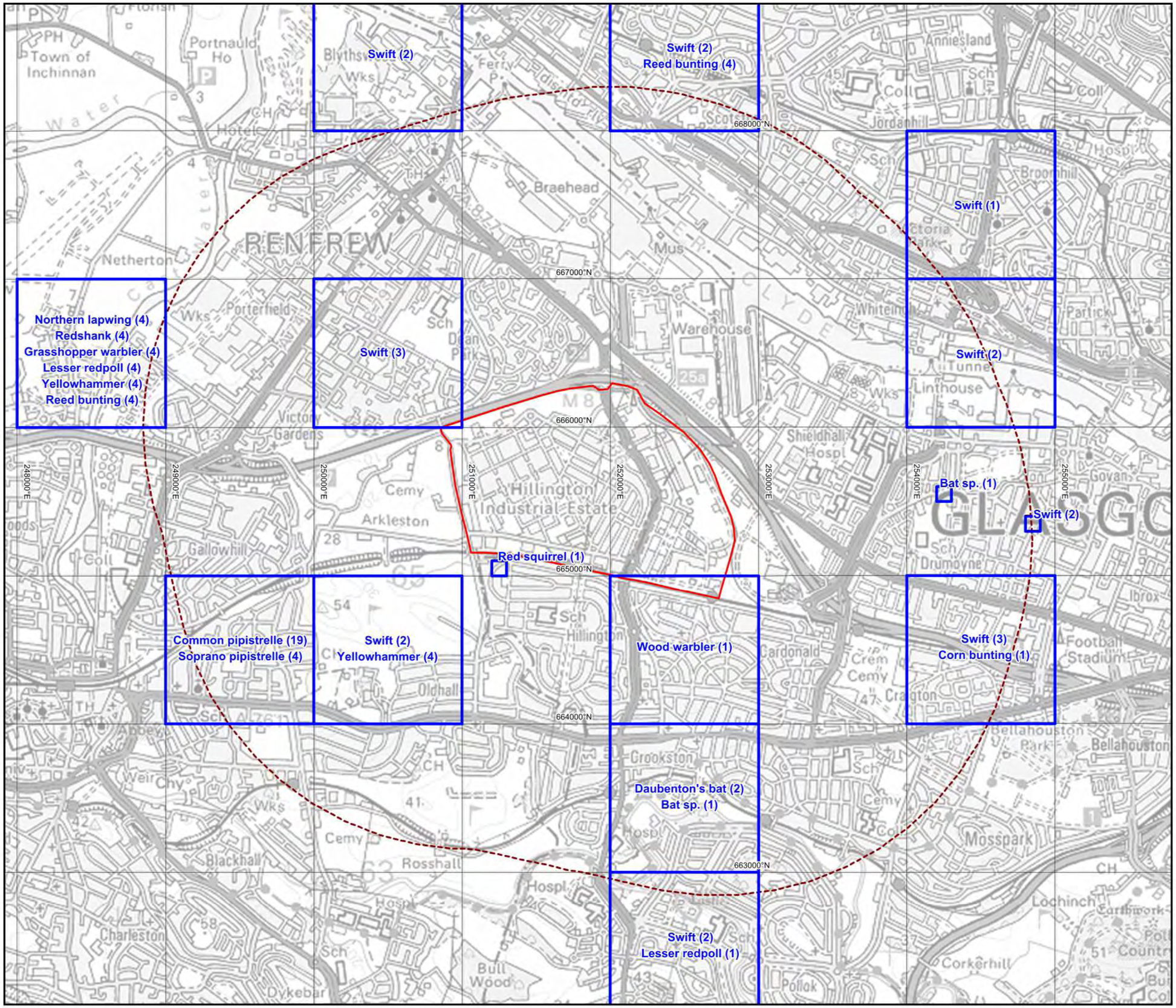

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FIGURE 2
Key Desk Study Findings

Site boundary

2 km site boundary buffer

National Biodiversity Network (NBN) record within grid square (100 m or 1 km resolution) [species (no. records)]

Original A3 plot scale 1:25,000

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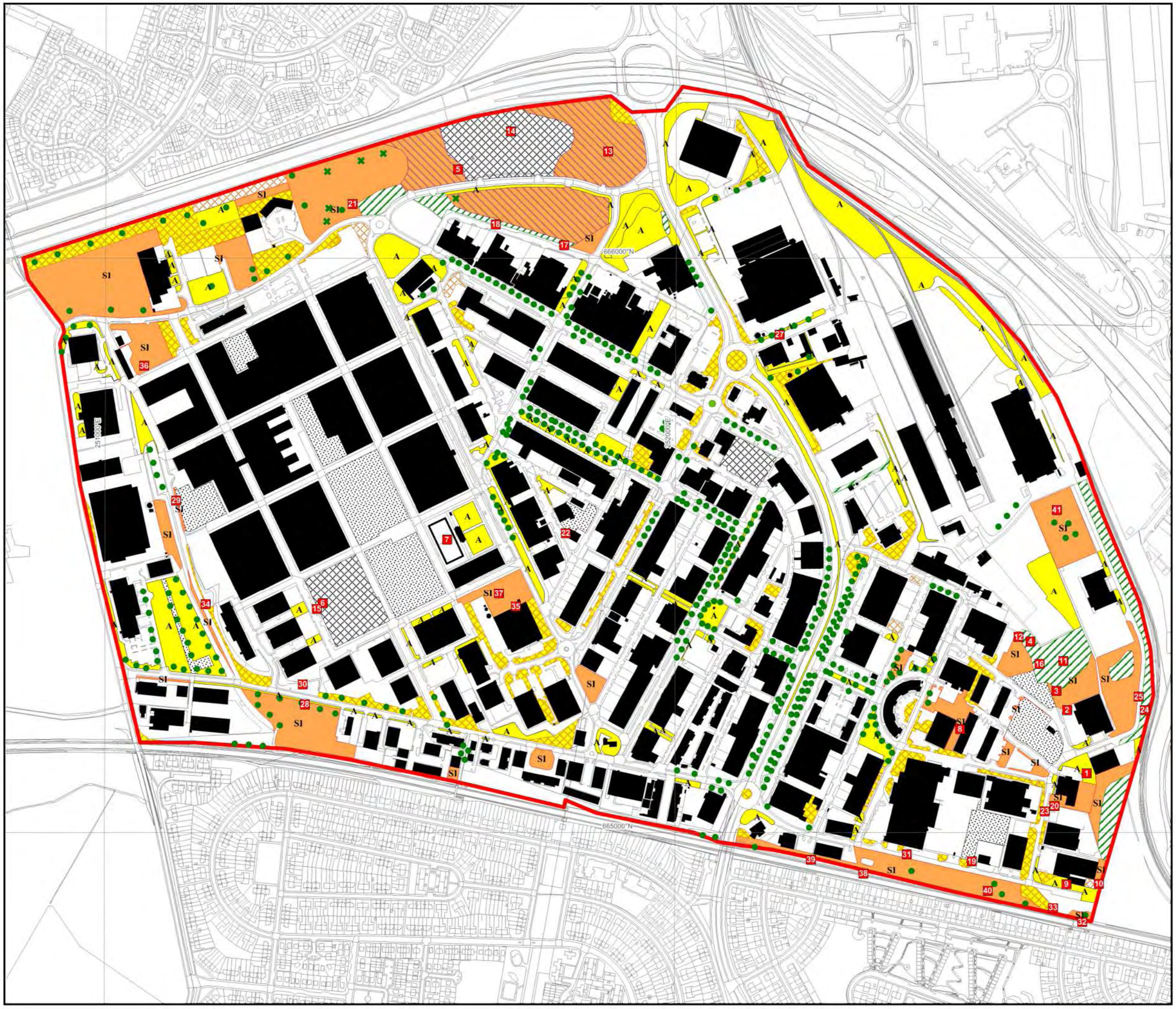
FIGURE 3
Phase 1 Habitat Survey Results



Survey boundary

Phase 1 habitat
- Broad-leaved plantation woodland
- Mixed scattered trees
- SI Semi-improved neutral grassland
- Marsh/marshy grassland
- A Amenity grassland
- Amenity grassland / Introduced shrub
- Ephemeral/short perennial
- Introduced shrub
- Buildings
- Bare ground
- Other (nature garden)
- Other (roads, carparks and other hardstanding)

- Scattered trees
- Scattered scrub
- Target note

Original A3 plot scale 1:6,500

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Figure 3

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FIGURE 4
Preliminary Bat Roost Assessment Results

Survey boundary

Potential bat roost (building) rating
- High
- Medium / High
- Medium
- Low / Medium
- Low
- Very Low

Potential bat roost (tree) rating
- 1 (High)
- 2 (Medium)
- 3 (Low)

Original A3 plot scale 1:6,500

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Figure 4

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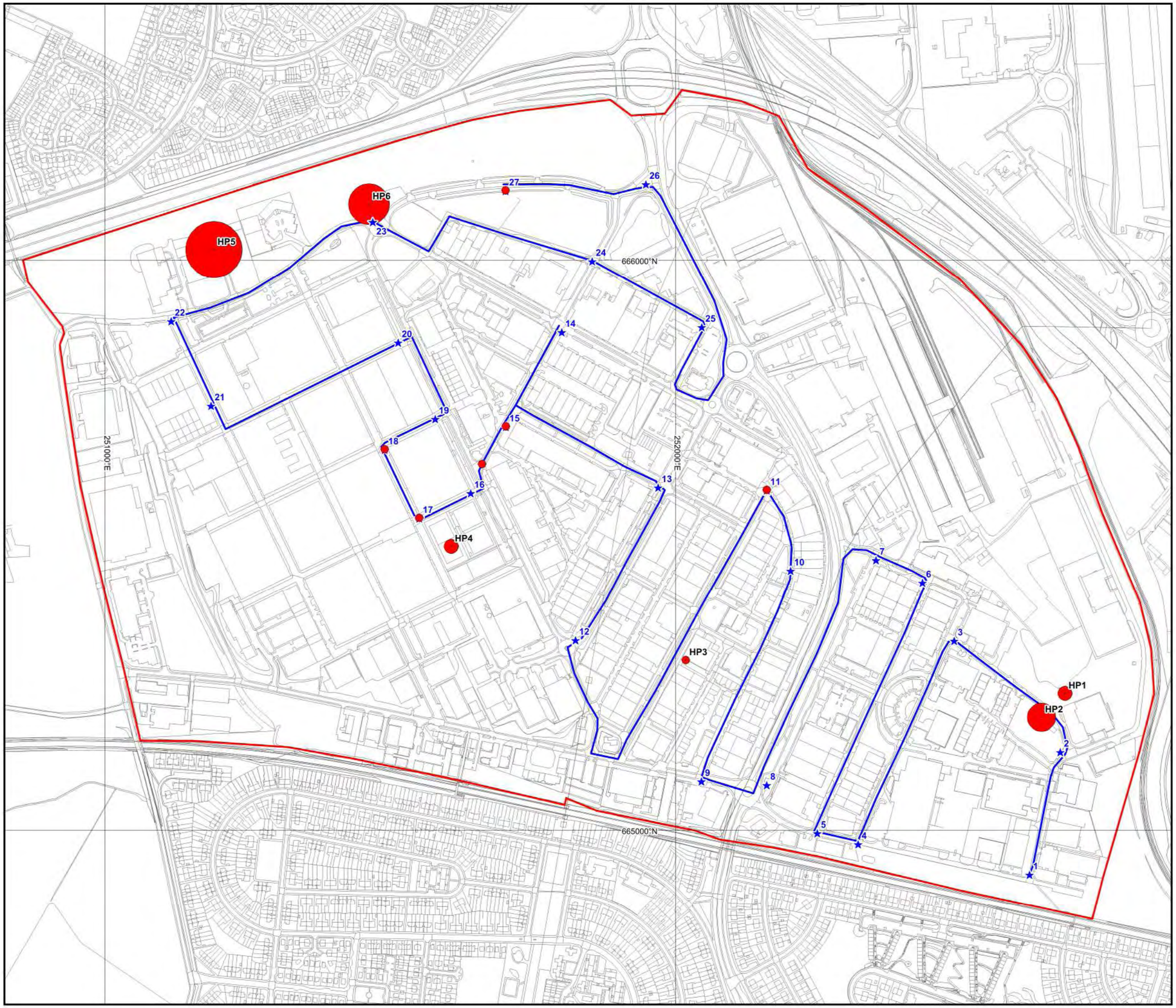
FIGURE 5
Bat Activity Survey Results



Survey boundary

HP1 Automated bat detector location (SM2)

1 Driven transect stop point

Driven transect route

Mean Pipistrellus spp. passes per night

0 - 1
1 - 5
5 - 10
10 - 50
50 +

Original A3 plot scale
1:6,500

Client / Project No.		MEPC / 049.003	
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Appr. By	PB	Layout	N/A

Figure 5

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APPENDICES

APPENDIX 1: Desk Study Findings including Designated Sites

1.1 Introduction

This appendix presents information from a number of sources regarding international, national and local designated sites, species lists and areas of ancient woodland.

The information is presented in this appendix as:

1.2 - Designated Sites including areas of ancient woodland from the Ancient Woodland Inventory; and
1.3 - Data for species of conservation concern and important non-native invasive species only, obtained through the National Biodiversity Network (NBN) Gateway.

1.2 Designated Sites in / near Hillington Industrial Park

Sites designated for nature conservation are shown on Figure 1. There are no statutory or non-statutory designated sites within the redline site boundary for Hillington Park. However there are several non-statutory sites designated by the local authority present in the wider study area (i.e. within c 2km of the site boundary). These are listed below:

- River Clyde SINC – c. 250m east
- White Cart Water SINC - 1200m south
- White Cart Water SINC - 1800m northwest

In addition there are areas identified within the Central Scotland Green Network (integrated habitat networks) as non-core for woodland and neutral grassland within the Hillington Park site. The closest core habitat network area (for wetland) is located c. 300m to the east of the site on the opposite side of the M8 and A8 from the industrial park (see Figure 1).

1.3 Summary Data from the NBN Gateway (Sourced May 2013)

All data used in this appendix was accessed in May 2013 and complies with the Terms & Conditions of the NBN Gateway as stated at that time.

Table A1.1: Summary NBN Gateway Records for notable species for the Study Area. There is a key at the end of this table that explains the acronyms within the Taxon Desigantions column.

Mammals

Species	Common name	Number of records	Last recorded	Taxon Designations
Arvicola amphibius	Water vole	16	2006	Scottish - BL, UK-BAP, WCA - Sch5 Sect9.1 (killing/injuring). WCA - Sch5 Sect9.1 (taking), WCA - Sch5 Sect9.2, WCA - Sch5 Sect9.4a, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5, Sect9.5a, WCA - Sch5 Sect9.5b
Lepus europaeus	Brown hare	4	1994	Scottish - BL, UK-BAP
Lutra lutra	Otter	24	2007	BC (App 2), EC Cites (A), EPS(Sch2) - HR(1994), GRLS - Near threatened, HD (A2 - NPS), HD (A4), Scottish - BL, UK-BAP, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b
Meles meles	Badger	1	1994	Badger Act, BC (App 3), Scottish - BL
Vespertilionidae	Vesper bats	1	2002	BC (App 2), BC (App 3), CMS - EUROBATS A1, CMS (App 2), EPS(Sch4) - HR(1994), HD (A4), Scottish - BL, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 , Sect9.5b
Chiroptera	Bat	23	2011	BC (App 2), BC (App 3), CMS - EUROBATS A1, CMS (App 2), EPS(Sch4) - HR(1994), HD (A4), Scottish - BL, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 , Sect9.5b
Myotis daubentonii	Daubenton's bat	31	2011	BC (App 2), BC (App 3), CMS - EUROBATS A1, CMS (App 2), EPS(Sch4) - HR(1994), HD (A4), Scottish - BL, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 , Sect9.5b

Species	Common name	Number of records	Last recorded	Taxon Designations
Pipistrellus	Pipistrelle bat	3	2002	BC (App 2), BC (App 3), CMS - EUROBATS A1, CMS (App 2), EPS(Sch4) - HR(1994), HD (A4), Scottish - BL, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 , Sect9.5b
Pipistrellus pipistrellus sensu lato	Common pipistrelle	33	2007	BC (App 2), BC (App 3), CMS - EUROBATS A1, CMS (App 2), EPS(Sch4) - HR(1994), HD (A4), Scottish - BL, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 , Sect9.5b
Pipistrellus pygmaeus	Soprano pipistrelle	4	2005	BC (App 2), BC (App 3), CMS - EUROBATS A1, CMS (App 2), EPS(Sch4) - HR(1994), HD (A4), Scottish - BL, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 , Sect9.5b
Sciurus vulgaris	Red squirrel	4	2011	BC (App 3), Scottish - BL, UK-BAP, WCA - Sch5 Sect9.1 (killing/injuring), WCA - Sch5 Sect9.1 (taking), WCA - Sch5 Sect9.2, WCA - Sch5 Sect9.4a, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b

Birds

Sp	Common name	Number of records	Last recorded	Taxon Designations
Apus apus	Swift	19	2010	BoCC Amber, WCA general protection under Section 1
Carduelis cabaret	Lesser redpoll	5	2011	BoCC Red, WCA general protection under Section 1
Emberiza calandra	Corn bunting	1	2009	BoCC Red, WCA general protection under Section 1
Emberiza calandra	Yellowhammer	8	2011	BoCC Red, WCA general protection under Section 1
Emberiza schoeniclus	Reed bunting	8	2011	BoCC Amber, WCA general protection under Section 1
Locustella naevia	Grasshopper warbler	4	2011	BoCC Red, WCA general protection under Section 1
Phylloscopus sibilatrix	Wood warbler	1	2011	BoCC Red, WCA general protection under Section 1
Tringa totanus	Redshank	4	2011	BoCC Amber, WCA general protection under Section 1
Vanellus vanellus	Lapwing	4	2011	BoCC Red, WCA general protection under Section 1

Amphibians

Species	Common name	Number of records	Last recorded	Taxon Designations
Bufo bufo	Common toad	4	2011	BC (App 3), UK-BAP, WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b
Lissotriton helveticus	Palmate newt	2	2011	BC (App 3), WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b
Rana temporaria	Common frog	8	2011	BC (App 3), HD (A5), WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b

Butterflies

Species	Common name	Number of records	Last recorded	Taxon Designations
Boloria euphrosyne	Pearl-bordered fritillary	1	-	RL - Endangered (2001), Scottish - BL, UK-BAP, WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b
Boloria selene	Small pearl-bordered fritillary	1	-	RL - Near threatened (2001), UK-BAP
Coenonympha pamphilus	Small heath	4	-	RL - Near threatened (2001), UK-BAP
Cupido minimus	Small blue	1	-	RL - Near threatened (2001), Scottish - BL, UK-BAP, WCA - Sch5 Sect9.5a, WCA - Sch5 Sect9.5b
Erynnis tages subsp. tages	-	1	-	Scottish - BL
Euphydryas aurinia	Marsh fritillary	1	-	BC (App 2), HD (A2 - NPS), RL - Vulnerable (2001), UK-BAP, WCA - Sch5 Sect9.1 (killing/injuring), WCA - Sch5 Sect9.1 (taking), WCA - Sch5 Sect9.2, WCA - Sch5 Sect9.4a, WCA - Sch5 Sect9.4b, WCA - Sch5 Sect9.4c, WCA - Sch5 Sect9.5a WCA - Sch5 Sect9.5b
Hipparchia semele	Grayling	1	-	RL - Vulnerable (2001), UK-BAP
Pyrgus malvae	Grizzled skipper	1	-	RL - Vulnerable (2001), UK-BAP

Moths

Species	Common name	Number of records	Last recorded	Taxon Designations
Colletes (Colletes) daviesanus	-	5	2012	Scottish - BL
Lasioglossum (Dialictus) smeathmanellum	-	2	2009	Scottish - BL
Osmia (Osmia) rufa	-	6	2009	Scottish - BL

Plants

Species	Common name	Number of records	Last recorded	Taxon Designations
Allium schoenoprasum	Chives	3	1999	RSS - Nationally scarce
Alopecurus myosuroides	Black-grass	3	1999	Scottish - BL
Anagallis arvensis	-	2	1999	Scottish - BL
Anthemis cotula	Stinking chamomile	2	1999	RL - Vulnerable (2001)
Apium graveolens	Wild celery	2	1999	Scottish - BL
Brassica oleracea	Wild cabbage	1	1999	RSS - Nationally scarce Scottish - BL
Calluna vulgaris	Heather	2	1999	Scottish - BL
Campanula rotundifolia	Harebell	3	1999	Scottish - BL
Carex diandra	Lesser tussock-sedge	2	1999	RL - Near threatened (2001)
Centaurea scabiosa	Greater knapweed	2	1999	Scottish - BL
Colchicum autumnale	Meadow saffron	2	1999	RL - Near threatened (2001)
Equisetum variegatum	Variegated horsetail	2	1999	RSS - Nationally scarce
Euphorbia helioscopia	Sun spurge	1	1999	Scottish - BL

Species	Common name	Number of records	Last recorded	Taxon Designations
Fallopia convolvulus	Black-bindweed	1	1999	Scottish - BL
Galeopsis speciosa	Large-flowered hemp-nettle	4	1999	RL - Vulnerable (2001) Scottish - BL
Glebionis segetum	Corn marigold	1	1999	RL - Vulnerable (2001)
Gnaphalium sylvaticum	Heath cudweed	3	1999	RL - Endangered (2001) Scottish - BL
Herniaria glabra	Smooth rupturewort	1	1999	RSS - Nationally rare
Hippophae rhamnoides	Sea-buckthorn	2	1999	RSS - Nationally scarce
Hyacinthoides non-scripta	Bluebell	5	1999	Scottish - BL WCA - Sch8
Lepidium campestre	Field pepperwort	4	1999	Scottish - BL
Lycopodium clavatum	Stag's-horn clubmoss	1	1999	EC Cities (D) HD (A5)
Lysimachia thyrsiflora	Tufted loosestrife	30	2004	RSS - Nationally scarce
Meconopsis cambrica	Welsh poppy	19	1999	RSS - Nationally scarce
Mentha arvensis	Corn mint	2	1999	Scottish - BL
Menyanthes trifoliata	Bogbean	15	2004	EC Cities (D)
Nymphoides peltata	Fringed water-lily	1	1999	RSS - Nationally scarce
Ononis spinosa	Spiny restharrow	1	1999	Scottish - BL
Parentucellia viscosa	Yellow bartsia	2	1999	Scottish - BL
Pinus sylvestris	Scots Pine	4	1999	RSS - Nationally scarce, Scottish - BL
Platanthera chlorantha	Greater Butterfly-orchid	5	1999	RL - Near threatened (2001), Scottish - BL
Polemonium caeruleum	Jacob's-ladder	1	1999	RSS - Nationally rare
Potamogeton friesii	Flat-stalked pondweed	5	1999	RL - Near threatened (2001), RSS - Nationally scarce

Species	Common name	Number of records	Last recorded	Taxon Designations
Potamogeton trichoides	Hairlike pondweed	11	1999	Scottish - BL
Potamogeton trichoides x crispus = P. x bennettii	A hybrid pondweed	18	1999	RL - Vulnerable (2001), RSS - Nationally rare
Potentilla argentea	Hoary cinquefoil	2	1999	RL - Near threatened (2001), Scottish - BL
Potentilla fruticosa	Shrubby cinquefoil	1	1999	RL - Near threatened (2001), RSS - Nationally rare
Ranunculus sardous	Hairy buttercup	3	1999	Scottish - BL
Ribes alpinum	Mountain currant	2	1999	RSS - Nationally scarce
Sedum forsterianum	Rock stonecrop	1	1999	RSS - Nationally scarce
Silybum marianum	Milk thistle	2	1999	Scottish - BL
Sinapis alba	White mustard	2	1999	Scottish - BL
Sinapis arvensis	Charlock	6	1999	Scottish - BL
Spergula arvensis	Corn spurrey	4	1999	RL - Vulnerable (2001)
Stellaria palustris	Marsh stitchwort	2	1999	RL - Vulnerable (2001), UK-BAP
Trifolium glomeratum	Clustered clover	1	1969	RSS - Nationally scarce
Viola tricolor	Wild pansy	2	1999	RL - Near threatened (2001), Scottish - BL

Bryophytes

Species	Common name	Number of records	Last recorded	Taxon Designations
Buellia pulverea	-	2	2009	RSS - Nationally scarce
Collema limosum	-	1	2009	RSS - Nationally scarce, Scottish - BL
Lecanora ecorticata	-	1	2009	RSS - Nationally scarce
Lecanora persimilis	-	1	2009	RSS - Nationally scarce
Micarea lithinella	-	1	2009	RSS - Nationally scarce

Species	Common name	Number of records	Last recorded	Taxon Designations
Sarcosagium campestre var. campestre	-	1	2009	RSS - Nationally scarce
Steinia geophana	-	1	2009	RSS - Nationally scarce
Strangospora moriformis	-	1	2009	RSS - Nationally scarce
Thelidium minutulum	-	1	2009	RSS - Nationally scarce
Verrucaria bryoctona	-	1	2009	RSS - Nationally scarce
Vezdaea retigera	-	1	2009	RSS - Nationally scarce

Invasive Plants

Species	Common name	Number of records	Last recorded	Taxon Designations
Allium paradoxum	Few-flowered leek	3	1999	WCA - Sch9 Pt2
Cotoneaster bullatus	Cotoneaster, hollyberry	3	1999	WCA - Sch9 Pt2
Cotoneaster horizontalis	Cotoneaster	2	1999	WCA - Sch9 Pt2
Cotoneaster integrifolius	Cotoneaster, entire-leaved	2	1999	WCA - Sch9 Pt2
Cotoneaster simonsii	Cotoneaster, himalayan	2	1999	WCA - Sch9 Pt2
Elodea canadensis	Waterweeds	19	1999	WCA - Sch9 Pt2
Elodea nuttallii	Waterweeds	3	1999	WCA - Sch9 Pt2
Fallopia japonica	Japanese knotweed	10	2012	WCA - Sch9 Pt2
Fallopia sachalinensis	Giant knotweed	2	1999	WCA - Sch9 Pt2
Heracleum mantegazzianum	Giant hogweed	5	1999	WCA - Sch9 Pt2
Impatiens glandulifera	Himalayan balsam	12	2012	WCA - Sch9 Pt2

Species	Common name	Number of records	Last recorded	Taxon Designations
Rhododendron ponticum	Rhododendron	3	1999	WCA - Sch9 Pt2
Robinia pseudoacacia	False-acacia	2	1999	WCA - Sch9 Pt2
Rosa rugosa	Japanese rose	3	1999	WCA - Sch9 Pt2

Invasive Mammals

Species	Common name	Number of records	Last recorded	Taxon Designations
Sciurus carolinensis	Grey squirrel	241	2013	WCA - Sch9 Pt1

Taxon Designation Key:

- *Badger Act - Protection of Badgers Act - Protection of Badgers Act (1992)*
- *BC (App 1) - Bern Convention - Appendix 1*
- *BC (App 2) - Bern Convention - Appendix 2*
- *BC (App 3) - Bern Convention - Appendix 3*
- *BoCC - Birds of Conservation Concern (amber and red lists)*
- *CMS - EUROBATS A1 - Convention on Migratory Species - EUROBATS Annex I*
- *CMS (AII) - Convention on Migratory Species - AEWA Annex II*
- *CMS (App 1) - Convention on Migratory Species - Appendix 1*
- *CMS (App 2) - Convention on Migratory Species - Appendix 2*
- *CMS (ASCOBANS) - Convention on Migratory Species – ASCOBANS*
- *EC Cites (A) - EC Cites - Annex A*
- *EC Cities (B) - EC Cites - Annex B*
- *EC Cities (C) - EC Cites - Annex C*
- *EC Cities (D) - EC Cites - Annex D*
- *EPS(Sch2) - HR(1994) - European Protected Species (Schedule 2) – Habitats Regulation (1994)*
- *EPS(Sch3) - HR(1994) - European Protected Species (Schedule 3) - Habitats Regulation (1994)*
- *EPS(Sch4) - HR(1994) - European Protected Species (Schedule 4) - Habitats Regulation (1994)*

- *GRLS - Critically Endangered - Global Red list status - Critically Endangered*
- *GRLS – Endangered - Global Red list status – Endangered*
- *GRLS – Extinct - Global Red list status - Extinct*
- *GRLS - Near threatened - Global Red list status - Near Threatened*
- *GRLS – Vulnerable - Global Red list status – Vulnerable*
- *HD (A2 - NPS) - Habitats Directive - Annex 2 - non-priority species*
- *HD (A2 - PS) - Habitats Directive - Annex 2 - priority species*
- *HD (A4) - Habitats Directive - Annex 4*
- *HD (A5) - Habitats Directive - Annex 5*
- *OSPAR - OSPAR Convention on the protection of the marine environment of the North-East Atlantic.*
- *RL - Critically Endangered (1994) – Red Listing based on 1994 IUCN guidelines - Critically Endangered*
- *RL - Critically Endangered (2001) - Red listing based on 2001 IUCN guidelines - Critically Endangered*
- *RL - Endangered (1994) - Red Listing based on 1994 IUCN guidelines - Endangered*
- *RL - Endangered (2001) - Red listing based on 2001 IUCN guidelines – Endangered*
- *RL - Endangered (pre-1994) - Red Listing based on pre 1994 IUCN guidelines – Endangered*
- *RL - Extinct (1994) - Red Listing based on 1994 IUCN guidelines – Extinct*
- *RL - Extinct (2001) - Red listing based on 2001 IUCN guidelines - Extinct*
- *RL - Extinct (pre 1994) - Red Listing based on pre 1994 IUCN guidelines – Extinct*
- *RL - Extinct in wild (2001) - Red listing based on 2001 IUCN guidelines - Extinct in the Wild*
- *RL - Near threatened (1994) - Red Listing based on 1994 IUCN guidelines - Near Threatened*
- *RL - Near threatened (2001) - Red listing based on 2001 IUCN guidelines - Near Threatened*
- *RL - Rare (pre 1994) – Red Listing based on pre 1994 IUCN guidelines – Rare*
- *RL - RDB - Threatened endemic (pre 1994) - Red Listing based on pre 1994 IUCN guidelines - RDB - Threatened endemic*
- *RL - Regionally Extinct (2001) - Red listing based on 2001 IUCN guidelines - Regionally Extinct*
- *RL - Vulnerable (1994) - Red Listing based on 1994 IUCN guidelines - Vulnerable*
- *RL - Vulnerable (2001) - Red listing based on 2001 IUCN guidelines – Vulnerable*
- *RL - Vulnerable (pre 1994) - Red Listing based on pre 1994 IUCN guidelines – Vulnerable*
- *RSS - Nationally Notable - Rare and scarce species (not based on IUCN criteria) - Nationally Notable*
- *RSS - Nationally Notable A - Rare and scarce species (not based on IUCN criteria) - Nationally Notable A*
- *RSS - Nationally Notable B - Rare and scarce species (not based on IUCN criteria) - Nationally Notable B*
- *RSS - Nationally rare - Rare and scarce species (not based on IUCN criteria) - Nationally rare*
- *RSS - Nationally rare marine species - Rare and scarce species (not based on IUCN criteria) - Nationally rare marine species*
- *RSS - Nationally scarce - Rare and scarce species (not based on IUCN criteria) - Nationally scarce*
- *RSS - Nationally scarce marine species - Rare and scarce species (not based on IUCN criteria) - Nationally scarce marine species*

- *Scottish - BL - Biodiversity Lists - Scotland - Scottish Biodiversity List*
- *UK-BAP - Biodiversity Action Plan UK list of priority species - Priority Species*
- *WCA - Sch1 Pt1 - Wildlife and Countryside Act 1981 - Schedule 1 Part 1*
- *WCA - Sch1 Pt2 - Wildlife and Countryside Act 1981 - Schedule 1 Part 2*
- *WCA - Sch5 Sect9.1 (killing/injuring) - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.1 (killing/injuring)*
- *WCA - Sch5 Sect9.1 (taking) - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.1 (taking)*
- *WCA - Sch5 Sect9.2 - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.2*
- *WCA - Sch5 Sect9.4a - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.4a*
- *WCA - Sch5 Sect9.4A* - *Wildlife and Countryside Act 1981 - Schedule 5 Section 9.4A**
- *WCA - Sch5 Sect9.4b - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.4b*
- *WCA - Sch5 Sect9.4c - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.4c*
- *WCA - Sch5 Sect9.5a - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.5a*
- *WCA - Sch5 Sect9.5b - Wildlife and Countryside Act 1981 - Schedule 5 Section 9.5b*
- *WCA - Sch8 - Wildlife and Countryside Act 1981 - Schedule 8*
- *WCA - Sch9 Pt1 - Wildlife and Countryside Act 1981 - Schedule 9 Part 1*
- *WCA - Sch9 Pt2 - Wildlife and Countryside Act 1981 - Schedule Part 2*

APPENDIX 2: Target Notes and Plant Species List from the Phase 1 Habitat Survey

This appendix contains three sets of tables. Table A2.1 details each Phase 1 habitat survey target note. Table A2.2 provides a list of all plant species found within the survey area and Tables A2.3-2.9 provide information from quadrats completed within some selected Phase 1 habitat types within the survey area. See Figure 3 for the locations of the target notes given in Table A2.1.

Table A2.1: Phase 1 Habitat Target Notes

TN No.	Eastings	Northings	Details
1	252722	665103	Mature black poplar *Populus nigra var spp. betulifolia* 20 m tall.
2	252688	665213	Mature stand of broom *Cytisus scoparius covering approximately* 15 x 10 m.
3	252669	665246	Spanish bluebell *Hyacinthoides hispanica* individual.
4	252623	665332	Spanish bluebell *Hyacinthoides hispanica*, several individuals scattered through this corner of the broad-leaved plantation woodland.
5	251618	666154	Reed mace *Typha latifolia* (LD) here and scattered for 30 x 30 m. Other species include: soft rush *Juncus effusus* (D), floating sweet-grass *Glyceria fluitans* (F), Pointed spear-moss *Calliergonella cuspidata* (F), sedge sp. *Carex sp.* (O), eared willow *Salix aurica* (R).
6	251372	665389	Ephemeral pool c. 30 x 30 m being used by 50+ herring gulls.
7	251600	665510	Private community nature garden with small birch woodland, apple trees, vegetables and Polly tunnel.
8	252500	665180	Relatively species-rich semi-improved neutral grassland (compared to others across site. Cock's foot (D) *Dactylis glomerata*, Germander speedwell *Veronica chamaedrys* (O), Crane's *bill Geranium sp.* (O), meadow foxtail *Alopecurus pratensis* (O), cuckoo flower *Cardamine pratensis* (LF), soft rush *Juncus effusus* (LF).
9	252824	665213	Line of broad-leaved trees including horse chestnut (*Aesculus hippocastanum*), sycamore (*Acer pseudoplatanus*), Pedunculate oak (*Quercus robur*), ash (*Fraxinus excelsior*) and bird cherry (*Prunus padus*). These are 2 - 3 trees thick near railway. Some scrub present - bramble (LD) *Rubus fruticosus*, gooseberry (R) *Ribes uva-crispa*, and honeysuckle (R) *Lonicera periclymenum*. Thin strip (2 m wide) of amenity grassland in front of tall ruderal / broad-leaved plantation near road.

TN No.	Eastings	Northings	Details
10	252813	665236	Large concrete slabs around area of semi-improved neutral grassland. Bramble (LD) and rosebay willow herb (A) (*Chamerion angustifolium*) and cock's foot (F) and meadow foxtail (F) growing near concrete blocks.
11	252881	665232	Small patches (approximately 3 x 4 m) of rosebay willow herb (LD), creeping thistle (A) *Cirsium arvense*, bramble (O) and nettle (O) *Urtica dioica*.
12	252182	665866	Line of planted Norway Maple (*Acer platanoides*).
13	251351	665223	Semi-improved neutral grassland with small patches of bare earth (approximately 2 x 4 m) and tall ruderal (brambles (D) and rosebay willow herb (A).
14	251349	665226	Small patch (approximately 4 x 4 m) of tall ruderal with rosebay willow herb (LD) and dock (A) *Rumex obtusifolius.* Some introduced shrub around the edge of patch which is mostly dog wood (*Cornus* sp.).
15	251125	665578	Skips on previously bare ground with some creeping thistle growing around them.
16	252639	665293	Bird nest
17	251804	666022	Bird nest
18	251684	666058	Hyacinthoides non-scripta
19	252521	664950	Invasive plant – giant hogweed (*Heracleum mantegazzianum)*
20	252666	665046	Invasive plant – giant hogweed (*Heracleum mantegazzianum)*
21	251433	666094	Patches (approximately 5 x 5 m) of creeping thistle (D), cock's foot (A), meadow fescue (A) *Festuca pratensis*, dock (F), willow (R), creeping soft-grass (R) *Holcus mollis* and white clover (R) *Trifolium repens*.
22	251808	665521	Area of bare ground with some low growing colonizing vegetation.
23	252649	665037	Introduced scrub. Mostly dogwood.
24	252824	665213	Line of broad-leaved trees including horse chestnut, sycamore, ash, oak and bird cherry. These are 2 - 3 trees thick near railway. Some scrub present - notably gooseberry, raspberry, honeysuckle and bramble. Thin strip of amenity grassland in front near road.
25	252813	665236	Concrete slabs around area of semi-improved neutral grassland.
26	252881	665232	Small patches of rosebay willow herb, creeping thistle, bramble and nettle.

TN No.	Eastings	Northings	Details
27	252182	665866	Line of planted maple
28	251351	665223	Semi-improved neutral grassland with patches of bare earth and tall ruderal (brambles, ferns, docs and rosebay willow herb). Introduced dog wood around the edges of this area.
29	251125	665578	Skips on previously bare ground with some thistle growing around them.
30	251347	665258	Small patch of semi-improved neutral grassland with sighting of fox.
31	252407	664962	Patches of creeping thistle, cock's foot, fescue, doc, willow, creeping soft grass and white clover.
32	252715	664844	Stands of dog wood covering an approximate area of 3 x 4 m.
33	252664	664869	Dogwood, covering an approximate area of 3 x 3 m. Original planting with unknown introduced shrub (garden plant).
34	251177	665397	Large stand of dogwood, approximately 5 x 5 x 4 m.
35	251721	665393	Dogwood plant
36	251068	665812	Common spotted orchid (very numerous) within an area of approximately 4 x 4 m.
37	251691	665416	Common spotted orchid
38	252331	664929	Common spotted orchid growing within a damp area approximately 10 x 10 m.
39	252239	664953	Cotoneaster. Sighting of a fox in this area of semi-improved neutral grassland.
40	252549	664899	One stand of Japanese Knotweed, covering approximate area of 1 m x 1 m. Growing close to railway next to small wooded area.
41	252669	665561	Area of assumed scattered scrub and SI neutral grassland, based on aerial photography only (access was not possible to this part of the survey area)

Table A2.2: Plant Species List from the Phase 1 Habitat Survey (May - June 2013)

Species	Common name
Acer platanoides	Norway Maple
Acer pseudoplatanus	Sycamore
Achillea millefolium	Yarrow
Aegopodium podagraria	Ground-elder
Aesculus hippocastanum	Horse chestnut
Agrostis capillaris	Common bent
Agrostis stolonifera	Creeping bent
Alnus glutinosa	Alder
Alopecurus pratensis	Meadow foxtail
Anthoxanthum odoratum	Sweet vernal-grass
Bellis perennis	Daisy
Betula papyrifera	Paper birch
Betula pendula	Silver birch
Buddleja davidii	Butterfly-bush (cultivar)
Calliergonella cuspidata	Pointed Spear-moss
Cardamine flexuosa	Wavy Bitter-cress
Cardamine hirsuta	Hairy Bitter-cress
Cardamine pratensis	Cuckooflower
Carex sp.	Sedge sp.
Ceanothus sp.	Californian lilac (cultivar)
Centaurea nigra	Common knapweed
Cerastium fontanum	Common mouse-ear
Ceratostigma plumbaginoides	Hardy blue-flowered leadwort (cultivar)
Chamerion angustifolium	Rosebay willowherb
Cirsium arvense	Creeping thistle
Cirsium palustre	Marsh thistle
Cirsium vulgare	Spear thistle
Cornus sanguinea	Dogwood species (cultivar)
Cornus sericea	Dogwood species (cultivar)
Cotoneaster apiculatus	Cotoneaster (cultivar)
Cotoneaster sp.	Cotoneaster (cultivar)
Crataegus monogyna	Hawthorn
Crocosmia sp.	Lucifer (cultivar)
Cupressus x leylandii	Leyland cypress
Cytisus scoparius	Broom
Dactylis glomerata	Cock's-foot
Deschampsia cespitosa	Tufted hair-grass
Draba verna	Whitlow grass
Elytrigia repens	Common Couch
Epilobium ciliatum	American Willowherb
Epilobium montanum	Broad-leaved Willowherb
Equisetum palustre	Marsh Horsetail

Species	Common name
Equisetum telmateia	Great Horsetail
Fagus sylvatica	Beech
Festuca rubra	Red fescue
Fragaria vesca	Wild Strawberry
Galium aparine	Cleavers
Geranium robertianum	Herb-Robert
Geranium sp.	Crane's bill species
Glyceria fluitans	Floating Sweet-grass
Hebe sp.	Hebe (cultivar)
Hedera helix	Ivy
Heracleum mantegazzianum	Giant hogweed
Heracleum sphondylium	Hogweed
Holcus lanatus	Yorkshire-fog
Holcus mollis	Creeping soft-grass
Hyacinthoides hispanica	Spanish Bluebell
Hypochaeris radicata	Cat's-ear
Jacobaea vulgaris	Ragwort
Juncus effusus	Soft-rush
Larix decidua	European larch
Laurus nobilis	Laurel
Lavandula angustifolia	Lavender
Leucanthemum vulgare	Oxeye Daisy

Species	Common name
Lolium perenne	Perennial rye-grass
Mahonia aquifolium	Oregon-grape (cultivar)
Medicago lupulina	Black Medick
Narcissus pseudonarcissus	Wild Daffodil
Phormium cookianum	Phormium (cultivar)
Phragmites australis	Common Reed
Pieris sp.	Andromedas (cultivar)
Pinus nigra	European black pine
Plantago lanceolata	Ribwort plantain
Plantago major	Greater Plantain
Poa annua	Annual Meadow-grass
Poa chaixii	Broad-leaved meadow-grass
Poa trivialis	Rough Meadow-grass
Polygonum aviculare	Knotgrass
Populus nigra	Lombardy Poplar
Populus nigra var spp. betulifolia	Black Poplar
Populus tremula	Aspen
Potentilla fruticosa	Shrubby Cinquefoil (cultivar)
Primula veris	Cowslip
Prunus spp.	Cherry tree species (cultivar)
Ranunculus acris	Meadow buttercup
Ranunculus repens	Creeping buttercup

Species	Common name
Rhododendron luteum	Yellow Azalea (cultivar)
Rhytidiadelphus squarrosus	Springy Turf-moss
Rosa rugosa	Japanese Rose
Rubus fruticosus sp	Blackberry
Rumex acetosa	Common sorrel
Rumex crispus	Curled Dock
Rumex obtusifolius	Broad-leaved dock
Sagittaria sagittifolia	Arrowhead
Salix aurita	Eared Willow
Salix cinerea	Grey willow
Salix sp.	Willow species
Sambucus nigra	Elder
Sedum telephium x spectabilis	Autumn joy (cultivar)
Senecio vulgaris	Groundsel
Sorbus aria	Common Whitebeam
Sorbus aucuparia	Rowan
Sycopsis sinensis	Chinese fig hazel (cultivar)
Taraxacum officinale	Dandelion
Trifolium pratense	Red Clover
Trifolium repens	White clover
Tussilago farfara	Colt's-foot
Typha latifolia	Great reedmace

Species	Common name
Ulex europaeus	Gorse
Urtica dioica	Common nettle
Veronica chamaedrys	Germander speedwell
Veronica hederifolia	Ivy-leaved Speedwell
Vicia sp.	Vetch sp.
Vinca minor	Lesser periwinkle (cultivar)

Table A2.3 List of Phase 1 Habitats Recorded

Phase 1 code	Phase 1 Habitat
J12	Amenity grassland
B22	Semi-improved neutral grassland
J12 / J14	Amenity grassland / introduced shrub mosaic
J14	Introduced scrub
A112	Broad-leaved plantation woodland
J13	Ephemeral / short perennial
B5	Marsh / marshy grassland
J5	Other habitat + target note
C3.1	Tall ruderal

Tables A2.4 - 2.8 Typical Plant Species Cover Tables for each Phase 1 Habitat Type Sampled (based on the DAFOR scale: D = Dominant, A = Abundant, F = Frequent, O = Occasional, R = Rare)

Table A2.4

Amenity grassland	**J12**
Epilobium montanum	R
Lolium perenne	D
Senecio vulgaris	O

Table A2.5

Semi-improved neutral grassland	**B22**
Chamerion angustifolium	O
Cirsium vulgare	O
Dactylis glomerata	D
Heracleum sphondylium	F
Plantago major	F
Ranunculus repens	O
Rubus fruticosus sp	LD
Taraxacum officinale	F
Urtica dioica	O

Table A2.6

Broad-leaved plantation woodland	**A112**
Acer pseudoplatanus	D
Aegopodium podagraria	R
Aesculus hippocastanum	A
Alnus glutinosa	R
Epilobium montanum	R
Equisetum palustre	R
Galium aparine	R
Hebe sp.	O
Hedera helix	R
Hyacinthoides hispanica	R
Narcissus pseudonarcissus	R
Poa chaixii	R
Poa trivialis	O
Populus nigra var spp. betulifolia	R
Prunus sp.	R
Ranunculus repens	R
Rubus fruticosus sp	R
Sambucus nigra	R
Sorbus aucuparia	R
Urtica dioica	R

Table A2.7

Ephemeral / short perennial	J13	J13	J13
Achillea millefolium		O	
Agrostis capillaris		F	
Agrostis stolonifera			F
Alnus glutinosa		R	
Betula pendula		R	
Buddleja davidii		O	O
Centaurea nigra		F	
Chamerion angustifolium	O		LF
Cytisus scoparius		R	
Dactylis glomerata		F	
Draba verna		R	
Epilobium ciliatum		R	
Festuca rubra		O	
Geranium robertianum	O		
Holcus mollis			F
Holcus mollis		O	
Hypochaeris radicata	O	O	
Juncus effusus		LF	
Leucanthemum vulgare		F	O
Lolium perenne		R	
Medicago lupulina		R	
Polygonum aviculare		R	
Primula veris	A		
Ranunculus repens	A		
Rubus fruticosus sp	O		
Rumex obtusifolius	O		
Salix aurita		F	O
Salix cinerea			R
Senecio vulgaris		O	F
Taraxacum officinale	F	O	O
Tussilago farfara		R	A
Ulex europaeus		O	
Vicia sp.		R	

Table A2.8

Marsh / marshy grassland	B5
Agrostis stolonifera	LD
Calliergonella cuspidata	R
Juncus effusus	D
Rhytidiadelphus squarrosus	O
Salix aurita	R

APPENDIX 3: Target Notes from the Protected Species Surveys

Table A3.1 Protected Species Target Notes – Provisional Assessment of Bat Roost Potential (buildings only)

TN	GR X	GR Y	Rating	Details
1	252703	664918	MH	Fascia boards loose with some access behind wooden boards. Expanded fascia boards allow some access. Owner reports pigeons are in the loft space.
2	252797	664844	L	Sheet metal building. No access into the immediate area, although no obvious entry points.
3	252726	664936	L	Sheet metal property with a high level of disturbance (open garage and lighting).
4	252672	664993	L	Building - sheet metal construction.
5	252693	665054	M	Building - sheet material. Some holes in the walls of the structure in the sheet material. Also possible gaps in the leading at the top of the sheet material. No access through gate. Appears to offer some potential.
6	252680	665086	M	Building made of bricks. Most of building well sealed. However, two of the corners are split / broken with clear access into the roof space. Also a ventilation duct that appears to enter into the roof space may offer access potential.
7	252755	665132	L	Sheet metal property with no access other than a covered ventilation duct.
8	252709	665207	L	Sheet metal property. Broken metal above garage door may offer entry point although a high level of disturbance.
9	252661	665179	H	Property behind a high security fence. Partially collapsing. Access visible into the roof space. Near to the woodland for foraging. Front door missing with access into the structure.
10	252570	665232	ML	Sheet metal roof over brick. Single hole above "Elite Coffee Group" giving access into the building.
11	252549	665158	L	Sheet metal roof over brick. No access points visible.
12	252577	665081	ML	Sheet metal property over brickwork. Hole at the East end of the building into brickwork via gaps in the brickwork.
13	252599	664972	L	Sheet metal property - no access points visible.

TN	GR X	GR Y	Rating	Details
14	252509	665170	VL	Sheet metal/brick property - no suitable access points observed.
15	252535	665250	VL	Sheet metal/brick property - no suitable access points observed.
16	252538	665349	L	Large property - brickwork and sheet material. High disturbance with trucks and no visible access points.
17	252498	665272	VL	Sheet metal property. Three vents but with a grill over vent.
18	252465	665176	VL	Sheet metal building. No visible access and high disturbance.
19	252382	665236	L	Metal, wood and brick building. No access into building. Fascia wood boards have some gaps above into metal, but look shallow.
20	252339	665076	ML	Large building. Gap between the face of the wall and the mounting concrete sign (F'n'G) (252341 665082). Otherwise the building appears to be metal/brick work with few access points for bats.
21	252285	665010	VL	Metal sheet building. No visible access points.
22	252283	665213	VL	Four sheet metal construction buildings. No visible access points.
23	252317	665321	VL	Sheet metal building. No visible access points.
24	252351	665270	ML	Boarded up building. Ventilation holes into roof space. Cracked bricks near flat roof.
25	252452	665357	L	Large property - brick - metal sheet roofing. Very few access points.
26	252366	665410	L	Metal /brick/sheet material construction. No visible access.
27	252377	665515	VL	Glass, brick, metal roof. No visible access points.
28	252316	665552	VL	Glass, brick, metal roof. No visible access points.
29	252232	665473	VL	Brick/ sheet metal - no visible entry points.
30	252232	665382	M	Outbuilding behind wall - roof with obvious access points. Can not assess fully.
31	252123	665167	L	Brick/sheet/metal construction. Very few access points in one building. Very noisy busy road.
32	252057	665180	L	Sheet/metal brick building. No suitable access points. Some gaps in sheet roofing but very poor quality for bats.

TN	GR X	GR Y	Rating	Details
33	251953	665138	ML	Access points into roofing on corner over car park. Can not assess quality. Also access into space under roofing at road front side through broken cement base board
34	251889	665154	L	Old slate roof property. No access points visible. All brickwork, leading and fascia boards secure.
35	251988	665216	L	Sheet/metal brick building. No suitable access points. Some gaps in sheet roofing but very poor quality for bats.
36	251935	665237	ML	Slight crack between buildings (3cm) at 251940 665214 (GAC logistics)
37	252070	665319	M	Electrical building - unoccupied. Board above the door has a 2cm gap. Can not assess whether it enters the building.
38	252171	665452	M	Back of building - fascia boards missing and access into the brickwork. Also gaps behind several other fascia boards.
39	252128	665474	L	Sheet/metal brick building. No suitable access points.
40	252053	665461	L	Sheet/metal brick building. No suitable access points.
41	251860	665281	ML	Sheet/metal brick building. No suitable access points. Barge boards on south side of the building offer low potential (251834 665298).
42	251932	665464	ML	Hole in roof of porch - enters into the small flat roof (building 7).
43	251967	665527	ML	Hole/crack in concrete above second floor building.
44	251985	665831	L	Large building - brick/ sheet material - no access visible.
45	251979	665864	VL	Unoccupied electrical building - no access points visible.
46	251931	665838	L	Small outbuilding - no roof/open to the elements.
47	251910	665864	L	Building concrete/brick. No obvious access points.
48	251864	665794	VL	Metal construction property
49	251956	665963	MH	Out-buildings appear to have gaps in the top brickwork into the ceiling space - behind security fence in a courtyard.
50	251613	666058	M	Old warehouse - gaps in fascia boards under guttering in the roof space.

TN	GR X	GR Y	Rating	Details
51	251623	666011	L	Mainly solid brick/metal/ glass building. No obvious entry signs.
52	251553	665991	M	Hole at the west corner into the roof space. No other access points visible.
53	251527	665780	L	Some metal fascia boards peeling away from wall. But look to be low potential.
54	251563	665876	L	No obvious entry points.
55	251604	665796	VL	Sheet metal building. No visible entry points.
56	251646	665710	L	Brickwork crumbling in places, most of the structure metal sheet. No access points visible at this time.
57	251769	665672	L	Metal sheet/brick buildings - no obvious access points.
58	251774	665750	L	Metal sheet/brick buildings - no obvious access points.
59	251810	665724	MH	End of roofing missing. Large access into the roof space - appears to access into woodwork and other areas of the building..
60	251837	665713	L	Metal sheet/brick buildings - no obvious access points.
61	251972	665642	L	Brick/tile roofed building - no obvious access points.
62	252045	665602	VL	Metal sheet building. No visible access points.
63	252014	665723	VL	Metal sheet and wood building. No visible access points.
64	252063	665682	VL	New construction - metal construction - no visible access points.
65	251873	665606	ML	Missing barge board at end of the building with access into sheet metal. Low potential.
66	251898	665541	L	Numerous features in metal/brick - all very poor quality also very disturbed with factory and a chemical smell.
67	251822	665547	L	Factory/warehouses - sheet roof - no obvious access points.
68	251829	665415	L	Some loose roof sheeting - otherwise no access point.
69	251779	665461	L	Building - brick/metal roof - no access visible.
70	251672	665467	VL	Sheet metal building - no visible access points.

TN	GR X	GR Y	Rating	Details
71	251632	665505	M	Bowling club and out houses - gaps into shed roof - can not assess building further without access.
72	251723	665357	VL	Sheet metal building - no visible access points.
73	251644	665306	VL	Sheet metal building - no visible access points.
74	251585	665357	VL	Sheet metal building - no visible access points.
75	251579	665453	MH	Standing wall - access into brick, wall, cracks, vents and behind girders. Potential use as a winter roost.
76	251318	665344	VL	Three sheet metal construction buildings.
77	251735	665230	VL	Three sheet metal construction buildings.
78	251361	665799	M	Old derelict warehouses - old blue doors vented with access at 0-2m.
79	251286	665754	M	Gaps in barge boards in derelict building.
80	251195	665769	M	Gaps in fascia boards and into doorways edges and top. Gap in fascia boards extend entire length of the building at 3m - much enters into metal.
81	251205	665891	VL	Brick/glass building. No visible entry points.
82	251089	665959	VL	Metal sheet building. No visible access points.
83	251311	665903	L	Glass and wood building - no visible entry points.
84	251294	666064	L	Metal/brick building - new property - high level of disturbance with lorries. No visible access points but security fence limits access.
85	251700	665803	VL	Metal sheet building. No visible access points.
86	251696	665884	VL	Metal sheet buildings and one brick building. No visible access points.
87	252825	665327	VL	
88	252184	665872	VL	Brick and concrete building with steel corrugated roof
89	252208	665879	VL	Steel construction.
90	252242	665893	VL	Compound steel construction.

TN	GR X	GR Y	Rating	Details
91	252241	665893	VL	Steel construction.
92	252263	665903	L	Very good condition brick structure with slate roof, guttering intact and area well lit
93	252263	665903	L	Brick structure. Corrugated steel roof
94	252179	665773	L	Brick and corrugated steel construction. Perfect condition
95	251739	665157	L	Brick with render. Corrugated steel roof. Good condition
96	251717	665161	L	Brick with render. Corrugated steel roof
97	251679	665165	VL	Brick structure with render. Corrugated steel roof.
98	251657	665168	VL	Brick structure with render. Corrugated steel roof.
99	251632	665172	VL	Brick structure with render. Corrugated steel roof. Row of 5 units.
100	251564	665191	VL	Modern building. Steel structure. Corrugated steel roof. Good condition.
101	251497	665201	VL	Brick building with a flat roof. Modern. Good condition.
102	251436	665220	VL	Brick Building. Asbestos tile roof. Good Condition. Modern.
103	251166	665264	VL	Brick with render. Steel Structure. Steel roof. Modern. Good condition
104	251147	665264	VL	Group of 4 buildings. Steel structures. Good conditions.
105	251148	665214	VL	Brick and steel. Asbestos roof. Good condition.
106	251148	665216	VL	Steel structure. Steel roof. Good condition.
107	251095	665315	VL	Brick and steel. Flat roof. Good condition.
108	251095	665315	VL	Brick and steel. Flat roof. Good condition.
109	250992	665460	VL	Brick and steel. Steel roof. Good condition.
110	250961	665615	VL	Brick and steel. Steel roof. Good condition.
111	251095	665315	L	Brick and steel. Flat roof. Good condition 1990's build.
112	251095	665315	L	Brick and steel roof. Good condition 1990's build.

TN	GR X	GR Y	Rating	Details
113	250992	665460	L	Brick and steel construction. Steel roof. 1990's. Good condition.
114	250961	665615	L	Brick building with steel roof. 1990's. good condition.
115	250949	665684	L	Built in the 2000's with a steel structure. Steel roof. Good condition
116	250430	665813	L	Built in the 2000's with a steel structure. Steel roof. Good condition
117	251028	665865	L	1980's brick building with a steel roof.
118	251046	665781	L	1980's brick and steel roof.
119	257066	665757	L	1980's steel roof. Good condition.
120	257111	665643	L	
121	251122	665610	L	1980's building with brick and steel roof. Good condition.
122	251274	665322	L	1960's brick with render. Steel roof.
123	251414	665240	L	Three new buildings. Steel structures. Steel roof. Good condition.
124	251553	665798	L	Two new buildings. 2000's Steel structures. Steel roof. Good condition.
125	251577	665798	L	Four new buildings. 2000's steel structure. Steel roof. Good condition.
126	251773	665132	VL	1950's brick with render. Asbestos roof. Ten buildings in group.
127	251855	665132	VL	1980's steel and brick. Steel roof. Six buildings in group.
128	251900	665122	L	1950's brick building with flat roof. 1980's extension at apex.
129	251980	665105	VL	2000's steel structure. Steel roof. Good condition
130	251980	665105	VL	1950's breeze block structure. Asbestos roof. Seven buildings. Good condition.
131	252039	665094	VL	1950's Brick and render. Asbestos roof. Good condition.
132	252039	665036	VL	Petrol station.
133	252074	666094	VL	Bus depot and Makro building.
134	252200	665008	VL	1980's brick structure. Steel roof. Good condition.

TN	GR X	GR Y	Rating	Details
135	252253	664991	VL	1980's steel structure. Steel roof. Good condition
136	252374	664991	VL	1970's brick. Flat roof. Good condition.
137	252520	664943	VL	1980's brick and steel. Flat roof.

Table A4.2 Protected Species Target Notes - Provisional Assessment of Bat Roost Potential (trees only)

TN	GR X	GR Y	Tree Species	Rating	Details
T1	252688	665319		2	Partially falling down tree with a lot of loose flaking bark.
T2	252671	665327		2	Partially falling down tree with a lot of loose flaking bark. Split into a hanging plant.
T3	252647	665319	Horse chestnut	1	Very long split (1.4m x 5cm) between 2 - 3.5m. Appears to continue into core of the tree.
T4	252627	665338	Standing dead wood	1	Flaking bark and split/hole at 3m.
T5	252635	665310	Maple and cherry	2	Two trees leaning on each other and a gap has formed between the trees. Also flaking bark and rot holes present in cherry tree.
T6	252666	665275	Standing dead wood	2	Split at 2m and lots of flaking bark.
T7	252680	665270		2	Split at tree base between 0.5 to 1.25m) - gap about 5cm wide then narrows into tree out of sight.
T8	251878	665373		2	Ivy on tree up to 3m
T9	251886	665390		2	Ivy on tree up to 3m
T10	251904	665420		2	Ivy on tree up to 3m
T11	251936	665481		2	Ivy on tree up to 3m
T12	251943	665495		3	Ivy on tree up to 3m
T13	251949	665506		3	Ivy on tree up to 3m

TN	GR X	GR Y	Tree Species	Rating	Details
T14	251750	666041		1	Hollow lime tree - hole at 1m.
T15	251801	666023		1	Bird box - scratch marks - active - possibly birds.
T16	251585	665776		2	Thick ivy on line of trees both sides of the road - 15 trees.
T17	251491	665937		2	Thick ivy on line of trees both sides of the road - 15 trees.
T18	251499	665912		2	Thick ivy on line of trees both sides of the road - 15 trees.
T19	251510	665890		2	Thick ivy on line of trees both sides of the road - 15 trees.
T20	251521	665872		2	Thick ivy on line of trees both sides of the road - 15 trees.
T21	251582	665748		2	Thick ivy on line of trees both sides of the road - 15 trees.
T22	251539	665835		2	Thick ivy on line of trees both sides of the road - 15 trees.
T23	251552	665809		2	Thick ivy on line of trees both sides of the road - 15 trees.
T24	251564	665788		2	Thick ivy on line of trees both sides of the road - 15 trees.
T25	251563	665826		2	Thick ivy on line of trees both sides of the road - 15 trees.
T26	251571	665811		2	Thick ivy on line of trees both sides of the road - 15 trees.
T27	251574	665768		2	Thick ivy on line of trees both sides of the road - 15 trees.
T28	251578	665758		2	Thick ivy on line of trees both sides of the road - 15 trees.
T29	251586	665740		2	Thick ivy on line of trees both sides of the road - 15 trees.
T30	251574	665797		2	Thick ivy on line of trees both sides of the road - 15 trees.
T31	252674	664861	Ash	2	Nine trees in a group.
T32	252614	664887	Common lime	2	Common Lime
T33	252606	664876	Ash	2	Four trees
T34	252599	664876	Whitebeam	2	
T35	252558	664891		2	Species unknown

TN	GR X	GR Y	Tree Species	Rating	Details
T36	252558	664891		2	Species unknown
T37	252552	664848	Common lime	2	
T38	252544	664902		2	Coniferous
T39	252536	664905	Willow	2	Willow
T40	252527	664849	Standing dead wood	2	Three standing dead wood.
T41	252502	664923	Ash	2	
T42	252264	664903	Willow	2	Willow
T43	252382	664927	Standing dead wood (Ash)	1	Three trees
T44	252253	664957	Whitebeam	2	Whitebeam
T45	251635	665132	Popular	2	Four young trees
T46	252074	666094	Silver birch and Sycamore	2	Two silver birch and five sycamore.
T47	252716	664844	Grey willow and sycamore	2	

APPENDIX 4: Bat Activity Survey Results

Table A4.1 Summary results of bat activity driven transects including weather conditions

Transect	Spring	Summer	Autumn
Dusk/ Dawn	Dusk	Dusk	Dawn
Direction	forward	backwards	forwards
Date	28/06/2013	24/07/2013	13/09/2013
Sunset/ Sunrise time	21:58	21:38	06:45
Start time	22:00	21:45	04:50
End time	23:55	00:00	06:55
Rainfall	Dry	Dry	Dry
Wind speed (Beaufort scale)	1-2	1	1
Cloud cover (%)	100	80	100
Start temperature	13.0 °C	20 °C	15 °C
End temperature	12.5 °C	18 °C	14 °C
Soprano pip. commuting pass		3	
Soprano pip. Foraging pass			
Common pip. Commuting pass			1
Common pip. Foraging pass			
Pipistrellus sp. commuting pass		2	
Total passes	0	4	1

Table A4.2 Number of bat passes recorded at SM2 sampling points

		Spring 2013						Summer 2013						Autumn 2013					
		24/06-27/06 (4 nights)						31/07 - 04/08 (5 nights)						09/09 -12/09 (4 nights)					
Species	**Pass Type**	HP1	HP2	HP3	HP4	HP5	HP6	HP1	HP2	HP3	HP4	HP5	HP6	HP1	HP2	HP3	HP4	HP5	HP6
Pipistrellus pipistrellus	Commuting	17	70	5				7	9		6	791	38		3		2	15	13
Pipistrellus pipistrellus	Foraging											41							
Pipistrellus pygmaeus	Commuting										4	3			5		3		
Pipistrellus pygmaeus	Foraging																		
Pipistrellus sp.	Commuting										1		1						
Pipistrellus sp.	Foraging																		
Total		17	70	5	0	0	0	7	9	0	11	835	39	0	8	0	5	15	13