

14. Ecology and Nature Conservation

Environmental Statement

Volume I

14 Ecology and Nature Conservation

Introduction

- 14.1 This chapter of the Environmental Statement (ES) reports the findings of an assessment of the likely significant effects on Ecology and Nature Conservation as a consequence of the proposed Peel Centre Hybrid Planning Application (hereafter referred to as the 'Proposed Development') in the London Borough of Barnet (LBB).
- 14.2 With reference to the Institute of Ecology and Environmental Management (IEEM) (now the Chartered Institute of Ecology and Environmental Management) 'Guidelines for Ecological Impact Assessment' (2006) (Ref 14-1), the aims of this assessment are to:
- Identify any features, habitats or species which would constitute potential constraints to the Proposed Development;
 - Provide an objective and transparent assessment of the likely ecological impacts;
 - Facilitate objective and transparent determination of the consequences of the Proposed Development in terms of national, regional and local policies relevant to nature conservation and biodiversity; and
 - Set out what steps would be taken to adhere to legal requirements relating to any designated sites and/or legally protected or controlled species.
- 14.3 An Extended Phase 1 Habitat survey (Ref 14-2 and Ref 14-3) and further bat surveys (Ref 14-4) of the Site were undertaken by WSP during 2011/2012. In order to provide a robust baseline for this assessment the Extended Phase 1 Habitat survey was updated by URS Infrastructure and Environment Ltd (hereafter URS) in March 2014 (see **ES Volume III: Appendix J**), with further bat survey work undertaken during June and July 2014 (see **ES Volume III: Appendix J**).
- 14.4 LBB and Natural England were consulted through the Scoping Report issued in March 2014 (Ref 14-5) and comments were received within the formal Scoping Opinion received in June 2014 (Ref 14-6).
- 14.5 This assessment firstly describes the legislation and policy relevant to the assessment. Subsequently details of the methodologies used to identify and assess the potential significant effects are described. Baseline conditions are then described, followed by a summary of impacts and resultant effects that would occur as a consequence of the Proposed Development. Design, mitigation and enhancement measures are then described. A summary of the assessment is then provided, together with relevant conclusions.
- 14.6 In line with standard ecological practice the assessment includes consideration of potential cumulative effects of multiple impacts on a single receptor (e.g. impact of land take and air pollution on a particular habitat type) ('Type 1' effects). Cumulative and in-combination effects of the Proposed Development with other development schemes ('Type 2' effects) are discussed in **Chapter 18: Effect Interactions and Cumulative Effects**.
- 14.7 This assessment and ES chapter have been produced by URS.

Legislation and Planning Policy Context

National Legislation

The Wildlife and Countryside Act (WCA) (1981) (as amended)

- 14.8 The WCA 1981 (Ref 14-7) is the major domestic legal instrument for wildlife protection in the UK, and is the primary means by which the following are implemented:
- The Convention on the Conservation of European Wildlife and Natural Habitats ('the Bern Convention'); (Ref 14-8) and;
 - The Council Directive 79/409/EEC on the Conservation of Wild birds (the 'Bird Directive') (Ref 14-9).

- 14.9 The main relevant provisions of the Act are: allowance for the protection of the most important habitats by designating Sites of Special Scientific Interest (SSSIs); a level of protection to all nesting wild birds and specific species under Schedule 1; and protection to various other species under the Act, including other animals (Schedule 5) and plants (Schedule 8).

Protection of Badgers Act 1992

- 14.10 The Act (Ref 14-10) (Remakes it an offence, except as permitted by or under this Act, to wilfully kill, injure or take, or attempt to kill, injure or take, a badger.
- 14.11 A person is guilty of an offence if, except as permitted by or under this Act, he/she interferes with a badger sett.

The Countryside and Rights of Way (CroW) Act (2000)

- 14.12 Part III of this Act deals specifically with wildlife protection and nature conservation in England and Wales. The CroW Act (Ref 14-11) strengthens the safeguards afforded to SSSI's and adds to the protection of wild animals designated under the WCA 1981 by making it an offence to "recklessly disturb" the sheltering places of wild animals designated under Schedule 5 of the WCA.

Natural Environment and Rural Communities (NERC) Act (2006)

- 14.13 Section 41 of the NERC Act (Ref 14-12) requires the listing of habitats and species that are considered to be of principle importance for the conservation of biodiversity in England, including habitats and species in England that have been identified as priorities within the UK Biodiversity Action Plan (UKBAP).
- 14.14 The NERC Act requires that the Section 41 list be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions.

Conservation of Habitats and Species Regulations (2010) (as amended)

- 14.15 The Conservation (Natural Habitats and c) Regulations, 1994 (Ref 14-13) transposed the EU Directive on Natural Habitats, and Wild Fauna and Flora 9/43/EEC (Ref 14-14) into domestic legislation. Amendments in 2007 and 2009 addressed a number of gaps and inconsistencies in the original legislation and provided a greater legal certainty and clarity in a number of areas and in April 2010 the Regulations (Ref 14-15) were brought up to date to consolidate changes made since 1994. The Regulations afford a high level of protection to a variety of species that are considered important at a European scale. The Regulations identify European Protected Species and various habitats of importance within the European Union, with important sites for these habitats/species or both being designated as special Areas of Conservation (SAC). Any proposed development that may have a significant effect on a SAC or Special Protection Area (SPA) (a protected site in accordance with Article 4 of the EC Birds Directive designated on the basis of rare or vulnerable birds or regular migrants) the should be assessed in relation to the Site's 'conservation objectives', i.e. the reasons for which the Site is designated.
- 14.16 The 2010 Regulations and subsequent amendments simplify the species protection regime to better reflect the Habitats Directive, provide a clear legal basis for surveillance and monitoring of European Protected Species (EPS). The Regulations also amend the WCA, updating Schedules 5 and 8 to consider provisions made by the Habitat Regulations 1994 in relation to the protection of EPS. They also offer further clarification to Part 4 of Section 9 considering "reckless" offences on wild animals, which was previously amended by the CROW Act 2000.

National Planning Policy and Guidance

National Planning Policy Framework (2014)

- 14.17 The National Planning Policy Framework (NPPF) (Ref 14-16) replaces all of the Planning Policy Statements and Planning Policy Guidance (PPG) documents, including PPS9 Biodiversity and Geological Diversity (Ref

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14-17). It states that the planning system should aim to conserve and enhance the natural environment by minimising impacts on biodiversity and providing net gains in biodiversity, where possible.

- 14.18** Section 11 of the NPPF relates specifically to “Conserving and Enhancing the Natural Environment”. Briefly, Paragraph 109 states that “*The planning system should contribute and enhance the natural and local environment*”.
- 14.19** Paragraph 113 states that “*Local Planning Authorities should set criteria based policies against which proposals for any development on or affecting protected wildlife or geo-diversity sites or landscape areas will be judged. Distinctions should be made between the hierarchy of international, national and locally designated sites, so that protection is commensurate with their status and gives appropriate weight to their importance and the contribution that they make to wider ecological networks*”.
- 14.20** Paragraph 118 states that “*When determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying a set of defined principles, which includes refusing permission if adequate avoidance or mitigation cannot be put into place; development on land within or outside a Site of Special Scientific Interest (SSSI) likely to have an adverse effect on an SSSI should not normally be permitted unless the benefits clearly outweigh the impacts; development proposals where the primary objective is to conserve or enhance biodiversity should be permitted; opportunities to incorporate biodiversity in and around developments should be encouraged; planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless benefits of the development clearly outweigh the loss; and potential/possible European sites should be given the same protection as European sites.*”
- 14.21** Paragraph 119 states “*The presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directive is being considered, planned or determined*”.

National Planning Practice Guidance (2014)

- 14.22** The National Planning Practice Guidance (NPPG) (Ref 14-18) was launched on the 6th March 2014 and provides a web-based resource in support of the NPPF.
- 14.23** Following its launch, a number of previously published planning guidance documents have been cancelled and are detailed within the Written Ministerial Statement titled ‘*Making the planning system work more efficiently and effectively*’, also dated 6th March 2014.
- 14.24** Key sections of the NPPG that are relevant to this assessment are those relating to Biodiversity, ecosystems and green infrastructure and Brownfield land, soils and agricultural land.

UK Post-2010 Biodiversity Framework, (2012)

- 14.25** The UK Post-2010 Biodiversity Framework (Ref 14-19) was produced in response to a change in strategic thinking following the publication of the Convention of Biological Diversity’s Strategic Plan for Biodiversity 2011–2020. It replaces the UK Biodiversity Action Plan. The Strategic Plan consists of 20 new biodiversity targets for 2020, termed the ‘Aichi biodiversity targets’ and the launch of the new EU Biodiversity Strategy in May 2011.
- 14.26** The framework sets a structure for action across the UK between now and 2020, including a shared vision and priorities for UK-scale activities to help deliver the Aichi targets and the EU Biodiversity Strategy. A major commitment by Parties to the Convention of Biological Diversity is to produce a National Biodiversity Strategy and/or Action Plan.

Biodiversity 2020: A Strategy for England’s wildlife and ecosystem services (2011)

- 14.27** Biodiversity 2020: A Strategy for England’s wildlife and ecosystem services (Ref 14-20) is the country biodiversity strategy for England for the period up to 2020. It further develops ideas introduced within Making

Space for Nature and the Natural Environment White Paper and sets out the strategic direction for biodiversity policy in England for the next decade.

- 14.28** The aim of the strategy is ‘to halt overall biodiversity loss, support healthy well-functioning ecosystems and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people’.

Regional Planning Policy and Guidance

The London Plan – Spatial Development Strategy for Greater London (2011)

- 14.29** The London Plan sets out an overall strategic plan for London and the policies it contains form part of the development plan for sites within Greater London which should be taken into account in determining planning applications (Ref 14-21). It spans the period from 2011 until 2031.
- 14.30** Chapters two, five and seven of the London Plan contains the following policies of relevance to ecology:
- Policy 2.18 Green Infrastructure: The Network of Open and Green Spaces states that development proposals should protect, promote, expand and manage the extent and quality of London’s network of green infrastructure;
 - Policy 5.3 Sustainable Design and Construction states that development proposals should promote and protect biodiversity and green infrastructure, for example through the provision of green roofs;
 - Policy 5.10 Urban Greening states that development proposals should integrate green infrastructure, which could include tree planting; green roofs and walls; and soft landscaping;
 - Policy 5.11 Green Roofs and Development Site Environs states that major development proposals should include roof, wall and site planting, especially green roofs and walls where feasible;
 - Policy 7.19 Biodiversity and Access to Nature describes the protection that should be given to internationally and nationally designated sites, Sites of Importance for Nature Conservation (SINCs), protected species and priority species identified in the UK, London and borough BAPs; and
 - Policy 7.21 Trees and Woodlands states that trees and woodlands should be managed, maintained and enhanced in accordance with the London Tree and Woodland Framework.

Revised Early Minor Alterations to the London Plan (2013)

- 14.31** A single alteration to the original policies within the 2011 London Plan is relevant to ecology (Ref 14-22):
- Policy 2.18 Green Infrastructure: Supplementary guidance on the All London Green Grid has been published, which sets strategic objectives and priorities for green infrastructure across London.

Draft Further Alterations to the London Plan (2014)

- 14.32** The following proposed alterations to the London Plan are relevant to ecology (Ref 14-23):
- Policy 2.18 Green Infrastructure: this policy has been updated to state that Boroughs should set out a strategic approach to planning positively for the creation, protection, enhancement and management of networks of biodiversity and green infrastructure.
 - Policy 7.21 Trees and Woodlands has been updated to include the requirement that each Borough’s Tree Strategy is linked to a green infrastructure strategy.

The Mayor’s Biodiversity Strategy (2002)

- 14.33** The Mayor’s Biodiversity Strategy (Ref 14-24) details the Mayor of London’s vision for protecting and conserving London’s natural open spaces. The strategy aims to:
- Ensure that people have access to nature by creating new green spaces, improving existing ones and encouraging people to visit less well-known places;

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- Protect wildlife habitats, stating that sites which are important for nature conservation should not be built on;
- Encourage developers to incorporate green design into their development proposals; and
- Protect London's most vulnerable wildlife, for example, bats and birds.

14.34 Within the strategy it states that “*Boroughs should use the procedures adopted by the Mayor ...to protect Sites of Borough and Local Importance for Nature Conservation and other local designations*” and that “*The Mayor will and boroughs should resist development which would have a significant adverse impact on the population or conservation status of protected or priority species.*”

14.35 It also states that “*Where, exceptionally, development is permitted which has an adverse impact on a Site of Importance for Nature Conservation (SINC) or other local designation or on the population or conservation status of protected or priority species, the Mayor will and boroughs should aim to secure compensatory measures to mitigate such adverse effects... The Mayor will and boroughs should ensure that new development capitalises on opportunities to create, manage and enhance wildlife habitat and natural landscape.*”

14.36 Policy 5 states that “*The Mayor will seek to ensure that opportunities are taken to green the built environment within development proposals and to use open spaces in ecologically sensitive ways. This is particularly important in areas deficient in open spaces and in areas of regeneration.*”

The All London Green Grid Supplementary Planning Guidance (2012)

14.37 The All London Green Grid (ALGG) (Ref 14-25) provides an arrangement of attractive green spaces and routes that link London together. By being connected, the value and function of the ALGG is significantly enhanced in many different ways, including its value as an ecological corridor.

14.38 This document provides guidance on the implementation of London Plan policy to achieve a number of aims, including protecting, conserving and enhancing London's strategic network of green spaces; and securing a network of high quality, well designed and multifunctional green spaces.

14.39 The document discusses four key elements: London's existing key landscape corridors, including the River Thames; established open spaces and identified opportunities for creating new parks; existing and proposed green connections and corridors; and designated and protected landscapes.

Sustainable Design and Construction Draft Supplementary Planning Guidance (2013)

14.40 This draft document (Ref 14-26) provides guidance on the implementation of London Plan policy 5.3 (Sustainable Design and Construction, as well as a range of policies, primarily in Chapters 5 and 7 that deal with matters relating to environmental sustainability, including policies 5.11, 7.19 and 7.21. An outline of these policies is provided in paragraph 14.30 above.

14.41 Section 2.7 provides guidance relevant to nature conservation which aims to ensure that developments are sensitively designed to protect and enhance biodiversity by increasing connectivity between areas of urban habitat and contribute to conservation at the development site scale.

London Biodiversity Action Plan (2007)

14.42 The London Biodiversity Partnership was established in 1996 in response to the UK Biodiversity Action Plan (BAP). The Partnership aims to protect and enhance the capital's habitats and species and has produced 26 Action Plans. Priority species include the black redstart and all bat species that occur in London (Ref 14-27).

Local Planning Policy

London Borough of Barnet Core Strategy Development Plan Document (2012)

14.43 The Core Strategy (Ref 14-28) provides the ‘vision’ for the Local Plan and the most fundamental, cross-cutting objectives and policies that the local authority and its partners will seek to deliver. The following policy is relevant to this assessment:

- Policy CS7 states that existing SINC should be protected, and the protection and enhancement of biodiversity in Barnet should be improved. Developments should protect existing site ecology and enhance biodiversity. In supporting new Green Infrastructure the LBB will set out an approach for improving the network of green spaces within the Green Infrastructure SPD¹.

London Borough of Barnet Local Plan Development Management Policies (DMP) Development Plan Document (DPD) (2012)

14.44 This document sets out the borough-wide planning policies that implement the Core Strategy (Ref 14-29).

- Policy DM16 states that development proposals should retain and enhance, or create, biodiversity. In addition that development adjacent to or within areas identified as part of the Green Grid Framework will be required to contribute to its enhancement.

London Borough of Barnet Unitary Development Plan Saved Policies (2006)

14.45 This document is a land use plan, seeking to make the most effective use of land in the public interest, from 2006 until 2016 or 2021 (Ref 14-30).

- Policy GBEnv4 states that the council will protect open spaces or features that are of special value in nature conservation terms;
- Policy O17 of the document states that where a proposed development could have an adverse impact on areas of nature conservation value, an Ecological Impact Statement will be required.

Colindale Area Action Plan: Local Development Framework (2010)

14.46 This document identifies the policy framework for future development and change in the Colindale Area (Ref 14-31).

- Policy 5.5 states that development in Colindale will protect and enhance biodiversity, as well as the creation of new habitats. This includes retaining existing mature trees where possible and practical, and offsetting losses where tree retention is not possible.

London Borough of Barnet Supplementary Planning Document (SPD) - Sustainable Design and Construction (2013)

14.47 The design principles in this document (Ref 14-32) state that existing habitats should be enhanced or replaced if this is not possible. Existing mature, healthy trees should be incorporated into layouts, and where possible existing ponds and hedges should be retained.

14.48 The construction principles of this document state that during construction any habitat features to be retained should be properly preserved.

Other Relevant Policy, Standards and Guidance

14.49 The assessment is conducted with regard to other current guidance and best practice, including (but not limited to) the following:

¹ This document is yet to be published by LBB.

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- *IEEM Guidelines of Ecological Impact Assessment in the United Kingdom*
- *Handbook for Phase 1 Habitat Survey A Technique for environmental audit* (Ref 14-33);
- *Bat Mitigation Guidelines* (Ref 14-34); and
- *Bat Conservation Trust: Bat Surveys - Good Practice Guidelines 2nd Edition* (Ref 14-35).

Assessment Methodology and Effect Significance Criteria

14.50 This section of this ES chapter presents the following:

- Identification of the information sources that have been consulted throughout the preparation of this chapter;
- Details of the consultation undertaken with respect to ecology and nature conservation;
- The methodology behind the assessment of effects on ecology and nature conservation resources/receptors, which is in accordance with the *IEEM Guidelines to Ecological Impact Assessment in the United Kingdom*;
- An explanation as to how the identification and assessment of potential ecology and nature conservation effects has been reached; and
- The significance criteria and terminology for assessment of the residual effects to ecology and nature conservation.

14.51 The assessment undertaken seeks to clearly distinguish the impacts occurring as a consequence of the Detailed Components of the Hybrid Planning Application and those likely to occur as a consequence of the Outline Components when subsequent Reserved Matters Applications are made. Following the description of impacts, the effects of the Proposed Development on each of the potential receptors is considered. The assessment takes into account the indicative development phasing and makes clear the timing and duration of any impacts that are considered likely to generate likely significant effects.

14.52 The same assessment methodology is utilised for both the Detailed and Outline Components of the Proposed Development. However, given that the proposals for Development Stages 2 and 3 (and the associated sub-phases) are at this stage outline only, the detail of planting proposals of these areas is indicative only at this stage. The Indicative Masterplan submitted in support of the Outline Components has been reviewed, however, this is not a document for approval and therefore this assessment does not rely on this information although the sources below have been used for this assessment.

14.53 The following sources of information that define the Proposed Development have been reviewed and form the basis of the assessment of likely significant effects on ecology and nature conservation:

- Parameter Plans;
- Design Principles Document
- Design and Access Statement;
- Landscape Masterplan, incorporating ecology strategy and tree strategy; and
- Planning Application Specification.

Assessment Methodology

Methodology for Determining Baseline Conditions and Sensitive Receptors

Study Area

14.54 A desk study conducted in support of the Scoping Report identified that there are no SPAs, SACs or Ramsar² sites (or equivalent proposed or provisional sites) within 5km of the Proposed Development.

14.55 The study area considered within this assessment included all sensitive ecological receptors that are potentially subject to impacts as a consequence of the Proposed Development. This included as a minimum consideration of all of the following potential receptors located within 2km of the Site:

- Statutory designated sites for nature conservation;
- Non-statutory designated sites for nature conservation; and
- Protected and/or otherwise notable habitats and species.

14.56 The baseline for the assessment is considered as the Site conditions at the time of field surveys undertaken in support of this assessment (i.e. March to July, 2014).

Desk Study

14.57 An initial query of the Multi-Agency Geographical Information for the Countryside (MAGIC) website (Ref 14-36) was undertaken to inform the March 2014 Scoping Report.

14.58 The study area considered in detail within the ES was therefore limited to obtaining the location of statutory designated sites for nature conservation within 2km of the Site through the MAGIC website.

14.59 Locations of non-statutory designated sites for nature conservation and records of protected and/or notable habitats and species within a 2km radius of the Application boundary were obtained from Greenspace information for Greater London (GiGL) (Ref 14-37).

Field Survey

Habitats

14.60 An extended Phase 1 habitat survey was undertaken on the 26th March 2014 by two ecologists from URS. The aim of the survey was to identify the type, quality and extent of habitats present within the Site and to identify the potential for these habitats to support protected or otherwise notable species.

14.61 The survey was conducted according to the standard Phase 1 habitat survey methodology extended to include targeted searches for signs of protected species such as bats, dormouse (*Muscardinus avellanarius*), great crested newt (*Triturus cristatus*), reptiles and badgers (*Meles meles*).

14.62 The full methodology for this survey is provided in **ES Volume III: Appendix J**.

Species - Bats

14.63 An initial inspection of all buildings and trees³ within the Site was undertaken between March and June 2014. All areas were accessed, however the survey was undertaken in several stages due to access restrictions in some areas of the Site at the time of the initial survey.

² Ramsar sites are wetlands of international importance designated under the Ramsar Convention. As a matter of policy, Ramsar sites in England are protected as European sites.

³ Trees of diameter at breast height of 0.25m or less are considered highly unlikely to support features with potential to support roosting bats.

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- 14.64** Close focusing binoculars and a one million candle power torch were used to inspect trees/buildings from the ground. All potential bat access/egress points and features with the potential to support roosting bats were identified and recorded along with any evidence which may have indicated the location of roosts, such as stains or scratches around entrance holes, bat droppings, feeding remains and odours or noise characteristic of bats.
- 14.65** On the basis of the initial roost potential assessment the overall potential of each tree/ building was classified as being negligible, low, moderate, high or confirmed. The full methodology for the initial bat roost potential assessment is provided in **ES Volume III: Appendix J**.
- 14.66** A single building (152 Colindale Avenue) located within the Site was identified as containing features with a moderate potential to support roosting bats. It was not possible to access the roof space of this building in order to undertake a further inspection, as the windows and doors of the building have been bricked up to prevent access. As a consequence, a series of two (one dusk and one dawn) bat emergence surveys were conducted on the potential access/egress point of interest on 26th June and 9th July 2014. Surveys were conducted in accordance with Bat Conservation Trust (BCT) Good Practice Guidelines. Full details of the methodology are provided in **ES Volume III: Appendix J**.
- 14.67** In addition, a series of three bat activity surveys (one dusk only, one dusk/dawn, and one dawn only) were undertaken at the Site between 10th June and 8th July 2014. The surveys were undertaken in accordance with the BCT Good Practice Guidelines. Full details of the methodology are provided in **ES Volume III: Appendix J**.
- 14.68** No other further surveys for other protected and/or notable species were required.

Evaluation of Ecological Receptors

- 14.69** The evaluation of ecological resources or features has been undertaken in accordance with the IEEM guidelines for ecological impact assessment.
- 14.70** Protected species are assessed independently of its legal protection status. For example, a site which has bat species foraging above it is not automatically of international value (and therefore analogous with a SAC). Instead, such a site may be assessed as having value in a Borough or County context.
- 14.71** Data received through consultation, desk-based investigations and field-based investigations is used alongside available guidance to allow habitats, species and other features of ecological value to be identified, and the main factors contributing to their value described. An ecological resource or feature is then subject to evaluation to assign a level of value (or potential value) using the following geographic scale:
- International (within EU unless otherwise stated);
 - UK;
 - National (i.e. England);
 - Regional (i.e. south east England);
 - Metropolitan (i.e. Greater London);
 - Borough (i.e. LBB);
 - Local (i.e. Colindale/Hendon area);
 - Site; and
 - Negligible (used where the value is lower than the Site level).

Characterising Potential Ecological Impacts

- 14.72** Each potential impact (and where relevant resultant effects) has been characterised as follows:

- Beneficial/adverse - i.e. is the impact likely to be positive or negative;
- Magnitude - the 'size' or 'amount' of an impact - this is determined on a quantitative basis where possible;
- Spatial extent - the area or distance over which the impact occurs;
- Duration - the time over which an impact is expected to last prior to recovery or replacement of the resource or feature. For the purposes of this assessment the following categories are utilised where relevant: short-term (up to 1 year), medium-term (1-5 years), long term (more than 5 years) and permanent. The duration of an effect may be longer than the duration of an activity or impact;
- Reversibility - i.e. is the impact temporary or permanent. A reversible (temporary) impact is one from which recovery is possible or for which effective mitigation is both possible and an enforceable; and
- Timing and frequency - i.e. consideration of the point at which the impact occurs in relation to critical life-stages or seasons.

Methodology for Determining Significance of Effects (Construction, Demolition and Operation)

- 14.73** Once each of the factors described above has been considered, a judgement on the significance of the impact on a particular receptor can be made. The significance depends on both the characteristics and magnitude of the impact and the value of the receptor.
- 14.74** The IEEM guidelines state that '*An ecologically significant effect is defined as an effect (negative or positive) on the integrity of a defined site or ecosystem and/or the conservation status of habitats or species within a given geographical area.*'
- 14.75** Effects on ecological integrity of designated sites are those which affect integrity as described by the Office of the Deputy Prime Minister (ODPM) circular 06/2005 (Ref 14-38) as '*...coherence of ecological structure and function...that enables it to sustain the habitat, complex of habitats and/or levels of populations or species for which it was classified.*' The guidelines also provide definitions for the conservation status of habitats and species as follows:
- The conservation status of a habitat is "*the sum of the influences acting on a natural habitat and its typical species that may affect its long-term natural distribution, structure and functions as well as the long-term survival of its typical species*";
 - The conservation status of a species is defined as "*the sum of the influences acting on the species concerned that may affect the long-term distribution and abundance of its populations*".
- 14.76** Once an impact is identified, the geographic scale at which that impact will take effect is also established. For example, an impact may not be significant at a national scale but may be significant at a county or local scale. All of these judgements are based, wherever possible, on quantitative evidence; however in some cases the professional judgement of an experienced ecologist may also be required.
- 14.77** Taking the value of the receptor and the magnitude of the impact into account, an overall evaluation of the significance of an effect can be derived.
- 14.78** The assessment includes consideration of the cumulative effects arising from multiple impacts on a single receptor (e.g. loss of habitat and light disturbance on foraging or commuting bats). These are defined in this ES as 'Type 1' cumulative effects and are described for ecology within this chapter. In addition it considers the potential for the cumulative effects as a consequence of interactions with other proposed developments in the vicinity of the Site. These are defined as 'Type 2' cumulative effects and are described in **Chapter 18: Effect Interactions and Cumulative Effects**.
- 14.79** Effects on ecology and nature conservation receptors are assessed according to the IEEM guidelines, based in relation to effects on integrity or conservation status as being either:

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- Neutral and non-significant (i.e. no effect on integrity or conservation status);
- Beneficial or adverse at the relevant geographical scale (i.e. International, UK, National, Regional etc).

14.80 For the purposes of facilitating comparison with other disciplines those effects on integrity or conservation status of receptors at the Borough geographic level or greater are considered 'significant' effects. Individual effects anticipated at the Site or Local geographical levels are considered 'non-significant', however the potential for significant cumulative effects due to a series of Site or Local level effects is also considered.

Consultation

14.81 A formal EIA Scoping Report was submitted to LBB in March 2014, and a Scoping Opinion received from LBB in June 2014 as shown in **ES Volume III: Appendix A**.

14.82 The Scoping Opinion includes responses from LBB and Natural England in relation to ecology issues. Natural England provided standard guidance on best practice for undertaking an ecological impact assessment, including stressing the need for adherence to the IEEM guidelines. Cross reference is made to Natural England's standing advice on protected species (Ref 14-39).

14.83 LBB noted in the Scoping Opinion that opportunities for positive effects on ecology should be identified within the ES, and that the development should seek to enhance habitats where possible and biodiversity on the Site. The proposed strategy for assessing impacts (as set out in this chapter) was agreed to be acceptable.

Limitations and Assumptions

14.84 It was not possible to access the roof space of 152 Colindale Avenue. This building was identified to have moderate potential to support roosting bats from the extended Phase 1 Habitat Survey undertaken in 2014, as the windows and doors have been bricked up to prevent access. However, an emergence survey of the moderate potential feature was undertaken in line with best practice guidelines and, as a consequence, this is not considered a significant constraint to the assessment.

14.85 The small area of the Site located to the west of the Northern Line (0.08ha) was not accessible during the 2014 update of the Extended Phase 1 habitat survey. However, the Site was subject to an Extended Phase 1 habitat survey in June 2012 and a survey undertaken from the adjacent footpath in June 2014 indicate that the area remains unchanged from the previous survey.

14.86 For the assessment of ecological impacts in relation to the Outline Components of the Proposed Development, it is assumed that the quantum of semi-natural habitat and landscaping to be provided will remain broadly similar to that currently shown in the Parameter Plans and Landscape Masterplan drawings when Reserved Matters Applications for these areas are brought forward (i.e. it is assumed there will be no significant changes to the overall area of semi-natural habitat provision to that currently proposed in the parameter plans).

14.87 It is assumed that habitat creation in the Outline Components of the Proposed Development will be provided in accordance with the Landscape Masterplan. The assessment assumes that the design principles set out in the Design Principles Document will be applied when Reserved Matters Applications concerning the Outline Components are made.

Baseline Conditions

Designated Sites

14.88 No statutory designated sites for nature conservation occur within or directly adjacent to the Site. There are no SPAs, SACs or Ramsar sites within 5km of the Site. There are no SSSI's or any other statutory designated site for nature conservation present within the Application boundary or within 1km of the Site. However, two statutory designated sites for nature conservation are located 1.1km from the Site, the details of which are contained within Table 14-1 and shown in Figure 14-1. The Sites partly coincide but do not

share the same boundary throughout. The LNR (approx. 97ha) occupies a larger area than the SSSI (approximately 68ha).

Table 14-1 Statutory Designated Sites for Nature Conservation within 2km of the Site

Site	Distance from Site closest point (km) and Bearing	Designation	Reason for Designation
Brent Reservoir (Welsh Harp)	1.1km to the South	Site of Special Scientific Interest (SSSI)	The reservoir supports a significant number of nesting great crested grebe. The variety of wintering waterfowl and plant species along the water margins is of special note for Greater London.
Brent Reservoir (Welsh Harp)	1.1km to the South	Local Nature Reserve (LNR)	LNR supports open water, marshes, trees and grassland. Reservoir with associated waterfowl. Surrounded by meadows, woodland and parks. Species include great crested grebe.

14.89 There are 12 non-statutory designated sites for nature conservation within 2km of the Site, consisting of one designated as a Site of Metropolitan Importance (SMI), four Sites of Borough Importance (SBI) Grade 2, and seven Sites of Local Importance for Nature Conservation (SLINC). The reasons for their designations and location relative to the proposed works are contained in Table 14-2 and shown in Figure 14-1.

Table 14-2 Non-statutory Designated Sites for Nature Conservation within 2km of the Site

Site	Distance from Site at closest point (km) and Bearing	Designation	Reason for Designation
Silk Stream and Burnt Oak Brook	Partly within Site	Site of Borough Importance (SBI) Grade 2	An urban stream forming a valuable green corridor through Colindale and Hendon.
Sunny Hill Park	0.4km east	Site of Local Importance for Nature Conservation (SLINC)	An urban park with a range of recreational facilities and wild flower meadow, the park retains feature of the former farm fields.
Grahame Park Open Space	0.5km north	SLINC	Open parkland surrounded by a 1970s housing estate with undulating landscape with a pond fringed by reedmace (<i>Typha latifolia</i> and <i>Typha angustifolia</i>) and rushes (<i>Juncus spp.</i>).
Grove Park and Tramway Brook	0.8km west	SLINC	A site which is made up of distinct parts situated within an old sports ground which supports wild edges and a small tributary of the Silk Stream.
Cophall South Fields	0.9km north east	SLINC	An area of informally managed grassy fields with surrounding old hedgerows.
Meadow Way Copse	1km south west	SLINC	A small habitat of trees and scrub situated amongst residential suburbia.
Brent Reservoir (Welsh Harp)	1.1 km south	Site of Metropolitan Importance (SMI)	One of London's largest lakes supporting large number of waterfowl including the largest colonies of great crested grebes in Britain.
Hendon Park and Northern Line Railway Cutting	1.2km south east	SLINC	A hillside park offering a range of recreational facilities.
Roe Green Park	1.3km south west	SBI Grade 2	A park with a walled kitchen garden which is used as a demonstration wildlife garden and nature area.
Cophall Railway Walk and Cophall Old Common	1.4km north east	SBI Grade 2	Linear walk along an abandoned railway with surrounding habitat of grassland scrub and woodland.
Kingsbury Road Bank	1.4km south west	SLINC	A part-naturalised south-facing bank providing a pleasant visual aspect alongside the Kingsbury Road.

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Ashley Lane	1.4km north east	SBI Grade 2	A former green lane and ancient trackway, over 400 years old which runs between Hendon Golf Course and Hendon Cemetery.
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Evaluation

- 14.90** The Brent Reservoir (Welsh Harp) SSSI is of **National** value based on it meeting the criteria set nationally for SSSI designation. Those areas of the Brent Reservoir (Welsh Harp) SMI/LNR that are located outside of the SSSI are of **Metropolitan** value.
- 14.91** The Silk Stream and Burnt Oak Brook SBI Grade 2 and all other SBI's within the Study area are each of **Borough** value based on the designation afforded.
- 14.92** The Sunny Hill Park SLINC and all other SLINC's within the study area are each of **Local** value.

Habitats

- 14.93** The Site largely comprises hard standing, buildings and amenity grassland. Other habitats include ornamental planting, individual broadleaved trees, standing water, dense scrub, poor semi improved grassland and species poor intact hedgerows. The Site is bordered to the north and west by residential and commercial buildings and hard standing in the form of roads and paths. The M1 and Midland Main Line (MML) runs to the east of the Site. The London Underground Northern Line borders the south of the Site which in turn has some areas of dense and scattered scrub along the embankments.
- 14.94** A summary of baseline information arising from Extended Phase 1 Habitat survey undertaken by URS in March 2014 is presented below. Target notes from the Extended Phase 1 Habitat survey are presented in **ES Volume III: Appendix J**.

Building, Structures and Hard Standing

- 14.95** Buildings and hard standing comprise approximately 40% of the Site in the form of footpaths, car parks, residential dwellings and buildings.
- 14.96** The Site contains a wide variety of buildings. The majority of buildings within the main site were multi-storey flat roofed buildings used as classrooms, offices, living accommodation, and catering facilities with multiple port-a-cabins and wooden sheds. In addition there are semi-detached residential properties at the far south (adjoining Rowan Drive) and north of the Site (adjoining Colindale Avenue). Only five of the properties on Rowan Drive are located within the Site (Numbers 6-10). A further three directly adjoin the boundary. The remainder of the houses and gardens at Rowan Drive are located outside of the Site.
- 14.97** A bridge carrying the London Underground Northern Line is present along the southern boundary of the Site. The underpass present is blocked by fences and is not currently accessible for use by pedestrians.

Amenity Grassland

- 14.98** Amenity grassland comprises approximately 50% of the Site, which was regularly mown to maintain a short sward. This habitat was recorded across the Site; typically surrounding footpaths, buildings and car parking areas, with the largest area recorded as the playing field in the centre of the Site.
- 14.99** Species present include frequent perennial ryegrass (*Lolium perenne*) and occasional daisy (*Bellis perennis*), dandelion (*Taraxacum* sp.), common field speedwell (*Veronica persica*), common ragwort (*Jacobaea vulgaris*), groundsel (*Senecio vulgaris*), white clover (*Trifolium repens*), yarrow (*Achillea millefolium*), dove's-foot crane's-bill (*Geranium molle*), greater plantain (*Plantago major*) and red fescue (*Festuca rubra*).

Species Poor Semi Improved Grassland

- 14.100** Areas of species poor semi-improved grassland (less than 1% of the Site) are present within the Site at Colindale Drive and are rank and generally species poor; with frequent cock's foot (*Dactylis glomerata*) and

Yorkshire fog (*Holcus lanatus*) and occasional creeping thistle (*Cirsium arvense*), common field speedwell, curled dock (*Rumex crispus*) and teasel (*Dipsacus fullonum*).

Broad-leaved Semi-natural Woodland

- 14.101** A small section of the Site, located to the south of the railway line, was identified during the WSP extended Phase 1 survey undertaken in 2011 as consisting of broad-leaved woodland with a canopy dominated by sycamore (*Acer pseudoplatanus*), ash (*Fraxinus excelsior*) and pedunculate oak (*Quercus robur*). The understorey is species poor and consists almost entirely of bramble (*Rubus fruticosus* agg.) with stands of common nettle (*Urtica dioica*) and ivy (*Hedera helix*). A survey from adjacent land in 2014 suggests that this habitat description remains accurate.

Scrub

- 14.102** The majority of the section of the Site to the south of the railway was identified during the WSP extended Phase 1 survey undertaken in 2011 as consisting of bramble with frequent hawthorn (*Crataegus monogyna*), elder (*Sambucus nigra*), and large bindweed (*Calystegia silvatica*).

Invasive Species

- 14.103** The area of the Site to the south of the railway was found to contain a large stand of Japanese knotweed in close proximity to the bridge carrying the London Underground Northern Line. In addition large stands of Himalayan balsam (*Impatiens glandulifera*) were identified outside of the Site along the banks of the Silk Stream.

Running Water

- 14.104** The Silk Stream is located approximately 15m from the southern boundary of the Site. The WSP Phase 1 conducted in 2011 identified the stream as shallow with sections of the bank dominated by Himalayan balsam and scattered specimens of tasteless water pepper (*Persicaria mitis*), river water-crowfoot (*Ranunculus fluitans*), pendulous sedge (*Carex pendula*) and great willowherb (*Epilobium hirsutum*).

Hedgerows

- 14.105** Short sections of species poor hedgerow are present in the south east of the Site, adjacent to the boundary with gardens of houses on Rowan Drive. In addition, further small sections are present within Rowan Drive just to the south east of the Site. The hedgerows comprise either beech (*Fagus sylvatica*), leylandii (*Cuprocyparis leylandii*) or garden privet (*Ligustrum ovalifolium*).

Scattered Broadleaved Trees

- 14.106** Semi-mature and mature individual broadleaved trees are present across the Site including beech, sycamore, horse chestnut (*Aesculus hippocastanum*) weeping willow (*Salix babylonica*), pedunculate oak and ash.

Ornamental/Introduced Shrub

- 14.107** Introduced shrubs and plants are present throughout the Site, both within an area of landscape planting and within the gardens of house on Colindale Avenue and Rowan Drive. Species present are typical ornamental species such as cherry laurel (*Prunus laurocerasus*), Cotoneaster sp., Berberis sp., Mahonia sp., and Rose of Sharon (*Hypericum calycinum*).

Standing Water

- 14.108** An ornamental pond is present on Site. The pond is concrete lined and steep sided with a water feature which appears to be disused.

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Evaluation

- 14.109** The small area of broad-leaved semi-natural woodland that is located within the Site to the south of the railway is considered to fall under the definition of the Habitat of Principal Importance type lowland mixed deciduous woodland, as listed on Section 41 of the NERC Act, 2006. In addition woodland is a London BAP Priority Habitat. It is a scarce habitat type within London and in this case the woodland forms part of a green corridor through Colindale and Hendon. It could only be recreated within the medium to long term. It is of **Borough** value.
- 14.110** The Silk Stream represents a London BAP priority habitat type (Rivers and Streams). The section of the Stream in close proximity to the Site is of limited ecological value supporting only scattered specimens of common plant species. However, the wider stream is the key reason for the designation of the Silk Stream and Burnt Oak Brook and forms a valuable green corridor. The wider Silk Stream is of **Borough** value for nature conservation.
- 14.111** The areas of amenity grassland and semi-improved grassland on the Site are species poor. Such habitats are widespread within the local area. They are of intrinsic low value and can be recreated at the Site in the short to medium term. Scattered broadleaved trees, hedgerows, scrub, standing water and ornamental/introduced shrub habitats present form part of the landscape planting and are individually each of limited ecological value. However, collectively this assemblage of habitats supports a range of common faunal species and therefore is considered to be of **Local** value.
- 14.112** All other habitats within the Site (i.e. buildings, structures and hard standing and invasive species) are of **Negligible** value and are not considered further in the subsequent assessment.

Protected and/or Notable Species

- 14.113** The GIGL data search identified no records of protected or otherwise notable species within the Site. A table of protected and/or otherwise notable species recorded within 2km of the Site is provided in **ES Volume III: Appendix J**.

Bats

- 14.114** The 2012 WSP bat survey (Ref 14-38) recorded a small number of common pipistrelle bats (max count of 2 individuals emerging/returning) roosting within a large oak tree 'in the back garden of number 24 Rowan Drive'. In addition one unidentified bat was recorded re-entering a gap below a raised section of lead flashing on the roof of 25 Rowan Drive on one occasion. Based on the low numbers of bats recorded it was concluded that neither the oak tree 'in the back garden of number 24' nor house at number 25 Rowan Drive supported maternity roosts.
- 14.115** Bat roost potential assessments undertaken by URS in 2014 (see **ES Volume III: Appendix J**) identified that the trunk of the oak identified as 'in the back garden of number 24 Rowan Drive' during the 2012 surveys is in fact located just within the Application Site adjacent to the rear (western) boundary of number 24 Rowan Drive. The canopy spread extends into the garden of 24 Rowan Drive. The 2014 roost potential assessment of this tree identified no suitable features to support roosting bats, and it is possible that features identified during the 2012 surveys are no longer present. However, adopting a precautionary approach for the purposes of the evaluation it is assumed that this tree continues to represent a non-breeding summer roost for a small number of common pipistrelle.
- 14.116** The updated bat roost potential assessments conducted in 2014 confirmed that the raised section of lead flashing identified as the roost access point during the 2012 survey at 25 Rowan Drive remains present and suitable for use by roosting bats. It is likely to represent a non-breeding summer roost, utilised by a low number of individuals of common species, likely *Pipistrellus* sp. The building is located approximately 25m from the south-east of the Site boundary.
- 14.117** The 2014 initial bat roosting potential assessments identified one further building within the Site (152 Colindale Avenue) as containing features with moderate potential to support roosting bats. Several roof tiles

are missing and there are gaps around the soffits. It was not possible to access this building to undertake internal inspection of the roof space as the doors and windows of this property have been bricked up to prevent access.

- 14.118** Emergence survey visits at 152 Colindale Avenue (within the Site) conducted during June and July 2014 (See **ES Volume III: Appendix J**) identified no bats entering or returning to this building, and on this basis it is assumed that bats are currently absent.
- 14.119** A total of five trees containing features with a high potential to support roosting bats were identified within areas of Rowan Drive that are outside of the Site boundary. Four of these trees are located to the south of numbers 14 to 17 Rowan Drive, and are therefore separated from the Site by the existing buildings to be retained. The remaining high potential tree, a mature oak is located within the garden of 27 Rowan Drive approximately 40m from the boundary of the Site.
- 14.120** All other buildings/structures and trees within the Site were identified as having either low or negligible potential to support roosting bats.
- 14.121** No bat species listed on Annex II of the Habitats Directive have been identified previously within the study area. The activity survey (see **ES Volume III: Appendix J**) identified low levels of activity by common bat species within the Site and in adjoining areas. With the exception of a single pipistrelle record that could not be distinguished to species level all other records were of common pipistrelle. The majority of activity recorded was in the north west of the Site in the vicinity of the boundary with Colindale Avenue. No strong linear commuting or foraging routes were identified.

Evaluation

- 14.122** Based on the results of the emergence surveys undertaken in 2012 it is assumed that the Site contains a single non-summer breeding roost for common pipistrelle within the tree on the boundary between the Application Site and the garden of 24 Rowan Drive.
- 14.123** One further building with moderate potential to support roosting bats is present within the Site (but absence of a roost was confirmed through the 2014 emergence surveys) and, in addition, there are numerous buildings and some trees with low bat roost potential scattered across the Site. However, similar resources are frequent throughout the wider local area.
- 14.124** The 2014 activity survey data suggests that the Site and the route of the adjacent section of the London Underground Northern Line do not represent an important part of the foraging or commuting resource for the wider local pipistrelle bat populations. Based on the available information, the wider local pipistrelle populations are considered of up to **District/Borough** value.

Amphibians

- 14.125** Great crested newts have not been previously recorded within the study area. The pond on Site is ornamental, steep sided, devoid of suitable aquatic vegetation and surrounded by hard standing. In addition there is no surrounding terrestrial habitat suitable to support great crested newts. It is therefore considered unsuitable to support great crested newt.
- 14.126** The Site is set within an urban environment and is bordered by hard standing, buildings and main roads to the north and west, the M1 and WCML to the east, and the London Underground Northern Line to the south. There are no other known standing water bodies within 500m and there are significant barriers to movement. Based on a lack of suitable breeding habitat within the Site and the presence of significant barriers to movement great crested newt and common amphibians are assumed to be absent from the Site.

Evaluation

- 14.127** The standing water body is considered unsuitable to support great crested newt and no other suitable breeding ponds have been identified within the vicinity of the Site. Great crested newt and common

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amphibians are therefore assumed likely to be absent and the Site is of **negligible** value for amphibians. As such they are not considered further in the subsequent assessment.

Birds

14.128 A total of 24 bird species of conservation concern have been recorded within approximately 2km of the Site boundary of which three species are protected under the EC Birds Directive, namely red kite (*Milvus milvus*), common kingfisher (*Alcedo atthis*) and little egret (*Egretta garzetta*). However, there are no records for these species within the Site.

14.129 Trees, buildings, scrub and a small area of woodland within the Site, and the adjoining habitats in the gardens of Rowan Drive and the vegetation adjacent to the railway, represent habitat suitable to support nesting birds.

Evaluation

14.130 The habitats on the Site are considered unsuitable to support species such as black redstart which are afforded special protection under Schedule 1 of the Wildlife and Countryside Act (1981 as amended). However, the trees, buildings, scrub and a small area of woodland within and adjoining the Site provide suitable to support a range of common bird species and are of **Site** value for breeding birds.

Reptiles

14.131 The March 2014 Extended Phase 1 (See **ES Volume III: Appendix J**) survey identified that some of the overgrown gardens on Rowan Drive have the potential to support common reptile species, in particular slow worm and common lizard.

14.132 However, the Proposed Development does not include the most suitable areas of potential reptile habitat which are located within those gardens at the southern end of Rowan Drive where there is connectivity with the adjoining railway corridor. Those gardens within the Site at the northern end of Rowan Drive (numbers 6-10) contain small areas of habitat that have limited potential to support small numbers of common reptiles.

Evaluation

14.133 The areas within the Site are considered unlikely to support reptiles. However, their presence in low numbers cannot be eliminated entirely. If individuals are present then they will form part of a wider population associated with the remaining gardens and railway line that adjoin the Site. Based on the nature and location of the habitats present in the wider area this population is considered unlikely to be of any more than **Site** value.

Badger

14.134 Neither the 2011 WSP Extended Phase 1 survey nor the URS March 2014 survey identified any signs of badger activity within or in close proximity to the Site. The gardens of properties on Rowan Drive that are located within the Site boundary were subsequently inspected during the initial bat roost potential assessment of these properties undertaken in June 2014 and, again, no signs of badger activity were found.

14.135 On the basis of the survey work undertaken badger is considered likely to be absent.

Evaluation

14.136 No signs of badger were identified and it is deemed likely to be absent. The Site is of **negligible** value for this species which is not considered further in the assessment.

White-clawed Crayfish

14.137 The GIGL data search identified a previous record of white-clawed crayfish (*Austropotamobius pallipes*) within a 2km radius of the Site. However, the Silk Stream, which is located approximately 15m from the Site boundary, was identified during in the 2011 Extended Phase 1 survey addendum as being heavily

channelized, polluted and slow flowing. As a consequence it is considered unsuitable to support white-clawed crayfish.

Evaluation

14.138 The Silk Stream is considered to be unsuitable to support white-clawed crayfish due to the slow flows, pollution and heavily channelized nature of the watercourse. On this basis the Site and adjoining habitats are considered to be of **negligible** value for this species and it is not considered further in this assessment.

Invertebrates

14.139 Stag beetle (*Lucanus cervus*) which is listed under Schedule 5 of the Wildlife and Countryside Act and four nationally notable species have been recorded previously within the 2km GIGL desk study search area, namely; hawthorn jewel beetle (*Agrilus (Anambus) sinuatus*), brown ant (*Lasius brunneus*), (*Platyderus depressus* (a ground beetle) and *Metasyrphus latilunulatus* (a hoverfly). However, there are no confirmed records from within the Site and the habitats are considered unlikely to support any of these species.

14.140 The highly managed nature of the semi-natural habitats within the Site, and resultant limited structure means the Site is considered unlikely to support a diverse assemblage of invertebrates, but is likely to support a range of common species.

Evaluation

14.141 The Site is considered unlikely to support any protected or notable invertebrate species. Based on the limited structure and diversity of habitats present the Site is of no more than **Site** value for terrestrial invertebrate assemblages.

Table 14-3 Summary of Evaluation of Ecological Resources/Receptors

	Resource/:Receptor	Value (Geographical Frame of Reference)
Designated Sites	Brent Reservoir (Welsh Harp) SSSI	National
	Areas of Brent Reservoir (Welsh Harp) LNR/SMI located outside of the SSSI boundary	Metropolitan
	Silk Stream and Burnt Oak Brook SBI Grade 2 (and all other SBIs)	Borough
	Sunny Hill Park SLINC (and all other SLINCs)	Local
Habitats	Semi-natural broadleaved woodland adjoining Silk Stream	Borough
	Silk Steam	Borough
	Assemblage of semi-natural habitats within Site east of railway	Local
	Other habitats adjoining the Site	Local
Species	Pipistrelle populations in the wider local area	District/Borough
	Amphibians	Negligible
	Assemblage of local bird populations	Site
	Reptiles	Up to Site
	White claw-crayfish	Negligible
	Invertebrates	Site

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Assessment of Effects and Significance

Overview

14.142 This section considers the likely impacts, and resultant effects of the proposed scheme on ecological resources/receptors. Based on the above analysis, the Proposed Development has the potential for adverse impacts on the following ecological resources within the study area:

- Habitat loss (land-take): this is a direct impact arising from the Proposed Development. The significance of this is related to the area lost, the proportion of the total and the ecology and nature conservation value of that habitat;
- Habitat fragmentation: land-take can sever habitats, leaving areas too small to support viable populations, and create physical barriers to the movement of animals and plants between areas cut off by the Scheme. Fragmentation can lead to reduced genetic diversity and can increase the likelihood of local populations being lost;
- Indirect effects: these effects may affect habitats outside the boundary of the construction site. They may arise from disturbance (visual, noise or vibration), dust deposition, pollution incidents and changes in site hydrology or the flow and/or quality of watercourses; and
- Cumulative effects: these are considered in two ways; firstly, the cumulative effect of the Proposed Development on the collective resource of particular habitats or species in the study area, or part of it (Type 1 effects): are considered within this chapter. The cumulative impact of the Proposed Development in conjunction with other development projects expected to occur near the Scheme over a similar time period (Type 2 effects) are considered in **Chapter 18: Effect Interactions and Cumulative Effects**.

14.143 This following sections report the likely effects of the Proposed Development assuming adherence to the standard construction and operational controls described below, but prior to the Application of additional mitigation measures which are described in a subsequent section of this chapter.

Effects during Demolition and Construction

Standard Construction Controls

14.144 In each case, the assessment provided below assumes adherence to the following measures designed to avoid or reduce potential adverse effects associated with the Proposed Development. Where relevant these measures have been incorporated into the Design Principles Document and in all cases would be secured as part of the Construction Environmental Management Plan (CEMP).

- Vegetation clearance/demolitions - undertaking clearance of features with the potential to support nesting birds outside of the key bird breeding period (i.e. between October and February inclusive), or where this is impractical ensuring a check for the presence of active nests is undertaken by an ecologist prior to the commencement of clearance. If any active nests are found, the work will cease, the area with the nests will be left in situ and an appropriate buffer zone will be established. This area will be left intact until it has been confirmed by the ecologist that the young have fledged and the nest is no longer in use;
- Dust suppression - prevention of dust deposition on retained habitats and those within the surrounding area through use of best practice methods to prevent dust generation and spread (e.g. wetting of construction access routes during dry weather);
- Noise - e.g. placing noisy plant and equipment as far as practical from potential receptors; throttling down or turning off machinery when not in use and using modern quiet and well maintained equipment fitted with appropriate silencers'

- Lighting - minimising construction lighting, directing lights downwards and away from sensitive receptors and minimising light spill into adjacent areas; ensuring that lighting is turned off when not required.
- Pollution controls - it is assumed that the CEMP will include the additional mitigation measures for demolition and construction identified within **Chapter 12: Water Resources and Flood Risk** which include measures to minimise the release of hydrocarbons and oils, sediment loading in run off and potential for contamination from dewatering. In addition it is assumed that all works will be undertaken with adherence to current Environment Agency Pollution Prevention Guidelines (PPGs) (Ref 14-40).

14.145 Good site practice will reduce the risk of pollution and disturbance. The following assessment assumes that on site staff and managers will have been trained in the importance of good site practice with regard to environmental protection (including protection of wildlife).

Designated Sites

14.146 No statutory designated sites would be directly or indirectly impacted as a consequence of the Proposed Development.

14.147 The Brent Reservoir (Welsh Harp) SSSI/LNR is located 1.1km to the south of the Site. There is no functional linkage with the Site and, as a consequence, no activities associated with either the Detailed Components or the Outline Components of the Proposed Development will impact upon this receptor. The overall effect will therefore be **neutral** and **non-significant**.

14.148 The Silk Steam and Burnt Oak Brook SBI Grade 2 is located approximately 75m south west of the extent of the Detailed Components of the Proposed Development, The Detailed Components will not result in habitat loss from the SBI. The existing surface water drainage at the Site currently discharges into the Silk Stream through two outfalls and these outfalls would be retained as part of the Proposed Development. Following the implementation of the construction controls identified in paragraph 14.144 it is likely that there will be a temporary and limited reduction in the water quality of the Silk Stream in the vicinity of the Proposed Development for the duration of demolition and construction due to minor increases in sediment loading and release of pollutants. These impacts are identified in **Chapter 12: Water Resources and Flood Risk** as resulting in a temporary effect on the Silk Stream (as a water resource) at the Local level, and are of negligible significance.

14.149 Assuming construction controls are implemented it is unlikely that there will be any other notable disturbance of the SBI during construction. Broadleaved woodland (the predominant habitat type within the SBI) is not considered particularly sensitive to disturbance and when standard controls are implemented it is likely any impacts (e.g. dust deposition, noise and visual disturbance) would reduce to a level where any resultant effects are imperceptible.

14.150 The Outline Components of the Proposed Development includes provision for the construction of a pedestrian/cycle route linking to the existing bridge passing below the railway in the far south of the Site (anticipated construction Q3 2017 to Q3 2018). For the purposes of the current assessment it is assumed that the permanent loss of up to 0.08ha habitat from the SBI, consisting predominately broadleaved semi-natural woodland, and associated dense scrub could occur. This represents a worst case assumption and potential means of reducing this impact during detailed design are discussed under 'Additional Mitigation'. The minor increases in sediment loading and release of pollutants to the Silk Stream are likely to continue for the duration of demolition and construction of the Outline Components.

14.151 The understorey of the woodland within the SBI assumed to be permanently lost during construction is also known to contain stands of Japanese knotweed. The permanent habitat loss (0.08ha) is currently expected to occur in late 2017/early 2018 and represents a total of less than 1% of the total SBI site area. The losses would be from a margin of the Site that already adjoins residential buildings, and that will already in part be subject to light pollution from street lighting in the surrounding area.

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- 14.152** Prior to mitigation, the construction of the pedestrian/cycle route also has the potential to result in indirect impacts on the adjoining retained areas of the SBI for a period of up to 15 months (Q3 2017 to Q4 2018). However, assuming that standard best practice controls are implemented (in particular to minimise light spillage into the adjacent woodland) any impacts resulting from construction activities are likely to be short term (construction of this feature is anticipated to take no more than 15 months to complete) and reversible. Further details on the controls to be utilised in this area of the Site during construction would be provided in subsequent Reserved Matters Applications.
- 14.153** Land take from within an SBI is contrary to national, regional and local policies which seek to avoid development within non-statutory sites for nature conservation. It is also from within an area that is identified as a strategic corridor within the All London Green Grid SPD. Japanese knotweed is listed under Schedule 9 Part II of the Wildlife and Countryside Act (1981, as amended). It is an offence to plant or otherwise aid the spread of this species. Further action by the developer will be required prior to construction commencing in this area to address legal obligations associated with working within areas containing Japanese knotweed.
- 14.154** The Silk Stream and Burnt Oak Brook SBI is designated on the basis of the stream and associated habitats forming a valuable green corridor through Colindale and Hendon. The Silk Stream itself has been heavily modified in the past and the Site surface water drainage already connects to it via two existing outfalls. Permanent habitat loss from the SBI will be limited (0.08ha of broadleaved woodland), and even when considered in-combination with limited increases in sedimentation and pollution that are expected within the Stream itself it is unlikely that the integrity of the SBI, and its ability to act as green corridor will be compromised. As a consequence neither the Detailed or Outline Components of the Proposed Development are likely to result in an adverse effect on the integrity of the SBI. Therefore **no significant effect** on the Silk Stream and Burnt Oak Brook SBI Grade 2 will occur. Effects on the conservation status of individual habitats and species associated with the Site are considered separately in subsequent section of this report.
- 14.155** No other non-statutory sites would be subject to habitat loss, and assuming that standard best practice construction methods are followed neither the Detailed or Outline Components of the Proposed Development will result in perceivable impacts on the other sites identified in Table 14-2. The effect on these sites will therefore be **neutral and non-significant**.

Habitats

- 14.156** Permanent habitat loss that would occur as a consequence of the both the Detailed and Outline Components of the Proposed Development are summarised in Table 14-4 below. It is assumed that prior to the commencement of any works associated with the Outline Components that all habitats within the Site for the Detailed Components would already have been cleared.

Table 14-4 Summary of Pre-mitigation Habitat Loss that would occur due to the Detailed and Outline Components of the Proposed Development

Habitat type	Permanent habitat loss due to Detailed Components	Indicative permanent habitat loss due to Outline Components	Total permanent habitat loss
Amenity grassland	6.89 ha	3.10ha	9.99 ha
Buildings	0.33 ha	1.88 ha	2.21 ha
Hard Standing	2.34ha	5.64ha	7.98 ha
Species poor semi-improved grassland	-	0.04 ha	0.04 ha
Broad-leaved semi-natural woodland	-	0.08 ha	0.08 ha
Broad-leaved woodland - plantation	-	0.02 ha	0.02 ha
Ornamental/introduced shrub	-	0.02 ha	0.02 ha

Standing water	-	0.01 ha	0.01 ha
Area totals	8.93ha	11.42ha	20.35ha
Species poor hedgerow	52m	114m	166m
Trees	75 (no.)	102 (no.)	177 (no.)

- 14.157** The Detailed Components would result in no adverse impacts on the habitats which form part of the Silk Stream and Burnt Oak Brook SBI, to the west of the London Underground Northern Line.
- 14.158** The permanent loss of up to 0.08ha of semi-natural broadleaved woodland to facilitate the installation of a pedestrian/cycle path in this area could occur as part of the Outline Components. This is currently likely to occur during late 2017 to early 2018. The area assumed is a precautionary figure at this stage and in line with the Design Principles efforts will be made to minimise the scale of land take required within the subsequent Reserved Matters Application.
- 14.159** The permanent loss of up to 0.08ha semi-natural broad-leaved woodland represents only approximately 1% of the wider area of woodland block of which it forms part. The loss of this small an area on the margin of a larger woodland block will not result in any additional adverse effects due to fragmentation.
- 14.160** Potential indirect impacts on the area of retained broadleaved woodland that adjoins the Site to the west of the London Underground Northern Line are described in relation to the Silk Stream and Burnt Oak Brook SBI above.
- 14.161** Assuming standard construction controls are in place it is considered unlikely that the overall effect on the conservation status of the woodland resource would be significant at the Borough level. However, it is likely that there would be an effect on conservation status at the **Site** level which would be **non-significant**.
- 14.162** As the Silk Stream is located 15m from the edge of the Site at its nearest point, neither the Detailed or Outline Components of the Proposed Development would result in any land take from this potential receptor. As described in paragraph 14.148 in relation to the Silk Stream and Burnt Oak Brook SBI, following the implementation of construction controls there remains the potential for a limited negative impact on water quality within the Silk Stream. However, this impact will not be continuous and will likely be limited to periods following heavy rainfall during demolition and construction works. When the adverse impact occurs it is likely to result in minor increases in sediment loading and pollutants (a local level effect of negligible significance in relation to water resources - see **Chapter 12: Water Resources and Flood Risk**). These impacts may in turn result in resultant adverse effect on the conservation status of the Silk Stream. However, it is considered unlikely these effects would be significant at the Borough level and are expected only to be temporary and of relevance at the **Site** level, and therefore **non-significant**.
- 14.163** Permanent habitat loss occurring as a consequence of the Detailed Components of the Proposed Development would include approximately 70% of the assemblage of semi-natural habitats located within the Site to the north of the London Underground Northern Line. This would include 6.89ha of amenity grassland, 52m of species poor hedgerow and 75 no. standard trees. These losses would occur between Q2 2015 and Q4 2017.
- 14.164** The Outline Components of the Proposed Development would subsequently result in the phased permanent loss of all remaining semi-natural habitats within the Site which total approximately 3.27ha and includes areas of amenity grassland, introduced shrub, standing water and broad leaf plantation as detailed in Table 14-4. These losses are assumed to occur between Q3 2015 and Q1 2018
- 14.165** The overall loss of the assemblage of semi-natural habitats to the north of the railway would result in a permanent adverse effect on the conservation status of the habitat assemblage that is of importance at the **Local** level. The effect would occur from Q1 2015 onwards when demolition and vegetation clearance in the Detailed Components is expected to commence. The effect is **non-significant**.
- 14.166** The habitats immediately surrounding the Site consist predominately of buildings and hard standing. The southern boundary of the Site adjoins a railway line (Northern Line) and associated mosaic of scrub and bare

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ground habitats. Only a very small section of the Site located to the south of the railway line directly adjoins the Site. It is assumed there will likely be minor increases in noise, dust deposition and light pollution for the duration of construction, based on the nature of the habitats present, the current background levels of disturbance and their likely limited sensitivity to these impacts there is unlikely to be any perceivable effect on these receptors. As a consequence the effect on these receptors would be **neutral** and **non-significant** throughout all indicative development phases during the construction period.

Protected and/or notable species

Bats

- 14.167** Demolition activities as part of the Detailed Components of the Proposed Development would only result in the loss of trees and buildings that have negligible potential to support roosting bats. In addition there would be the loss of all semi-natural habitats within this part of the Site as listed in Table 14-4. Results of bat activity surveys conducted during 2014 suggest that the areas of the Site covered by the Detailed Components contain no features of particular importance to the foraging and commuting patterns of local bat populations. The Detailed Components are well separated from the confirmed bat roosts located on the south eastern boundary of the Site and outside the Site, within the retained section of Rowan Drive to the south east of Site.
- 14.168** Demolitions in support of the Outline Components would in combination result in the permanent loss of a further 19 buildings/structures with low bat roosting potential, and one building (152 Colindale Avenue) with moderate potential to support roosting bats⁴, alongside the loss of all remaining semi-natural habitats within the Site. This would amount to the loss of all suitable roosting and foraging habitat within the Site.
- 14.169** A mature oak located within the Site and adjacent to the boundary with 24 Rowan Drive is assumed to contain a confirmed summer non-breeding bat roost utilised by a small number of common pipistrelle bats (see paragraph 14.115). This tree is located within an area that forms part of the Outline Components (Development Stage 3) and is scheduled for retention within the Landscape Masterplan drawing (see Tree Removal Plan PCC389-MP-00-0-1-007-P). However, it is located in very close proximity to proposed Block X and even if retained prior to mitigation there is the potential that construction lighting and noise could result in disturbance sufficient to result in the abandonment of the assumed roost.
- 14.170** The scale of the potential effect of the Proposed Development on the local assemblage of bat populations may differ depending on the time of year that the impacts described above occur. Taking a precautionary approach to the assessment, it is assumed that the confirmed tree roost within the Site may be disturbed during the summer months (i.e. when bats may be utilising the roost) and therefore prior to mitigation works the Outline Components could lead to permanent abandonment of a summer non-breeding roost for common pipistrelle bats.
- 14.171** Assuming the worst case scenario that the tree roost with the Site is abandoned, the loss of this roost would only represent a small proportion of the available roosting resource for bats within the wider local area, which is dominated by residential dwellings, many of which will contain features suitable to support bats.
- 14.172** Survey results suggest that no features of key importance to foraging and commuting bats would be adversely impacted by the Outline Components of the Proposed Development. While the linear habitats along the London Underground Northern Line and the Silk Stream and Burnt Oak Brook SBI represent potential bat flight corridors, activity surveys have only detected very low levels of activity alongside the railway line, and within the Site suggesting it is used by low numbers of bats of common species, principally common pipistrelle. There is no reason to anticipate that night time working will be required in this area of the Site on anything more than an occasional basis during the period of its construction (expected up to 15 months in total). The section of the SBI that would be subject to any lighting impacts is on the boundary with

⁴ Emergence survey undertaken in June/July 2014 found no evidence of bats and it is assumed the building is not currently utilised as a roost.

an existing residential area and it is likely already subject to light spill. Assuming standard construction controls are implemented any impacts on bats using these movement corridors during construction are likely to be both temporary (an occasional night during the 15 month construction period) and reversible. As such they are not expected to adversely impact the function of the SBI as a movement corridor for a range of species.

- 14.173** Demolition and construction works in the south east corner of indicative Development Stage 3 will involve works approximately 25m from the confirmed bat roost located outside of the Site within the building at 25 Rowan Drive. In addition another tree with a high potential to support roosting bats is located outside of the Site and approximately 40m from the Site boundary within the garden of 27 Rowan Drive. However, it is assumed that standard construction controls in relation to noise and construction lighting would prevent any effects on features at this distance from the Site.
- 14.174** The impacts described above associated with the Outline Components of the Proposed Development would occur in combination with the loss of other on site habitats. However, losses from within the Site are likely to represent a small percentage of the overall foraging habitat resource available to local bat populations, and even if losses were to all occur concurrently only a very small number of individuals from the wider local bat population would be subject to disturbance.
- 14.175** The overall effect of the Proposed Development on the conservation status on the local pipistrelle bat populations is unlikely to be significant at the District/Borough level. However, prior to mitigation this may result in a permanent adverse effect at up to the **Local** level. The effect would be **non-significant**.
- 14.176** However, the potential disturbance and loss of a bat roost are offences under the Conservation of Natural Habitat and Species Regulations (2010 as amended), and additional mitigation will be required in order to ensure that the Proposed Development results in no legal offences.

Birds

- 14.177** The Detailed Components of the Proposed Development would result in the permanent loss of scattered trees and buildings that have been identified as suitable to support a variety of common nesting bird species. These losses are anticipated to occur during the period Q1 2015 and Q2 2017.
- 14.178** The Outline Components would result in the loss of a further scattered trees, 0.08ha of broadleaved woodland and 0.02ha of introduced shrubs that all have the potential to support common species of nesting bird. These losses would occur between Q3 2015 and Q1 2018. However, the exact timing of these losses is not known at this stage.
- 14.179** It is assumed that standard construction controls are implemented, and that clearance of vegetation and buildings is conducted with consideration of potential impacts on breeding birds (i.e. outside of the breeding season or following a check by a suitably qualified person to confirm the absence of active nests). As such no direct killing or injury of birds as a consequence of demolition/operation is anticipated.
- 14.180** The areas of suitable bird nesting habitat within the retained properties on Rowan Drive, adjoining the London Underground Northern Line, and the retained areas of woodland to the south of the railway are already subject to regular noise and visual disturbance. However, the noise profile of construction activities will be different to the current baseline and so it is possible that there may be some additional disturbance of nesting birds as a consequence of construction noise for the duration of construction (estimated up to 5 concurrent years in any one location). This could result in abandonment of nests or reduced breeding success for a small number of individuals. However, the impact will be reversible and due to the small area and relatively low quality of the habitat concerned any resultant effect on breeding bird populations would be unlikely to be of importance at any more than the **Site** level. Therefore it would be **non-significant**.

Reptiles

- 14.181** The Detailed Components of the Proposed Development would not likely result in impacts on reptiles, given this area does not contain habitat suitable for reptiles.

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14.182 The Outline Components of the Proposed Development would result in the loss of an area of approximately 0.1ha habitat within the gardens of properties on Rowan Drive that has limited potential to support common reptiles. These losses are currently anticipated to occur as part of indicative Development Stage 3. Prior to mitigation, vegetation clearance and ground works within the area have the potential to result in the killing/injury of a small number of reptiles. A negative impact on reptiles is therefore possible, however based on the small proportion of the available suitable habitat that would be lost, this impact is unlikely to result in an adverse effect on the conservation status of the population concerned. As such the effect is likely to be **non-significant**.

14.183 The deliberate killing or injury of common reptile species is a legal offence under the Wildlife and Countryside Act (1981 as amended). As a consequence additional mitigation is required in order to avoid legal offences occurring.

Invertebrates

14.184 The loss of all semi-natural habitats within the Site would result in the removal of all suitable habitat for common invertebrate assemblages. This impact would result in a permanent adverse effect at the **Site** level that is **non-significant**.

Effects Once the Proposed Development is Completed and Occupied

Operational design controls

14.185 The lighting design for the Proposed Development will be provided in line with best practice (Ref 14-41), adhering to the following guidelines (which have been incorporated into the Design Principles Document for the Proposed Development) wherever it is practicable to do so:

- The lighting design for the scheme will respect the existing habitat corridors adjoining the Northern Line, Silk Stream and Burnt Oak Brook SBI and along the eastern boundary of the Site with Rowan Drive;
- Use only the minimum amount of lighting needed for the task;
- Minimise the spread of light to ensure that only the required area is lit. Direct any lighting around the margins of the Proposed Development so that it projects downwards and into the Site. Use shields, hoods or similar to direct light to where it is required;
- Ensuring lights provided in close proximity to sensitive ecological receptors are positioned away from reflective surfaces;
- Limit the period that lights are switched on to ensure at least some dark periods;
- Use temporary close-boarded fencing (where required) until vegetation matures to shield sensitive areas from lighting;
- Avoid lighting in the blue or white wavelengths of the spectrum and that emit minimal ultra violet light.
- Use light sources that emit minimal ultra-violet light.

14.186 It is assumed that all surface water from the Site would pass through an oil interceptor and end of line gross pollutant traps prior to discharge into the Silk Stream

Designated Sites

14.187 The Brent Reservoir (Welsh Harp) SSSI/LNR (the closest statutory designated sites) are located 1.1km from the Proposed Development and there are no aspects of the completed and occupied development that are likely to impact on their structure and function. As a consequence the effect on the integrity of these sites will be **neutral** and **non-significant**.

14.188 For the Proposed Development as a whole the discharge from the Site will be limited to a level that will match the existing greenfield flows from the Site, and reduces by greater than 50% the existing brown field flows from the Site (see **Chapter 12: Water Resources and Flood Risk**). Following application of the

controls identified above the Water Resources and Flood Risk assessment identifies there is likely to be a permanent adverse effect on water quality of the Silk Stream at a local level that is of negligible significance. However, this is considered unlikely to result in any notable impacts on the function of the SBI given that any pollution or sedimentation that does occur will likely be confined to periods following infrequent exceptional rainfall events. Impacts which occur are likely to be limited in extent and reversible.

14.189 The Detailed Components of the Proposed Development are unlikely to result in any additional impacts on the structure and/or function of the Silk Stream and Burnt Oak Brook SBI Grade 2 which is located approximately 75m from the Detailed Components. As a consequence it is considered unlikely any adverse effects on the SBI will occur during operation.

14.190 The Outline Components of the Proposed Development would involve the construction of a pedestrian/cycle route to pass below an existing bridge under the London Underground Northern Line. Once the development is complete and occupied it is likely that this pedestrian/cycle route will be lit. Permanent light spillage into the adjoining retained SBI will be minimised through sensitive lighting design in line with the principles outlined in paragraph 14.185. On this basis it is expected that the extent of any permanent impact would be limited to approximately a 5-10m strip along the route of the path. Prior to a Reserved Matters Application for this area, and development of a detailed lighting strategy, this scenario is utilised as a reasonable worst case scenario for the assessment.

14.191 It is understood that the boundary of the SBI in the vicinity of the Proposed Development is currently fenced to prevent public access. An equivalent fence will be provided following the completion of construction.

14.192 The increased number of local residents when the Proposed Development is occupied and the proximity of the new pedestrian/cycle route means there is the potential for increased unwanted access to the SBI, and associated trampling and disturbance. However, assuming that an equivalent fence is provided and given the nature of the habitats present (woodland with dense understorey dominated by bramble), even if such incursions are frequent they would likely occur over a limited extent and would likely be reversible in the short term.

14.193 Overall, it is likely that there could be very limited impacts on individual species/species groups utilising the SBI once the Proposed Development has been completed. However, the magnitude and extent of the expected impacts on the SBI are considered unlikely to result in any adverse effect on the integrity of the SBI, and its ability to act as a green corridor through the wider local area. As a consequence, the effect on the SBI is likely to be **non-significant**.

14.194 No operational impacts on other non-statutory designated sites are likely to occur, as these are all located 400m or more from the Proposed Development. As such the overall effect on these sites once the Site is occupied would be **neutral** and **non-significant**.

Habitats

14.195 Potential impacts (and resultant effects) on the areas of broadleaved woodland outside of the Proposed Development (adjacent to Detailed Components) that form part of the Silk Stream and Burnt Oak Brook SBI Grade 2 are described above in the Designated Sites section. The impacts of disturbance once the Proposed Development is completed and occupied are likely to be limited and as a consequence the effect on the broadleaved woodland is likely to be **neutral** and **non-significant**.

14.196 Expected operational discharge of surface water from the Site into the Silk Stream is described in paragraph 14.188 and it is considered unlikely to result in anything more than periodic temporary adverse effects on the conservation status of the Silk Stream at the **Site** level that will likely be reversible in the short term (up to 1 year) and **non-significant**.

14.197 No other notable impacts on the habitats receptors adjoining the Site are likely to occur during operation.

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Species

Bats

14.198 The Detailed Components of the Proposed Development are unlikely to generate any negative impacts on bat populations.

14.199 The retained non-breeding summer roost at 25 Rowan Drive is located outside of the Site, approximately 25m to the south east. A further tree with a high potential to support roosting bats is located outside of the Site and approximately 40m from the boundary. However, assuming sensitive lighting design in line with the principles outlined in paragraph 14.185 it is unlikely that either of these features will be subject to light spill that could result in disturbance of bats or their roosts.

14.200 As described, in relation to the Silk Stream and Burnt Oak Brook SBI in paragraph 14.109 it is likely that good lighting design will limit the extent of light spill into the retained sections of the SBI. While there may be some limited disturbance of foraging/commuting bats utilising the wider SBI as a movement corridor, the impact is unlikely to result in adverse effects on the conservation status of any populations concerned. As a consequence any resultant effects will be **non-significant**.

Reptiles

14.201 No additional impacts on reptiles are anticipated once the Proposed Development is completed and occupied. The effect will be **neutral** and **non-significant**.

Birds

14.202 Assuming operational lighting is in accordance with the design principles, once the Proposed Development is completed and occupied there are not expected to be any additional impacts on birds. The effect on the local assemblage of common bird species will likely be **neutral** and **non-significant**.

Invertebrates

14.203 No additional impacts on local invertebrate populations are anticipated once the Proposed Development is completed and occupied. As a consequence the effect on the wide local resource as a consequence of this aspect of the development will be **neutral** and **non-significant**.

Table 14-5 Summary of Effects Prior to Additional Mitigation

Receptor	Description of impact	Nature of effect prior to additional mitigation	Geographic scale at which effect is assessed to be of relevant	Significant/Non-significant
Demolition and Construction				
Brent Reservoir SSSI/LNR/SMI	No impact	-	Neutral	Non-significant
Silk Stream and Burnt Oak Brook SBI Grade 2	Loss of 0.08ha (Less than 1% of total area of this site) of SBI	Neutral effect on site integrity	-	Non-significant
Semi-natural broadleaved woodland adjoining Silk Stream	Loss of 0.08ha of semi-natural broadleaved woodland	Permanent adverse effect on conservation status	Site	Non-significant
Silk Steam	Minor periodic increases in silt loading and pollutants	Temporary and reversible adverse effect on conservation status	Site	Non-significant
Assemblage of semi-natural habitats within Site east of railway	Loss of 10ha of semi-natural habitat (predominately amenity grassland)	Permanent adverse effect on conservation status	Local	Non-significant

Receptor	Description of impact	Nature of effect prior to additional mitigation	Geographic scale at which effect is assessed to be of relevant	Significant/Non-significant
Habitats adjoining the Site	Disturbance as a consequence of demolition and construction	-	Neutral	Non-significant
Wider local pipistrelle bat populations	Loss of on Site habitats and temporary disturbance of known roosts	Permanent adverse effect on conservation status	Local	Non-significant
Assemblage of local bird populations	Habitats loss and potential disturbance	Permanent adverse effect on conservation status	Site	Non-significant
Reptiles	Clearance of 0.1 ha area of areas with limited potential to support reptiles	No effect on conservation status	Neutral	Non-significant
Invertebrates	Loss of all suitable habitat within the Site	Permanent adverse effect on conservation status	Site	Non-significant
Completed and Occupied Development				
Brent Reservoir SSSI/LNR/SMI	No impacts	-	Neutral	Non-significant
Silk Stream and Burnt Oak Brook SBI Grade 2	Potential for increased disturbance of SBI	No effect on site integrity	Neutral	Non-significant
Silk Stream	Minor periodic increases in silt loading and pollutants	Temporary and reversible adverse effect on conservation status	Site	Non-significant
Other habitats	No impacts	-	Neutral	Non-significant
Wider local pipistrelle bat populations	Potential for disturbance of foraging commuting due to operational lighting	Adverse effect on conservation status	Site	Non-significant
Reptiles	No impacts	-	Neutral	Non-significant
Birds	No impacts	-	Neutral	Non-significant
Invertebrates	No impacts	-	Neutral	Non-significant

Additional Mitigation

14.204 The ecological impact assessment has identified that the Proposed Development will result in no likely significant effects on ecological receptors, prior to the consideration of the additional habitat creation and mitigation that forms part of the Proposed Development. However, the additional mitigation, compensation and enhancement measures outlined below are provided in order to address policy and legislative requirements arising from the Proposed Development.

Additional Mitigation during Demolition and Construction

Designated sites

14.205 While no significant effect on the Silk Steam and Burnt Oak Brook SBI Grade 2 is likely to occur, the Outline Components of the Proposed Development includes provision for the construction of a new pedestrian/cycle within the SBI. The relevant Reserved Matters Application covering works proposed within the SBI should include detail of the working methodology to be utilised in this area of the Site and in line with the Design Principles detailed landscape and lighting design taking account of the Silk Stream movement corridor for bats and other mammals.

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14.206 The section of the SBI within the Site is known to contain Japanese knotweed, and in addition Himalayan balsam is known to occur in close proximity. Both species are listed on Schedule 9 Part II of the Wildlife and Countryside Act (1981 as amended). On this basis prior to commencement of construction a scheme of works would be implemented to ensure that these species are eradicated from the area affected by works and are not inadvertently spread as a consequence of the Proposed Development.

14.207 In order to address the policy implications of the loss of habitat from the SBI the Reserved Matters Application would also include details of an appropriate scheme of compensatory works to be conducted within the SBI. This would likely entail either the developer contributing to the control of invasive species within the retained area of the SBI; or the ongoing management of the woodland areas. The retained woodland areas would benefit from removal of some of the bramble and ruderal species in the ground flora to promote ability for a wider range of species of greater ecological value to thrive). It is expected that these works would be agreed with stakeholders and secured by appropriately worded conditions. Such works would be in line with the goals of the All London Green Grid Supplementary Planning Guidance.

Habitats

14.208 While habitat losses as a consequence of the Proposed Development do not generate significant effects, under ecological assessment criteria there would be a loss of approximately 10ha of semi-natural habitats that were identified collectively to be of value at the Local level.

14.209 The ecology strategy for the Proposed Development is detailed in Drawing Number PCC389-AL-MP-0-1-008 and the likely quantum of habitat creation for each broad habitat category within the proposals are detailed in Table 14.4.

Table 14-6 Summary of Habitat Creation to be Included within the Proposed Development

Broad habitat category within Ecology Strategy	Habitat creation proposed within the Detailed Components (ha)	Indicative habitat creation proposed within the Outline Components (approximate ⁵ ha)	Total habitat creation (approximate ha)
Living roof flowering grass mix	0.20	0.3	0.50
Flowering amenity lawn	0.75	0.2	0.95
Species rich wildlife garden	0.15	0.0	0.15
Damp habits swale	0.15	Less than 0.1	Up to 0.25
Native hedgerow planting	0.27	0.3	0.57
Podium gardens - mixed ornamental planting	0.43	0.7	1.13
Nectar rich flowering planting	Less than 0.1	Less than 0.1	Up to 0.2
Amenity lawn	1.49	0.2	1.69
Clipped ornamental hedges	0.28	0.4	0.68
	3.82ha	Approximately 2.3ha	Approximately 6.12ha

⁵ Figures utilised are indicative habitat extents based on the current Landscape Masterplan. Final extents will be determined by Reserved Matters Applications

14.210 The following Design Principles for ecology and planting are stated in the Design Principles Document:

- Southern boundary woodland edge to form wildlife corridor along the southern Site boundary;
- Green infrastructure green streets and living roofs introduced to the masterplan to provide a Site wide network of wildlife corridors;
- Planting design to incorporate a high proportion of native species and a range of species to maximise biodiversity potential including species rich lawns, native species hedgerow and woodland edge planting, nectar rich flowering plants, native species living roofs;
- Tree planting strategy to incorporate a balance of tree canopy layers including climax species to provide vertical habitat diversity;
- Wetland habitat swales to be incorporated into the Site wide drainage strategy;
- Detailed design of the footpath/cycleway that passes through the Silk Stream and Burnt Oak Brook SBI will be undertaken with the aim of minimising the loss of existing habitats from within the SBI, as far as is reasonably practical;
- The lighting design for the scheme will respect the existing habitat corridors adjoining the Northern Line, Silk Stream and Burnt Oak Brook SBI and along the eastern boundary of the Site with Rowan Drive;
- Establishment of amenity planting as early as possible within the construction programme to limit the duration that semi-natural habitats are absent from the Site;
- Ongoing management of created habitats to encourage ongoing development of the biodiversity value of the Site.

14.211 Based on the above principles, the following detail has been developed in relation to the broad planting types that are to be provided as part of the Detailed Components of Application:

- **Living roof flowering grass mix:** A total of approximately 0.20ha of living roof are proposed within the Detailed Components of the Application. These areas would be vegetated using native species and material of UK provenance. This would be achieved either through the use of pre-prepared wildflower turf, such as that provided by Wildflower Turf⁶ or through sowing of a suitable wildflower grass mixture (e.g. Emorsgate ER1⁷). It is expected that the detailed design and ongoing management regime for living roofs would be agreed with the local planning authority via adherence to a suitably worded condition;
- **Flowering amenity lawn:** The area of approximately 0.75ha of flowering amenity lawn within the Detailed Components will be seeded predominately utilising a seed mixture containing slow growing grasses and a range of native wildflowers that can tolerate regular cutting (e.g. Emorsgate EL1 Flowering Lawn Mixture⁸);
- **Species rich wildlife gardens:** The wildlife garden (0.15ha) would consist of a small scale mosaic of native grassland and tree planting. It is envisaged that it would include small areas managed under less intensive mowing regimes where a longer sward can develop;
- **Damp habitats swale:** The extent of the swale areas (0.15ha) would be sown with either a native seed mixture suitable for areas that will be seasonally wet (e.g. Emorsgate EM8 Meadow Mixture for Wet Soils), or native plug plants where the ground conditions dictate;
- **Native hedgerow planting:** Native hedgerows will be created principally from the following species: hazel (*Corylus avellana*), wild privet (*Ligustrum vulgare*), hawthorn (*Crataegus monogyna*), and blackthorn (*Prunus spinosa*).
- **Podium gardens- mixed ornamental species** - the focus of these areas (0.43ha in extent) will be ornamental planting. However, where possible they will incorporate species that will provide nectar and

⁶ e.g. <http://www.wildflowerturf.co.uk/Products/wildflower-roof-turf.aspx>

⁷ <http://wildseed.co.uk/mixtures/view/54/turf-roof-mixture>

⁸ <http://wildseed.co.uk/mixtures/view/56>

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pollen for bees and other types of pollinating insects which are listed in the guidance provided in the Royal Horticultural Society (RHS) Perfect for Pollinators list (Ref 14-42);

- **Nectar rich flowering planting:** These areas which total less than 0.1ha within the Detailed Components will be planted with nectar rich flowering shrubs and ornamentals that appear on the Royal Horticultural Society (RHS) Perfect for Pollinators list.

- 14.212** The total area of semi-natural habitat to be created within the Detailed Components is approximately 3.82ha. These habitats will be provided by the end of Q2 2019. This compares with the total of 8.93ha of semi-natural habitat that are currently present within the same area. While this represents a reduction in the area of semi-natural habitat, the areas to be created will contain a far wider diversity of floral species. In addition the increased structural and habitat diversity is in turn likely to make these areas more suitable to support faunal species. In addition there will be substantial tree planting to ensure a net increase in the number of trees.
- 14.213** The indicative total area of semi-natural habitat to be created within the Outline Components is approximately 2.3ha. This compares with the total of 11.42ha of semi-natural habitats which are present prior to development. As for the Detailed Components of the Proposed Development, assuming that the Design Principles are followed the species diversity and structural diversity of those habitats to be created is likely to greatly exceed that currently present. As for the Detailed Components there will also be a net increase in the number of trees.
- 14.214** Overall the planting proposed within the Proposed Development as shown in the Landscape Masterplan would act to strengthen the existing corridor of semi-natural habitats alongside the Silk Stream and the London Underground Northern Line, which likely provides a movement corridor for a range of fauna. In addition they would provide increased habitat linkage across the Site. This promotes better connected ecological corridors and gives the opportunity for providing future additional linkages when adjoining areas are subject to redevelopment. The benefits to faunal species are discussed in more detail under separate sub-headings below.
- 14.215** The creation of habitat areas is likely to be progressive, and on a precautionary basis it is assumed that habitat creation proposed in each indicative Development Stage will not be completed until the end of scheduled construction within that indicative Development Stage. As a consequence it is expected that the local level adverse effect as a consequence of the loss of the assemblage of habitats to the north of the London Underground Northern Line will reduce to neutral approximately five years after the completion of the Detailed Components (i.e. around 2024).
- 14.216** Overall, assuming that the quantum of habitat provision shown in the current ecology strategy (Drawing Number PCC389-AL-MP-0-1-008) remains broadly indicative of that provided in subsequent Reserved Matters Applications, and any amendments remain broadly consistent with the Design Principles it is likely that in the longer term (5-10 year) the Proposed Development will provide net benefit to local biodiversity with a **permanent beneficial effect at the Local level**. In particular there is likely to be a

Protected and/or notable species

Bats

- 14.217** The Detailed Components contains one temporary structure with low bat roosting potential. All low bat roost potential buildings should be subject to inspection from ground level prior immediately prior to the start of demolitions in support of the Detailed Components (currently anticipated to start Q1 2015) to ensure the current assessment remains an accurate assessment. Assuming this is the case, the contractor would be made aware of any buildings or trees identified as containing features with a low potential to support roosting bats, and the procedure to follow in the unlikely event that bats are encountered.
- 14.218** For the Outline Components of the Proposed Development, pre-construction surveys in line with current best practice should be conducted during the period May to September prior to the submission of any Reserved Matters application to ensure that baseline information relating to bats remains valid.

14.219 If update surveys indicate that the tree roost within the Site and adjoining the garden of 24 Rowan Drive remains present then it will likely be necessary to obtain a European Protected Species Mitigation Licence (EPSML) to cover the likely exclusion of bats from this roost prior to commencement of indicative Development Stage 3 in order to prevent the disturbance of the roost throughout construction.

14.220 Assuming that update surveys confirm the roost is still utilised by a small number of common pipistrelle as a non-breeding summer roost then suitable mitigation would be provided through the provision of 5 Schwegler 1FF bat boxes⁹ on suitable retained mature trees or new building within or adjacent to the Site. Ideally these would be provided adjacent to the corridor of suitable bat foraging/commuting habitat along the route of the London Underground Northern Line.

14.221 On the basis of the above, following the implementation of the above mitigation measures it is likely that the overall effect of the proposed development on the local bat population will be reduced to a temporary (medium term - approximately 2 years) adverse effect at the **Site** level that is **non-significant**.

Reptiles

14.222 No mitigation for reptiles is required in support of the Detailed Components of the Proposed Development.

14.223 In order to avoid the potential for killing or injury of reptiles (and potential for an offence under the Wildlife and Countryside Act, 1981 as amended) the clearance of vegetation within the gardens of properties that adjoin Rowan Drive would be undertaken according to a precautionary working method. Progressive clearance would be undertaken under the supervision of an ecologist during the period that reptiles are active (generally April to September inclusive). Following the implementation of this method no offence is likely to occur.

Invertebrates

14.224 Assuming that the design principles for habitat creation are adhered to, then it is likely that the increased diversity and structural complexity of the habitats included within the ecology strategy will provide habitats more suitable for invertebrates than those currently present. In particular, the areas of living roofs have the potential to provide habitats that are suitable to support a wide range of invertebrate species.

14.225 In the long term (5-10 years post construction) when habitats become established an increase in both suitable feeding/foraging habitat and nesting habitat is likely to result in a permanent beneficial effect on terrestrial invertebrates at the **Local** level that is **non-significant**.

Birds

14.226 Assuming the design principles for habitat creation are adhered to the increased diversity and structural complexity of habitats included within the ecology strategy is likely to provide habitats that are of increased value to common bird species.

14.227 The phasing of the creation of the amenity areas will mean that approximately 3.82ha of amenity habitats will be created as part of the Detailed Components. In the long term (5-10 years post construction) when habitats become established an increase in both suitable feeding/foraging habitat and nesting habitat is likely to result in a beneficial effect on nesting birds at the **Site** level that is **non-significant**.

Additional Mitigation Once the Proposed Development is Completed and Occupied

Designated sites

14.228 No additional mitigation measures are required.

⁹ <http://www.schwegler-natur.de/index.php?main=produkte&sub=fledermaus&psub=sommerquartiere&pcontent=flachkasten-1ff>

14 Ecology and Nature Conservation

Habitats

14.229 It is assumed that in line with the Design Principles the developer will secure the appropriate ongoing management of created habitats in order to maintain the biodiversity benefits of the habitats to be created.

Protected and/or Notable Species

Bats

14.230 Assuming adherence to the lighting design principals set out in paragraph 14.185 the lighting design will utilise predominately directional downward facing lighting to minimise light spillage at these locations and the adjacent habitat areas such as the railway corridor, and Silk Stream and Burnt Oak Brook SBI which may be of value to the wider local bat populations.

14.231 A supplementary document providing the details of operational lighting design in this area would be provided in support of the relevant subsequent Reserved Matters Application.

Residual Effects and Conclusions

14.232 No significant residual effects on ecological receptors are likely to occur as a consequence of either the Detailed or Outline Components of the Proposed Development. A summary of effects is provided in Table 14-4 below.

Table 14-7 Summary of Effects on Ecological Receptors

Receptor	Description of impact	Nature of effect	Geographic scale at which effect is assessed to be of relevance	Significant/N on-significant	Additional mitigation	Residual effect
Demolition and Construction						
Brent Reservoir SSSI/LNR/SMI	No impact	-	Neutral	Non-significant	None required	Non-significant
Silk Stream and Burnt Oak Brook SBI Grade 2	Loss of 0.08ha (Less than 1% of total area of this site) of SBI	Neutral effect on site integrity	-	Non-significant	Funding of compensatory works within the SBI (invasive species control or management of woodland understorey.	Non-significant
Semi-natural broadleaved woodland adjoining Silk Stream	Loss of 0.08ha of semi-natural broadleaved woodland	Permanent adverse effect on conservation status	Site	Non-significant	As above.	Non-significant
Silk Steam	Minor periodic increases in silt loading and pollutants	Temporary adverse effect on conservation status	Site	Non-significant	None required	Non-significant
Assemblage of semi-natural habitats within Site east of railway	Loss of 10ha of semi-natural habitat (predominately amenity grassland)	Permanent adverse effect on conservation status	Local	Non-significant	Provision of 3.82ha of diverse habitats within Detailed Components and approximately 6.12ha in total across Proposed Development.	Permanent beneficial effect at Site level - Non-significant.

Receptor	Description of impact	Nature of effect	Geographic scale at which effect is assessed to be of relevance	Significant/N on-significant	Additional mitigation	Residual effect
Habitats adjoining the Site	Disturbance as a consequence of demolition and construction	-	Neutral	Non-significant	None required	Non-significant
Wider local pipistrelle bat populations	Loss of on Site habitats and temporary disturbance of known roosts	Permanent adverse effect on conservation status	Local	Non-significant	Pre-construction update surveys. Application for EPSM licence to cover loss of pipistrelle roost. Provision of 5 x Schwegler 1FF bat boxes. Adherence to best practice guidelines for lighting design and inclusion of these measures within the Design Principles. Phased provision of amenity areas to minimise duration of foraging habitat losses.	Temporary (up to 2 years) adverse effect at Site level - Non-significant
Assemblage of local bird populations	Habitats loss and potential disturbance	Permanent adverse effect on conservation status	Site	Non-significant	None required	Permanent beneficial effect at the Site level - Non-significant.
Reptiles	Clearance of 0.1 ha area of areas with limited potential to support reptiles	No effect on conservation status	Neutral	Non-significant	Precautionary working method to minimise potential for killing/injury	Non-significant
Invertebrates	Loss of all suitable habitat within the Site	Permanent adverse effect on conservation status	Site	Non-significant	Living roof provision and increase in habitat diversity.	Permanent beneficial effect at Local level - Non-significant.
Completed and Occupied Development						
Brent Reservoir SSSI/LNR/SMI	No impacts	-	Neutral	Non-significant	None required	Non-significant
Silk Stream and Burnt Oak Brook SBI Grade 2	Potential for increased disturbance of SBI	No effect on site integrity	Neutral	Non-significant	None required	Non-significant
Silk Stream	Minor periodic increases in silt loading and pollutants	Temporary and reversible adverse effect on conservation status	Site	Non-significant	None required	Non-significant

14 Ecology and Nature Conservation

Receptor	Description of impact	Nature of effect	Geographic scale at which effect is assessed to be of relevance	Significant/N on-significant	Additional mitigation	Residual effect
Other habitats	No impacts	-	Neutral	Non-significant	Secure ongoing management for created habitats	N/A
Wider pipistrelle local bat populations	Potential for disturbance of foraging commuting due to operational lighting	Adverse effect on conservation status	Site	Non-significant	Adherence to Design Principles for sensitive lighting. Supplementary document to detail operational lighting design in the vicinity of sensitive receptors	Neutral and non-significant.
Reptiles	No impacts	-	Neutral	Non-significant	None required	Non-significant
Birds	No impacts	-	Neutral	Non-significant	None required	Non-significant
Invertebrates	No impacts	-	Neutral	Non-significant	None required	Non-significant

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