

**Land East of Evenlode Crescent
and South of Langford Lane,
Kidlington**

Ecological Enhancement and
Management Plan

Report to Inform the Discharge of Condition
16 of Planning Application Number:
14/02067/OUT

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Project	Land East of Evenlode Crescent and South of Langford Lane, Kidlington
Report title	Ecological Enhancement and Management Plan
Draft version/final	FINAL
File reference	8939_EMP_APPR_02 02 2017.docx

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Revised	Katy Stiles	Senior Ecologist	02 February 2017
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Contents

1 Introduction..... 2

2 Section A: Invasive Species 4

3 Section B: Avoidance, Mitigation, Compensation and Enhancement Measures for Protected Species 5

4 Section C: Habitat Retention, Creation and Management Requirements..... 7

Appendix 1: SES Ecological Survey Report 10

Appendix 2: Site Layout..... 11

1 Introduction

- 1.1 The Site, is an area of land approximately 7.7 ha in size located to the east of Evenlode Crescent and to the south of Langford Lane in Kidlington, Oxfordshire at Ordnance Survey (OS) grid reference SP4760 1466. The Site comprises areas of bare ground, tall ruderal vegetation, semi-improved neutral grassland, scattered and dense scrub and species-poor hedgerows.

Background to Commission

- 1.2 Outline planning permission was granted on 10 October 2016 by Cherwell District Council for “a new build Technology Park comprising 40,362 sq. m. of office, research and development, laboratory, storage and ancillary space”. Twenty one planning conditions have been attached to the outline planning permission, three of which relate to ecology. Condition 16 states:

- 1.3 *“Prior to the commencement of the development hereby approved, including any demolition, and any works of site clearance, a method statement for enhancing tree or shrub planting, areas of species rich grassland, habitat boxes for birds shall be submitted to and approved in writing by the LPA. Thereafter, the biodiversity enhancement measures shall be carried out and retained in accordance with the approved details”.*

- 1.4 BSG Ecology was commissioned by Hill Street Holdings Ltd on behalf of Oxford Technology Park Ltd to provide information to enable the formal discharge of Condition 16 attached to the outline planning permission.

Previous Ecological Surveys

- 1.5 The Site was subject to an extended Phase 1 habitat survey in March 2012 undertaken by SES. A copy of this report is provided in Appendix 1. The Site was also subject to a walkover ecological survey by Principal Ecologist Guy Miller MCIEEM of BSG ecology on 10 June 2016.

Aims of Study

- 1.6 As part of the Site Layout (drawing ref: 13045/1000 Rev P2 dated 03/11/2014, in Appendix 2) that was submitted with the planning application, broad landscaping proposals were put forward. The broad proposals include:

- Shrub planting
- Tree planting
- Grassland creation
- Creation of SUDs drains.

- 1.7 This document, an Ecological Enhancement and Management Plan, aims to address the requirements of Condition 16 within the following three sections.

Section A: Invasive Species

- 1.8 BSG Ecology identified a small patch of Japanese knotweed on the eastern boundary of the Site.

- 1.9 This section proposes measures to ensure that Japanese knotweed *Fallopia japonica* is not spread as part of the proposed development.

Section B: Enhancement Measures for Protected and Notable Species

- 1.10 This section proposes measures to provide enhancement measures for nesting birds.

Section C: Habitat Retention, Creation and Management Requirements

- 1.11 This section provides details of the habitat retention and creation that will be undertaken on Site and provides details of management.

CDM Regulations

- 1.12 When BSG Ecology designs construction work, as defined in the Construction (Design and Management) Regulations (CDM), we will comply with our statutory duties. Where our design is not construction work, as defined, we do not have any CDM duties.
- 1.13 BSG Ecology will not be responsible for any design undertaken by other companies whether they be a 'designer' or a contractor, except where noted in relation to sub consultants appointed by BSG Ecology who are not based in Great Britain or Northern Ireland.
- 1.14 BSG Ecology will attend site to review the quality of the works and resolve any issues arising out of unforeseen circumstances but will not "control the way in which any construction work is carried out by a person at work" (CDM Regulations 25(2)). BSG Ecology will not carry out construction work (as defined).
- 1.15 When BSG Ecology is the contract administrator we will not have any responsibility in relation to permitting the works to start (CDM Regulation 16) or the on-going adequacy of the Construction Phase Plan or welfare provisions by the contractor.

2 Section A: Invasive Species

Rationale

- 2.1 Japanese knotweed was recorded on the eastern boundary of the Site at approximate OS grid reference SP4771 1463.
- 2.2 Japanese knotweed is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). It is an offence to plant or cause the spread of Japanese knotweed in the wild under the Wildlife and Countryside Act 1981 (as amended). All waste containing Japanese knotweed comes under the control of Part II of the Environmental Protection Act 1990.

Approach

- 2.3 In advance of any Site clearance works, advice will be sought from a specialist contractor in order to appropriately treat or remove the Japanese knotweed so as to avoid spreading the Japanese knotweed within the Site or beyond the Site boundary.

3 Section B: Avoidance, Mitigation, Compensation and Enhancement Measures for Protected Species

Rationale

- 3.1 The purpose of the mitigation and enhancement measures is to avoid or reduce the risk of adverse impacts on nesting birds, bats and badger as a result of the proposed development.

Nesting Birds

Status

- 3.2 All nesting birds are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. In addition to this, for some rarer species (listed on Schedule 1 of the Act), it is an offence to disturb them whilst they are nest building or at or near a nest with eggs or young, or to disturb the dependent young of such a bird.

Mitigation

- 3.3 The hedgerows, dense and scattered scrub habitats within the Site provide suitable habitat for nesting birds.
- 3.4 To avoid any impact on nesting birds, any areas of habitat to be retained during the development (for example the hedgerow on the southern Site boundary) will be appropriately fenced off with Heras fencing and signage to ensure that this is not disturbed or damaged during the construction work.
- 3.5 Any vegetation clearance should be undertaken outside the bird nesting season (i.e. between October and February). If this is not possible then a check of the vegetation will need to be undertaken by a suitably qualified ecologist to determine the presence or absence of active nests. If any active nests are present then works that would affect the active nests would need to be delayed until the birds had fledged. If no active nests were recorded then works could proceed without delay.

Bats

Status

- 3.6 Bats are European Protected Species (EPS) that are fully protected under the Conservation of Habitats and Species Regulations 2010 (as amended) and under the Wildlife and Countryside Act 1981 (as amended). In summary this legislation means that bats are protected against disturbance, killing or injuring and their roosts are protected against obstruction, damage or destruction. A bat roost may be any structure a bat uses for breeding, resting, shelter or protection. Seven UK bat species are listed as Species of Principal Importance under the provisions of the NERC Act 2006.

Mitigation

- 3.7 The Phase 1 Habitat Survey undertaken by SES in March 2012 identified that a black poplar hybrid tree (T1) located on the southern boundary of the site had bat roosting potential.
- 3.8 This tree is to be retained in-situ as part of the development proposals and no impact on roosting bats is anticipated as a result of the development.

Badger**Status**

- 3.9 Badgers are protected under the Protection of Badgers Act 1992. This makes it an offence to wilfully kill, injure, take, possess or cruelly ill-treat a badger, or to attempt to do so; or to intentionally or recklessly interfere with a sett. Sett interference includes disturbing badgers whilst they are occupying a sett, as well as damaging or destroying a sett or obstructing access to it. A badger sett is defined in the legislation as “any structure or place, which displays signs indicating current use by a badger”.

Mitigation

- 3.10 The Phase 1 Habitat Survey undertaken by SES in March 2012 did not identify any evidence of badger. The site was identified as offering potential for use by foraging badger and the bunds on site were identified as possibly being suitable for sett creation.
- 3.11 BSG Ecology undertook a walkover ecological survey on 10 June 2016 and seven site visits were undertaken in September 2016 to undertake reptile surveys. No evidence of badger was recorded during these site visits. If construction work commences prior to September 2017 then no further badger survey work will be required. If construction work is delayed beyond September 2017 then an updated badger survey will be completed by a suitably qualified ecologist to ensure that no badger setts have been created. In the event that a badger sett is identified, then an appropriate mitigation strategy will be drawn up in consultation with the LPA.
- 3.12 In order to ensure that any badger that may be foraging or commuting across the site are not adversely affected by the proposed development, the following measures will be implemented during construction:
- Every excavation will have a timber scaffold plank leant against the excavation side at the end of each working day to create a ramp to allow any badger that may fall in to escape
 - Any open pipework greater than 150mm diameter will be made secure by covering the hole with a solid timber panel.

4 Section C: Habitat Retention, Creation and Management Requirements

4.1 In summary, the habitat retention will consist of the following:

- Retention of the hedgerow along the southern boundary of the Site.

4.2 In summary, the habitat creation will consist of the following:

- Native shrub planting
- Species-rich grassland creation
- Native and non-native tree planting
- Native ground flora planting.

4.3 This document should be read in conjunction with the *Specification for Soft Landscape Works 5 year Maintenance Plan* produced by Open Spaces Consultants Ltd (OS 1346-16-Doc1, February 2017), which provides details of management and maintenance for Years 1-5.

Habitat Retention

4.4 During the Site clearance and construction phase of the proposed development protective Heras fencing will be installed along the southern boundary to ensure that the hedgerow is protected from damage and disturbance. This fencing will be installed prior to any site clearance works and will be installed a minimum of 2m from the base of the hedgerow. This fencing will only be removed following completion of the development.

Habitat Creation

Native Shrub Planting

4.5 Native shrub planting will be undertaken through the centre of the Site in association with the tree lined avenue, to the north of units 3 and 4 and at the south of the Site. The native shrub planting will include:

<i>Native Shrub Planting</i>
<i>Cornus sanguinea</i> Dogwood
<i>Rosa canina</i> Dog rose
<i>Viburnum opulus</i> Guelder rose
<i>Rosmarinus officinalis</i> Rosemary
<i>Lavandula officinalis</i> Lavender

Native and Non-Native Tree Planting

4.6 Native and non-native tree planting will be undertaken in the north of the Site and a central avenue of trees will be planted. The use of two species of non-native tree is considered to be appropriate within this development to provide visual interest. These non-native species will be confined to central areas of the Site away from the Site boundaries. The tree planting will include:

<i>Tree Planting</i>
<i>Liquidambar styraciflua</i> Liquid amber tree
<i>Cercidiphyllum japonica</i> Katsura tree
<i>Acer campestre</i> Field Maple
<i>Betula pendula</i> Silver birch
<i>Malus sylvestris</i> Crab apple

<i>Prunus avium</i> Wild cherry
<i>Sorbus aucuparia</i> Rowan

Species-rich grassland (dry)

- 4.7 Areas of grassland will be created around the boundaries of the development. The EL1 Emorsgate Flowering Lawn Seed Mixture will be used to provide species-rich grassland that tolerates a higher maintenance regime compared with meadow mixes. This will allow some areas of grassland to be maintained as a close mown sward and other areas to be maintained as a taller sward.
- 4.8 After the first year of establishment, the diversity of the grassland will be further enhanced by planting bulbs into grassland during February. These should include winter aconite *Eranthis hyemalis*, lesser celandine *Ranunculus ficaria*, wild cyclamen *Cyclamen hederifolium* and snowdrop *Galanthus nivalis*.

Table 1: Proposed Seed Mix (no non-native cultivars should be used)

Herbs (represent 20% of the total weight)	% of total herbs	Grasses (represent 80% of the total weight)	% of total grasses
<i>Galium verum</i> Lady's bedstraw	3	<i>Agrostis capillaris</i> Common bent	8
<i>Leontodon hispidus</i> Rough hawkbit	0.5	<i>Cynosurus cristatus</i> Crested dog's tail	40
<i>Leucanthemum vulgare</i> Oxeye daisy	1	<i>Festuca rubra</i> Red fescue	28
<i>Lotus corniculatus</i> Bird's-foot trefoil	3	<i>Phleum bertolonii</i> Small cat's tail	4
<i>Primula veris</i> Cowslip	1.5		
<i>Prunella vulgaris</i> Selfheal	5		
<i>Ranunculus acris</i> Meadow buttercup	3		
<i>Rumex acetosa</i> Common sorrel	2		
<i>Trifolium pratense</i> Red clover	1		

Species-rich grassland (damp)

- 4.9 Areas of damp grassland will be created around on the banks and within the base of the SUDs drains located to the north of the site. The Emorsgate EM8 meadow mixture for wetlands will be used in this area.

Table 1: Proposed Seed Mix (no non-native cultivars should be used)

Herbs (represent 20% of the total weight)	% of total herbs	Grasses (represent 80% of the total weight)	% of total grasses
<i>Achillea millefolium</i> Yarrow	0.5	<i>Agrostis capillaris</i> Common bent	10
<i>Achillea ptarmica</i> Sneezewort	0.2	<i>Alopecurus pratensis</i> Meadow foxtail	4
<i>Betonica officinalis</i> Betony	1	<i>Anthoxanthum odoratum</i> Sweet vernal grass	1
<i>Centaurea nigra</i> Common knapweed	2.5	<i>Briza media</i> Quaking grass	1
<i>Filipendula ulmaria</i> Meadowsweet	2	<i>Cynosurus cristatus</i> Crested dog's tail	32
<i>Galium verum</i> Lady's bedstraw	1	<i>Deschampsia cespitosa</i> Tufted hairgrass	1
<i>Geum rivale</i> Water avens	0.5	<i>Festuca rubra</i> Red fescue	24

<i>Leucanthemum vulgare</i> Oxeye daisy	0.6	<i>Hordeum secalium</i> Meadow barley	1
<i>Lotus pedunculatus</i> Greater birds' foot trefoil	0.8	<i>Festuca pratensis</i> Meadow fescue	6
<i>Plantago lanceolata</i> Ribwort plantain	1		
<i>Primula veris</i> Cowslip	0.2		
<i>Prunella vulgaris</i> Selfheal	1.5		
<i>Ranunculus acris</i> Meadow buttercup	2.5		
<i>Rhinanthus minor</i> Yellow rattle	1.5		
<i>Rumex acetosa</i> Common sorrel	1.5		
<i>Sanguisorba officinalis</i> Great burnet	1		
<i>Silene flos-cuculi</i> Ragged robin	0.2		
<i>Vicia crecca</i> Tufted vetch	1.5		

Appendix 1: SES Ecological Survey Report



Updated Phase 1 Habitat Survey

Land South Of Langford Lane, Kidlington, Oxfordshire.

On Behalf of:

Hill Street Holdings Ltd.

December 2014

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Report Status	Final
Date of Issue	4 th December 2014

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Contents

1.0	Introduction and Aims.....	1
2.0	Methodology.....	1
3.0	Constraints	2
4.0	Results.....	2
5.0	Findings and Recommendations	5
6.0	Conclusions	8
7.0	References	9

Appendices

- Appendix 1: Updated Habitat Map
- Appendix 2: Species List and Relative Abundance
- Appendix 3: Legislation Relating to Bats
- Appendix 4: Night Scented Planting for Bats

Plates

- Plate 1: Poplar tree onsite
- Plate 2: View of Improved Grassland (south west aspect)
- Plate 3: Spoil piles in North East Corner
- Plate 4: Compost heap
- Plate 5: Bare ground and earth banks

1.1 Introduction and Aims

1.2 Southern Ecological Solutions Ltd. (SES) was commissioned to undertake an updated extended phase 1 habitat survey of the Land south of Langford Lane, Kidlington on behalf of Hill street Holdings Ltd (see Appendix 1).

1.3 The objectives of this extended phase 1 survey were to:

- Map the main ecological features within the site and compile a plant species list for each habitat type;
- Make an initial assessment of the presence or likely absence of species of conservation concern;
- Identify any legal and planning policy constraints relevant to nature conservation which may affect the development;
- Determine any potential further ecological issues;
- Determine the need for further surveys and mitigation; and
- Make recommendations for minimising impacts on biodiversity and providing net gains in biodiversity where possible in accordance with chapter 11: Conserving and Enhancing the Natural Environment, of the National Planning Policy Framework (NPPF) (DfCLG, 2012).

1.4 The extended phase 1 habitat survey was undertaken by suitably qualified ecologist Mark Poynter Bsc (Hons) in November 2014 with all areas of the site accessible at the time of survey.

2.1 Methodology

Desk Study

2.2 Prior to the initial phase 1 habitat survey of the site (undertaken by SES in March 2012) a data search was conducted via Thames Valley Environmental Record Centre (see Appendix 3 for full results). These records detailed protected and notable fauna species as well as statutory and non-statutory designated sites within the proposed development area and up to 2km of the site boundary. SES performed an updated online data search in November 2014 to further inform the ecological knowledge on the site and its surroundings. Due to copyright laws this data cannot be reproduced.

Updated Phase 1 Habitat Survey

2.3 The field survey comprised of an extended phase 1 habitat survey (JNCC, 2010) of the proposed development site. This is a standard technique for obtaining baseline ecological information for areas of land, including proposed development sites, the initial phase 1 habitat survey was carried out in March 2012 by SES using the same techniques.

2.4 The dominant and readily identifiable higher plant species identified in each of the various habitat parcels were recorded and their abundances were assessed on the DAFOR scale (Appendix 2):

- D Dominant
- A Abundant
- F Frequent
- O Occasional
- R Rare

2.5 These scores represent the abundance within the defined area only and do not reflect national or regional abundances. Plant species nomenclature follows Stace (1997).

2.6 Incidental records of fauna were also made during the survey and the habitats identified were evaluated for their potential to support legally protected species and other species of conservation concern, including Biodiversity Action Plan (BAP) and Natural Environment and Rural Communities Act 2006 (NERC) species of principle importance.

3.1 Constraints

3.2 Desktop data searches are a valuable tool in evaluating a site's potential to hold rare and protected species, it is not however an absolute in confirming presence or absence of noted species due to the nature of how the records are collected.

4.1 Results

Desk Study

4.2 Results from the initial data search undertaken in 2012, are available in full as follows. The updated online data search informed the report's findings but cannot be reproduced due to copyright law.

Non-Statutory Designated Sites

4.3 No LWS (Local Wildlife Sites) are located onsite. LWS found within the wider landscape include: Langford Meadows found approximately 442m north east of the proposed development site, grid ref: SP 480 153, cited habitat -coastal and floodplain grazing marsh (neutral grassland); fen. Bladon Heath found approximately 1460m south west of the site, grid reference SP 455 138, cited habitat- lowland deciduous woodland. Begbroke Wood is found approximately 1509m south-west of the site, grid reference SP 465 132, cited habitat- lowland mixed deciduous woodland.

Statutory Designated Sites

4.4 Rushy Meadows can be found approximately 220m to the south-east of the site (grid reference: SP 481 143). The sites consists of a series of unimproved alluvial grasslands alongside the Oxford Canal, in which low-intensity, traditional management has produced rich meadow and fen communities containing several uncommon species. Meadow habitats of this type are now both rare and under threat in Britain. Rushy Meadows represents one of the few surviving sites in a district where such grasslands have declined in area following agricultural improvement and urban development.

4.5 Potential adverse effects from recreational pressure upon the SSSI and LWS identified within 5km of the site should be considered. It is recommended that the open space provision within the development be sufficient to mitigate for any potential adverse effects from recreational pressure upon these sensitive habitats, in particular Rushy Meadows SSSI which is situated 220m to the site's south-east boundary adjacent to the Oxford Canal. Additional measures could be implemented to increase awareness of the sensitive nature of the site such as education/information boards. These would provide information for visitors regarding species on site and measures to reduce impacts/disturbance to this SSSI. These should include actions to reduce the impact by dog walkers by keeping dogs on leashes, particularly due to the presence and importance of the site for Otters *Lutra lutra*, Water Voles *Arvicola amphibius* and Birds. Impacts could be further reduced by restricted access through the south of the site from the development area.

Protected Species

- 4.6** A number of protected fauna species were recorded within the wider landscape, particularly associated with the LWS/SSSI. These include species protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010. Protected species include Bats, Great Crested Newt *Triturus cristatus*, Grass Snake *Natrix natrix*, Common Lizard *Zootoca vivipara*, Otter and Water Vole.

Updated Extended Phase 1 Habitat Survey

- 4.7** The updated phase 1 habitat map of the site is shown within Appendix 1 and the plant species recorded per habitat type are tabled in Appendix 2.
- 4.8** The site is 8.45ha in size and is located to the North-West of Kidlington. An industrial estate bounds the site to the east with Langford Lane and Oxford Airport to the North. The Oxford Canal is located approximately 300m west of the site. Immediately beyond the western boundary an immigration detention centre and Ambulance Station can be found which is linked to Langford Lane by Evenlode Crescent which runs parallel to this boundary. Beyond the sites southern extent arable farmland dominates with the town of Begbroke located further south.
- 4.9** The site is dominated by improved grassland and tall ruderal vegetation with other semi-natural habitats – largely limited to the site boundaries. The following habitats were observed and are discussed in further detail below:
- Improved grassland
 - Dense scrub
 - Scattered scrub
 - Tall ruderal
 - Dry ditch
 - Scattered trees
 - Spoil
 - Earth Bund
 - Defunct species-poor hedgerow
 - Bare ground
- 4.10** Each habitat type is described below and their distribution shown within Appendix 1.

Improved grassland

- 4.11** Improved grassland forms the dominant habitat type on site, with tall ruderals also present. Typical rank species include Cocksfoot *Dactylis glomerata*, Red Fescue *Festuca rubra* and False Oat-Grass *Arrhenatherum elatius* with bare areas characterised by species such as Ground-Ivy *Glechoma hederacea*, Ribwort Plantain *Plantago lanceolata* and Mosses.

Dense Scrub

- 4.12** Dense scrub, in part, forms the understorey of the scattered trees found lining the western boundary. A thick area of dense scrub can also be found to the site's eastern boundary. Typical species include Hawthorn *Crataegus monogyna*, Apple *Malus Sp.*, Bramble *Rubus Sp.* and Blackthorn *Prunus Spinosa*. Within areas of dense scrub it is typical to find scattered trees.

Scattered Scrub

- 4.13** Scattered scrub has become more prevalent throughout the site, but predominantly in the southern half of the site with the dominant species being bramble.

Tall Ruderal

- 4.14** Adjacent to the northern boundary tall ruderal species including Creeping Thistle *Cirsium arvense*, Dock *Rumex sp.* and Common Nettle *Urtica dioica* have encroached upon habitats that were previously classified as bare ground in the initial phase 1 survey. Within the improved grassland patches of tall ruderal dominated vegetation persists in the form of Creeping Thistle, Common Nettle and occasional Dock.

Dry Ditch

- 4.15** A small dry ditch is located along the south-eastern boundary; this ditch was devoid of aquatic vegetation and contained rank grasses, tall ruderals and small patches of scattered scrub.

Scattered Trees

- 4.16** A number of scattered trees can be found lining the site's boundaries, with the length of the western and northern boundaries being lined with trees (including deadwood) including intermittent specimens found within the dense scrub along the site's eastern boundary. Species present include Sycamore *Acer pseudoplatanus*, Apple *Malus sp.*, Elm *Ulmus Sp.*, Elder *Sambucus nigra* and a large Hybrid Black Poplar *populus x canadensis*.

Spoil

- 4.17** Spoil piles can be found onsite; these piles are situated in close proximity of the site's northern and southern boundaries. Smaller spoil piles containing a mixture of building debris can also be found in proximity of the site's boundaries.

Defunct species-poor hedgerow

- 4.18** A defunct species-poor hedgerow can be found running the length of the site's southern boundary, separating the site from arable farmland. In the previous survey this hedgerow was found to be heavily managed with 'skinny legs' meaning its base was woody in nature with a lack of floral diversity. The hedgerow was found to be in a similar condition in 2014 and was dominated by Hawthorn with rarely recorded Elder and Bramble.

Earth Bund

- 4.19** The site contains a number of earth bunds that are limited to the site's north-eastern and eastern boundaries, these earth bunds contain grasses, Bramble and tall ruderals such as Dock *Rumex sp.*

Bare Ground

- 4.20** Areas of bare ground are confined to the north-east corner of the site and are sparse in vegetation. However some tall ruderals such as Dock and other grasses have begun to colonise this habitat through natural succession.

5.1 Findings and Recommendations

Habitats

Habitats of Principle Importance to UK Biodiversity

Hedgerow

- 5.2** The hedgerow running along the site's southern boundary is considered to fall under the category as a habitat of principle importance listed under s41 of the Natural Environment and Communities (NERC) Act (2006). Although this hedgerow is listed under s41 its structure (defunct) and management dictate that its biodiversity value is limited. Should this hedgerow be retained it is recommended that it is planted with native woody species to form a species-rich hedgerow (5 or more species within a 30m length) 'filling' the gaps within the defunct section (see Appendix 5 for species list). A grassland/ tall ruderal buffer of between c.0.3–1m wide should also accompany this hedgerow. This buffer provides valuable protection against 'edge' effect degradation of the hedgerow and also provides transitional habitat capable of supporting a wide variety of noteworthy plant and animal species. If the hedgerow is lost; a species-rich hedgerow should be included within the development plan to enhance biodiversity and compensate for the loss of this habitat within the developable area. This will ensure that the requirements of section 11 (conserving and enhancing the natural environment) of the NPPF (DfCLG, 2012) are met.

Oxford Conservation Target Areas (CTA)

- 5.3** CTA's are the primary method for delivering the targets of the Local Biodiversity Action Plan (BAP) habitats. CTAs identify the most important areas for wildlife where targeted conservation work will have the greatest benefits, looking for opportunities to link other areas of BAP habitat. The site does not fall within an area designated as a CTA, which are areas that have habitat targets. Oxfordshire operates its biodiversity targets through this spatial strategy; the nearest CTA to the application site is the Lower Cherwell which covers Kidlington.

Species of Conservation Concern

Plants

- 5.4** All plant species recorded onsite are common and widespread throughout the UK.

Bats

- 5.5** All bat species are legally protected under s9 of the Wildlife and Countryside Act 1981 (as amended) and regulation 41 of the Conservation of Habitats and Species Regulations 2010.
- 5.6** The boundary habitat (hedgerow, tree belts) around the site provides potential foraging and commuting opportunities for bat species.
- 5.7** All trees were inspected from ground level for signs of roosting bats. Table 1 below is reproduced text from the Bat Conservation Trust (BCT) Guidelines 2nd Ed. (Hundt, 2012) highlighting features assessed from ground level (where appropriate).

Table 1: Features and signs indicating bat roosting features.

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural holes	Tiny scratch around entry point
Woodpecker holes	Staining around entry point
Cracks/splits in major limbs	Bat droppings in, around or below entrance
Loose bark	Audible squeaking at dusk or in warm weather
Hollows/ cavities	Flies around entry point
Dense epicormic growth (bats may roost within)	Distinctive smell of bats
Bird and bat boxes	Smoothing of surfaces around cavity

- 5.8** All trees onsite displayed negligible bat roosting potential apart from a large black poplar hybrid (T1). This tree was assessed in 2012, using bat conservation trust guidelines as being a category 1 tree, as such it displayed definite potential to support roosting bats (albeit from ground level). Since the previous survey, a large section of the tree has been lost to adverse weather and as such the value of this tree for bats has been reduced, however it does still hold suitable features for use by bats. It is therefore recommended that if this tree is to be lost to development or indirectly affected via light pollution, an aerial inspection is undertaken to look for signs of roosting bats and guide whether further survey is necessary.
- 5.9** Following BCT guidance the site is assessed as ‘medium’ size and is considered to offer ‘low’ value habitat for bats. Following the aforementioned guidance bat activity surveys are recommended, the aim of these surveys is to determine the usage of the site by roosting and/or foraging bats in order to assess its value and potential direct and indirect (such as lighting) impacts the proposed development may have on bats. These surveys will consist of transect surveys with one visit each season (spring, summer and winter). Automated data loggers should also be used at one location per transect on three consecutive nights each season.
- 5.10** The recommended surveys will provide data sufficient to guide the required mitigation associated with the redevelopment.

Birds

- 5.11** The versatility of most bird species means they can utilise almost any habitats encountered and the site’s field boundary habitats provide good foraging and nesting opportunities for many bird species including the scrub and trees found onsite.
- 5.12** All breeding birds are protected under the Wildlife and Countryside Act 1981 (as amended). Therefore, if any nesting bird habitat is to be lost (hedgerows, scrub and trees) it should be cleared outside of the nesting season (which is generally March to August) or after an ecologist has confirmed active nests are not present.
- 5.13** The provision of bird boxes onsite could see an increase in bird activity onsite; they would also provide mitigation for the loss of nesting habitat if any scrub and/ or trees were to be removed during the construction phase. Boxes would be fixed to retained trees and proposed buildings at a height avoiding the likelihood of predation from domestic cats and other animals. These boxes should be placed out of direct sunlight and away from harsh winds. There are many designs available on the market, these vary according to the requirements of each species i.e. open fronted, entrance hole size etc. Log piles and grass/ tall ruderal buffers creating transitional habitats, as described within section 5.18- 5.21 below, will also provide additional foraging habitat for birds.

Badgers

- 5.14** No badger setts or significant field signs such as latrines were recorded onsite. Other badger field signs such as snuffle marks were difficult to verify due to the heavy use of the site by rabbits. It is likely that the site is used by badgers for occasional foraging and dispersal purposes; the development of the site is unlikely to affect a badger's ability to disperse due to the ubiquitous nature of the surrounding landscape. Thus the development of the site is not thought to affect the conservation status of any badger group in the area. However badgers are prolific sett builders and the bunds onsite are sheltered with dense scrubby vegetation constituent potential sett-building habitat and therefore an inspection of these areas using hand tools to penetrate the scrub is recommended before the site is cleared.

Great Crested Newts

- 5.15** GCN are legally protected under S9 of the Wildlife and Countryside Act (1981) regulation 41 of The Conservation of Habitats and Species Regulations (2010) thus making GCN a material consideration of the planning process.
- 5.16** The site does contain terrestrial habitat that is associated with noted amphibians including great crested newts *Triturus Cristatus*. However, the site and the wider landscape (walkover and aerial photography) does not contain aquatic habitat that is essential to form the mosaic of terrestrial and aquatic habitat necessary for this species. No further works are required for this species.

Invertebrates

- 5.17** The site does not contain a density of quality micro-habitats suitable to support valuable assemblages of noted invertebrates. Therefore no further survey work regarding invertebrates is recommended.
- 5.18** In accordance with the NPPF (DfCLG, 2012) it is recommended that habitat features and suitable planting is employed to provide mitigation and potential enhancement for invertebrates. Log piles could be installed within shaded areas in proximity to retained or created green infrastructure, these piles would provide essential habitat for many invertebrates.
- 5.19** Including invertebrate friendly varieties within a planting scheme could also enhance the site for a broad range of invertebrates including bees, wasps, beetles, moths and butterflies. The creation of flower-rich areas can be achieved in three ways:
- Planting alongside the boundaries,
 - In new natural and semi-natural green space,
 - Within any proposed formal ornamental planting.
- 5.20** Rough margins interspersed with scrub can provide key forage plants and also provide overwintering sites, such as rough grass tussocks and overwintering stems and seed-heads. Key forage plants include species of longer grass swards and competitive herbs, additionally including:
- Umbellifers, such as Hogweed *Heracleum sphondylium*, Cow Parsley *Torilis japonica*, Parsnip *Pastinaca sativa*, Willowherb *Chamerion* and *Epilobium* species,
 - Labiates, particularly Black Horehound *Ballota nigra* and White Dead-Nettle *Lamium album*.

- 5.21** These margins could be associated with retained boundary habitats and any additional green infrastructure. Associations with other habitat areas should create gradual gradients and transitions rather than sharp boundaries.

Reptiles

- 5.22** During the initial survey in 2012 the site was found to be lacking the required thermally diverse mosaic of habitats needed to support a viable assemblage of reptiles, during the updated survey the habitats recorded have matured and their value increased for reptiles. However, the ongoing management regime of the site means that the habitats onsite are not sufficiently mature or suitable enough to support a population of reptiles, thus reptiles are likely absent from the site. Should this regime change for a period of time the site has potential, although limited, to be colonized by reptile populations in the wider landscape in the future.

Conclusions

- 6.0** The site, an old sports field, is approximately 8.45Ha in size and is located to the south of Langford Lane. Sparse improved grassland and tall ruderal dominate the site with scattered encroaching scrub noticeable from the initial phase 1 survey (SES 2012), with hedgerow and scattered trees partially lining the site boundaries.
- 6.1** The site was initially found to contain ‘habitats largely of low ecological value’ (SES 2012), and given the managed nature of the site, it can be seen that more structurally diverse habitats have not become established to date.
- 6.2** However, to adhere to planning policy and relevant wildlife legislation further works are recommended for the following ecological receptors:
- Badgers (inspection for setts and field signs can be completed as site works proceed by monitoring sett building activity on site)
 - Bats (activity surveys; aerial inspection of potential roosts on site if to be impacted upon)
- 6.3** The following precautionary methods are also recommended:
- Removal of nesting bird habitat such as hedgerows, trees and scrub should be completed outside of the nesting bird season (March – August) or after a suitably qualified ecologist has completed a nesting bird survey and confirmed absence.
 - Design of proposed development to include sufficient green space to avoid recreational pressure on surrounding sites.
 - Precautionary lighting and construction techniques sensitive to bats, badgers and other species (if applicable to site).
- 6.4** It is considered that any potential adverse impacts from the proposed development upon specific protected species/habitats/designated sites will likely be able to be mitigated for in line with relevant wildlife legislation and planning policy. It should be noted that an opportunity exists for the proposed development to make a positive contribution to biodiversity. With appropriate onsite mitigation and targeted enhancements, a positive change in the biodiversity could be achieved, in line with chapter 11: *Conserving and Enhancing the Natural Environment*, of the NPPF (DfCLG, 2012).

7.1 References

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Appendix 1: Updated Habitat Map



KEY

- Boundary
- Improved grassland
- Dense scrub
- Spoil
- Scattered shrub
- Tall Ruderal
- Earth bund
- Bare ground
- Dry ditch
- Defunct species poor hedgerow
- Scattered trees

N

Common Name	Latin Name	Improved Grassland	Dense Scrub	Scattered Scrub	Dry Ditch	Earth Bund	Scattered Trees	Bare Ground	Spoil	Tall ruderal	Defunct species poor hedgerow
Hybrid Black-poplar	<i>Populus x canadensis</i>						R				
Ivy	<i>Hedera helix</i>						O				
Leylandii	<i>Leylandii</i>						R				
Lords-and- Ladies	<i>Arum maculatum</i>	O				R					
Lesser Celandine	<i>Ranunculus ficaria</i>	R									
Common Nettle	<i>Urtica dioica</i>	O			O	O					
Periwinkle	<i>Vinca sp.</i>	R				R					
Red Fescue	<i>Festuca rubra</i>	O				R					
Rose	<i>Rosa sp.</i>			R							
Sycamore	<i>Acer pseudoplatanus</i>			R			O				
Speedwell	<i>Veronica Sp.</i>	R									
Teasel	<i>Dipsacus sp.</i>	R				R					
Creeping Thistle	<i>Cirsium arvense</i>	O									
Timothy	<i>Phleum pratense</i>	O									
Wavy Bitter-cress	<i>Cardamine flexuosa</i>					R					
Garden Grape-hyacinth	<i>Muscari armeniacum</i>					R					
Yorkshire Fog	<i>Holcus lanatus</i>	R				O					

D= Dominant A= Abundant F = Frequent O = Occasional R = Rare

Appendix 3: Legislation Relating to Bats

The following is an interpretation of the law and as such has not been prepared by a legal professional and therefore should be viewed as a guide only.

All bat species are legally protected under section 9 of the Wildlife and Countryside Act 1981 and regulation 41 of The Conservation of Habitats and Species Regulations 2010. Taken together it is illegal to:

- Deliberately kill, injure or capture any wild animal of European protected species;
- Deliberately disturb wild animals of any European protected species in such a way to be likely to significantly affect:
 - The ability of any significant groups of animals of that species to survive, breed, rear or nurture their young; or
 - The local distribution of that species.
- Recklessly disturb a European protected species;
- Damage or destroys breed sites or resting places of such animals;
- Deliberately takes or destroys the pups of such an animal;
- Possess or transport or any part of a European protected species, unless acquired legally;
- Sell, barter or exchange any part of a European protected species.

The maximum fine per offence is £5000 the Countryside and the Rights of Way Act 2000 (CROW) amendment contains a provision for a custodial sentence of up to 6 months instead of, or in addition to, a fine. Along with a lengthy development delay until an appropriate mitigation programme has been agreed and completed.

Natural Environment and Rural Communities Act 2006 (NERC) also lists bats/ great crested newts as a species of principle importance under Section 41 and Section 40 requires every public body in the exercising of its functions (in relation Section 41 species) 'have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'; therefore making bats/ great crested newts a material consideration in the planning process and requiring a detailed ecological survey before planning permission can be granted.

Appendix 4: Plant Species of Known Benefit to Bats

Plant species	Common name	Native (N)	Type	Benefit	Soil	Aspect	Extensive Green roofs	Living Walls	Rain gardens	Hedge/Trees	Beds/Borders
<i>Acer campestre</i>	Field maple	N	T/S	C	Any	Sun/Shade				Y	
<i>Acer platanoides</i>	Norway maple		T/S	S	Well drained/ alkaline	Sun/Shade				Y	
<i>Acer saoocharum</i>	Sugar maple		T/S	S	Any	Sun/Shade				Y	
<i>Achillea millefolium</i>	Yarrow	N	HP	C,F	Well drained	Sun/Shade				Y	
<i>Ajuga reptans</i>	Bugle	N	HP	C,F	Any	Sun/Shade	Y		Y		
<i>Anthyllis vulneraria</i>	Kidney Vetch	N	HP	F	Well drained	Sun	Y				
<i>Aubrieta deltoidea</i>	Aubretia		H	F	Well drained	Sun/Shade		Y			
<i>Betula pendula</i>	Silver birch	N	T	C	Sandy/Acid	Sun				Y	
<i>Cardamine pratensis</i>	Cuckoo-flower	N	HP	F	Moist	Sun/Shade			Y		Y
<i>Carpinus betulus</i>	Hornbeam	N	T	C	Clay	Sun				Y	
<i>Centaurea nigra</i>	Common Knapweed	N	HP	C,F	Dry/ not acid	Sun	Y				Y
<i>Centranthus ruber</i>	Red valerian		HP	F	Well drained	Sun	Y				Y
<i>Clematis vitalba</i>	Old man's beard	N	C	F	Well drained/ alkaline	Sun				Y	
<i>Corylus avellana</i>	Hazel	N	S	C	Any dry	Sun/Shade		Y		Y	
<i>Crataegus monogyna</i>	Hawthorn	N	S	S,C	Any	Sun/Shade				Y	
<i>Daucus carota</i>	Wild carrot	N	Bi	S,C,F	Any	Sun	Y				Y
<i>Dianthus spp.</i>	Pinks	N	A-Bi	F	Well drained	Sun	Y	Y			Y
<i>Digitalis purpurea</i>	Foxglove	N	Bi	C	Well drained	Shade/ partial shade				Y	Y
<i>Erica cinera</i>	Bell heather	N	S	F	Sandy	Full sun					Y
<i>Ersimum cherira</i>	Wallflower		Bi-P	F	Well drained	Sun		Y			Y
<i>Eupatorium</i>	Hemp agrimony	N	H	F	Moist	Sun/Shade			Y		Y
<i>Fagus sylvatica</i>	Beech	N	T	C,R	Well drained alkaline	Sun/Shade				Y	
<i>Foeniculum vulgare</i>	Fennel		H	F	Well drained	Sun					Y
<i>Fraxinus Excelsior</i>	Common Ash	N	T	C,R	Any	Sun/Shade				Y	
<i>Hebe spp.</i>	Hebe species		S	F	Well drained	Sun/Shade				Y	Y
<i>Hedera Helix</i>	Ivy	N	C	F,C	Any	Sun/Shade		Y	Y	Y	Y
<i>Hesperis matronalis</i>	Sweet rocket		H	F	Well drained/dry	Sun/Shade					Y

<i>Hyacinthoides non-scripta</i>	Bluebell	N	B	F	Loam	Shade/ partial shade		Y		Y	Y
<i>Ilex aquaifolium</i>	Holly	N	T	C	Any	Sun/Shade				Y	
<i>Jasmine officinale</i>	Common jasmine		C	F	Well drained	Sun		Y			Y
<i>Lavandula spp.</i>	Lavender species		S	F	Well drained/ sandy	Sun		Y			Y
<i>Linaria vulgaris</i>	Toadflax	N	HP	C	Well drained/alkaline	Sun	Y				Y
<i>Locinera periclymenum</i>	Honeysuckle	N	C	F	Well drained	Sun		Y		Y	
<i>Lotus corniculatus</i>	Bird's foot trefoil	N	HP	F	Well drained/dry	Sun	Y				Y
<i>Lunaria annua</i>	Honesty		Bi	F	Any	Sun/ partial shade	Y				Y
<i>Malus spp.</i>	Apple		T	C	Any	Sun				Y	Y
<i>Matthiola longipetala</i>	Night-scented stock		A-Bi	F	Well drained/ moist				Y		Y
<i>Myosotis spp.</i>	Forget-me-not species	N	A	F	Any	Sun	Y	Y			Y
<i>Nicotiana glauca</i>	Ornamental tobacco		A	F	Well drained/ moist	Sun/ partial shade			Y		Y
<i>Oneothesa spp.</i>	Evening primrose		Bi	F	Well drained	Sun	Y				Y
<i>Origanum vulgare</i>	Marjoram	N	HP	F	Well drained/dry	Sun				Y	
<i>Populus alba</i>	White poplar	N	T	C	Clay loam	Sun				Y	
<i>Primula veris</i>	Cowslip	N	HP	F	Well drained/ moist	Sun/ partial shade	Y				Y
<i>Primula vulgaris</i>	Primrose	N	HP	F	Moist	Partial shade	Y	Y		Y	Y
<i>Prunus avium</i>	Wild cherry	N	T	C	Any	Sun				Y	Y
<i>Prunus domestica</i>	Plum		T	C	Well drained/ moist	Sun				Y	Y
<i>Prunus spinosa</i>	Blackthorn	N	S	C	Any	Sun/ partial shade				Y	
<i>Quercus petraea</i>	Sessile oak	N	T	C, R	Sandy loam	Sun/ shade				Y	
<i>Quercus robur</i>	Common oak	N	T	R	Clay loam	Sun/ shade				Y	
<i>Rosa canina</i>	Dog rose	N	S	C	Any	Sun			Y	Y	Y
<i>Salix spp.</i>	Willow species	N	S	S, C	Moist	Sun/ shade			Y	Y	
<i>Sambucus nigra</i>	Elder	N	T	C	Clay loam	Sun				Y	
<i>Saponaria officinalis</i>	Soapwort	N	HP	F	Any	Sun					Y
<i>Saxifraga oppositifolia</i>	Saxifage	N	HP	C	Well drained	Sun	Y	Y			Y
<i>Scabiosa columbaria</i>	Small scabious	N	HP	F	Well drained/ alkaline	Sun	Y				Y
<i>Sedum spectabile</i>	Ice plant		HP	F	Well drained/ dry	Sun	Y				Y
<i>Silene dioecia</i>	Red campion	N	HP	F	Any	Shade/ partial shade		Y	Y	Y	Y
<i>Sorbus aucuparia</i>	Rowan	N	T	C	Well drained	Sun				Y	

<i>Stachys lanata</i>	Lamb's ear		HP	F	Well drained/ dry	Sun					Y
<i>Symphotrichum spp.</i>	Michalemas daisies		HP	F	Any	Sun					Y
<i>Tages patula</i>	French marigold		A	F	Well drained	Sun					Y
<i>Thymus serpyllum</i>	Creeping thyme	N	HP/S	F	Well drained/ dry	Sun	Y	Y			Y
<i>Tilia x europaea</i>	Common lime		T	C	Any	Sun/ shade				Y	
<i>Trifolium spp.</i>	Clover species	N	H	F	Any	Sun	Y				Y
<i>Valerina spp.</i>	Valerian species	N	HP	F	Moist	Sun/ partial shade			Y		Y
<i>Verbascum spp.</i>	Mulliens	N	Bi/ HP	C	Well drained	Sun					Y
<i>Verbena bonariensis</i>	Verbena		HP	F	Well drained/ moist	Sun					Y
<i>Viburnum lantana</i>	Wayfaring tree	N	S	C	Any	Sun/ shade				Y	Y
<i>Viburnum opulus</i>	Guelder rose	N	S	C	Moist	Sun/Shade			Y	Y	
<i>Viola tricolor</i>	Pansy	B	A	F	Well drained/ moist		Y	Y			Y

Type		Benefit	
HP	Herbaceous perennial	C	Moth caterpillar food plant
Bi	Biennial	S	Sap sucking insects (e.g. whiteflies)
BiP	Biennial perennial	F	Flowers attract adult moths
T	Tree	E	Good roost potential
S	Shrub		
H	Herb		
A	Annual		
B	Bulb		
C	Creeper/ climber		

Plates

Plate 1: Poplar Tree



Plate 2: View of Improved Grassland (south west aspect)



Plate 3: crushed
concrete piles in North
East Corner



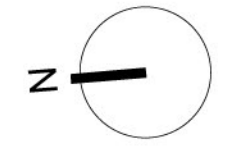
Plate 4: Felled brush heap



Plate 5: Bare ground and earth banks



Appendix 2: Site Layout



	Gross External Area		Gross Internal Area	
	Total (m ²)	Total (m ²)	Total (m ²)	Total (sq. ft)
Unit 1 (B1a)	4,089	3,796	40,860	
Unit 2 (B1a)	4,626	4,116	44,304	
Unit 3 (B1b)	2,988	2,779	29,913	
Unit 4 (B1b)	3,131	3,047	32,798	
Unit 5 (B2/B8)	3,586			
Unit 5a		1,732	18,643	
Unit 5b		1,732	18,643	
Unit 6 (B2/B8)	3,658			
Unit 6a		1,767	19,020	
Unit 6b		1,767	19,020	
Unit 7 (B2/B8)	3,105	2,994	32,227	
Unit 8 (B2/B8)	3,158	3,053	32,862	
Unit 9 (B2/B8)	3,603			
Unit 9a		1,742	18,751	
Unit 9b		1,742	18,751	
Unit 10 (B2/B8)	3,658			
Unit 10a		1,771	19,063	
Unit 10b		1,771	19,063	
Unit 11 (B2/B8)	2,702	2,608	28,072	
Unit 12 (B2/B8)	2,058	1,978	21,291	
TOTAL	40,362	38,395	413,280	

P2	Class usage notes and areas updated.	AS	GH	04
P1	Areas updated.	AS	GH	24
rev	amendments		by	old dnb

Oxford Technology Park
Site Layout



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Drawing Status:	Preliminary
Drawn:	MF
Date:	03/11/2014
Scale:	1:500 A0
Drawing no:	13045 1000
Revision:	P2