

ASSESSMENT OF ECOLOGY CREDITS AVAILABLE UNDER THE BREEAM NEW CONSTRUCTION 2018 SCHEME FOR:

THE FORMER ISIS HOUSE OXFORD BIOMEDICA TRANSPORT WAY OX4 6LT

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1.0 Introduction

Survey and reporting

- 1.1 This report details the results of a Preliminary Ecological Appraisal (comprising an Extended Phase 1 Habitat and Protected Species Scoping Survey, and, Preliminary Bat Roost Assessment) and, an assessment of the Land Use and Ecology credits available under The BREEAM New Construction Scheme 2018 for the former Isis House, Oxford Biomedica, Transport Way, Oxford, OX4 6LT.
- 1.2 The site visit and survey to inform this assessment was carried out on 2 October 2020.

Application site

- 1.3 The application site is located towards the south western end of Transport Way, a main road running through the Cowley industrial area in south east Oxford (Grid Reference SP55740350, Figure 1). The application site comprises a laboratory (not currently in use) within the Oxford Biomedica site, and, the surrounding hardstanding carpark and access road.
- 1.4 The total area of the application site is approximately 0.58ha.

Details of proposed works

- 1.5 It is proposed to demolish the former Isis House building and erect a new laboratory building across a similar development footprint.
- 1.6 The six birch trees along the south eastern site boundary will be removed to facilitate the proposals.



Figure 1 – Site location plan

2.0 Methodology

<u>Desk study</u>

2.1 A desk study data search was undertaken. This involved reviewing publicly available datasets and citations of statutory designated sites of importance for nature conservation, Natural England's Priority Habitat Inventory GIS dataset for England, and Natural England's Ancient Woodland Inventory for sites within the zone of influence of the survey area (considered to be a maximum of 1km in this case). In addition, species records (on the MAGIC website¹) were accessed, and aerial photographs and Ordnance Survey maps were studied for features of interest.

Extended Phase 1 Habitat and Protected Species Scoping Survey

2.2 An Extended Phase 1 Habitat and Protected Species Scoping Survey was undertaken. This comprised a walkover survey of the application site and the classification of habitats following the descriptions provided within the Joint Nature Conservancy Council 'Handbook for Phase 1 Habitat Survey' (NCC 1990, JNCC 1993). An assessment of the site in terms of its suitability for notable or protected species was carried out and any features of note were described.

Preliminary Bat Roost Assessment

- 2.3 The preliminary bat roost assessment comprised a survey of the buildings, and any trees to be affected by the proposals, for bats, signs of bats and features potentially suitable for use by roosting bats, and an assessment of the surrounding habitat in terms of its suitability for commuting and foraging bats.
- 2.4 The survey consisted of a detailed search of the interior and exterior of the buildings looking for bats and/or evidence of bats including droppings (on walls and windowsills and in roof and loft spaces), rub or scratch marks, staining at potential roosts and exit holes, live or dead bats and features, such as raised or missing tiles, potentially suitable for use by roosting bats. Binoculars, an endoscope, a ladder and a high-powered torch were used as required.
- 2.5 Buildings are classified according to their suitability for use by roosting bats. The classification is dependent on a number of factors including:
 - Bats and/or signs of bats
 - External and internal features potentially suitable for use by roosting bats (e.g. raised or missing tiles, gaps behind fascia boards)
 - Setting
 - Night time light levels
 - Disturbance levels
 - Proximity of suitable foraging habitat and commuting routes (e.g. ponds, streams, woodland, large gardens, hedgerows)
- 2.6 The categories used to classify buildings and trees and the survey effort required to determine the presence or absence of bats (as per the Bat Conservation Trust's Bat Survey Guidelines², referred to by Natural England in their standing advice to planning officers) are described in Table 1, and factors affecting habitat suitability in Table 2.

¹ <u>http://www.natureonthemap.naturalengland.org.uk/</u>

 $^{^{2}}$ Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn) Bat Conservation Trust

Table 1 – Description of the categories used to assess a building or tree's bat roost potential and the survey effort required to determine the likely presence or absence of bats

	Roost status	Description	Survey effort required to determine the likely presence or absence of bats
	Confirmed	Bats or evidence of bats found.	Surveys would be required to establish the status of the roost. Generally three dusk emergence and/or pre-dawn re-entry surveys between May and September. Optimum period May – August (two surveys should be undertaken during the optimal period and at least one survey should be a pre-dawn survey).
	High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.	Three dusk emergence and/or pre-dawn re-entry surveys between May and September. Optimum period May – August. Two surveys should be undertaken during the optimal period and at least one survey should be a pre-dawn survey.
Bat R	Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only i.e. irrespective of species conservation status, which is established after presence is confirmed).	Two surveys, comprising one dusk emergence and a separate pre-dawn re-entry survey between May and September (one of the surveys needs to be carried out between May and the end of August).
it Roost Potential	Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation) A tree of sufficient size and age to contain features but with none seen from the ground or features seen with only very	One dusk emergence or pre-dawn re-entry survey between May and the end of August (but only if features will be affected by the proposals). May not be required for trees with low roost suitability (dependent on case-specific conditions) as a precautionary approach to tree works can be taken to minimise the risk of harming bats.
	Negligible	Negligible habitat features on site likely to be used by roosting bats.	No further surveys required.

Table 2 – Habitat suitability scale for commuting and foraging bats

	Habitat Suitability	Description
Suitability of	High	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts
¹ habitat for co	Moderate	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water
nmuting and forag	Low	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
ţing	Negligible	Negligible habitat features on site likely to be used by commuting or foraging bats

Assessment of ecological value

2.7 The site and any ecological features within it were assigned an ecological value. Details of the assessment criteria used to assess nature conservation value are given in Appendix 3.

Surveyor details

2.8 The survey and reporting was carried out by Ryan Davies BSc (Hons) ACIEEM of GS Ecology Ltd. Ryan holds a BSc in Zoology from Cardiff University and works as an ecologist for GS Ecology. He is an associate member of the Chartered Institute of Ecology and Environmental Management (CIEEM), holds a Natural England great crested newt survey licence (WML-CLo8) and a Natural England WML A34 Level 2 bat survey licence, and has experience of undertaking a wide range of ecological surveys.

- 2.9 This report has been read and reviewed by Giles Sutton BSc (Hons) MSc MCIEEM CEnv of GS Ecology Limited. Giles is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and a Chartered Environmentalist with 20 years' experience as a professional ecologist and is therefore a "suitably qualified ecologist" as per the guidance (see Appendix 6 for details). Giles confirms that this report:
 - Represents sound industry practice
 - Reports and recommends correctly, truthfully and objectively
 - Is appropriate given the local site conditions and scope of works proposed
 - Avoids invalid, biased and exaggerated statements.

3.0 Results

Desk study

Statutory sites of importance for nature conservation

- 3.1 There are no statutory designated nature conservation sites or areas of woodland listed on Natural England's Ancient Woodland Inventory within 1km of the application site.
- 3.2 The nearest such site, Brasenose Wood & Shotover Hill Site of Special Scientific Interest (SSSI), is located approximately 1.3km to the north.

Protected and notable species records

3.3 Within 2km of the site there are two records of licenses issued by Natural England for works affecting protected species on The MAGIC website. These records are summarised in Table 3 below.

Table 3 – Summary of Natural England bat licence records within 2km of the application site

Distance from development site	Species affected	Roost type	Year licence was issued
1.3km North-west	Common pipistrelle	Non-breeding	2011
1.6km South-west	Common pipistrelle	Non-breeding	2009

Habitats surrounding the application site

- 3.4 The application site is located towards the south western end of Transport Way, a main road running through the Cowley industrial area in south east Oxford. Directly adjacent to the site in all directions, and, further to the north, east and west, are large, light-industrial, and commercial units within the Cowley industrial area. Further to the south is an area of densely packed residential properties, some of which have small gardens with very few trees. Beyond to the east (approximately 250m) are large arable fields with few trees along their boundaries.
- 3.5 The habitats surrounding the site are therefore of predominantly "low" suitability for commuting and foraging bats.

Habitats within the application site

- 3.6 A Phase 1 habitat map and associated target notes are provided in Appendix 1. A description of the habitats within the application site is given below, photos are provided in Appendix 2:
 - Buildings see section below.
 - Hardstanding The site has two access points, both leading to Transport Way at the south eastern boundary. The southernmost site access leads to a large car park and forecourt at the west of the site, with the other site access being a road which runs through the north eastern car park of the Oxford Biomedica site (outside of the application site).
 - Ornamental shrub planting. Alongside the south eastern, and part of the south western elevations of the former Isis House, are beds of low-lying ornamental shrub planting. In addition, there is a small area of shrub planting at the southern corner of the site (adjacent to the road), and, below the two silver birches within the western car park.
 - Scattered broadleaved trees Above the shrub planting at the front (south east) of the site there is a row of six young silver birch trees. In the western car park, there are a further two young silver birch trees, above a small area of shrub planting. None of these trees have any features potentially suitable for use by roosting bats.

<u>Bats – preliminary roost assessment</u>

- 3.7 The former Isis House has two distinct sections; the south eastern third of the building and, the north western two thirds.
- 3.8 The south eastern section of the building has brick walls and a flat, parapet roof. Across the front and sides of the south eastern section are large, floor to ceiling windows. The north western section is a large commercial laboratory which has corrugated metal cladding above a brick base.
- 3.9 The main roof has a shallow pitch which is also clad with corrugated metal. At the far northern end of the building there is a single-storey, brick and metal lean-to. In addition, at the south western elevation there are two metal canopies, both with bird "control" netting on their underside. All areas of the metal cladding across the building are tightly fitted and there were no potential points of ingress for bats observed on the exterior of the building.
- 3.10 Internally the north western section has a large roof space which is full of machinery. The roof has a metal frame, with no ridge board, and a plastic panel lining.
- 3.11 The building has no features suitable for use by roosting bats, no bats or signs of bats were found inside or outside the building and it is assessed as having "negligible" potential to host a bat roost (see Table 1).

4.0 Assessment

Statutory sites of importance for nature conservation and Ancient Woodland

4.1 The proposals will not affect any statutory sites of importance for nature conservation or areas of woodland listed on Natural England's Ancient Woodland Inventory. This is because there are none within 1km of the application site.

<u>Habitats</u>

4.2 The Secretary of State periodically publishes a list of habitats that are of principal importance for the conservation of biodiversity in England under Section 41 (S41) of the 2006 Natural Environment and Rural Communities (NERC) Act. The list currently comprises 56 habitats, referred to as "priority habitats" in the National Planning Policy Framework (NPPF). Paragraph 174 of the NPPF states that:

"To protect and enhance biodiversity and geodiversity, plans should [...] promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity"

- 4.3 As such where priority habitats are found they should be protected from the adverse impacts of development.
- 4.4 The habitats within the development site are of limited ecological value, being common, widespread and easily replaceable. None are "priority habitats" and there should be no habitat-related constraints to the proposals.

<u>Bats</u>

- 4.5 All species of bats receive special protection under UK law and it is a criminal offence under the Wildlife and Countryside Act 1981 (as amended) and The Conservation of Habitats and Species Regulations 2017 (The Habitat Regulations), deliberately or recklessly to destroy or damage their roosts, or to disturb, kill or injure them without first having obtained the relevant licence for derogation from the regulations from the Statutory Nature Conservation Organisation (the SNCO Natural England in England).
- 4.6 No bats or signs of bats were found inside or outside any of the buildings on site, all of which have no features potentially suitable for use by roosting bats. All buildings and trees are assessed as having "negligible" potential to host roosting bats (see Table 1) and it is considered very unlikely that bats roost within the site.
- 4.7 The proposals will not affect roosting bats and no further surveys or mitigation is required.
- 4.8 Appendix 5 provides further information on bat ecology and legislation

Nesting birds

- 4.9 All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended). Section 1 of this Act makes it an offence to kill, injure or take any wild bird, or intentionally to take, damage or destroy the nest of any wild bird while that nest is in use or being built.
- 4.10 No signs of nesting birds (bird nesting material, roosting birds, bird droppings or feathers) were observed inside or outside of the building and due to the bird netting under the canopies it is considered unlikely that birds will nest in these areas, or elsewhere in the building.

4.11 The young birch trees have some – albeit limited – potential to be used by nesting birds. As such, these trees should be removed outside of the bird nesting season (March – August inclusive depending on weather conditions). If this is not practicable then they will need to first be checked by a suitably qualified ecologist for nesting birds, and, if any nests are found, works would need to be postponed until all young have fledged the nest and it was no longer in use.

Other protected species

4.12 The proposals will almost certainly have no effect on other protected species, such as reptiles, badgers or great crested newts, as the habitats to be affected by the proposals, predominantly building and hardstanding, are unsuitable for use by these species, and the site is isolated from habitat that they are likely to use.

Ecological site value

- 4.13 The site is of almost no ecological value and has negligible potential to host protected species. The only features of any ecological value are the eight silver birch trees two of which will be retained and completely unaffected and these are of very low ecological value (i.e. of value "within zone of influence only").
- 4.14 An assessment of the site using the applicable components of Radcliffe's Criteria (see Appendix 3) are detailed below:
 - Size: The site is relatively small, approximately 0.58ha, 98% of which is buildings and hardstanding.
 - Diversity: The site does not contain a diversity of habitats as the habitats on site, the silver birch trees and the introduced shrub planting, have very low species diversity, with almost no native species present.
 - Naturalness: The site is located within the Cowley industrial area in south east Oxford, and therefore, has been exposed to constant disturbance and maintenance. As such, these habitats are considered to exhibit a very low level of naturalness.
 - Rarity: The habitats within the development site are common and widespread and are not rare.
 - Fragility: The habitats on site are of low ecological value and are easily replaceable. These habitats are not sensitive to disturbance or modification.
 - Typicalness: The site does not represent typical natural or semi-natural habitats in the context of the local or regional area.
 - Position in an ecological/geographical unit: There are no areas of nature conservation or geographical value within 1km of the site and the site is isolated from other natural and seminatural habitats by buildings and hardstanding.
 - Potential Value: As the site comprises predominantly hardstanding and buildings, and will remain as such, there are likely to be limited opportunities to enhance the value of the habitats unless the site is redeveloped. Furthermore, given the location of the site, it is unlikely that a change in management of the soft landscaping would be feasible.
 - Intrinsic Appeal: The silver birch trees have some limited, intrinsic appeal for passers-by and for the personnel working within the site.
- 4.15 In summary, using the criteria above, the site is of "low" ecological value.

5.0 Recommendations for minimising and mitigating any adverse ecological impacts of the proposals

- 5.1 It is recommended that a suitably qualified ecologist is appointed to act as an ecological clerk of works (ECoW) for the duration of the project. The ECoW will undertake a check within one month of the start of works to confirm that conditions on the site have not changed and that there will be no negative impact as a result of the proposals. They will advise on wildlife legislation and mitigation and on the installation of the enhancement measures detailed below.
- 5.2 The features of ecological value within the application site are the eight silver birch trees. Two of these trees (within the western car park) will be retained and it is recommended that these trees be protected in accordance with BS5837:2012 and advice from a suitably qualified arboriculturalist.
- 5.3 The birch trees have some potential to be used by nesting birds. As such, these trees should be removed outside of the bird nesting season (March August inclusive depending on weather conditions). If this is not practicable then they will need to first be checked by a suitably qualified ecologist for nesting birds, and, if any nests are found, works would need to be postponed until all young have fledged the nest and it was no longer in use.
- 5.4 The bird netting, which has been installed to stop birds nesting and roosting under the canopies, should be retained undamaged until these areas are demolished. This will ensure that birds do not next or roost in these areas.

6.0 Recommendations for optimising the ecological outcomes for the site

- 6.1 To achieve the maximum number of BREEAM Land Use and Ecology Credits the following recommendations would need to be adhered to:
- 6.2 A biodiverse or biosolar green roof would need to be installed covering at least 250 square metres. The roof would need to be designed to maximise its value for wildlife. The green roof would need to reach at least "moderate" condition within 3 years (as per the DEFRA 2 Technical Supplement)³.
- 6.3 The following is a typical specification for a biodiverse green roof (full details would need to be drawn up at a later stage):
 - The roof substrate (growing medium) to be between 80 and 150mm and will undulate and vary in depth across each roof.
 - The substrate type to vary, with a mix of larger aggregate type materials and sand and soil, using reclaimed material from the site where feasible.
 - The roof(s) to be sown with a wildflower seed mix such as Emorsgate seed mix ER1F (Wildflowers for Green Roofs⁴).
- 6.4 It would also be possible to have a "biosolar" green roof whereby there were a green roof below the solar panels. A calculation would need to be made as to how much of the roof were to be taken up by solar panels and how much was actual green roof.
- 6.5 **Tree planting**: Plant a minimum of one large canopy trees and two medium canopy trees in the car parking area. The trees should ideally be native species such as lime, silver birch or alder. This would help compensate for the loss of the six birch trees along the front of the building.
- 6.6 **Green wall:** Assess the feasibility of installing a green wall. This would provide habitats for invertebrates and birds.
- 6.7 **Bird nesting features:** Install at least six bird nesting features such as swift bricks on the façade of the building. Appendix 8 provides specifications and details of swift bricks and Oxford City Council encourages the installation of swift bricks through its Oxford Swift City project⁵. If this is not possible due to the design of the building it may be possible to install other nesting features on the green roof such as open fronted nest boxes.

³ The Biodiversity Metric 2.0: Auditing and accounting for biodiversity value: technical supplement (Beta version, July 2019). Natural England

⁴ Details of the Emorsgate seed mix can be found here: <u>https://wildseed.co.uk/mixtures/view/57/wild-flowers-for-green-roofs</u>.

⁵ https://www.rspb.org.uk/our-work/conservation/conservation-and-sustainability/safeguarding-species/swiftmapper/case-studies/oxfordswift-city/

7.0 An assessment of Land use and Ecology credits available under the BREEAM UK New Construction 2018 Scheme

<u>Overview</u>

- 7.1 This section gives an assessment of the Land use and Ecology credits available under the BREEAM UK New Construction 2018 Scheme (henceforth referred to as "The Guidance").
- 7.2 For this assessment we have used the Route 2, or ecologist route refer to P292 of The Guidance. Where applicable we have also assessed the Exemplary Criteria (EC)⁶
- 7.3 Twelve out of the 13 available BREEAM Land Use and Ecology Credits (LE Credits) are likely to be achieved (Table 3 gives a summary of the credits available) plus two ECs.

Criteria	Purpose	LE credits	LE credits	EC credits	EC credits
		available	likely to be	available	likely to be
			achieved		achieved
LE01 Site selection	Recognising the reuse of	2	1	0	
	previously developed and				
	contaminated land where				
	appropriate remediation has taken				
	place.				
LE02 Identifying and	Identifying and understanding the	2	2	1	1 (assuming
understanding the risks	ecological risks and opportunities				no ecology
and opportunities for the	associated with the site to inform				criteria are
site	the determination of the strategic				met)
	outcome for the site.				
LE03 Managing negative	Recognition of steps taken to	3	3	0	
impacts on ecology	avoid impacts on existing site				
	ecology as far as possible.				
LE04 Change and	Recognition of steps taken to	4	4	1	1
enhancement of	enhance site ecology.				
ecological value					
LE05 Long term ecology	Encouraging the long-term	2	2	0	
management and	maintenance and management of				
maintenance	ecology on site to ensure both				
	new and existing ecological				
	features continue to thrive.				
Total		13	12	2	2
				TOTAL LE C	REDITS = 14

Table 3 - BREEAM Land Use and Ecology credits available and likely to be achieved

⁶ Exemplary Criteria – A scheme can achieve an innovation credit by meeting exemplary performance criteria defined within an existing BREEAM issue, i.e. going beyond the standard BREEAM assessment criteria.

<u>LE01 – Site selection</u>

Aim - To encourage the use of previously occupied or contaminated land and avoid land which has not been previously disturbed.

Number of credits available: 2 (0 EC's)

Number of credits that are likely to be awarded for this development: 1

Rationale:

Pre-requisites

• There are no pre-requisites for LE01

Previously occupied land (1 credit)

• More than 75% of the development footprint (approximately 98%) is on land which has previously been developed and used for industrial, commercial or domestic purposes in the last 50 years, and, as such, **the credit for "Previously occupied land" can be awarded**.

Contaminated land (1 credit)

- If it can be demonstrated that the land is contaminated and will be remediated, then one credit can be awarded.
- No non-native invasive plants (such as Japanese knotweed or giant hogweed) were seen during our survey, however if a contaminated land professional were to confirm that other contaminants are present (for example it may be that the site contains hydrocarbon residues), it may be possible to achieve this credit.

At present there is no evidence to suggest that the credit for "Contaminated land" can be awarded.

LEO2 - Identifying and understanding the risks and opportunities for the project Aim: To determine the ecological baseline and zone of influence of the site and identify risks and opportunities for achieving optimum outcomes

Number of credits available: up to 2 (+1 EC)

Number of credits that are likely to be awarded for this development: 2 (+1EC)

Rationale:

Pre-requisites

- An assessment route (see Definitions on page 303 of The Guidance) for the project has been determined using BREEAM Guidance Note GN34 BREEAM Ecological Risk Evaluation Checklist. It has been determined that Route 2 (ecologist) should be followed for this scheme.
- To achieve these credits the client will need to confirm that they will allow compliance to be monitored against all relevant UK and EU or international legislation relating to the ecology of the site and it is recommended that an ecologist acting as an ecological clerk of works (see LE05 below) is appointed to do this.

Survey & evaluation (1 credit)

- A site survey was carried out at an appropriate stage in the design process. Following the site survey, an evaluation was made regarding:
 - o The value and condition of the site and its zone of influence
 - o The direct and indirect risks to ecology
 - The capacity and feasibility to enhance the ecology on site, its habitat restoration and creation potential, and,
 - o The impact of the proposed design, works and operations on site

Refer to Sections 3 to 6 of this report.

As such 1 credit for Survey & Evaluation can be awarded.

Determining the ecological outcomes for the site (1 credit)

- The survey and evaluation credit for the chosen assessment route has been achieved.
- Due to the very limited ecological value of the site, opportunities for wider stakeholder engagement are limited and would not deliver any additional ecological benefits (see The Guidance P301) however it is likely that input from the council's ecologist will be provided during the pre-planning and planning application process
- During the concept design stage, the project team liaised with GS Ecology to identify the optimal ecological outcome for the site. Recommendations for optimising the ecological outcomes for the site (informed by the hierarchy of action as per P300 of the guidance) have been provided in Section 6 of this report and *if the scheme is designed in accordance with these recommendations then 1 credit (Determining the ecological outcomes for the site Route 2) can be awarded.*

Exemplary Criteria

As it is likely that both credits for LEO2 (Survey & evaluation, and, Determining the ecological outcomes for the site) will be achieved, it may be possible to achieve an Exemplary Criteria Credit for LEO2.

However, to achieve this credit, it would also be necessary to achieve the following credits from outside the Land use and Ecology assessment criteria:

- Hea 07 Safe and healthy surroundings (Assessment scope on page 122) would need to achieve the credits for both "Safe access" and "Outside space"
- Pol 03 Flood and surface water management (Assessment scope on page 332) would need to achieve credits for 'Surface water run-off' and 'Minimising watercourse pollution'
- Pol 05 Reduction of noise pollution (Assessment scope on page 349)

LE03 - Managing negative impacts on ecology

Aim: To avoid, or limit as far as possible, negative impacts on the ecology of the site and its zone of influence arising as a result of the project.

No. of credits available: up to 3 (0 EC's)

No. of credits that are likely to be awarded for this development: 3

Rationale:

Pre-requisites

• LEo2 has been achieved (see LEo2 above).

Planning, liaison, implementation and data (1 credit)

The Guidance for this credit reads as follows:

"2 Roles and responsibilities for managing negative impacts on the ecology are clearly defined and allocated to support successful delivery of project outcomes at an early enough stage to influence the Preparation and Brief or Concept Design."

3 The potential impact of site preparation and construction works on ecology are identified at an early project stage to optimise benefits and outputs.

4 The project team, liaising and collaborating with representative stakeholders and, taking into consideration data collated and shared, have proposed solutions and selected measures to be implemented during site preparation and construction works."

Section 5 (above) provides recommendations to ensure that there is no negative impact on ecology, this includes protecting the retained trees during the construction period and clearing vegetation outside of the nesting season. An ECoW should be appointed who will undertake a site visit and survey within one month of the start of works to confirm that conditions on the site have not changed and that there will be no negative impact as a result of the proposals. The ECoW will liaise with the site manager and project team and advise on wildlife legislation and mitigation.

If works are carried out in line with section 5 of this report then 1 credit for planning, liaison, implementation and data can be awarded.

Managing negative impacts of the project (up to 2 credits - route 2 [ecologist])

An assessment using the DEFRA Metrics referred to in the BREEAM document "GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2" has been undertaken. This shows that pre-development the site has 0.16 Habitat Units

In the recommendations given in Section 6 are implemented, it will be possible to achieve a total net change in Habitat Units of 17.5% (a net increase of 0.03 Habitat Units).

This equates to a gain/loss percentage score of 17.5% which demonstrates that there has been "no overall loss of ecological value on the site as a result of activities to avoid, protect, reduce, limit, control or compensate for impacts" and as such **the two credits for "Managing negative impacts of the project" can be awarded.**

LE04 - Change and enhancement of ecological value

Aim: To enhance the ecological value of the site and areas within its zone of influence in support of local, regional and national priorities.

No. of credits available: up to 4 (+1 EC)

No. of credits that are likely to be awarded for this development: 4 (+ 1 EC)

Rationale:

Pre-requisites

- LEo2 has been achieved (see LEo2 section above)
- To achieve this credit the client must confirm that they will allow compliance to be monitored against all relevant UK and EU or international legislation relating to the ecology of the site and it is recommended that a ECoW (see LEo5 below) is appointed to do this. For the purposes of this assessment it has been assumed that the client agrees to this.

Liaison, implementation and data collation (1 credit)

The Guidance at P311 reads as follows:

"4 The project team, liaising and collaborating with representative stakeholders (for relevant stakeholders see - Determining the ecological outcomes for the site – project team liaison and collaboration with relevant stakeholders on page 301), and taking into consideration data collated and shared, have implemented the solutions and measures selected in a way that enhances ecological value in the following order:

4.a On site, and where this is not feasible,

4.b Off site within the zone of influence.

5 Data collated are provided to the local environmental records centres nearest to, or relevant for, the site."

- Recommendations for optimising the ecological outcomes for the site have been provided in section 6 (following liaison with the project team) and if a landscaping scheme is designed (and implemented) in accordance with these recommendations then it is considered that the proposals would accord with the above.
- The client will also need to provide copies of ecological report associated with the development (i.e. this report) to the local environmental records centres.

If the above recommendations are implemented, then 1 credit for "Change and enhancement of ecology" can be awarded.

Change and enhancement of ecology (up to three credits)

- An assessment using the DEFRA Metrics referred to in the BREEAM document "GN36 -BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2" has been undertaken. This shows that pre-development the site has 0.16 Habitat Units
- If the recommendations given in Section 6 are implemented, it will be possible to achieve a total net change in Habitat Units of 17.5% on site (a net increase of 0.03 Habitat Units).

As this demonstrates there will be "Net gain of ecological value" 3 credits for "Change and enhancement of ecology" can be awarded.

• The excel calculator summary sheet is given in Appendix 9.

Exemplary Criteria

- It will be possible to achieve this Exemplary Criteria if the recommendations given in Section
 6 are fully implemented, this would constitute a "Significant net gain of ecological value (percentage score of 110 or above)"
- This would be determined once the full landscape plan and details of the green wall has been drawn up, to confirm that the recommended enhancements can be incorporated into the scheme.

LE 05 Long term ecology management and maintenance

Aim: To secure ongoing monitoring, management and maintenance of the site and, its habitats ecological features to ensure intended outcomes are realised for the long term.

No. of credits available: up to 2

No. of credits that are likely to be awarded for this development: 2

Rationale:

Pre-requisites

• Route 2 - Criteria 2-3 in LE 03 have been achieved (see above) and one credit under LE 04 for 'Change and Enhancement of Ecology' has been awarded (see above). As such the pre-requisites for this credit have been met

Planning, liaison, data, monitoring and review management and maintenance (1 credit)

The guidance on this credit at P315 and 316 reads as follows:

"3 The project team liaise and collaborate with representative stakeholders (for relevant stakeholders see -Determining the ecological outcomes for the site – project team liaison and collaboration with relevant stakeholders on page 301), taking into consideration data collated and shared, on solutions and measures implemented to:

3.a Monitor and review the effectiveness with which the plans for LE 03 & LE 04 are implemented

3.b develop and review management and maintenance solutions, actions or measures.

4 In support of the above and to help ensure their continued relevance over the period of the project the following should be considered:

4.a Monitoring and reporting of the ecological outcomes for site implemented at the design and construction stage

4.b Monitoring and reporting of outcomes and successes from the project

4.c Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site)

4.d Maintaining the ecological value of the site and its relationship or connection to its zone of influence

4.e Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02).

4.f Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04.

5 As part of the tenant or building owner information supplied, include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value and biodiversity on or near the site."

• It is therefore recommended that if the client commits to appointing an ECoW to write, monitor and report on criteria 3 and 4 above, and to review the tenant or building owner information then this credit can be awarded.

Landscape and ecology management plan (or similar) development

The guidance on this credit at P315 and 316 reads as follows:

"6 Landscape and ecology management plan, or equivalent, is developed in accordance with BS 42020:2013 Section 11.1(203) covering as a minimum the first five years after project completion and includes:

6.a Actions and responsibilities, prior to handover, to give to relevant individuals

6.b The ecological value and condition of the site over the development life.

6.c Identification of opportunities for ongoing alignment with activities external to the development project and which supports the aims of BREEAM's Strategic Ecology Framework

6.d Identification and guidance to trigger appropriate remedial actions to address previously unforeseen impacts

6.e Clearly defined and allocated roles and responsibilities.

7 The landscape and management plan or similar is updated as appropriate to support maintenance of the ecological value of the site."

• As such, if a landscape and ecology management plan is produced, covering the management of the green roof (green wall if it is installed) and bird nesting sites described in Section 6of this report, then this credit can be awarded.

8.0 Summary

- 8.1 The application site comprises a laboratory within the Oxford Biomedica site, and, the surrounding hardstanding carpark and access road. The site is of low ecological value and will not host protected species.
- 8.2 If the recommendations given in this report are implemented, 12 out of the 13 available BREEAM Land Use and Ecology Credits under the BREEAM UK New Construction 2018 Scheme are likely to be achieved.
- 8.3 It should also be possible to achieve two Exemplary Level Credits for: "LEO2 Identifying and understanding the risks and opportunities for the project" (if the credits from other BREEAM disciplines are achieved) and "LEO4 Change and enhancement of ecological value".

Appendix 1 - Extended Phase 1 Habitat Map and Target Notes

Target notes

- (1) The south eastern section of the former Isis House. This section of the building has brick walls and a flat, parapet roof. Across the front and sides of this section are large, floor to ceiling windows.
- (2) The north western section of the former Isis House. This section of the building is a large commercial laboratory which has corrugated metal cladding above a brick base. The main roof has a shallow pitch which is also clad with corrugated metal. At the far northern end of the building there is a single-storey, brick and metal lean-to.
- (3) Open-fronted, metal-framed, UPVC bike store.
- (4) Open-fronted, metal-framed, UPVC bike store.
- (5) Brick-walled electric sub-station with adjacent area of shrub planting.
- (6) Low-lying ornamental shrub plating with six birch trees (*Betula spp*) above.
- (7) Small area of shrub planting with two young birch trees above.
- (8) Site access road, which runs through the north eastern Oxford Biomedica carpark.



Appendix 2 – Photographs

Photo 1 - The south eastern section of the former Isis House viewed from the north west, and, Photo 2 – The north western section viewed from the south west



Photos 3 and 4 – The north western section of the building viewed from the north west and north east



Photos 5 and 6 – Inside the roof space of the north western section



Appendix 3 - Criteria used for assessing nature conservation value

The Institute of Ecology and Environmental Management - Guidelines for Ecological

<u>Assessment</u>

In its Guidelines for Ecological Assessment, the Institute of Ecology and Environmental Management (IEEM) recommends that the value of areas of habitat and plant communities should be measured against published selection criteria where available and the value or potential value of an ecological resource or feature should be determined within a defined geographical context. They recommend that the following frame of reference be used or adapted to meet local circumstances:

- 1. International
- 2. UK
- 3. National (e.g. England/Northern Ireland/Scotland/Wales)
- 4. Regional (e.g. The South East)
- 5. County or Metropolitan (e.g. London)
- 6. District (or Unitary Authority, City, or Borough)
- 7. Local or Parish
- 8. Within zone of influence only (e.g. the development site and immediately adjacent areas)

Ratcliffe's Criteria

Assessing the value of an ecological feature is a difficult undertaking and depends on a number of factors. A widely used framework for assessing value is that set out in Ratcliffe, D.A. (1977) A Nature Conservation Review, Cambridge University Press. This paper is the basis for many ecological valuation systems, such as those used to designate Sites of Special Scientific Interest. The criteria used in the Ratcliffe Criteria are listed and discussed below:

Size: In lowland Britain, semi-natural habitats tend to be highly fragmented and the value of a site usually increases with its size.

Diversity: The number of both communities and species depends largely on the diversity of habitat. Diversity is also related to area; therefore the number of both plant and animal species shows a marked tendency to increase with the size of the area.

Naturalness: Truly natural habitats, unmodified by man, are rare in Britain; as a result nature conservation deals largely with semi-natural habitats. To be defined as 'semi-natural', however, a habitat must nevertheless exhibit a level of quality marked by a lack of features which indicate gross or recent human modification. This criterion has to take into account the fact that some habitats, (e.g. grasslands, heathlands) are anthropogenic in origin.

Rarity: One of the most important purposes of nature conservation is to protect rare species and communities. The general principle is that the rarer the species or community, the greater its value for nature conservation. Rarity is measured against frequency of occurrence at national or county level and assessed using lists such as the Section 41 List of Species and Habitats of Principal Importance for the Conservation of Biodiversity in the UK

Fragility: Fragility reflects the degree of sensitivity of habitats, communities and species to environmental change and involves a consideration of intrinsic and extrinsic factors.

Typicalness: When a site is viewed in the context of the local or regional area, certain habitats assume importance because they are good examples of what is, or has historically been, typical of the area. It is therefore important to safeguard representative areas to prevent what was once common becoming fragmented or rare.

Recorded History: The extent to which a site has been used for scientific study along with historic records of species is of some importance when assessing the value of a site.

Position in an ecological/geographical unit: The relationship of a site to adjacent areas of nature conservation value is a factor to consider when assessing a site and it is also important to recognise the important and characteristic formations, communities and species of a district.

Potential Value: Certain sites could, through appropriate management or natural change, develop a greater nature conservation interest.

Intrinsic Appeal: The knowledge of the distribution and numbers of popular groups of species, such as birds, is greater than for obscure groups. Similarly, colourful wild flowers and rare orchids arouse more enthusiasm than liverworts. It is sometimes pragmatic to give more weight to some groups than to others.

<u>Our approach</u>

We use the factors described by Ratcliffe to guide our assessment of ecological value, which is then given a geographical value as per the IEEM guidelines. If the value of a site or feature is assessed as being 'within zone of influence only', i.e. the lowest IEEM category, then, for the purposes of BREEAM and The Code for sustainable Homes, that site or feature is categorised as being of 'low ecological value'. Any assessment above 'within zone of influence only' is not considered as being of 'low ecological value'.

Appendix 4 - Legislation and planning policy

Planning Authorities have a legal duty to consider biodiversity when assessing planning applications. Where there is a reasonable likelihood that a planning application might affect important protected sites, species or habitats, information on the species, habitat or site likely to be affected, together with an assessment of the impacts of the proposals, will almost certainly be required.

The legal duty for Planning Authorities to have regard to the conservation of biodiversity was introduced in the 2006 Natural Environment and Rural Communities Act (The NERC Act). This act clarified existing commitments with regard to biodiversity, raised the profile of biodiversity and aimed to make the consideration of biodiversity a natural and integral part of policy and decision making.

In addition to the NERC Act there is also national and international biodiversity legislation. This includes legislation in relation to protected species and sites which operates outside of the planning system. Local Authorities and developers have a duty to comply with this legislation.

National planning policy

Paragraph 99 of the Government Circular 06/05: Biodiversity and Geological Conservation - Statutory Obligations and Their Impact Within the Planning System (this document has not been revoked by the recently published National Planning Policy Framework) states that:

'It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision.'

As such, in line with national planning policy, most planning authorities will ask for this information to be provided before a planning decision is made and in many cases before it is registered.

Local planning policy

In addition to national planning policy, most councils have planning policies to protect biodiversity, and to enhance it where practicable within and adjacent to development sites.

European protected species

The United Kingdom hosts a number of European Protected Species (EPS) of animals (table 1) and plants (table 2). These species receive special protection under UK law and it is an offence under the Wildlife and Countryside Act 1981 (as amended) and the European Habitats and Species Directive (92/43/EC), enacted in the UK through The Conservation of Habitats and Species Regulations 2017, to deliberately or recklessly destroy or damage their habitat, or to disturb, kill or injure the species without first having obtained the relevant licence from Natural England.

Planning Authorities have a statutory duty under these regulations to have regard to the requirements of the Habitats Directive and need to be satisfied that the development is likely to receive a licence from Natural England, and therefore comply with the Habitats Directive, before granting planning permission.

Common name	Scientific name
Bats, Horseshoe (all species)	Rhinolophidae
Bats, Typical (all species)	Vespertilionidae
Butterfly, Large Blue	Maculinea arion
Cat, Wild	Felis silvestris
Dolphins, porpoises and whales (all species)	Cetacea
Dormouse	Muscardinus avellanarius
Frog, Pool	Rana lessonae
Lizard, Sand	Lacerta agilis
Moth, Fisher's Estuarine	Gortyna borelii lunata
Newt, Great Crested (or Warty)	Triturus cristatus
Otter, Common	Lutra lutra
Snail, Lesser Whirlpool Ram's-horn	Anisus vorticulus
Snake, Smooth	Coronella austriaca
Sturgeon	Acipenser sturio
Toad, Natterjack	Bufo calamita
Turtles, Marine	Caretta caretta
	Chelonia mydas
	Lepidochelys kempii
	Eretmochelys imbricata
	Dermochelys coriacea

Table 1 – European Protected Species of Animal found in the UK

Table 2 - European Protected Species of Plant found in the UK

Common name	Scientific name
Dock, Shore	Rumex rupestris
Fern, Killarney	Trichomanes speciosum
Gentian, Early	Gentianella anglica
Lady's-slipper	Cypripedium calceolus
Marshwort, Creeping	Apium repens
Naiad, Slender	Najas flexilis
Orchid, Fen	Liparis loeselii
Plantain, Floating-leaved water	Luronium natans
Saxifrage, Yellow Marsh	Saxifraga hirculus

Nationally protected species

Many species of animal are protected under the 1981 Wildlife and Countryside Act (as amended). 'Full protection' applies to EPS and some non EPS species such as the water vole. This prohibits the intentional killing, injuring or taking (capture. etc); possession; intentional disturbance whilst occupying a 'place used for shelter or protection' and destruction of these places; sale, barter, exchange, transporting for sale and advertising to sell or to buy. Many species, such as common species of reptile and amphibian, are protected from intentional killing and injuring and trading.

Birds

All wild birds are protected under the Wildlife and Countryside Act 1981 (as amended), whilst they are actively nesting or roosting. Section 1 of this Act makes it an offence to kill, injure or take any wild bird, and to intentionally take, damage or destroy the nest of any wild bird while that nest is in use or being built. It is also an offence to take or destroy any wild bird eggs.

In addition, bird species listed under Schedule 1 of the Act receive extra protection. The Act states that 'it is an offence to intentionally or recklessly disturb any wild bird listed in Schedule 1 while it is nest building, or at (or near) a nest containing eggs or young, or disturb the dependent young of such a bird'.

In practice this means that in areas where birds are likely to be nesting works should not be undertaken during the nesting season, which is generally considered to be March to September, although this very much depends on weather conditions, habitats and the species involved. If works cannot be avoided then areas should first be checked for nesting birds. Habitats likely to host nesting birds include trees, hedgerows and dense scrub, buildings, reedbeds and riverine habitats and open areas with tussocky vegetation.

Appendix 5 – Bat ecology and conservation status

Background

Bats are the only true flying mammals and belong to their own taxonomic group, the *Chiroptera*. Worldwide there are almost 1,000 species, with 16 in the UK. All species in the UK are insectivorous. They have a highly sophisticated echolocation system that allows them to avoid obstacles and catch invertebrates, either in flight or by picking them off water, the ground or foliage.

Bat species in the UK

There are 16 species of bat that are known to exist in the UK mainland, with a further two - the greater mouse eared bat *Myotis myotis*, and the parti-coloured bat *Vespertilio murinus* - that are thought to occur as rare migrants or to have small populations in the UK. Bats in the UK belong to one of two taxonomic families, the Rhinolophidae (horseshoe bats) and the Vespertilionidae (all other UK bats).

Bat Conservation Status

Bat populations have undergone a significant decline in the past sixty years. For example, estimates from the National Bat Colony Survey suggest that the UK pipistrelle population (one of our commonest bat species), declined by approximately 70% between 1978 and 1993. Factors contributing to this decline include:

- Loss of, and damage to, roosting sites, including buildings, trees, and underground structures (mines, tunnels, ice-houses, cellars, etc).
- Loss and fragmentation of suitable insect-rich feeding habitats such as wetlands and deciduous woodland.
- Reduction in the abundance and diversity of insect prey due to intensive agriculture, particularly over-grazing and the use of pesticides.
- Loss of linear features such as tree-lines and hedgerows, depriving bats of commuting routes between roosts and feeding areas.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.

Roosts

Bats use a variety of roosts of different types including trees, buildings, caves, mines and other structures. Most species are colonial and roost in groups. This can make populations particularly vulnerable to loss of roosts as the loss of a single roost may affect the whole population. Some species hang in obvious locations, such as the timbers near to the apex of a roof, others roost in cracks and crevices, such as the gaps under tiles, and as such can be very difficult to locate.

During the winter (November to February), when there is a reduction in insect numbers, bats hibernate to conserve energy. They prefer sites with a constant low temperature and a high relative humidity. On mild winter's nights, bats may wake up and feed. However, bats are particularly vulnerable to disturbance at this time of year, as flying in winter uses up large quantities of energy that cannot easily be replaced.

In the spring, after emerging from hibernation, bats often move from site to site and may congregate in small groups. Female bats gather together in the summer (approximately May to August dependant on species) in maternity roosts. Once the young have stopped suckling, and the baby is independent, bats

tend to disperse and use other roosts. Maternity roosts are particularly vulnerable to disturbance, as bats may have come from a wide geographical area, and have a strong tradition of returning to the same roost year after year.

During the late summer and early autumn males occupy mating roosts which are visited by several females. After mating some species gather together at swarming sites to fatten up prior to hibernation.

Habitat associations

In addition to roosts, bats also need foraging habitats to find suitable food resources, and commuting routes to get to these areas. As would be expected, the highest numbers of bats are found in areas with abundant invertebrates. Some species specialise in catching small invertebrates in flight, whilst others specialise in catching larger invertebrates such as moths and beetles. The distances that bats travel to foraging areas varies between species; records have shown some greater horseshoe bats travel up to 22km to forage, although many species will typically feed within 1km of a roost.

Bats, especially the smaller species, tend to follow linear features (such as hedgerows and tree lines) to their foraging habitats and will often not cross open spaces. A gap of 10m in a linear feature will often not be crossed by bats, and it is important that developments do not create such gaps if linear features are used by bats.

Appendix 6 - Wildlife friendly plants for landscaping

The species in this list are species which are native or have a known attraction to local wildlife.

These lists are not exhaustive and have been adapted and sourced from various online resources including:

Natural History Museum's Postcode Plant Database - <u>http://www.nhm.ac.uk/nature-online/life/plants-</u> fungi/postcode-plants/

Dorset Wildlife Trust - <u>http://www.dorsetwildlifetrust.org.uk/</u>

The Countryside Council for Wales' Plant for Wildlife Garden Planner http://www.plantforwildlife.ccw.gov.uk/

Wild About Gardens - a joint project of The Wildlife Trusts and the Royal Horticultural Society http://www.wildaboutgardens.org.uk/

Habitat aid: <u>http://www.habitataid.co.uk/</u>

Native trees

Alder (Alnus glutinosa) Ash (Fraxinus excelsior) Aspen (Populus tremula) Beech (Fagus sylvatica) Black-poplar (Populus nigra) Common Whitebeam (Sorbus aria) Crack-willow (Salix fragilis) Downy Birch (Betula pubescens) English Elm (Ulmus procer) Field Maple (Acer campestre) Hornbeam (Carpinus betulus) Pedunculate Oak (Quercus robur) Rowan (Sorbus aucuparia) Silver Birch (Betula pendula) Sessile Oak (Quercus petraea) White Willow (Salix alba) Wild Cherry (Prunus avium) Wych Elm (Ulmus glabra)

Native small shrubs / hedging plants (some of which are trees that can be grown as shrubs)

Alder Buckthorn (Frangula alnus) Almond Willow (Salix triandra) Bird Cherry (Prunus padus) Blackthorn (Prunus spinosa) Buckthorn (Rhamnus cathartica) Burnet rose (Rosa pimpinellifolia) Crab Apple (Malus sylvestris) Dog Rose (Rosa canina) Dogwood (Cornus sanguinea) Field Maple (Acer campestre) Field Rose (Rosa arvensis) Goat Willow (Salix caprea) Grey Willow (Salix cinerea) Guelder-rose (Viburnum opulus) Hawthorn (Crataegus monogyna) Hazel (Corylus avellana) Holly (Ilex aquifolium) Midland Hawthorn (Crataegus laevigata) Osier (Salix viminalis) Purple Willow (Salix purpurea) Spindle (Euonymus europaeus) Wayfaring Tree (Viburnum lantana) Wild cherry (Prunus avium)

Native climbers

Honeysuckle (Lonicera periclymenum) Hop (Humulus lupulus) Ivy (Hedera helix) Traveller's-joy (Clematis vitalba)

Plants that are good sources of nectar

Aubretia (Aubretia) Buddleia (Buddleja spp) Coneflower (Echinacea purpurea) Evening primrose (*Oenothera biennis*) Flowering currant (Ribes sanguineum) French marigold (*Tagetes spp*) Golden rod (Solidago candensis) Grape hyacinth (Muscari botryoides) Greater stitchwort (Stellaria holostea) Heather (Calluna vulgaris) Honeysuckle (Lonicera spp.) Ice plant (Sedum spectabile) Lady's bedstraw (Galium verum) Lavender (*Lavendula* spp) Lungwort (Pulmonaria spp) Mallow (Lavatera spp) Meadow saffron (Colchicum autumnale) Michaelmas daisies (Aster novi-belgii) Night scented stock (Matthiola longipetala) Perennial sunflower (Helianthus spp) Primrose (Primula vulgaris) Purple toadflax (Linaria purpurea) Red valerian (*Centranthus rubra*) Rock cress (Arabis caucasica) Sea holly (Eryngium maritimum) Sweet violet (Viola odorata) Tobacco plant (*Nicotiana spp*) Verbena (Verbena bonariensis) Wallflower (Erysimum cheiri) White campion (Silene latifolia)

Winter aconite (Eranthis hyemalis) Wood anemone (Anemone nemorosa) Yellow alyssum (Alyssum saxitile)

Bulbs

English bluebell (Hyacinthoides non-scripta) Crocus (Crocus spp.) Snowdrop (Galanthus nivalis) Wild daffodil (Narcissus pseudonarcissus) Ramsons (Allium ursinum) Star of Bethlehem (Ornithogalum umbellatum) Lily of the Valley (Convallaria majalis) Solomon's Seal (Polygonatum multiflorum) Winter Aconites (Eranthis hyemalis)

Herbs – good for attracting insects in the garden, such as day-flying moths and hoverflies.

Angelica (Angelica spp) Borage (Borago officinalis) Catmint (Nepeta spp) Chives (Allium shoenoprasam) Fennel (Foeniculum vulgare) Hyssop (Hyssopus officinalis) Mint (Mentha spp) Rosemary (Rosmarimus officinalis) Thyme (Thymus spp) Wild marjoram (Origanum vulgare)

Additional species suitable for biodiverse green roofs

Kidney vetch (Anthyllis vulneraria) Viper's bugloss (Echium vulgare) Red clover (Trifolium pretense) Bird's-foot trefoil (Lotus corniculatus) Ox-eye daisy (Leucanthemum vulgare) Yarrow (Achillea millefolium) Bladder campion (Silene vulgaris) Sea campion (Silene uniflora) Wild pansy (Viola tricolor) Common daisy (Bellis perennis) Lady's bedstraw (Galium verum) Hawkbits (Leontodon spp.) Biting stonecrop (Sedum acre)

Aquatic plants

<u>Pond Edge</u>

Marsh Marigold (Caltha palustris) Water forget me not (Myosotis palustris) Water Plantain (Alisma aquatic-plantago) Brooklime (Veronica beccabunga) Yellow Flag Iris (Iris pseudacorus) Purple Loosestrife (Lythrum salicaria) Water mint (Mentha aquatica) Lesser Spearwort (Ranunculus flammula) Slender Tufted Sedge (Carex acuta) Water Mint (Mentha aquatica)

Wet areas

Ragged Robin (Lychnis flos-cucli) Sneezewort (Achillea ptarmica) Meadowsweet(Filipendula ulmaria) Skullcap (Scutellaria galericulata) Marsh Woundwort(Stachys palustris) Water Avens (Geum rivale)

<u>Open Water</u>

Flowering Rush (Butomus umbellatus) Greater spearwort (Ranunculus lingua) White Water Lily (Nymphaea alba) Yellow Water Lily (Nuphar lutea) Fringed Water Lily (Nymphoides peltata)

Curriculum Vitae: Giles Sutton BSc, MSc, CEnv, **MCIEEM**

PROFESSIONAL AFFILIATIONS, CERTIFICATES AND LICENCES

- **Chartered Environmentalist**
- Full member of the Chartered Institute of Ecology and Environmental Management
- Holder of Natural England licence for surveying great crested newts (science and education)
- Holder of a Natural England bat licence conservation (voluntary bat roost visitor) and for science and education
- -Have held Natural England badger and development licences
- Hold a LANTRA Chainsaw and climbing certificate

KEY SKILLS AND EXPERIENCE

Ecological surveys

- Bat
- Badger including territorial bait-marking studies
- Farm Environmental Plan for Higher Level Stewardship Great crested newt

Wildlife management and ecological mitigation

- Reptile and amphibian translocations
- Badger sett closures/ exclusions
- Writing a chapter within the Highways Agency 'Design Manual for Roads and Bridges' and a document for CIRIA on rabbits and rabbit control
- Deer survey and population modelling for Gloucestershire Wildlife Trust

Land management

- Woodland management plans advising on, writing and implementing
- -Ecological / landscape management plans
- Higher Level Stewardship instigating, surveying, applying for and implementing
- Practical experience of arboriculture, horticulture and woodland management (I have worked on a number of farms and as a landscape gardener / woodsman)

Planning

- Expert in environmental planning policy and legislation -
- Expert witness for developers at public inquiry
- Negotiating with planners, developers and statutory agencies
- Advising developers and planners on the ecological impacts of, and opportunities for enhancements within new development
- Code for sustainable homes/ BREEAM reports

Policy

- Author of the London Borough of Enfield's Biodiversity Action Plan
- Writing, and advising on, planning policy (Reading and Enfield)
- Writing the London Borough of Enfield's criteria for designating Local Wildlife Sites

Giles Sutton CV - Page 1 of 3

- Otter
 - Phase 1 habitat
 - Reptile

Water vole

Geographical Information Systems

- Expert in GIS, particularly MapInfo and MapBasic
- Run GIS training courses for groups and individuals
- Undertake GIS consultancy work
- Programming and developing GIS tools, including BosqMap Forms, and BosqMap Phase 1 Habitat Wizard see www.bosqmap.co.uk

Other

- I have recently set up Reading Outdoor Classrooms, which provides free hosted school trips to wildlife sites
- I am working with Reading and Bristol university on a project to assess the value of urban areas for insect pollinators

CAREER SUMMARY

Director - GS Ecology Limited (www.gsecology.co.uk) - 2008 to Present



GS Ecology Limited is an independent ecological consultancy with clients in the public and private sector.

Private sector contracts include works for house builders and developers in relation to protected species surveys, licensing and mitigation, and sub-contracting to other consultancies.

Public sector clients include the London Borough of Enfield where I have written and implemented the Borough's Biodiversity Action Plan, successfully applied for a Higher Level Stewardship grant, undertaken a review of the Borough's Local Wildlife Sites for the Local Development Framework and written woodland management plans. GS Ecology provides on-going advice to Enfield's planning department.

GS Ecology Ltd is fully insured for public, product and professional liability.



Director - BosqMap (www.bosqmap.co.uk) -2009 to Present

BosqMap Ltd sells MapInfo and GIS tools for data collection and analysis and a tool for Extended Phase 1 habitat surveys. Clients include Thames Valley Environmental Records Centre, housing trusts, environmental consultancies, mineral companies and local authorities. In this capacity I develop mapping software, and provide GIS training and consultancy.

Ecologist - Reading Borough Council - 2008 to Present

As Reading Borough Council's ecologist I provide ecological advice to the planning and parks departments, represent the council at the Berkshire Nature Conservation Forum, advise on planning policy and liaise with elected officials, residents, friends groups, Natural England, The Environment Agency, the police, voluntary and conservation groups. I have successfully applied and implemented a Higher Level Stewardship agreement for Readings Parks.

Senior Ecologist, Marishal Thompson Group - 2005 to 2008

Marishal Thompson Group is a national arboricultural and environmental consultancy. My duties included management of staff and contractors nationwide undertaking habitat and protected species surveys, ecological clerk of works, protected species licence applications etc, and presenting evidence at Public Inquiry as an expert witness

Ecologist - Cresswell Associates (Environmental Consultants) Ltd 2003 to 2005

My duties included: Report writing, data analysis, protected species surveying, ecological mitigation, plant and animal translocations, ecological clerk of works duties. Key projects I was involved in include:

- Writing a chapter within the Highways Agency 'Design Manual for Roads and Bridges' and a document for CIRIA on rabbits and rabbit control
- Environmental Statement for a 200 mile gas pipeline (with responsibility for data management, surveying, mapping and analysis for Phase 1 and Phase 2 ecological surveys)
- GIS analysis of lesser horseshoe bat radio tracking in relation to habitat use for the National Trust's 'Bats in the landscape' project.

Giles Sutton CV - Page 2 of 3

EDUCATION AND QUALIFICATIONS

Imperial College London (2001 - 2002) - MSc - Environmental Technology (Ecological Management)

Thesis: Woodland management by foxhunts and the likely implications of a foxhunting ban on woodland ecology - research undertaken for the Game Conservancy Trust

The University of Newcastle Upon Tyne (1993 – 1996) - *BSc* - *Agriculture and Environmental Science* – 2.1 Dissertation: Dietary competition between the North American Mink and the European Otter

REFERENCES

Available on request

Giles Sutton CV - Page 3 of 3

Appendix 8 – 'Facts about swift bricks' Leaflet – RSBP



Accommodation for Swifts built in to buildings is to be preferred to accommodation retrofitted on the outside. Planning departments are now conditioning new developments and renovations to provide space for building dependent species in the interests of biodiversity: bats, House Sparrows, Starlings and Swifts. This document is intended to summarise the available options for Swifts.

Accommodation within the eaves, on top of the wall, is one good idea, making sure that nesting places are completely isolated from the roof space, so that roof insulation cannot deny space to the birds, nor can the birds invade the roof space.

Although custom solutions are often used, the Schwegler Delta box (No 604) is one of the few products on the market for this situation

The rest of this document deals with Swift bricks and Swift boxes suitable for embedding in a wall below the eaves; these are now available from a range of suppliers.



Schwegler No 604

All encroach on the cavity to some extent, or even span the cavity. If they are placed high up under eaves, or under a fascia board on a gable end, this should not be a problem. Lower locations, though less desirable, may need a cavity tray.

It is easier for builders in the UK if the Swift brick can fit within a multiple of standard UK brick sizes. For example, the height of 2 bricks, including the mortar between them, is 14cm, and 3 bricks is 21.5cm. There is a table of dimensions at the end.

All of these boxes can accommodate smaller species such as House Sparrows and tits, and those with larger entrances may also accommodate Starlings.

We do not think that access for maintenance is of critical importance, as Swifts make a minimal nest, and natural nesting places never get maintained or cleared out. However, should one wish to clear out old House Sparrow, Starling or tit nests, then a removable front may be an advantage.

Most of these Swift bricks will not overheat in a south-facing wall, but the ones with thinner front walls should not be placed in the sun, but sheltered under eaves would be acceptable.

Many of these Swift bricks are well proven and Swifts have bred successfully in them. So the choice may be one of architectural aesthetics and price.

Birdbrickhouses







This is a box designed so that the removable front can be matched with any existing brickwork. The body of the box and the brick front enclosure is made of 3mm thick injection moulded plastic. The floor of the box is roughened and it is supplied with a concave nesting platform. It can be retrofitted into a wall without cutting bricks.

URL: http://www.birdbrickhouses.co.uk/page53.html Review: http://actionforswifts.blogspot.co.uk/2013/03/product-review-bird-brick-houses-swift.html

Hanson clay air brick liner



The air brick liner is not marketed by Hanson as a Swift brick, but the model 401 makes an attractive low cost solution made by cutting an entrance and blocking off the ends with slate or fibre-cement board, such as soffit board. Many building supply merchants hold them in stock. It is exactly the length of 1 brick and the height of 2 bricks. It is a proven solution.

URLs: http://www.heidelbergcement.com/uk/en/hanson/products/bricks/brick_specials/cavity_wall_bridging_ducts.htm http://actionforswifts.blogspot.co.uk/2012/08/the-air-brick-liner-swift-brick.html

CJ Wildlife Woodstone





Built in Visible Swift box Number 90068



Built in Visible Swift box Number 90059



Number 90060

These nest boxes are made of WoodStone®, a robust, durable mix of cement and wood fibres which offers protection from predators and a more consistent internal temperature.

URL: http://www.birdfood.co.uk/ctrl/node:136;page:66;/woodstone

Ecosurv



The Ecosurv Swift brick can be customised to match any brickwork. The materials include slate.

URL: http://ecosurv.co.uk/swift box.html

lbstock





An attractive brick, designed to encroach minimally on the cavity. It is thus one of the narrowest boxes on the market. The materials are frost resistant.

URL: http://www.ibstock.com/sustainability-ecozone.asp

Schwegler



Schwegler 17



Schwealer 16 S



Schwegler 25





Schwegler lightweight Type 1A





Schwegler Cavity Panel

Perhaps the oldest established company in the Swift brick business. Schwegler boxes have been very successful for Swifts. In addition to these are the Schwegler 16 and Schwegler 1MF double box, which, with their entrances in the floor, would need to protrude outside the wall.

URL: http://www.schwegler-natur.de/index.php?main=home&sub=katalog-downloaden

Table of dimensions and indicative prices

	Length x Wid	ith x Height cm	Entrance	Access for	Price
10 10	Internal	External	mm	maintenance	(approx)
Birdbrickhouses	44 x 15 x 14	45 x 18 x 22.5	65 x 30	Yes	£75
CJ Wildlife Woodstone 90068	27 x 11 x 13	33 x 16 x 19	65 x 35	Yes	£25
CJ Wildlife Woodstone 90059	25 x 13 x 13	31 x 17 x 17	60 x 35	No	£25
CJ Wildlife Woodstone 90060	25 x 15 x 13	33 x 17 x 17	custom	No	£25
Ecosurv	28.5 x 16.5 x 10	32.5 x 20.5 x 14.5	70 x 35	No	£65
Ibstock	30 x 10 x 10	32.5 x 14 x 14	65 x 30	No	£35
Schwegler lightweight Swift box type 1	32 x 13 x 11.5	34 x 15 x 135	70 x 30	No	£35
Schwegler 1MF (double box)	36 x 16 x 17	43 x 22.5 x 46	60 x 45	Yes	£90
Schwegler 16 nest box	36 x 16 x 17	43 x 22 x 24	60 x 45	Yes	£55
Schwegler 16S nest box	36 x 16 x 17	43 x 22 x 24	70 x 30	Yes	£55
Schwegler 17 nest box	30 x 14 x 14	34 x 15 x 15	70 x 30	Yes	£55
Schwegler brick box type 25	21.5 x 17 x 13	26.5 x 22 x 18	55 x 33	Yes	£35
Schwegler brick box type 25A	27 x 10 x 13	32 x 15 x 18	55 x 33	Yes	£35
Schwegler cavity panel	Custom box	Custom box	70 x 30	Yes	£15 + DIY
Hanson clay air brick liner	20 x 17.5 x 10	21 x 21.5 x 14	Custom	No	£5 + DIY

Prices may vary between suppliers and through time. Any product with a custom component may incur additional time and cost.



This document has been prepared by Action for Swifts. Should any supplier wish to have their products added or wish modifications to the text, please get in touch. August 2013. URL: actionforswifts.blogspot.com mailto:actionforswifts@gmail.com



Swift Conservation is a "not for profit" service providing free advice to individuals via our website, by e-mail and on site. In addition we provide a commercial service to building professionals.



The RSPB is the country's largest nature conservation charity, inspiring everyone to give nature a home.

www.rspb.org.uk

The RSPB is a registered charity in England & Wales 207076, in Scotland SC037654

Appendix 9 – Biodiversity impact assessment calculation using the DEFRA Metrics referred to in the BREEAM document "GN36 - BREEAM, CEEQUAL and HQM Ecology Calculation Methodology – Route 2"

A biodiversity impact assessment calculation for the scheme was undertaken. The calculation used the DEFRA Metric 2 calculator (The Biodiversity Metric 2.0 - Calculation Tool - Beta Test, XLSM, 4.9 MB, downloaded from http://publications.naturalengland.org.uk/publication/5850908674228224).

Oxford Biomedica	Return to
Headline Results	results menu

	Habitat units	0.16
On-site baseline	Hedgerow units	0.00
	River units	0.00
On-site post-intervention	Habitat units	0.19
(Including habitat retention, creation, enhancement &	Hedgerow units	0.00
succession)	River units	0.00
	Habitat units	0.00
Off-site baseline	Hedgerow units	0.00
	River units	0.00
Off-site post-intervention	Habitat units	0.00
Off-site post-intervention	Habitat units Hedgerow units	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	Habitat units Hedgerow units River units	0.00 0.00 0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	Habitat units Hedgerow units River units	0.00 0.00 0.00
Off-site post-intervention (Including habitat retention, creation, enhancement &	Habitat units Hedgerow units River units Habitat units	0.00 0.00 0.00 0.03
Off-site post-intervention (Including habitat retention, creation, enhancement & Total net unit change	Habitat units Hedgerow units River units Habitat units Hedgerow units	0.00 0.00 0.00 0.03 0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & Total net unit change (including all on-site & off-site habitat retention/creation)	Habitat units Hedgerow units River units Habitat units Hedgerow units River units	0.00 0.00 0.00 0.03 0.00 0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & Total net unit change (including all on-site & off-site habitat retention/creation)	Habitat units Hedgerow units River units Habitat units Hedgerow units River units	0.00 0.00 0.00 0.03 0.00 0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & Total net unit change (including all on-site & off-site habitat retention/creation)	Habitat units Hedgerow units River units Habitat units Hedgerow units River units Habitat units	0.00 0.00 0.00 0.03 0.00 0.00 17.50%
Off-site post-intervention (Including habitat retention, creation, enhancement & Total net unit change (including all on-site & off-site habitat retention/creation) Total net % change	Habitat units Hedgerow units River units Habitat units Hedgerow units River units Habitat units Hedgerow units	0.00 0.00 0.00 0.03 0.00 0.00 17.50% 0.00%

Appendix 10 - About GS Ecology

Established in 2009, GS Ecology is an independent <u>ecological consultancy in Berkshire</u>. We carry-out surveys and ecological consultancy services for public and private sector clients including in Berkshire, Oxfordshire and Hampshire, London and the south of England. We can advise you on cost effective sustainable solutions for your project, whether it be a bat survey to inform a planning application, the ecology chapter of an Environmental Statement or a Woodland Management Plan.

Our work is undertaken by experienced and qualified ecologists, who are members of the <u>Chartered</u> <u>Institute of Ecology and Environmental Managers</u>. Our services include:

- Ecology surveying and reporting to inform planning applications, e.g.
 - <u>Preliminary Ecological Appraisal</u>
 - <u>Extended Phase 1 Habitat Survey</u>
 - Protected species surveys, e.g. badgers, dormouse, great crested newts
 - Bat surveys in Surrey, Berkshire, Hampshire, London and Southern England
 - BREEAM ecology assessments to demonstrate the sustainability of a new building
 - <u>Protected species licensing</u> such as bat and great crested newt licences for development sites after planning permission has been obtained
 - Providing advice to land managers and writing ecological management plans, such as woodland management plans and farm environmental plans for <u>England woodland Grant</u> <u>Scheme</u> and Environmental Stewardship applications
- <u>Providing ecology advice to Local Authorities</u> and Local Planning Authorities