The Ecology Consultancy

Holy Trinity Swiss Cottage, London / BREEAM New Construction (2014) Assessment / **Report for Tandem Projects**

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Holy Trinity Swiss Cottage, London

BREEAM New Construction (2014) Assessment

Report for Tandem Projects

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Contents

Executive Summary

The Ecology Consultancy was commissioned by Tandem Projects to prepare a report providing the ecological components of a BREEAM New Construction (2014) Assessment for the proposed redevelopment at Holy Trinity Swiss Cottage, London Borough of Camden. The results of a walkover survey undertaken on 21 September 2016 have been used to provide baseline information about the site. The main findings of the survey and assessments are as follows:

- Subject to confirmation by the project's Assessor, a total of eight credits could be achieved for BREEAM New Construction Land-use and Ecology (LU&E) 02, 03, 04, and 05.
- The site comprised buildings and small pockets of introduced shrub. Due to the site's urban location and limited vegetation, overall, the site was considered to be of low ecological value. Therefore, two credits can be awarded for LE02.
- The recommendations outlined in Section 2 of the report will be incorporated into the final landscape plan, as discussed with Joanna Sutherland (Associate Director, Haworth Tompkins) Therefore, the development will result in a no negative change in the ecological value of the site. As such, two credits can be achieved for LE03. Two credit can be awarded for LE04 as the new habitats are a significant percentage of the total site.
- Habitats on site had negligible potential to support roosting bats, low potential to support breeding birds and was considered unlikely to support any other protected species.
- To achieve the two credits for LE05, mitigation measures for breeding birds must be undertaken to ensure compliance with relevant EU and UK legislation. The management plan provided in Appendix 5 must be adopted and associated requirements met in order to achieve two credits for LE05.
- The developer will commit to the mandatory and additional requirements set out in this report under criteria LE05 and will adopt and implement the five year management plan proposed. Therefore the second credit can be awarded for LE05.

1 Introduction

BACKGROUND

1.1 The Ecology Consultancy was commissioned by Tandem Projects to carry out a BREEAM New Construction (2014) Assessment for the proposed development at Holy Trinity Swiss Cottage, London Borough of Camden.

1.2 The results of a walkover survey undertaken on 21 September 2016 have been used to provide baseline information for the Land Use and Ecology section of the BREEAM New Construction (2014) Assessment.

1.3 The following report includes:

- A description of current baseline ecological conditions at the site, features of ecological value and potential for protected species;
- An assessment of the site and development proposals with respect to the following components of the BREEAM New Construction (2014) Assessment methodology (BRE, 2014):
  - LE02 - Ecological Value of Site and Protection of Ecological Features (2 available credits);
  - LE03 – Minimising Impact on Existing Site Ecology (2 available credits);
  - LE04 - Enhancing Site Ecology (2 available credits); and,
  - LE05 - Long-term Impact on Biodiversity (2 available credits).
- Recommendations for further survey highlighting any possible constraints to development.

1.4 This report has been produced in support of a BREEAM New Construction (2014) Assessment and is not intended for use for any other purpose.

1.5 The site selection element of LE01 is best carried out by the architect and requires confirmation by appropriate surveys for chemical related contamination. This credit is not addressed in the course of this survey. The presence of invasive plant species (Japanese knotweed *Fallopia japonica* and giant hogweed *Heracleum mantegazzianum*) does however constitute contamination and if present, is addressed as part of this survey.

SITE LOCATION AND CONTEXT

1.6 The site is in an urbanised setting, situated along the A41 Finchley Road and adjacent to commercial buildings on the north and south elevations. Finchley Road overground station is situated approximately 20 metres (m) to the west. Hampstead Heath and Primrose Hill are located approximately 1 kilometre (km) to the north east and south east respectively, of the proposed development site. The area of the site being assessed totals 751m^2 in size and comprises those areas where new buildings are proposed and excludes areas of retained hardstanding. The Ordnance Survey National Grid reference for the centre of the site is TQ 26359 84670.

1.7 The site is not subject to any statutory or non-statutory nature conservation designations. The nearest non statutory designated site is West Hampstead Railsides, Medley Orchard and Westbere Copse SBINC approximately 200 metres (m) north west of the proposed development site.

DEVELOPMENT PROPOSALS

1.8 The development proposal involves demolition of the existing building on site to allow construction of a multi-use church and community centre. Soft landscaping to be incorporated into the new development includes a biodiverse roof and terrace level planting.

2 Methodology

WALK-OVER SURVEY

2.1 A walk-over survey of the proposed development site was carried out on 21 September 2016. Any features of ecological interest were described and mapped based on the standard Phase 1 habitat survey methodology (JNCC 2010) as adapted by the Greater London Authority (GLA, 2002). The DAFOR scale was used to describe the relative abundance of species within the site. This approach is designed to identify broad habitat types and to assist in providing an overview of the ecological interest at a site. It is generally the most widely used and professionally recognised method for initial ecological site appraisal.

2.2 A habitat map is presented in Appendix 1. Photographs of the site and enhancement examples are provided in Appendix 2, a CV of the Suitably Qualified Ecologist (SQE) is provided in Appendix 3 and the relevant legislation and policies relating to protected species and habitats are set out in Appendix 4.

PROTECTED SPECIES ASSESSMENT

2.3 The potential of the site to support protected species (i.e. bats and breeding birds) was assessed from field observations carried out at the same time as the habitat survey. This included an inspection of structures for features potentially suitable for roosting bats and nesting birds. Inspections of external features were made using close focussing binoculars.

2.4 The likelihood of the occurrence of protected species is ranked as follows and relies on the findings of the current survey.

- Negligible - while presence cannot be absolutely discounted, the site includes very limited or poor quality habitat for a particular species or species group. No local returns from a data search, surrounding habitat considered unlikely to support wider populations of a species/species group. The site may also be outside or peripheral to known national range for a species.
- Low - on-site habitat of poor to moderate quality for a given species/species group. Few or no returns from data search, but presence cannot be discounted on the basis of national distribution, nature of surrounding habitats, habitat fragmentation, recent on-site disturbance etc.

- Medium - on-site habitat of moderate quality, providing all of the known key requirements of given species/species group. Local returns from the data search, within national distribution, suitable surrounding habitat. Factors limiting the likelihood of occurrence may include small habitat area, habitat severance, and disturbance.
- High - on-site habitat of high quality for given a species/species group. Local records provided by desk-top study. The site is within/peripheral to a national or regional stronghold. Good quality surrounding habitat and good connectivity.
- Present - presence confirmed from the current survey or by recent, confirmed records.

2.5 Incidental records of birds and other fauna noted during the course of the habitat survey were also compiled. Scientific names are given after the first mention of a species, thereafter, common names only are used.

2.6 The purpose of this assessment is to identify any potential constraints associated with protected species pre-development. The potential for invasive plant species is also considered within this assessment

BREEAM NEW CONSTRUCTION (2014) ASSESSMENT

2.7 The BREEAM New Construction (2014) Assessment for the Land Use and Ecology Section LE 02 to 05 follows the methodology provided in the BREEAM New Construction (2014) Technical Guidance (BRE, 2014).

2.8 Wendy McFarlane MA, MSc, MCIEEM carried out the original site walkover for the ecology survey, and conducted the assessment and produced the report for the BREEAM. Wendy has 10 years' experience in consultancy, 13 years' experience in ecology and a full member of CIEEM, who therefore qualifies as a suitability qualified ecologist (SQE) as defined under the BREEAM guidance. Her CV is presented in Appendix 3.

2.9 The Ecologist's contact details are: Wendy McFarlane, The Ecology Consultancy, 33a Tempus Wharf, Bermondsey Wall West, London, SE16 4TQ, T: 0207 378 1914 E: wendy@ecologyconsultancy.co.uk.

2.10 The Client contact details are: Tim Keighley, Holy Trinity Swiss Cottage, Finchley Road, London, NW3 5HT, Tel: 020 7435 0083, E: timk@htsc.org

LIMITATIONS

2.11 Whilst every effort has been made to provide a comprehensive description of the site, no investigation could ensure the complete characterisation and prediction of the natural environment. The walk-over habitat survey does not constitute a full botanical survey or a Phase 2 pre-construction survey that would include accurate GIS mapping for invasive or protected plant species.

2.12 The protected species assessment provided a preliminary view of the likelihood of protected species occurring on the site, based largely on the suitability of the habitat. It should not be taken as providing a full and definitive survey of any protected species group. It is only valid at the time the survey was carried out.

2.13 A full desk study or data search from the local biological records centre (Greenspace Information for Greater London) for statutory and non-statutory sites and protected species within 1km of the site was not commissioned. However, on-line mapping resources (MAGIC, 2015; iGiGL, 2015), have been used to identify any statutory and publicly accessible non-statutory designated sites close to the development area.

2.14 Overall, due to the urban and developed nature of the site, the survey was considered sufficient to meet the aims of the report and provide a robust basis for the assessment of credits within the BREEAM assessment.

3 Results

OVERVIEW

3.1 The proposed development site comprised a one-storey building with associated introduced shrubs. A hard standing pavement ran parallel to the west elevation.

Building

3.2 The buildings consisted of a one storey brick build with a flat roof, extended skylight and glass entrance with a wood fascia board.

Introduced shrub

3.3 Two small areas of introduced shrub were present comprising species such as rose and Spanish dagger.

PROTECTED SPECIES RISK ASSESSMENT

3.4 The potential of the site to provide habitat for protected species was assessed from field observations carried out at the same time as the habitat survey. Particular attention was given to looking for field signs of, and suitable habitat features for, bats and breeding birds. No other protected species were considered due to the absence of suitable habitats on-site and in the surrounding area.

Bats

3.5 The building was in a good structural condition, with no visible cracks in the stonework or crevices that would be suitable to support roosting bats.

3.6 The site is on a major inner-city road junction, in a highly urbanised location and subject to high levels of artificial lighting, conditions that are likely to deter bats from using the area. Therefore, the likelihood of bats using the site is considered negligible.

Breeding birds

3.7 The building was structurally well-sealed with no visible access points or suitable nesting places. The absence of vertical structures, such as chimney stacks, limited nesting and foraging opportunities for birds including black redstart *Phoenicurus ochruros*. However, the vegetation had potential to support common breeding birds. Therefore, the site has been assessed as having low potential to support breeding birds.

Other protected species

3.8 The site had negligible potential to support other protected species.

4 BREEAM New Construction (2014) Assessment

4.1 The BREEAM New Construction (2014) Land Use and Ecology (LE02-05) assessment methodology provides a number of credits in respect of the ecological aspects of a development, the aim being to encourage, wherever possible, development on land that already has a limited value to wildlife, and discourage the development of ecologically valuable sites. In addition, projects are encouraged to minimise/mitigate against potential ecological impacts, compensate for any habitat loss and, where possible, enhance the site for biodiversity.

LE02 – ECOLOGICAL VALUE OF SITE AND PROTECTION OF ECOLOGICAL FEATURES

4.2 Up to two credits are available for the ecological value of the site and the protection of ecological features. The aim of these credits are to encourage development on land that already had limited value to wildlife and to protect existing ecological features from substantial damage during site preparation and completion of construction works. The credits are awarded as follows:

- Where evidence is provided to demonstrate that the construction zone is defined as 'land of low ecological value'. This can be demonstrated either through using the BREEAM checklist for defining land of low ecological value or by a Suitably Qualified Ecologist (SQE) identifying the land as being of 'low ecological value' within an ecological assessment report, based on a site survey (one credit awarded).
- Where evidence is provided to demonstrate that all existing features of ecological value within and surrounding the construction zone and site boundary are adequately protected from damage during clearance, site preparation and construction activities in line with BS42020:2013[1] and the SQE recommendations (one credit awarded).

4.3 Due to the urban location and limited habitats the site was, therefore, considered to be of low ecological value and unlikely to support rare or diverse assemblages of species

[1] BS 42020.2013: Biodiversity-Code of Practice for Planning and Development BSI2013

or large species populations. Therefore, **two** credits for LE02 - Ecological Value of Land and Protection of Ecological Features can be achieved.

LE03 – MINIMISING IMPACT ON EXISTING ECOLOGY

4.4 Up to two credits are available for mitigating ecological impact. The aim of this credit is to minimise the impact of a building development on existing site ecology. The credits are awarded as follows:

- Where evidence is provided to demonstrate the change in ecological value of the site is less than zero but equal to or greater than minus nine plant species i.e. a minimal change (one credit awarded).
- Where evidence is provided to demonstrate the change in ecological value of the site, as a result of development is equal to, or greater than zero plant species, i.e. no negative change (two credits awarded).

4.5 In this assessment, the change in ecological value is provided as an estimated ecological value (species/m^2) of the site based on the survey carried out by a SQE. The species/m^2 score is based upon the number of dominant/abundant/frequent species of known wildlife value. The total area of the application site is 751 m^2.

4.6 By using the formula given in the BREEAM New Construction (2014) guidance we arrive at a figure for species per m^2 before development, shown in Table 1.

Table 1: Habitats present at the site before development

Plot Type	BEFORE DEVELOPMENT		
	Area [m^2]	Species richness	Area x richness
Buildings and hardstanding	737	0	0
Introduced shrub	14	2	28
TOTAL[2]	751	/	28
Sum of area x species richness / area [3]	0.037		

4.7 The total of the species scores before development divided by the site area is 0.037.

[2] The total site area (751m^2) comprised the footprint of the proposed new buildings only.
[3] For each plot type that species score was multiplied by the area it covered. These scores were added then this total divided by the total site area, to give the species per hectare score, before and after the redevelopment.

4.8 Table 2 sets out the habitat areas and species values present at the site after redevelopment based on information provided by Haworth Tompkins.

Table 2: Habitats present at the site after redevelopment

Plot Type	AFTER DEVELOPMENT		
	Area [m²]	Species richness	Area x richness
Buildings	408	0	0
Biodiverse roof	315	23	7,245
Planters and trellis	28	10	280
TOTAL[4]	751	/	7,525
Sum of area x species richness / area	10.02		

4.9 The total of the species scores for each habitat after redevelopment divided by the site area is 10.02.

4.10 The overall species score change is therefore: 10.02 (species after redevelopment) – 0.06(species before redevelopment) = a change in species of +9.96.

4.11 Based on the development resulting in no negative change in the ecological value of the site, and on the assumption that the recommendations set out in this report are incorporated into the landscaping, **two** credits can be achieved under LE03 - Mitigating Ecological Impact for the proposed redevelopment at the site.

LE04 – ENHANCING SITE ECOLOGY

4.12 Up to two credits are available for enhancing site ecology. The aim of LE04 is to enhance the ecological value of the site above the existing baseline conditions. The credits are awarded as follows:

- One credit where evidence is provided to demonstrate that the design team (or client) has:
  - i) Appointed an SQE to advise on enhancing the ecology of the site at an early stage;
  - ii) An Ecology Report provided by the SQE with appropriate recommendations for the enhancement of the site's ecology, and that this report is based on a site visit/survey by the SQE; and

[4] The total site area (751m²) comprised the footprint of the proposed new buildings only. The areas of green roof and trellis on the building have been subtracted from the building area displayed in table 2 for the purpose of the calculation.

iii) Implemented, or will implement, the SQE's recommendations for general enhancement and protection of site ecology in the final design and build.

- Two credits where criteria i), ii) and iii) above are achieved and evidence is provided to demonstrate an increase in the ecological value of the site, with an increase of six plant species or greater. Where the SQE identifies that an increase in ecological value of the site can be achieved without meeting the target of an increase of six plant species, the credit can be awarded if there is clear justification which addresses the three following points:

  i) The enhancement of the ecological value of the site;

  ii) The best possible chance of establishment and long term survival of the species within the habitat; and

  iii) Links to and support of the local ecosystem beyond the site boundary.

4.13 This report confirms that the developer has consulted with an SQE.

4.14 The below recommendation will ensure legislation has been adhered to on site.

Breeding birds

4.15 The site had low potential to support breeding birds which are protected under the Wildlife and Countryside Act 1981 (as amended) (see Appendix 4 for full details). It is recommended that clearance of the introduced shrub should be undertaken outside of the nesting bird season which is typically March to August, inclusive (Newton et al., 2011).

4.16 Where this is not possible, a search for nesting birds must be undertaken by an experienced ecologist up to 48 hours prior to works taking place that would affect these nesting opportunities. If any nests are found, the nests are to be protected by establishing an exclusion zone around the nest. Works may then proceed up to, but not within, this exclusion zone until such time as an ecologist confirms the young have fledged the nest. If nesting birds are found at any time during clearance works, work must stop immediately and an ecologist must be called for further advice.

Ecological Enhancements

4.17 The enhancement measures below will ensure that there is an overall enhancement in the ecological value of the site.

Biosolar green roof

4.18 Proposals include provision of a biodiverse green roof with solar panel on the building. To demonstrate the highest feasible and viable sustainability standards in line with the London Plan policy 5.11 (pg129), it is recommended that a low-nutrient biodiverse roof is used. Such roofs are preferable to standard sedum species dominated roofs that deliver little in the way of biodiversity value and ecosystem services as they are typically less species-rich and have a shallower substrate depth. The biodverse roof should include additional habitat features such as temporary pools, deadwood and varying substrate depths (Appendix 2, Photograph 2 and 3). Habitat features can be designed specifically to attract target species, such as the black redstart *Phoenicurus ochruros*, a London Biodiversity Action Plan (BAP) species.

4.19 Biodiverse green roofs are established with a minimum substrate depth of 80mm and plug planted with herbs/wildflower species before seeding with a wildflower mix such as the Emorsgate ER1F wildflowers for green roofs seed mixture.

4.20 In addition, it is important that the specification is a detailed one that combines how the solar panel supports interface with the green roof. Also there are some minor details of how to draw water beneath the panels from the front. All standard practice in Germany and Switzerland are available and achievable in UK. Furthermore there will be a need to provide enough space between each row of panels to ensure that tall vegetation does not negatively impact on solar panels.

4.21 It is recommended that advice is sought from a professional green roof consultancy such as The Green Infrastructure Consultancy (http://greeninfrastructureconsultancy.com/) in order to design the specification of the green roof in-line with the environmental goals of the development. The Green Roof Consultancy designed one of the largest green PV roof (biosolarroof) in UK at the Olympics (see photograph 4, Appendix 2). In addition, further details can be found at www.biosolarroof.com a pan-European project that Dusty Gedge has been involved in.

4.22 The proposals include provision of 315m^2 area of biodiverse roof. To demonstrate the highest feasible and viable sustainability standards in line with the London Plan Policy

5.11[5], it is recommended that a low-nutrient biodiverse roof is used on all roofs. Such roofs are preferable to standard sedum species-dominated roofs that deliver little in the way of biodiversity value and ecosystem services as they are typically less species-rich and have a shallower substrate depth. The green roof should include additional habitat features such as varied substrate depths (topography) and types, deadwood and/or rubble piles and temporary pools as these will enhance the wildlife value of the roof (see Appendix 1, Photograph 2 & 3 for examples). Habitat features can be designed specifically to attract Camden Built Environment BAP target species and London BAP species black redstart.

4.23 Biodiverse roofs are established with a minimum substrate depth of 80mm and seeded with a wildflower mix such as the Emorsgate ER1F[6] wildflowers for green roofs seed mixture. Seed mixes that contain no grasses should be used as grasses can become dominant and reduce overall plant diversity on a green roof. The ER1F seed mix would provide a pollen and nectar source for invertebrates. Biodverse roofs can also be plug-planted with herbs/wildflower species before seeding if an instant visual effect is required.

4.24 The calculation for Eco 4 – Change of Ecological Value of the Site is based on using the Emorsgate ER1F seed mix which comprises of 23 native species.

Shrub planting for wildlife

4.25 Areas of shrubs will be planted on the terraces. Shrub planting should comprise a range of native species or species a recognised wildlife value such as rosemary *Rosmarinus officinalis*, thyme *Thymus* sp., Russian sage *Perovskia atriplicifolia,* and/or English lavender *Lavandula angustifolia*. The site will contain at least ten (10) native, locally sourced plant species. Native species of local provenance and/or species with known value to wildlife should be used as these are better adapted to local climate and conditions, often requiring less maintenance and better able to provide the resources needed by native wildlife.

Bird boxes

4.26 In line with Camden's BAP targets, the new development should include nesting opportunities for birds. Two bird boxes, comprising one (1) 2H open-fronted 120mm

[5] https://www.london.gov.uk/priorities/planning/publications/the-london-plan Chapter 5
[6] http://wildseed.co.uk/mixtures/view/57

opening nest box for black redstart, and one woodcrete Schwegler 1B hole-front bird boxes with a 32mm opening suitable for house sparrow and other hole-nesting bird species (Schwegler, 2010), should be integrated into the proposed development.

4.27 The boxes should be installed in a sheltered recess at roof level, out of direct sunlight, near to the green roofs. This style of box will require cleaning out over winter months to reduce parasites and prepare for the following season, therefore it should be installed where access for maintenance is possible i.e. where it can easily be accessed by ladder.

Invertebrate habitat provision

4.28 The provision 'insect hotels' and/or dead wood should be included on the biodiverse roof to provide shelter and nesting places for invertebrates. Ideally bespoke habitat features should be used as these can be attractively designed using recycled materials of local provenance that are appropriate to the habitats available on site (see Appendix 2, Photograph 4 for an example). A recommended supplier of bespoke wildlife habitat panels can be found here http://greenroofshelters.co.uk/habitat-panels/. These create an overwintering habitat for a variety of invertebrate species that can enhance existing populations and provide a food source for other species such as birds and bats.

Sustainable horticulture

4.29 It is recommended that sustainable horticultural practices are employed to minimise off-site ecological impacts. These include:

- All native plant material should be sourced from suppliers who have adopted Flora Locale's Code of Practice for collectors, growers and suppliers of native flora http://www.floralocale.org;
- The use of peat-free composts and soil conditioners to reduce the loss of important peat bogs;
- Feeding of plants using organic based fertilisers and improving the soil structure by incorporating organic material, preferably composted municipal waste;
- The use of drought tolerant plants and mulches to reduce evaporation and the amount of mains water needed for horticulture, and;
- Minimising the use of pesticides (herbicides, insecticides, and fungicides) to prevent cumulative fatal effects to animals via the food chain. Where use is unavoidable, non-residual chemicals should be applied.

4.30 Assuming that all the above recommendations can be incorporated into the new development, the proposals will result in a +10.922 increase in the ecological value of the site, therefore two credits can be awarded for LE04 - Enhancing Site Ecology.

LE05 - LONG TERM IMPACT ON BIODIVERSITY

4.31 Two credits are achievable where steps have been taken to prevent adverse impacts on the site's and surrounding area's biodiversity. To qualify for both credits the developer must commit to achieving all mandatory requirements plus an appropriate number of the additional requirements listed below.

Mandatory requirements

4.32 An SQE is appointed prior to commencement of activities on site, and has confirmed in writing that:

- (1) All the relevant UK and EU legislation relating to protection and enhancement of ecology has been complied with during the design and construction process.
- (2) An appropriate outline management plan, conforming to BS 42020:2013, covering at least the first five years after project completion is included in this document. This is to be handed over to the building owner/occupants and includes;
    - Management of any potential / protected features on site; and,
    - Management of any new, existing or enhanced habitats.

Evidence for mandatory requirements

4.33 Mandatory requirement 1: An SQE has been appointed prior to the commencement of activities on-site. Recommendations regarding mitigation for breeding birds are provided in LE04. Provided that these are followed, it can be confirmed that all relevant legislation relating to ecology will have been complied with during the design and construction phase of the development.

4.34 The site was considered unlikely to support protected species. If any unexpected discoveries of legally protected species are made on site during site clearance or other works, then all activities in the immediate vicinity should be halted and further advice sought from a suitably qualified ecologist.

4.35 Mandatory requirement 2: A management plan for the first five years after project completion is provided in Appendix 5 of this document.

Additional requirements

4.36 In order to achieve the full two credits, the additional measures listed below that are applicable to the site must be undertaken. These additional measures are:

- (1)The principal contractor nominates a Biodiversity Champion with the authority to influence site activities and ensure that detrimental impacts on biodiversity are minimised in line with the recommendations of an SQE;
- (2) The principal contractor trains the site workforce on how to protect site ecology during the project. Training should be based on the finding and recommendations for protection of ecological features highlighted within a report prepared by the SQE;
- (3) The principal contractor records actions taken to protect biodiversity and monitor their effectiveness throughout the key stages of the construction process;
- (4) The principal contractor seeks the advice of an SQE where a new ecologically valuable habitat appropriate to the local area is created. This includes a habitat that supports national, regionally or locally important biodiversity and/or which is nationally, regionally or locally important itself; and
- (5) Where flora and/or fauna habitats exist on-site, the contractor programmes site works to minimise disturbance to wildlife.

Evidence for mandatory requirements

4.37 Of the above additional requirements, it is considered that the below are applicable to the site. Therefore to be awarded two credits under LE05, three of these additional requirements must be met as follows:

- (1) A Biodiversity Champion is nominated by the principal contractor and should register their name with the local authority. They must read this report and ensure that the recommendations are installed i.e. biodiverse roof has the stated substrate depth, planting is of ecological value, bird boxes are installed;
- (4) The biodiverse green roof will provide new ecologically valuable habitat appropriate to the local area; and,
- (5) The principal contractor programmes site works to minimise disturbance to wildlife viz. breeding birds, as recommended in LE04.

4.38 Provided all of the mandatory and additional requirements are met, **two** credits can be awarded for LE05 – Long Term Impact on Biodiversity.

5 Conclusions

5.1 The ecology elements of a BREEAM New Construction (2014) Assessment have been determined for the proposed development at Holy Trinity Swiss Cottage, Camden London. The site was assessed to be of low ecological value prior to development. A number of recommendations have been made to enhance the ecological value of the site – see sections above. Providing the recommendations are implemented, then a total of eight credits could be achieved, as follows:

- LE02 - Ecological Value of Site and Protection of Ecological Features (2 of 2 available credit);
- LE03 - Mitigating Ecological Impact (2 of 2 available credits-);
- LE04 - Enhancing Site Ecology (2 of 2 available credits-), and;
- LE05 - Long-term Impact on Biodiversity (2 of 2 available credits-).

5.2 Please note that the awarding of credits achievable under the BREEAM New Construction Land-use and Ecology Sections 2, 3, 4 and 5 are subject to confirmation by the developer and verification by the Assessor.

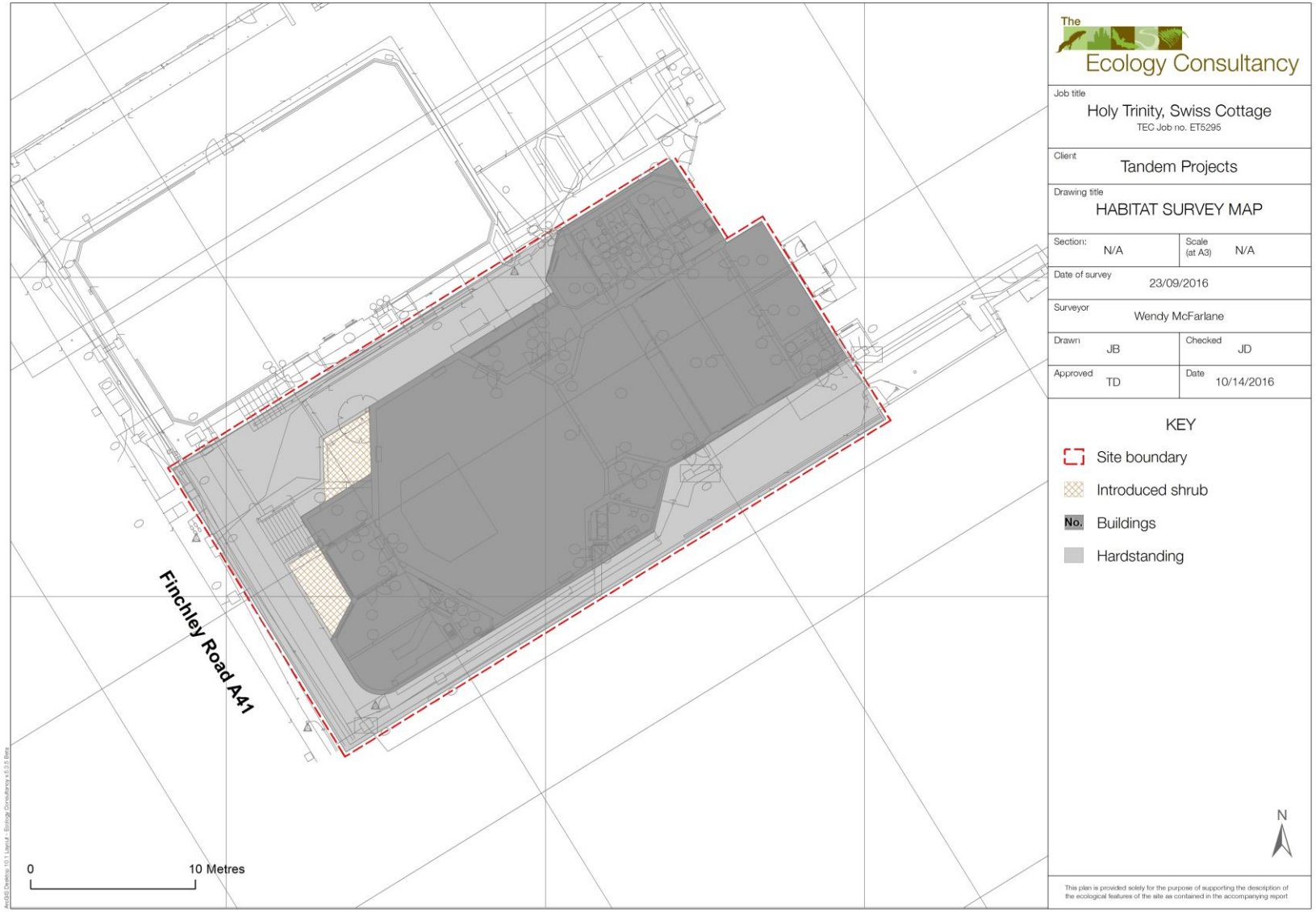
References

Building Research Establishment Ltd (2012) *BREEAM New Construction. Technical Manual*. SD 5073: Issue 3.0, BREGlobal, Watford.

JNCC - Joint Nature Conservation Committee (2010) *Handbook for Phase 1 habitat survey - A technique for Environmental Audit.* JNCC, Peterborough. [On-line]. Available from http://www.jncc.gov.uk/page-2468.

MAGIC (2015) Multi-Agency Geographic Information for the Countryside. [On-line]. Available from www.magic.gov.uk [Accessed: 16/12/2015].

Appendix 1: Habitat Map


The
Ecology Consultancy
Job title
Holy Trinity, Swiss Cottage
TEC Job no. ET5295
Client
Tandem Projects
Drawing title
HABITAT SURVEY MAP
Section: N/A
Scale (at A3) N/A
Date of survey 23/09/2016
Surveyor Wendy McFarlane
Drawn JB
Checked JD
Approved TD
Date 10/14/2016
KEY
Site boundary
Introduced shrub
No. Buildings
Hardstanding
N
This plan is provided solely for the purpose of supporting the description of the ecological features of the site as contained in the accompanying report
Finchley Road A41
0
10 Metres

Appendix 2: Photographs and Examples of Ecological Enhancements

Photograph 1
The building situationed along the A41Finchley Road

Photograph 2
Example of a flower-rich, biodiverse roof with varying substrates and dead wood and rubble habitat piles. (Photograph source: Caroline Nash The Ecology Consultancy)

Photograph 3
Example of a flower-rich, biodiverse roof withlog piles. (Photograph source:John Little Green Roof Shelters)

Photograph 4
Example of a biosolar roof. (Image provided by Dusty Gedge The Green Roof Consultancy).

Photograph 5
Example of an invertebrate wall. (Photograph source: Rosie Whicheloe The Ecology Consultancy)

Appendix 3: Curriculum vitae of SQE

Curriculum Vitae Wendy McFarlane

Profession	Principal Ecologist
Position	Ecologist- The Ecology Consultancy
Nationality	British

Overview

Wendy McFarlane MA MSc MCIEEM is an ecologist with 10 years' experience in consultancy and over 13 years' experience in ecology. She is a highly committed and a skilled project manager with an understanding of the planning process and the needs of the client. She is particularly competent with, Preliminary Ecological Appraisals, Ecological Impact Assessments, BREEAM and CfSH Assessments with a particular focus on small scale mitigation in an urban context. Her particular focus whilst working with The Ecology Consultancy has been within the residential and commercial sectors in the majority of London's Boroughs. Her particular strength is client liaison coupled with an ability to manage a high turnover of diverse project types.

Education and professional qualifications

MA (Hons)	Countryside and Environmental Management, Aberdeen University	1998
MSc	Environmental Management , Surrey University	2001
IEEM	Full Member	2008
FISC Field Identification Skills Certificate (level 4)	BSBI/University of Birmingham	2010

Key Skills

- Business development and management of junior staff
- Project management
- Production of tenders and fee quotes
- Active role in financial turnover
- Client liaison/advice
- Attendance at design meetings
- Ecology Chapters for EcIA
- Support at Public Inquiry, including input into ecological statements
- Report review and technical input
- Phase 1 habitat and NVC surveys
- BREEAM & CfSH assessments
- Phase 2 surveys

Key experience

Experienced in Phase 1 Habitat Surveys and species specific surveys; particularly reptiles and great crested newts. Also, experienced with water vole, otter and bat surveys. Acting project manager on a range of projects including the rail, educational, commercial and residential sectors.

Involved in over 200 BREEAM Ecohomes/Code for Sustainable Homes Assessments for a variety of sites in London, including repeat surveys in the London Boroughs of Tower Hamlets, Hackney, Camden, Southwark, Westminster, Lewisham, Islington, Waltham Forest, Ealing to name but a few. The focus of these assessments being site specific recommendations for improving biodiversity whilst meeting client expectations.

Since late 2013 Wendy has been involved in the master plan of the Canal Park on the River Lea adjacent to the Olympic Park in London and more recently in 2015 has acted as the lead ecologist on the design team for the West Reservoir, London Borough of Hackney.

Professional History

July 2016 - present	**Ecology Consultancy Ltd** Principal Ecologist
May 2013 – June 2016	**Ecology Consultancy Ltd.** Senior Ecologist
May 2008 – 2013	**Ecology Consultancy Ltd.** Ecologist
April 2007 – Nov 2007	**Centre for Hydrology & Ecology, Huntingdon.** Field Surveyor
Aug 2006 -Feb 2007	**Catherine Bickmore Associates** Ecologist
Apr 2004 -Aug 2006	**Scott Wilson Consultancy, Edinburgh** Seasonal Field Surveyor (3 summers)
Jan 2006 – **Apr 2006**	**Assistant Research Co-ordinator, Frontier, Tanzania.** Research assistant
Sept 2005 - Oct 2005	**Scott Wilson Consultancy, Leeds** Field Surveyor
Sept2004 - Mar 2005	**Frontier, Cambodia.** Research Co-ordinator,
Apr 2003 – Oct 2003	**Centre for Ecology and Hydrology, Huntingdon.**
Mar 2002- Nov 2002	Ecologist
	Scott Wilson Consultancy, Peterborough. Graduate Ecologist
Nov 2002- Apr 2003	**Centre for Ecology and Hydrology, Huntingdon.** Crop Scientist

Projects Summary

Dalston and New Cross / New Cross Gate 2012- ongoing

A walk-over of the above ground sections of the East London Line to assess the current biodiversity value e.g. in terms of habitat quality, presence of UK or regional BAP habitats, and potential for protected, BAP and other notable species and a review of the ecological enhancements installed. The information gathered was used to provide a Biodiversity Action Plan and further recommendations were provided, alongside a long term management plan. Further

invertebrate and black redstart surveys will inform further enhancements to be made. Client: Transport for London.

Canal Park, Queen Elizabeth Olympic Park

The lead ecologist for the Canal Park, Design Framework Guide, a condition of the Legacy Communities Scheme (LCS). This involved a baseline survey including a Preliminary Ecological Appraisal and an Ecological and Green Infrastructure Study providing ecological enhancement suggestions in keeping with the River Lea (Site of Metropolitan Importance for Nature Conservation). Included input and reviews of the landscape plans to ensure the enhancements were in line with the Olympic BAP 2014 criteria. Client: Jo & L Gibbons.

Improving Londoners' Access to Nature through Higher Level Stewardship (HLS)

Undertook a study for Natural England into how Higher Level Stewardship (HLS) might potentially help improve Londoners' access to nature in London's parks and city farms. This included a review of 'Priority Opportunities to reduce Areas of Deficiency in access to nature' prepared by the GLA (Mayor of London 2008) and 'Improving Londoners' Access to Nature - suggested projects for individual sites' (GLA, undated). Review of HLS documentation to assess how it could best be used to support the initiatives. This involved a site visit in conjunction with the site manager for Victoria Park and Burgess Park and a report listing enhancement projects for which enhancement suggestions had not been developed by the GLA. Client: Natural England.

Croydon Tramlink Mitcham – Mitcham Junction section of track. October 2012

Carried out an ecological scoping survey to record principal habitats and dominant plant species at the site as well as the checking for signs of protected species, in particular badger, bats, birds, reptiles and great crested newt being present, including marking trees with bat potential. Client: Temple.

London Gateway Power Corridor 2012

Conducted the scoping survey and an appraisal of the different routes proposed to facilitate the London Gateway Development power substation and associated power cable. This included carrying out baseline habitat and botanical surveys and managing a suite of Phase 2 for great crested newts, reptiles and water vole. Client DP World.

M25 widening project 2012

Involved in surveying and translocation of reptiles and great crested newts along a 25.5km stretch of motorway. Client Skanksa Balfour Beauty Joint Venture.

Willow Tree Lane Estate 2011

Carried out botanical assessment and hedgerow survey. The survey was commissioned to underpin the management of the fields and to inform future management priorities as part of the Countryside Stewardship Scheme. Client: Peabody Trust.

Hinckley Bus Station redevelopment 2011

Completion of an extended Phase 1 habitat survey, tree survey and further protected species surveys (foraging and roosting bats) in accordance and preparation of ecological aspects of an EIA with mitigation plans.

Appendix 4: Legislation

Important notice: This section contains details of legislation applicable in Britain only (i.e. not including the Isle of Man, Northern Ireland, the Republic of Ireland or the Channel Islands) and is provided for general guidance only. While every effort has been made to ensure accuracy, this section should not be relied upon as a definitive statement of the law.

A NATIONAL LEGISLATION AFFORDED TO SPECIES

The objective of the EC Habitats Directive[7] is to conserve the various species of plant and animal which are considered rare across Europe. The Directive is transposed into UK law by The Conservation of Habitats and Species Regulations 2010 (as amended) (formerly The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)) and The Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007 (as amended).

The Wildlife and Countryside Act 1981 (as amended) is a key piece of national legislation which implements the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) and implements the species protection obligations of Council Directive 2009/147/EC (formerly 79/409/EEC) on the Conservation of Wild Birds (EC Birds Directive) in Great Britain.

Since the passing of the Wildlife & Countryside Act 1981, various amendments have been made, details of which can be found on www.opsi.gov.uk. Key amendments have been made through the Countryside and Rights of Way (CRoW) Act (2000).

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

- Deer Act 1991;
- Countryside and Rights of Way (CRoW) Act 2000;
- Natural Environment & Rural Communities (NERC) Act 2006;
- Protection of Badgers Act 1992:
- Wild Mammals (Protection) Act 1996.

Species and species groups that are protected or otherwise regulated under the aforementioned domestic and European legislation, and that are most likely to be affected by development activities, include herpetofauna (amphibians and reptiles), badger, bats, birds,

[7] Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora

dormouse, invasive plant species, otter, plants, red squirrel, water vole and white clawed crayfish.

Explanatory notes relating to species protected under The Conservation of Habitats and Species Regulations 2010 (as amended) (which includes smooth snake, sand lizard, great crested newt and natterjack toad), all bat species, otter, dormouse and some plant species) are given below. These should be read in conjunction with the relevant species sections that follow.

- In the Directive, the term 'deliberate' is interpreted as being somewhat wider than intentional and may be thought of as including an element of recklessness.
- The Conservation of Habitats and Species Regulations 2010 (as amended) does not define the act of 'migration' and therefore, as a precaution, it is recommended that short distance movement of animals for e.g. foraging, breeding or dispersal purposes are also considered.
- In order to obtain a European Protected Species Mitigation (EPSM) licence, the application must demonstrate that it meets all of the following three 'tests': i) the action(s) are necessary for the purpose of preserving public health or safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequence of primary importance for the environment; ii) that there is no satisfactory alternative and iii) that the action authorised will not be detrimental to the maintenance of the species concerned at a favourable conservation status in their natural range.

Bats

All species of bat are fully protected under The Conservation of Habitats and Species Regulations 2010 (as amended) through their inclusion on Schedule 2. Regulation 41 prohibits:

- Deliberate killing, injuring or capturing of Schedule 2 species (e.g. all bats)
- Deliberate disturbance of bat species as:
  - a) to impair their ability:
    - (i) to survive, breed, or reproduce, or to rear or nurture young;
    - (ii) to hibernate or migrate[3]
  - b) to affect significantly the local distribution or abundance of the species
- Damage or destruction of a breeding site or resting place
- Keeping, transporting, selling, exchanging or offering for sale whether live or dead or of any part thereof.

Bats are also currently protected under the Wildlife and Countryside Act 1981 (as amended) through their inclusion on Schedule 5. Under this Act, they are additionally protected from:

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

How is the legislation pertaining to bats liable to affect development works?

A European Protected Species Mitigation (EPSM) Licence issued by the relevant countryside agency (e.g. Natural England) will be required for works liable to affect a bat roost or for operations likely to result in a level of disturbance which might impair their ability to undertake those activities mentioned above (e.g. survive, breed, rear young and hibernate). The licence is to allow derogation from the relevant legislation but also to enable appropriate mitigation measures to be put in place and their efficacy to be monitored.

The legislation may also be interpreted such that, in certain circumstances, important foraging areas and/or commuting routes can be regarded as being afforded *de facto* protection, for example, where it can be proven that the continued usage of such areas is crucial to maintaining the integrity of a local population.

Birds

All wild birds, their nests and eggs are protected under Sections 1-8 of the Wildlife and Countryside Act 1981 (as amended). Among other things, this makes it an offence to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built;
- Intentionally take or destroy an egg of any wild bird:
- Sell, offer or expose for sale, have in his possession or transport for the purpose of sale any wild bird (dead or alive) or bird egg or part thereof.

Certain species of bird, for example the barn owl, black redstart, hobby, bittern and kingfisher receive additional special protection under Schedule 1 of the Act and Annex 1 of the European Community Directive on the Conservation of Wild Birds (2009/147/EC). This affords them protection against:

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

How is the legislation pertaining to birds liable to affect development works?

To avoid contravention of the Wildlife and Countryside Act 1981 (as amended), works should be planned to avoid the possibility of killing or injuring any wild bird, or damaging or destroying their nests. The most effective way to reduce the likelihood of nest destruction in particular is to undertake work outside the main bird nesting season which typically runs from March to August[8]. Where this is not feasible, it will be necessary to have any areas of suitable habitat thoroughly checked for nests prior to vegetation clearance.

Those species of bird listed on Schedule 1 are additionally protected against disturbance during the nesting season. Thus, it will be necessary to ensure that no potentially disturbing works are undertaken in the vicinity of the nest. The most effective way to avoid disturbance is to postpone works until the young have fledged. If this is not feasible, it may be possible to maintain an appropriate buffer zone or standoff around the nest.

[8] It should be noted that this is the main breeding period for birds. Breeding activity may occur outside this period (depending on the particular species and geographical location of the site) and thus due care and attention should be given when undertaking potentially disturbing works at any time of year.

Appendix 5: Management Plan

AIMS OF THE MANAGEMENT PLAN

BS 42020: 2013 Section 11.1 states that the following should be included in long term management plans for habitats, species and biodiversity features:

a) Description and evaluation of features to be managed

b) Ecological trends and constraints on site that could influence management

c) Aims and objectives of management

d) Appropriate management options for achieving aims and objectives

e) Prescriptions for management actions

f) Preparation of a work schedule (including an annual work plan capable of being rolled forward over a five year period)

g) Body or organisation personnel responsible for implementation of the plan

h) Monitoring and remedial measures (see 11.2)

i) Funding resources and mechanisms to ensure sustainable long term delivery of the proposed management.

Description and evaluation of features to be managed

Habitats to be created on site include biodiverse roofs, planted shrubs using species of known for wildlife value. Nesting boxes suitable for bird species such as black redstart, house sparrow will also be provided. These newly created habitats are considered to be of value within the immediate vicinity of the site only, and will provide small areas of habitat suitable for foraging invertebrates and/or nesting/foraging birds.

Ecological trends and constraints on site that could influence management

There are currently no ecological trends and constraints on site that could influence management however, once the proposed habitats are created there is potential for breeding birds to use the site, therefore it will be necessary to comply with relevant nature conservation legislation e.g. by avoiding disturbance to breeding birds.

Aims and objectives of management

The general aims of management proposals provided below are to:

- Enhance the site with regard to biodiversity; and
- Comply with nature conservation legislation.

The specific aims of the management proposals provided below are as follows:

- Long-term provision of habitats of value to wildlife such as foraging and refuge habitats.

Appropriate management options for achieving aims and objectives

The appropriate management options for achieving the above aims and objectives are considered as part of the outline prescriptions for management actions and work schedule presented in the table below.

Biodiverse green roof

The green roof should be installed following the best practice guidance produced by the Green Roof Organisation (2011) and Buglife (Gedge *et al.* 2012). The Green Roof Directory, produced by Livingroofs.org provides a comprehensive online directory of green roof professionals, suppliers and installers.

Planting should be inspected regularly for the first three months, watering plugs and seeds for the first four to six weeks until established (and in summer months if required). Health of seedlings should be monitored and additional sowing may be required if plants fail to establish.

The green roofs should be inspected annually in the autumn. The roofs should not be accessed for maintenance within the period March-August inclusive to avoid disturbance to breeding birds. The following tasks will be carried out as necessary

- re-sowing if the number of wildflowers falls below an average of eight species per m^2 or perennial grasses account for greater than 50% of the vegetation cover;
- removal of perennial grasses from the roof if they account for greater than 25% or more of the vegetation cover; and,
- inspection of drainage outlets to ensure water drains freely from the roof, unblocking as required; and,
- removal by hand of any aggressive or competitive species such as Buddleia *Buddleja davidii* or fleabane *Conyza* spp. which may have established when they account for 10% or more of the vegetation cover on the green roofs.

New planting

Landscape contractors should be familiar with the National Plant Specification and follow relevant British Standards and Codes of Practice, including:

- BS 3882:1994 Specification for topsoil
- BS 3936-1:1992 Nursery Stock – Specification for shrubs
- BS 4428:1989 Code of Practice for general landscape operations (excluding hard surfaces)
    - Where possible, shrubs should be planted during the dormant season. This is essential for all planting which is not container grown. All planting should follow established horticultural practices;
    - Newly planted areas should be mulched with shredded bark or woodchip to conserve moisture, suppress weed growth, provide cover for soil dwelling invertebrates and foraging for birds and a growing medium for fungi;
    - Plants should be watered in the summer months in the first two years after planting;
    - Manual weeding should be carried out annually to ensure that invasive and unwanted species such as butterfly bush *Buddleja davidii*, thistles *Cirsium* spp., docks *Rumex* spp. and field bindweed *Convolvulus arvensis* are removed. This is particularly important whilst the landscape planting is establishing, but once established less invasive annual species could be left periodically to increase the biodiversity of the site;
    - Organic matter (decomposed municipal waste, well-rotted manure etc.) should be incorporated into the soil to increase nutrient levels. This will also improve the soil structure and its ability to retain plant nutrients over a longer period. Where fertilizers are used they should be organic;
    - Carry out annual monitoring of pest and disease levels to identify problematic species such as brown tailed moth and canker. To ensure sustainable horticultural practices are carried out, an Integrated Pest Management (IPM) system should be employed. This uses approaches such as the encouragement of beneficial insects and applying biological control alongside standard chemical use. Any chemicals used should be non-residual; and
    - The removal/replacement of any dead or diseased shrubs should be timed to avoid the main bird breeding season (March-August inclusive).

Outline prescriptions for management actions and preparation of a work schedule (including an annual work plan capable of being rolled forward over a five year period)

The table below provides a list of outline management prescriptions and details of when these should be carried out over a five year period.

Body or organisation personnel responsible for implementation of the plan

Responsibility for long-term management should be confirmed by the developer.

Monitoring and remedial measures

It is recommended that the site is monitored for invasive species, pests and diseases. The timing of these monitoring and remedial measures is given in the works schedule below. If after two years no birds appear to be using the bird boxes (evidenced by birds flying to and from the boxes carrying nesting material and/or food) during the breeding bird season (March to August), then relocation of the boxes should be considered. Advice from an Ecologist should be sought prior to relocation of bird boxes.

Funding resources and mechanisms to ensure sustainable long term delivery of the proposed management.

Responsibility for funding should be confirmed by the developer.

Five Year Management Plan

Task	Year 1				Year 2				Year 3				Year 4				Year 5			
	Jan-Feb	Mar-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec
Install biodiverse green roofs	✓																			
Watering of seeds/plugs on biodiverse green roofs	✓	✓	✓																	
Maintenance of green roofs				✓	✓			✓	✓			✓	✓			✓	✓			
Plant areas with species of known wildlife value, incorporating organic matter and mulching surface	✓																			
Water and weed horticultural planting as appropriate	As required				As required				As required				As required				As required			
Prune/dead head shrubs (avoid March to August)	✓			✓	✓			✓	✓			✓	✓			✓	✓			✓
Installation of bird boxes	As soon as possible																			
Clean out bird boxes								✓				✓				✓				✓

Five Year Management Plan

Task	Year 1				Year 2				Year 3				Year 4				Year 5			
	Jan-Feb	Mar-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec	Jan-Feb	Apr-Jun	Jul-Sep	Oct-Dec
Remove any accumulated rubbish	Throughout				Throughout				Throughout				Throughout				Throughout			
Pest and disease monitoring	Throughout				Throughout				Throughout				Throughout				Throughout			

The Ecology Consultancy is part of the Temple Group.

Experience and quality that make a difference

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