Goldcrest Land Plc

Hawley Mews, Camden

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CODE FOR SUSTAINABLE HOMES ECOLOGY REPORT

KATE PRIESTMAN LIMITED

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Contents

1 INTRODUCTION

Goldcrest Land Plc, commissioned Kate Priestman Limited in September 2015, to undertake a Phase 1 Habitat Survey in line with the Ecology requirements of Code for Sustainable Homes, 2010 (Eco 1 to Eco 4) for Hawley Mews, Camden, London (hereafter described as the 'site').

This report describes the findings of the Phase 1 Habitat Survey and will then assess each of the ecology credits that may be awarded to the subject site and redevelopment proposals, in accordance with Code for Sustainable Homes, 2010 criteria.

In addition, this report will be submitted to support the application to discharge Planning Application - 2015/3383/P Discharge of Condition 11 that reads:

"Full details in respect of the green roof and green wall as indicated on the approved plans shall be submitted to and approved in writing by the local planning authority before the relevant part of the development commences".

It is understood that the buildings shall not be occupied until the approved details have been implemented and that these works shall be permanently retained and maintained thereafter.

The results and conclusions of this report take into account the use of artificial planting to the 'green wall' proposed in the application to discharge Condition 11.

1.1 Background

The survey visit was carried out in September 2015; at this time the Hawley Mews site comprised a vacant area of land located in the highly urbanised setting of Camden, London.

There were no buildings or structures on site and surface cover comprised hardstanding. The site was located adjacent to residential properties (north, east and south east) and commercial properties (south and west). Hawley Mews (road) provided access from the south.

The proposed development comprises the construction of three residential properties. The buildings would be flat roofed and two-storeys in height.

1.2 Legislation, Policy and Guidance

This report is produced in accordance with relevant legislation, policy, best practice guidance and local biodiversity targets. Those that are relevant to this appraisal are summarised in the Appendices (A1).

1.3 Report Structure

The Phase 1 Habitat Survey is detailed in section 2. Section 3 addresses each of the Code for Sustainable Homes Ecology criteria in relation to the proposed development. Additional documentation is appended to the report.

2 PHASE 1 HABITAT SURVEY

Kate Priestman Limited undertook a Phase 1 Habitat Survey in September 2015 of the Hawley Mews site. The survey was undertaken in order to inform the redevelopment proposals for the site and the ecology section of a Code for Sustainable Homes, 2010 assessment.

2.1 Aims and Objectives

The aims and objectives of the Phase 1 Habitat Survey and appraisal are as follows:

- to record and appraise (relative value) the existing habitats on site and to identify the potential for protected or notable species to be present;
- to assess the implications of the findings of the survey for the proposed development and identify any ecological resources that may pose constraints and/or opportunities; and,
- to provide recommendations and advise as to any further work necessary to ensure legal and best practice compliance.

2.2 Methodology

Information about the ecological features present on (and in the immediate environs of) the site has been gathered through a combination of desk study and field survey. The methodology for both the desk study and field survey are provided below, together with any limitations identified during the course of the study.

2.2.1 Desk Study

Details of sites designated for their nature conservation importance that occur within close proximity to the proposed development site, have been obtained via a search of MAGIC's website (http://magic.defra.gov.uk/).

Aerial photographs of the site (via the internet) have also been reviewed in order to identify any notable habitats within close proximity.

No consultations with regulators, local record holding bodies or local interest groups have been undertaken in the preparation of this report[1].

2.2.2 Field Survey

A Phase 1 Habitat Survey was carried out on 9 September 2015 by a suitably experienced and qualified ecologist[2]. The survey was undertaken in accordance with standard guidance (JNCC, 2010[3]). The extent of each area of homogenous vegetation was recorded, in addition to the potential for the site to support protected or notable species. Habitat within the surrounding area adjacent to the property was noted as part of the survey.

[1] The need for more detailed consultation, and further gathering of records and information regarding species and notable sites, is considered on a site-by-site basis, dependent on Phase 1 Habitat Survey findings and development proposals.
[2] See Appendices A2 for Ecologist's CV.
[3] Handbook for Phase 1 habitat survey - a technique for environmental audit. Joint Nature Conservation Committee (JNCC), 2010.

2.2.3 Limitations

The findings presented in this study represent those at the time of survey and reporting. Variations in these conditions will take place as a result of seasonal factors and with the general passage of time. Notable fauna may travel over wide areas and/or have large home ranges and so can be overlooked within surveys. Species absent at the time of survey may also return to or colonise a site anew at any future time.

2.3 RESULTS

The findings of both the desk study search and the recent field survey are provided below.

2.3.1 Desk Study

The data search has identified sites of ecological note within close proximity to the subject site. None of these areas are located on or adjacent to the site itself.

Table 1 details statutory designated sites that have been identified within 2km of the Hawley Mews site.

Table 1 Statutory Designated Sites within 2km

Site Name	Notable Feature(s)	Approximate Location
Camley Street Nature Park Local Nature Reserve[4] (LNR)	The reserve provides natural habitat for birds, butterflies, amphibians and a rich variety of plant life. Species - Rare earthstar fungi; reed warblers, kingfishers, geese, mallards, and reed buntings; bats.	1.5km south east
Belsize Wood LNR	There is a pond, bird feeding area, large insect house, Stag beetle loggeries, bird boxes and other biodiversity enhancing features. Belsize Wood has a broad diversity of insect species, due to the floral diversity within the LNR.	1.5km north west
St John's Wood Church Ground LNR	The site comprises log piles, wildlife hedge, wildflower glade, thistle meadow and mixed woodland. The site is good for grey sedge and butterflies.	2km south west

Table 2 details areas that have been identified via MAGIC that comprise habitat of note within close proximity to the site:

[4] Local Nature Reserves are for both people and wildlife. They are places with wildlife or geological features that are of special interest locally.

Table 2 Notable Habitats for Nature Conservation within 2km

Site Name	Notable Habitat(s)	Approximate Location
Unnamed	Broadleaved deciduous woodland	658m south west, 707m south west, 824m south west, 935m north east, 1km west, 1.1km east and 1.5km south east.

2.3.2 Field Survey

The following habitats were identified during the Phase 1 Habitat Survey. These are described in accordance with standard methodology and guidance provided by the JNCC[3].

The Code for Sustainable Homes, 2010 assessment guidance differentiates between the 'construction site' and the 'development site'[5]. However, for this site there is no differentiation between the construction zone and the wider development site.

2.3.2.1 Hardstanding and Made Ground

The site predominantly comprised an area of hardstanding. This habitat is considered to be of low ecological value (see Photograph 1).

Photograph 1 The site as viewed from the northern end

[5] The construction site refers to the area of the plot that will be subject to construction works (including construction of the replacement building and land needed for the storage of materials etc.). The development site comprises land which is part of the development plot, but which will not be directly affected by the proposed construction works.

2.3.2.2 Tall Ruderal

Areas of tall ruderal species, including nettle (*Urtica* sp.), dandelion (*Taraxacum officinalis agg*.) and dock (*Rumex obtusifolius*), were located around the perimeters of the site and between the joins/cracks in the concrete hardstanding. This habitat is considered to be of relatively low ecological value, but may be of some value for invertebrates.

2.3.2.3 Other - Climbers

Wooden fencing around the boundary of the site supported dense climbing plants such as ivy (*Hedera helix*) and bindweed (*Calystegia sepium*), which again, are considered to be of some ecological value for birds and invertebrates. These plants had encroached across the floor of the site to the south (see photograph 2).

Photograph 2 Dense climbers along boundary fence

2.4 Appraisal

Following on from the desk study and field survey, this section of the report will appraise (relative value) the existing habitats on site, and assess the implications of the findings for the proposed development.

2.4.1 Designated/Notable Sites

Designated and notable sites for nature conservation interest have been identified within close proximity to the site (**Table 1** and **Table 2**).

The current redevelopment proposals are not considered likely to have a significant adverse effect on any of the designated and notable sites due to the localised nature of the proposed works, the highly urbanised setting (which is subject to a high level of continual disturbance and background noise), and distance to the designated and notable sites.

2.4.2 Protected/Notable Habitats

Habitat on site is minimal in extent and is considered to be of relatively low ecological value, comprising species typically found in an urban brownfield setting with limited structural

diversity. Whilst of low intrinsic value in terms of species composition, this habitat has some potential to support fauna such as birds and invertebrates as a refuge and foraging resource.

Habitat on site will be directly impacted by the proposed development and will be largely removed during the works. Given the relatively low ecological value of habitat, the effect of this removal is unlikely to be significant for local bird and invertebrate populations. Vegetation on site is easily recreated. Once established, the proposed soft landscaping (living roof) should make a significant contribution to local biodiversity targets[6] and provide a significant beneficial effect for biodiversity.

Surrounding habitat comprises residential dwellings with gardens and commercial properties. Mature trees are located in gardens adjacent to the north and north east of the site; these are considered to be of intrinsic value in this highly urbanised setting. Within the wider area, a small park is located approximately 50m to the east of the site, this has a mature treeline around the perimeter and amenity grassland. Habitat within the immediate vicinity of the site is likely to be of value for more mobile species such as birds, bats and invertebrates.

The proposed works will not directly affect habitat on adjacent land.

2.4.3 Protected/Notable Species

Habitat associated with the site has limited potential to support protected and notable species. This is discussed further within this section (see Appendix A1 for relevant a summary of legislation, policy and guidance):

2.4.3.1 Breeding Birds

Birds use a variety of both man-made and natural habitats and features for refuge, nesting and foraging purposes.

During the Phase 1 Habitat Survey, house sparrow (*Passer domesticus*) were observed. The UK house sparrow population has shown a significant decline, recently estimated as dropping by 71% between 1977 and 2008 with declines in both rural and urban populations (RSPB, 2012[7]). They are now given red status[8] and are listed as a UK Priority Species.

The climbers and ruderal vegetation located around the edges of the site are considered suitable for supporting foraging birds. This habitat will largely be removed during construction; however, this clearance is not considered to comprise a significant adverse effect for local populations. The habitat is easily recreated and the habitat creation opportunities that are provided by the new residential unit are considered to be of equal, if not greater, biodiversity value for birds than that, which is currently present on site.

It is likely that any birds using nearby trees (adjacent off-site) for nesting purposes, will be habituated to a degree of disturbance and background noise. Any displacement of birds as a result of construction, is likely to be restricted to trees immediately adjacent to the site; given the temporary nature of the works and the presence of other mature trees and nesting sites in the wider area, any temporary displacement is unlikely to have a significant adverse effect on breeding bird populations.

[6] See Appendices A1.8
[7] http://www.rspb.org.uk/
[8] The UK's birds can be split into three categories of conservation importance - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green. http://www.rspb.org.uk/

The effects of the redevelopment proposals during the construction phase are considered to be not significant. The landscape and enhancement proposals for the site are considered to comprise a beneficial effect for local breeding bird populations.

2.4.3.2 Invertebrates

The invertebrate interest is predominantly associated with ruderal habitat and climbers. Species present are likely to comprise more commonly recorded species.

Again, clearance of current habitat, as part of the construction works, is not considered to comprise a significant adverse effect for invertebrates. Habitat creation as part of the proposed development is considered to be of greater value for invertebrates than that which is currently present on site, and the inclusion of a living roof is likely to comprise a significant beneficial effect.

2.5 Conclusion and Recommendations

The Phase 1 Habitat Survey identified that overall the site is of relatively low intrinsic ecological value in terms of habitat and botanical composition. However, it does have some potential to support protected and notable species of fauna such as birds and invertebrates.

2.5.1 Recommendations

The proposed habitat creation and enhancement measures detailed below are made in order to feed into the design process to maximise both the biodiversity value of the site and achieve the maximum Code for Sustainable Homes 2010 credits[9].

2.5.1.1 Habitat Creation

It is recommended that habitat creation as part of the redevelopment proposals is focused on supporting species such as foraging bats, birds and invertebrates, in line with baseline conditions identified during the site survey and local Priority habitat and species targets[6].

Whilst habitat to support bats is not currently present on site, it is present within the wider area. Features such as tree lines facilitate the movement of bats (and other mobile species such as birds and mammals) through areas and are particularly valuable in an urban setting. Given the close proximity of mature trees in adjacent gardens and park, it is opportune to supplement these features and provide measures that can be utilised by bats, birds and invertebrates as part of the new development proposals.

2.5.1.2 Enhancement Measures

There are a variety of measures that can be implemented as part of the proposals, which would further enhance the site for ecology. The following recommendations take into account the locality of the site and are aimed at contributing to Priority species and habitats[10].

Nest Boxes - The inclusion of nest boxes for birds can significantly contribute to the biodiversity value of the development and provide positive ecological value in a local context, particularly if boxes are aimed at attracting species of local importance and of relevance to Priority Species such as house sparrow, which was observed during the site visit. It is recommended that where possible, boxes be incorporated into the structure of the building itself rather than being retro-fitted afterwards.

[9] It should be noted that the habitat creation and enhancement recommendations are not exhaustive; the options provided are within the scope and viability of the proposed scheme.
[10] It is recommended that advice is sought from an ecologist when choosing the type, number and placement of enhancement measures.

Bat Boxes - The installation of bat boxes can provide valuable support for these species in a local context. Along with nest boxes for birds, bat boxes can contribute to local biodiversity priorities. It is recommended that where possible, boxes be incorporated into the structure of the building itself rather than being retro-fitted afterwards.

Invertebrate Refugia – Log piles provide refuge for invertebrates in areas where naturally occurring habitat may be limited, such as in densely built up urban environments. It is recommended that these features be installed within areas of planting at roof level, in order to complement this resource.

3 CODE FOR SUSTAINABLE HOMES ASSESSMENT

The following appraisal has been undertaken in line with Code for Sustainable Homes 2010 criteria[11] and is based on plans provided by healycornelius (dated 11 May 2015).

3.1 Summary table

Table 3 Summary table

Issue ID	Credits available	Credits recommended
ECO 1	1	1
ECO 2	1	1
ECO 3	1	1
ECO 4	4	3

Total Eco credits available: 7
Total Eco credits recommended: 6

3.2 Section A

Section A provides the contact details of the Ecologist completing the report in addition to the Client and development details.

3.2.1 Section A1: Contact details

3.2.1.1 Ecologist's Details

Company name: Kate Priestman Limited

Company address: c/o AH Partnership, Stanley House, 49 Dartford Road, Kent TN13 3TE

Contact name: Kate Jackson (CEnv, MCIEEM)

Contact telephone number: +44 (0)845 226 0178

Ecology report reference: 0039_001

3.2.2 Developer / client details

Company name: Goldcrest Land Plc

[11] Code for Sustainable Homes – Technical Guide. Department for Communities and Local Government, 2010

Company address: Goldcrest House, 3 Hurlingham Business Park, London SW6 3DU

Contact name: Richard Hazell, Principal Architect

Contact telephone number: +44 (0)20 7348 6684

3.2.3 Section A2: Development details

BRIE reference number: TBC

Client reference number: TBC

Developers name: Goldcrest Land Plc

Development name: Hawley Mews, Hackney

Development address: Hawley Mews, Hackney, London NW1 8BF

3.3 Section B

This section provides information regarding the Suitably Qualified Ecologist (SQE) completing this assessment report.

3.3.1 Section B1: Suitably Qualified Ecologist's qualifications

Do you hold a degree (or equivalent qualification, e.g. N/SVQ level 5) in ecology or related subject?

Yes ~~No~~

If Yes, please provide details:

BSc (Hons) Geography (Physical), University of Coventry,
Advanced National Certificate in Countryside Management, Nottingham Trent University

Are you a practising ecologist with a minimum of 3 years relevant experience within the last 5 years?

Relevant experience must clearly demonstrate a practical understanding of factors affecting ecology in relation to construction and the built environment and will include acting in an advisory capacity to provide recommendations for ecological protection, enhancement and mitigation measures, e.g. ecological impact assessments.

Yes ~~No~~

If Yes, please provide details:

I have been undertaking ecological consultancy work for over thirteen years, which has included undertaking Ecological Impact Assessments, Phase 1 habitat surveys

and protected/notable species surveys, in addition to numerous BREEAM and Code for Sustainable Homes assessments.

Are you bound by a professional code of conduct and subject to peer review*?

A full member of one of the following organisations will be deemed suitable: Chartered Institution of Water and Environmental Management (CIWEM); Institute of Ecology and Environmental Management (IEEM); Institute of Environmental Management and Assessment (IEMA); Landscape Institute (LI).

Yes ~~No~~

If Yes, please provide details:

I am a full member of CIEEM (MCIEEM) and a Chartered Environmentalist (CEnv), and as such, bound by a professional code of conduct and ethical policies.

**Peer review is defined as the process employed by a professional body to demonstrate that potential or current full members maintain a standard of knowledge and experience required to ensure compliance with a code of conduct and professional ethics*.

Note: If the answer to any question in Section B1 is 'No' then the ecologist writing the report does not meet the requirements of a Suitably Qualified Ecologist under the Code. The ecology report therefore cannot be used in the Code assessment unless it is verified by a 'Suitably Qualified Ecologist'. If this is the case, proceed to Section B2.

If the ecologist does meet the requirements of a Suitably Qualified Ecologist, proceed to Section C.

3.3.2 Section B2: Report verification

If the appointed ecologist does not meet the requirements of a Suitably Qualified Ecologist, the report must be verified by an individual who does meet these requirements. Otherwise the ecology report cannot be used in the Code assessment.

1. The person who verifies the report must provide written confirmation that they meet the requirements of a Suitably Qualified Ecologist in accordance with Section B1 above.
2. Details on verifying an ecology report for a Code assessment:
    - The individual verifying the report must provide written confirmation that they comply with the definition of a Suitably Qualified Ecologist (as detailed above in Section B1).
    - The individual verifying the report must confirm in writing they have read and reviewed the report and found it to:
        - represent sound industry practice
        - report and recommend correctly, truthfully, and objectively
        - be appropriate given the local site conditions and scope of works proposed
        - avoid invalid, biased, and exaggerated statements.

Written confirmation from the third party verifier on all the points detailed under 1 and 2 above (for Section B2) must be included in the Appendix to this report (see Section E).

3.4 Section C: Site Survey

Have the findings of the ecology report been based on data collected from a site survey(s)?

Yes ~~No~~

If yes, please provide details to confirm this (e.g. date(s) and scope of site survey(s))

A Phase 1 Habitat Survey was undertaken by Kate Jackson (CEnv, MCIEEM) on 9 September 2015. The Phase 1 Habitat Survey is provided in Section 2 of this report.

Note: If 'No' has been answered to Question 1 of Section C the ecology report cannot be used to determine compliance with the requirements of the relevant Code credits.

On what date did/ will initial site preparation works commence?

TBC.

Note: If the site survey was carried out after initial site preparation works commenced, the ecology report cannot be used to determine compliance with the requirements of the relevant Code credits.

Note to Suitably Qualified Ecologist and the Code assessor: The contents of the ecology report must be representative of the site's existing ecology immediately prior to the commencement of initial site preparation works.

3.5 Section D: Details from the Site Survey

This section provides information on each of the Ecology (Eco) credits.

3.5.1 Eco 1: Ecological Value of Site

Is the construction zone of low or insignificant ecological value?

The construction zone includes any land used for buildings, hard standing, landscaping, site access and any other land where construction work is carried out (or land being disturbed in any way), plus a 3 metre boundary in either direction around these areas. It also includes any areas used for temporary site storage and buildings.

Yes ~~No~~

The construction zone is also the development site and comprises hardstanding. Semi-natural habitat in the form of climbers and ruderal vegetation is located around the site perimeter. These are considered to be of relatively low ecological value. Vegetation is of limited diversity in terms of species and structure.

If yes, is there any land outside the construction zone but inside the development site of ecological value?

~~Yes~~ **No**

Please give details:

N/A

If yes, is it possible for all areas / features of ecological value to remain undisturbed by the construction works?

Yes ~~No~~

Adjacent vegetation outside of the site ownership will remain intact and undisturbed during the construction phase of the proposed development.

3.5.1.1 Credits

Available credits: 1
Recommended credits: 1

3.5.2 Eco 2: Ecological Enhancement

Has the developer / client required you to provide advice and recommendations for enhancing site ecology?

Yes ~~No~~

If yes, please provide a brief statement outlining all of your KEY recommendations*:

Living roofs - The term 'living roof' encompasses a wide variety of different types of structure, planting and designs. They have been shown to provide a variety of building performance and environmental benefits, in addition to being of value for biodiversity. As well as providing features of botanical interest, they can be of significant value as a resource for invertebrates, birds and bats. It is recommended that a living roof be installed across the proposed development.

Bat boxes - The installation of bat boxes on buildings can provide valuable support for these species in a local context. Along with nest boxes for birds, bat boxes can contribute to biodiversity targets[6] and can be designed to fit into the building itself during the construction phase or can be retro-fitted[12].

Bird boxes - The inclusion of nest boxes for birds within developments (within the building fabric/retro-fitted) can significantly contribute to the biodiversity value of the development and provide ecological value in the local context[12]. This is the case particularly if boxes are aimed at attracting species of local importance and which are relevant to Priority targets[6].

If yes, please provide a brief statement outlining all of your ADDITIONAL recommendations*.

Living walls (climbers) - The addition of suitable climbers up vertical structures provides valuable habitat for species such as invertebrates and birds. Species such as ivy (*Hedera helix*), honeysuckles (*Lonicera* spp., including the native *L. periclymenum*) and climbing roses (*Rosa* spp. especially wild species such as dog

[12] See Appendices A3.

rose *R. canina* and field rose *R. arvensis*) provide scent as well as being of ecological value.

Invertebrate refugia at roof level - Invertebrates exist in every environment and are often at the base of the food chain where they provide a crucial food source for birds, bats and many other species. Many invertebrate species have declined in recent years and can be found on UK and local Priority species lists[6]. Invertebrates can easily be encouraged by the installation of log piles to provide structural diversity. These should be included within the living roof habitat.

** The client / developer will be required to adopt / implement all KEY recommendations and 30% of ADDITIONAL recommendations.*

3.5.2.1 Credits

Available credits: 1
Recommended credits: 1

3.5.3 Eco 3: Protection of Ecological Features

Note: Eco 3 looks at protecting all existing features / areas of ecological value on the site and boundary area. If a feature of ecological value is to be removed as part of the development works, e.g. site clearance, then this credit cannot be achieved. If you have deemed the whole development site to be of poor ecological value then there will be no features of ecological value to protect. If the construction zone is of low ecological value but the wider site is not, give protection measures here. If there is an area(s) or feature(s) of low or insignificant ecological value you wish to advise be retained and enhanced / improved, e.g. a species-poor hedgerow to a species-rich hedgerow, then full details of this advice should be entered as a recommendation under *Eco 2 Ecological Enhancement*.

Are there any existing features/areas of ecological value on the site or at the boundary of the site?

Yes ~~No~~

If yes, please provide a brief statement outlining the advice/ recommendations given for protecting all existing features and areas of ecological value:

Adjacent trees and vegetation, which are outside of the site ownership, should be protected during construction. Whilst vegetation on site has some potential to be of value for birds and invertebrates, this vegetation is easily recreated. Furthermore, it is considered that the habitat creation opportunities that arise as part of the new development proposals equal/outweigh the loss of current habitat.

Are any ecological features to be relocated on the site?

~~Yes~~ **No**

If yes, please provide a brief statement outlining the reasons for relocation and recommendations for protecting the ecological features:

N/A

3.5.3.1 Credits

Available credits: 1
Recommended credits: 1

3.5.4 Eco 4: Change in Ecological Value of the Site

Are you able to provide the following information for before and after construction: habitat types and an estimate of the number of floral species present per habitat type (based on appropriate censusing techniques and confirmed planting regimes)?

Yes ~~No~~

If yes, please provide the following information:

a. A brief description of the landscape and habitats surrounding the development site:

The development site is located within a highly urbanised setting. The site is currently vacant with hardstanding surface cover. A limited extent of ruderal vegetation in addition to climbers on the boundary fence-line, are present. Surrounding land uses comprise residential, 'parkland' (small in extent) and commercial properties. These habitats are likely to be of ecological value to species such as invertebrates, bats and breeding birds.

b. The total site area (this will be the same both before and after development):

307m^2 (The total area of the plot is 265m^2, however, 42m^2 has been added to this total to account for the climbers that are present along boundary fence-lines, prior to construction).

c. Provide details of the site before development in the table below:

The Phase 1 Habitat Survey identified that the following habitat types were present prior to redevelopment:

- Hardstanding.
- Ruderal vegetation.
- Climbers.

Table 4 Habitat information before development

Habitat type*	Area of habitat type (m^2)	Number of species per habitat type from survey
Hardstanding	252.5	0
Ruderal vegetation	12.5	12

Habitat type*	Area of habitat type (m^2)	Number of species per habitat type from survey
Climbers	42	4
Total area (m^2)	**307**	

d. Provide details of the site after development in the table below:

The new development will incorporate bird and bat boxes into the construction of the building(s). In addition a living roof will be installed. This will comprise a sedum and wildflower mat. To increase the ecological value of the living roof, the addition of small mounds should be considered, over which the mats are laid. This would seek to diversify the roof structure and provide microclimates, which are of benefit to invertebrates.

Table 5 Habitat information following development

Habitat type*	Area of habitat type (m^2)	Number of species per habitat type
Buildings & hardstanding	214	0
Living roof - sedum	93	14
Total area (m^2)	**307**	

** Habitat types will include natural areas, e.g. various grasslands and woodlands; as well as areas of the built environment, e.g. buildings, hard landscaping. The area of each habitat type when added together must always equal the total area of the development site*.

Has your client / developer requested you to carry out the calculation for Eco 4 Change in Ecological Value of Site? *The calculation must be carried out in line with the methodology provided in the most current version of the Code Guidance*.

Yes ~~No~~

If yes, please complete the tables below:

Table 6 Calculation of the ecological value of the site before development:

Plot type	Area of plot type (m^2)		Species [no.]		Species x area of plot type
Hardstanding	252.5	X	0	=	0

Plot type	Area of plot type (m^2)		Species [no.]		Species x area of plot type
Ruderal vegetation	12.5	X	12	=	150
Climbers	42	X	4	=	168
(1) Total site area =	307			(2) Total =	318
Species before development Total species x area of plot type / Total site area = (2)(1) =					1.04

Table 7 Calculation of the ecological value of the site after development:

Plot type	Area of plot type (m^2)		Species [no.]		Species x area of plot type
Buildings & hardstanding	214	X	0	=	0
Living roof - sedum	93	X	14	=	1,302
(1) Total site area =	307			(2) Total =	1,302
Species after development Total species x area of plot type / Total site area = (2)(1) =					4.24

Total change in species: Total no. Species after development – Total no. Species before development

= +3.2

This represents a minor change in ecological value.

Credits are awarded where the resulting change in ecological value is as follows:

Table 8 Criteria and available credits

Criteria	Credits
The ecological value before and after development is measured, and overall change in species per hectare is:	
Minor: negative Change between -9 and less than or equal to -3.	1
Neutral: greater than -3 and less than or equal to +3	2
Minor enhancement: greater than 3 and less than or equal to 9	3
Major enhancement: greater than +9	4

3.5.4.1 Credits

Available credits: 4
Recommended credits: 3

3.6 Additional Information

The required documentation to be included within the appendix of this report includes supplementary documentation, i.e. ecologist's curriculum vitae:

Table 9 Documentation

Document	Reference
Ecologist's CV	Appendices (A2)

APPENDICES

Contents:

A1 Legislation, Policy and Guidance

The principal legislation relating to ecological resources, that are relevant to this appraisal, are as follows:

- Wildlife and Countryside Act 1981 (as amended);
- Conservation of Habitats and Species Regulations 2010 (which consolidates all the various amendments made to the Conservation [Natural Habitats, &c.] Regulations, 1994);
- Countryside and Rights of Way (CROW) Act 2000; and,
- Natural Environment and Rural Communities (NERC) Act 2006.

Legislation is also in place to protect species. Those relevant to this report are detailed below:

A1.1 Bats

All species of bat are strictly protected in Europe and in the UK by the Wildlife & Countryside Act 1981 and the Conservation (Natural Habitats &c) Regulations 1994. This protection makes it illegal to intentionally kill, injure, capture or disturb bats, and to damage, destroy or prevent access to roost sites.

Bats are listed as priority species under the UK Biodiversity Action Plan (BAP).

A1.2 Breeding Birds

Under the Wildlife and Countryside Act 1981 (as amended), all birds, their nests and eggs are protected by law and it is thus an offence, with certain exceptions, to intentionally kill, injure or take any wild bird; intentionally take, damage or destroy the nest of any wild bird whilst it is in use or being built; and intentionally take or destroy the egg of any wild bird.

Additional protection is offered to those scarce species listed on Schedule 1 of the Act such that it is an offence to intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird.

A1.3 Invertebrates

Certain scarce or rare invertebrates are listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended), affording them protection against possession and sale and, in some cases killing and injury or deliberate destruction of their habitat.

The UK Priority Species lists invertebrate species that are considered to be especially threatened or scarce.

This report has also been produced in line with relevant policy and guidance. This includes the following:

A1.4 UK Post-2010 Biodiversity Framework

As a result of new drivers and requirements, the 'UK Post-2010 Biodiversity Framework', published in July 2012, has now succeeded the UK BAP. In particular, due to devolution and the creation of country-level biodiversity strategies, much of the work previously carried out under the UK BAP is now focussed at a country level. Additionally, international priorities have now changed: accordingly, the framework sets out the priorities for UK-level work to

support the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020 and its five strategic goals and 20 'Aichi Targets', agreed at the CBD meeting in Nagoya, Japan, in October 2010; and the new EU Biodiversity Strategy (EUBS) in May 2011. However, the UK BAP lists of priority species and habitats remain important and valuable reference sources.

The UK Biodiversity Action Plan (UK BAP) was produced in accordance with the 1992 UN Convention on Biological Diversity. It describes the UK's biological resources and commits a detailed plan for the protection of these resources, focusing on key habitats and species considered as being of particular significance to nature conservation within a UK context.

Priority species and priority habitats listed under the UK BAP and local BAP are addressed at all levels of UK planning policy, the aim of this being that development contributes to halting further losses and encouraging population enhancement.

Under the Natural Environment and Rural Communities (NERC) Act 2006, it is now the duty of all governmental departments to take Priority species into account as a material consideration in the determination of planning applications.

A1.5 The National Planning Policy Framework (NPPF)

The NPPF, published in April 2012 replaces all Planning Policy Statements and Guidance (PPSs and PPGs).

The stipulations for conservation and enhancement of the natural environment state that the planning system should minimise the impacts on biodiversity and where possible restore degraded or depleted habitats.

The main aim is to contribute to the government objective to halt the overall decline in biodiversity, through the establishment of coherent ecological networks that are more resilient to current and future environmental pressures. There has also been a range of conservation and enhancement principles established to guide planning processes and decisions.
Local planning authorities have been given responsibility to set the strategic approach for the creation, protection, enhancement and management of biodiversity networks through planning at the landscape-scale, often across local authority boundaries.

The NPPF emphasises the importance of local green space and states that Local Planning Authorities (LPA's) should plan positively for the creation, protection, enhancement and management of biodiversity networks and green infrastructure.

A1.6 The England 2020 Biodiversity Strategy

The England Biodiversity Strategy 2020 (August 2011) was published by Defra in response to the National Environment White Paper. It sets the Government's objectives for halting the net loss of biodiversity by 2020 and promotes the recognition of the intrinsic value of the benefits from biodiversity, by society.

It emphasises the landscape-scale and ecosystems approach for the demonstration of the benefits obtained from ecosystem services, their interactions and feedbacks rather than a species approach in order to establish more coherent and resilient ecological networks.

A1.7 BS42020: Biodiversity - Code of practice for planning and development

Published in August 2013, "The UK commitment to halt overall loss of biodiversity by 2020 in line with the European Biodiversity Strategy and UN Aichi targets, is passed down to local authorities to implement, mainly through planning policy. To assist organisations affected by

these commitments, BSI has published BS 42020 Biodiversity in planning and development – Code of practice, which offers a coherent methodology for biodiversity management.

The British Standard seeks to promote transparency and consistency in the quality and appropriateness of ecological information submitted with planning applications and applications for other regulatory approvals"[13].

A1.8 Camden Biodiversity Action Plan (2013-2018)

The Camden Biodiversity Action Plan (BAP) is a partnership document that outlines the priorities for biodiversity in Camden and sets out a programme of action to improve biodiversity across the borough. The plan draws together a series of actions that will ensure that best practice, policy and legislation are followed and Camden's residents are provided with opportunities to experience the natural world within a very urban environment.

The BAP comprises a partnership document, coordinated by Camden Council. It outlines how the public, private and voluntary sectors will work together to deliver tangible results for biodiversity.

It operates within the context of national and regional legislation and policy. That with specific relevance to Camden comprises:

- Local Development Framework 2010: Core Strategy Policy 15: Protecting and improving our parks and open spaces and encouraging biodiversity; Development Policy 22: Promoting sustainable design and construction, and; Development Policy 31: Provision of, and improvements to, open space and outdoor sport and recreation facilities.
- The Camden Plan.
- Camden Planning guidance: 1. Design (Section 6) Landscape design and trees; 3. Sustainability Section; 10 Brown roofs, green roofs and green walls; Section 13 Biodiversity; Section 14 Local food growing.
- Sites of Nature Conservation Importance Supplementary Planning guidance.
- Green Action for Change.
- Camden Parks and Open Spaces Action Plan 2012/13.
- Camden Tree Policy (2012).

The following action plan is of relevance to the subject site and proposals:

Action Plan 2: Built Environment

The built environment includes buildings, developments, streets, public realm and infrastructure. The main opportunities for providing biodiversity enhancements in the built environment are:

- *living roofs and walls;*
- *biodiversity enhancing landscaping;*
- *installation of artificial nesting and roosting sites;*
- *sustainable drainage systems (SuDS);*
- *trees.*

Current planning policy requires that developers consider biodiversity in their proposals and contribute to an overall biodiversity enhancement.

[13] http://shop.bsigroup.com/ProductDetail/?pid=000000000030258704

All developments to include living roofs wherever feasible, in line with Camden Development Policy 22. 75% of living roofs should be biodiverse extensive roofs, in line with best practice and guidance from the Environment Agency.

Encourage greening of the built environment through installation of sustainable living walls.

Include installation of species features such as bird and bat bricks. These should be targeted to Camden priority species.

Provide new roosting opportunities for bats across Camden.

Table 10 Protected and/or Priority Species for Camden

Species - common name	Species - scientific name
Birds	
Hedge Accentor	*Prunella modularis*
Song Thrush	*Turdus philomelos*
Common Starling	*Sturnus vulgaris*
House Sparrow	*Passer domesticus*
Redwing	*Turdus iliacus*
Eurasian Hobby	*Falco subbuteo*
Fieldfare	*Turdus pilaris*
Herring Gull	*Larus argentatus*
Common Redpoll	*Carduelis flammea*
Yellow Wagtail	*Motacilla flava*
Greylag Goose	*Anser anser*
Spotted Flycatcher	*Muscicapa striata*
Common Linnet	*Carduelis cannabina*
Common Kingfisher	*Alcedo atthis*
Brambling	*Fringilla montifringilla*
Tree Pipit	*Anthus trivialis*
Sky Lark	*Alauda arvensis*
Northern Lapwing	*Vanellus vanellus*
Sand Martin	*Riparia riparia*
Common Crossbill	*Loxia curvirostra*
Reed Bunting	*Emberiza schoeniclus*
Black Redstart	*Phoenicurus ochruros*
Ring Ouzel	*Turdus torquatus*
Common Tern	*Sterna hirundo*

Species - common name	Species - scientific name
Wood Warbler	*Phylloscopus sibilatrix*
Common Cuckoo	*Cuculus canorus*
Yellowhammer	*Emberiza citrinella*
European Turtle Dove	*Streptopelia turtur*
Lesser Spotted Woodpecker	*Dendrocopos minor*
Peregrine Falcon	*Falco peregrinus*
Firecrest	*Regulus ignicapilla*
Lesser Redpoll	*Carduelis cabaret*
Wood Lark	*Lullula arborea*
European Honey-buzzard	*Pernis apivorus*
Caspian Gull	*Larus cachinnans*
Green Sandpiper	*Tringa ochropus*
Eurasian Golden Oriole	*Oriolus oriolus*
Common Bullfinch	*Pyrrhula pyrrhula*
Short-eared Owl	*Asio flammeus*
Hawfinch	*Coccothraustes coccothraustes*
Red-backed Shrike	*Lanius collurio*
Arctic Tern	*Sterna paradisaea*
European Golden Plover	*Pluvialis apricaria*
Smew	*Mergellus albellus*
Osprey	*Pandion haliaetus*
Whimbrel	*Numenius phaeopus*
Grasshopper Warbler	*Locustella naevia*
Eursian Curlew	*Numenius arquata*
Little Egret	*Egretta garzetta*
Little Bittern	*Ixobrychus minutus*
Little Tern	*Sternula albifrons*
Mediterranean Gull	*Larus melanocephalus*
Merlin	*Falco columbarius*
Montagu's Harrier	*Circus pygargus*
Red Kite	*Milvus milvus*
Corn Bunting	*Emberiza calandra*
Eurasian Tree Sparrow	*Passer montanus*
Arctic Skua	*Stercorarius parasiticus*

Species - common name	Species - scientific name
Eurasian Wryneck	*Jynx torquilla*
Barnacle Goose	*Branta leucopsis*
Ruddy Shelduck	*Tadorna ferruginea*
Sandwich Tern	*Sterna sandvicensis*
Dartford Warbler	*Sylvia undata*
Eurasian Marsh Harrier	*Circus aeruginosus*
Barn Owl	*Tyto alba*
Common Greenshank	*Tringa nebularia*
Flowering Plants	
Cornflower	*Centaurea cyanus*
Chamomile	*Chamaemelum nobile*
Spreading Bellflower	*Campanula patula*
Marsh Sow-thistle	*Sonchus palustris*
Triangular Club-rush	*Schoenoplectus triqueter*
Mistletoe	*Viscum album*
Populus nigra subsp. betulifolia	*Populus nigra subsp. betulifolia*
Pennyroyal	*Mentha pulegium*
Creeping Marshwort	*Apium repens*
Caraway	*Carum carvi*
Corn Buttercup	*Ranunculus arvensis*
Divided Sedge	*Carex divisa*
Insects and Spiders	
Stag Beetle	*Lucanus cervus*
White-letter Hairstreak	*Satyrium w-album*
Wall Brown	*Lasiommata megera*
Grey Dagger	*Acronicta psi*
White Admiral	*Limenitis camilla*
Brindled Beauty	*Lycia hirtaria*
Buff Ermine	*Spilosoma luteum*
Centre-barred Sallow	*Atethmia centrago*
Cinnabar	*Tyria jacobaeae*
Dusky Thorn	*Ennomos fuscantaria*

Species - common name	Species - scientific name
Mouse Moth	*Amphipyra tragopoginis*
Sallow	*Xanthia icteritia*
Small Heath	*Coenonympha pamphilus*
Small Square-spot	*Diarsia rubi*
Beaded Chestnut	*Agrochola lychnidis*
Brown-spot Pinion	*Agrochola litura*
Double Dart	*Graphiphora augur*
Dusky Brocade	*Apamea remissa*
Knot Grass	*Acronicta rumicis*
Lackey	*Malacosoma neustria*
Large Nutmeg	*Apamea anceps*
Mottled Rustic	*Caradrina morpheus*
Mullein Wave	*Scopula marginepunctata*
Oak Hook-tip	*Watsonalla binaria*
Shaded Broad-bar	*Scotopteryx chenopodiata*
Shoulder-striped Wainscot	*Mythimna comma*
Small Phoenix	*Ecliptopera silaceata*
White Ermine	*Spilosoma lubricipeda*
Red-tailed Carder Bee	*Bombus (Thoracombus) ruderarius*
Narrow-bordered Bee Hawk-moth	*Hemaris tityus*
Oil Beetle	*Meloe proscarabaeus*
Terrestrial Mammals	
Soprano Pipistrelle	*Pipistrellus pygmaeus*
Common Pipistrelle	*Pipistrellus pipistrellus*
Daubenton's Bat	*Myotis daubentonii*
Noctule Bat	*Nyctalus noctula*
West European Hedgehog	*Erinaceus europaeus*
Brown Long-eared Bat	*Plecotus auritus*
Natterer's Bat	*Myotis nattereri*
Vespertilionidae	*Vespertilionidae*
Lesser Noctule	*Nyctalus leisleri*
Nathusius's Pipistrelle	*Pipistrellus nathusii*
Serotine	*Eptesicus serotinus*

Species - common name	Species - scientific name
Nyctalus Kuhl's Pipistrelle	*Nyctalus* *Pipistrellus Kuhlii*

A2 Suitably Qualified Ecologist (SQE) – CV

Based in Derbyshire

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Kate Jackson
Curriculum Vitae

PROFESSION:

Ecologist (Managing Director)

EMPLOYMENT HISTORY:

October 2012 – present; Ecologist & Managing Director
May 2006 - September 2012; Senior Ecologist, Arup
February 2002 - May 2006; Senior Environmental Consultant, RPS
July 1998 - July 1999; Environmental Officer, SGS

PROFESSIONAL ASSOCIATIONS AND LICENCES:

Chartered Environmentalist (CEnv)
Full member of the Chartered Institute of Ecology and Environmental Management (MCIEEM)
Class Survey Licence WML-CL09 (Great Crested Newt Class 2)

PROFILE:

Kate provides advice, undertakes habitat and protected species surveys, and produces reports at all stages of a development programme. She focuses on guiding projects to meet client needs, minimising ecological risk, whilst identifying opportunities for ecological gain and sustainable operation.

Kate is instrumental in encouraging clients to adopt sustainable design solutions, adding value to schemes. These include green roof design, green space and habitat creation: opportunities that encourage community and stakeholder involvement and environmental education.

Kate undertakes EcIA reporting and Appropriate Assessment, produces management plans to ensure long-term enhancement and maintenance of measures, and undertakes BREEAM/Code for Sustainable Homes assessment.

Kate has designed innovative methods to investigate and report the biodiversity value of large property portfolios and schemes to identify ecological ‘risk’, opportunities for enhancement / habitat creation and to understand the impacts on ecological receptors.

Protected species experience has included preparing applications for, and operating under license for badger sett closure and great crested newt mitigation schemes.

Kate’s management roles have included the day-to-day management of a team of consultants and project management of individual sites and large portfolios. Kate is experienced in the on-site management of sub-consultants and contractors, and actively pursues her Continuing Professional Development.

Project experience includes heavy industrial facilities to light industrial/commercial facilities, brownfield, coastal and rural sites. Clients have included statutory organisations, UK property investors, developers (commercial, office, retail, residential), rail operators, educational facilities and many other private companies with a breadth of operations.

PROJECT EXAMPLES:

Kate Priestman Limited:

Project: Private residential estate, Ascot; **Client:** Silverdene Properties Limited (July 2014-June 2015) - Extended Phase 1 Habitat Survey and subsequent report for planning purposes, advised on enhancements as part of the design process, provided project management, design and reporting of subsequent bat surveys, undertook badger survey and report, produced a Biodiversity Mitigation Strategy and a Biodiversity Management Plan to satisfy planning conditions.

Project: Private residential, Wilmslow; **Client:** Private (April 2015-June 2015) - Bat Scoping Survey of property prior to redevelopment, followed by a bat emergence and dawn re-entry survey of the site and subsequent reporting.

Project: Student Accommodation; **Client:** Cardy Construction Limited (2013-2015) - Extended Phase 1 Habitat Survey and BREEAM assessment, produced a subsequent Enhancement Specification document and a Biodiversity Management Plan for the development.

Project: Bat Surveys, Cambridgeshire; **Client:** Arup (May-August 2014) - Bat surveys of trees at various locations along the A14.

Project: Extended Phase 1 Habitat Survey, Kent; **Client:** Capita (October 2013) - Extended Phase 1 Habitat Survey and report of a site to inform future proposals for site management.

Project: Extended Phase 1 Habitat Survey and ecological watching brief, Essex; **Client:** Hydrock Contracting Ltd. (Sept. 2013) - Extended Phase 1 Habitat Survey and report in order to inform site clearance proposals. Subsequently carried out an ecological watching brief for reptiles.

Project: Various; **Client:** URS (July-August 2013) - Provided senior ecology support over a 7-week period, predominantly undertaking Habitat Regulation Assessment for Plans. Supported staff undertaking bat surveys and carried out the preliminary ecological assessment of a scheme.

Project: Code for Sustainable Homes Assessment (CSH) (private property); **Client:** Confidential (June-July 2013) - Site survey and report to support a CSH assessment for the redevelopment of a private property.

Project: West Wittering flood defence scheme; **Client:** Arup/EA (May-June 2013) - Undertook the Ecological Clerk of Works role, during the completion and habitat creation phase.

Project: Thames Tunnel; **Client:** Arup (Nov. 2012) - Provided EcIA support for the final production of ES chapters.

Project: Planning Report; **Client:** Pinewood Studios (Nov. 2012) - Produced an ecology report to support a planning application.

Previous employment[14]:

Project: Thames Tideway; **Client:** Thames Water (2010-2012) - Key member of the terrestrial ecology team for the Thames Tideway project. Works included species surveys and habitat surveys, EcIA, input into design, with associated mitigation and enhancement.

Project: Rail; **Client:** Crossrail (2012) - Study of the entire Crossrail route in order to identify opportunities for ecological enhancement and habitat creation. Devised an innovative report in order to present this information, which allowed the sites and options to be immediately identifiable.

Project: BREEAM; **Client:** British Land (2011-2012) - BREEAM assessment of a redevelopment site in Central London. This included liaison with the architects regarding the design of green roofs and landscaping, to ensure that the biodiversity potential of the development was maximised.

Project: Commercial/office/retail; **Client:** British Land (2009-2012) - Provision of advice and support in order to maximise biodiversity potential associated with UK wide portfolio. Activities included the production of a corporate sustainability biodiversity brief (addressing the integration of ecological considerations within each of the properties), the monitoring of biodiversity initiatives (green roofs and landscaping), production of Biodiversity Action Plans and Corporate Responsibility reporting.

Project: Commercial redevelopment; **Client:** Pinewood Studios (2008-2009 & 2012**)** - Input into 2008/09 EcIA: undertook species surveys, which included dormice, great crested newts, badgers (bait marking study), reptiles and bats. Ecology discipline lead for 2012 EcIA and design development: included species surveys (management and undertaking), species survey reporting, EcIA reporting, ongoing meetings with design and client teams, presentations, provision of ecological advice and ecology lead concerning the design proposals.

Project: East London Line Project; **Client:** TfL (2006-2012) - Ecological lead for Phases of the East London Line project included species surveys, habitat surveys, supervision of contractors, species translocation, Environmental Statement revision, meetings with stakeholders, provision of general ecological advice and input into landscape design proposals, mitigation and enhancement measures.

Project: Hayling Island & West Wittering; **Client:** Environment Agency (2009-2012) - Provided the ecological lead for coastal flood defence schemes on the south coast. This involved production of a screening and environmental report, numerous ecological surveys, Screening for Appropriate Assessment, liaison with regulators and local interest groups, and Environmental Clerk of Works through the construction phase.

Project: Animal Estates Exhibition; **Client:** N/A - (2011) - Guest presenter on the subject of living roofs for a London based exhibition.

Project: Newman's Sluice; **Client:** Environment Agency (2009-2011) - Ecology lead for the restoration of failing sluice gates, including species and habitat surveys and reporting. Inputs added value to the detailed design and management of works around breeding birds, riparian mammals, reptiles and fish. Key ecological enhancements include off-site habitat

[14] It should be noted that project examples associated with previous employment comprise Kate Priestman's personal experience whilst at Arup and are not associated with Kate Priestman Limited.

improvements for water voles and reptiles. Collaborated with local interest groups and undertook the Environmental Clerk of Works role during construction phase.

Project: Stratford City; **Client:** Westfield & Bovis Lend Lease (2006-2011) - Managed the delivery of surveys and provided ecological advice and input during construction, planning and design phases. This included the production of site management plans and mitigation reports, which were produced to satisfy planning conditions.

Project: Saudi Arabia; **Client:** Confidential (2010) - Terrestrial ecologist for a proposed development covering some 1250ha of terrestrial scrub and marine habitats. Work included EcIA reporting and input to the masterplan design to produce a solution to reduce the impact on the environment, improve education and restore local habitats.

Project: Sustainable Design Guide; **Client:** Centro (2010) - Provided the biodiversity input into a design guide for public transport buildings and infrastructure. The aims included identifying design measures, development of an evaluation method to assess the value of specific sustainable design measures, and a methodology for monitoring and reporting the performance of measures.

Project: Training presentation; **Client:** London Local Authority Planning Department (2009) - Delivered a training presentation on living roofs.

Project: River Ravensbourne; **Client:** Environment Agency (2008) - Feasibility study into restoration options for a stretch of river in South London. The scheme incorporated educational materials, living walls, restored river channels, and terraced landscapes.

A3 Bat Boxes and Bird Boxes

The following tables detail enhancement measures that are recommended for the site. These suggestions take into account the site locality, site conditions, survey results and local species targets and policy (see Appendices A1).

A3.1 Bat Boxes

Bats are frequently found in urban landscapes, often foraging in parks, gardens and other open spaces (for example, cemeteries) and roosting in crevices on buildings. Bats often use linear corridors of vegetation or buildings as flight paths.

Bats require roosts for rest (during the day), feeding (at night), reproduction and hibernation. Bat boxes are an effective means to provide shelter for the majority of bat species. They readily adopt these artificial boxes if they are of an appropriate design and placed in the correct location.

Bat box materials range from wood, brick, woodcrete (wood sawdust and concrete), concrete and clay. Materials are chosen which allow natural respiration, stable temperature, along with good durability. Boxes made of woodcrete have been successful in attracting bats and are considered to be more durable than wooden boxes.

Careful attention must be given to the placement of bat boxes, to ensure that bats will find and accept the roosts. Bat boxes can be attached to suitable locations under the eaves and overhangs of buildings, on suitable trees and on climbing plant-covered walls. Warm roost temperatures are important in summer for pregnant and lactating females and their young. In winter bats need constant cool temperatures for hibernation. The position of the bat boxes should therefore vary to maximise the roosting conditions available.

Bat boxes should be placed in secluded/low disturbance areas, where there are low levels of artificial lighting.

Table 11 Proposed Bat Box Installation

Suggested Box Type	Species	Proposed Number of Boxes	Installation Requirements
1WI Schwegler Summer and Winter Bat Box *Or,* Ibstock	Suitable for bat species, which typically inhabit buildings, such as common pipistrelles (*Pipistrellus pipistrellus*), serotine (*Eptesicus serotinus*) bats and occasionally noctule (*Nyctalus noctula*).	X2	Bat boxes should be positioned facing south or south west in a sheltered location. Positioning the boxes in this way will provide variation in microhabitat temperatures as required by bats whilst roosting and will increase the likelihood of the boxes being used.

Suggested Box Type	Species	Proposed Number of Boxes	Installation Requirements
Enclosed Bat Box 'C' *Or,* 1FR Schwegler Bat Tube			Obstructions such as branches or other items that may impede the bats' approach to the box should be cleared away underneath the box so the bats can land easily, before crawling into the box. All disturbance and monitoring of bat boxes must be undertaken by a suitably licenced person in order to not contravene legislation.

A3.2 Bird Boxes

Urban landscapes provide habitat for a variety of bird species, although there are often limited opportunities available for birds to nest and forage. Measures to provide additional foraging for birds are most effectively provided through habitat enhancements, and the provision of nest boxes is a straightforward method for increasing the opportunities available for nesting birds.

Careful consideration should be given to the species of bird to be attracted and that are known to use the site already: different styles of nest box suit different species of bird, and to ensure success, the most appropriate style of box should be provided.

Nest boxes can be attached to suitable locations under the eaves and overhangs of buildings, on trees and on walls (especially those covered by climbing plants). A wide variety of attachment methods are available for nest boxes, and it is possible to find a method that is appropriate to most situations.

It is recommended that a variety of box types should be chosen to encourage a diverse range of bird species. Woodcrete boxes are recommended for durability. They are made from a mix of sawdust, concrete and clay and are designed to be impervious to weather and predators, have excellent insulation properties, are rot proof and have an anticipated life of 25 years or more.

Table 12 Proposed Bird Box Installation

Suggested Box Type	Species	Proposed Number of Boxes	Installation Requirements
1SP Schwegler Sparrow Terrace	The Sparrow Terrace has been designed to help redress the balance of falling	X1	Face the box between north and east, avoiding strong sunlight and the

Suggested Box Type	Species	Proposed Number of Boxes	Installation Requirements
	house sparrow numbers.		wettest winds. Make sure that the birds have a clear flight path to the nest without any clutter directly in front of the entrance.
Schwegler Brick Nest Boxes - Type 24	Suitable for many small birds including great tit (*Parus major*), blue tit (*Cyanistes caeruleus*), marsh (*Poecile palustris*), coal tit (*Periparus ater*) and crested tit (*Lophophanes cristatus*), redstart (*Phoenicurus phoenicurus*), nuthatch (*Sitta europaea*), tree (*Passer montanus*) and house sparrow.	X1	