

St Edmunds Terrace
Code for Sustainable Homes
Ecology Report

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CONTENTS

SECTION	PAGE NO
1. INTRODUCTION.....	1
2. CODE FOR SUSTAINABLE HOMES	1
2.1 Background	1
2.2 How the Ecology Credits Are Achieved	3
3. PROFESSIONAL PROFILES.....	4
3.1 Suitably Qualified Ecologist and Report Reviewer.....	4
3.2 Surveyor	4
4. METHODOLOGY.....	5
4.1 Extended Phase 1 Habitat Survey Methodology	5
5. EXISTING SITE ECOLOGY	6
5.1 Existing Site Flora	6
5.2 Protected and Notable Species.....	9
6. PROPOSED DEVELOPMENT	10
7. WHICH CREDITS CAN BE ACHIEVED.....	10
7.1 Eco 1 Ecological Value of Site	10
7.2 Eco 2 Ecological Enhancement	11
7.3 Eco 3 Protection of Ecological Features	12
7.4 Eco 4 Change in Ecological Value of Site.....	12
8. SUMMARY OF WHICH CREDITS CAN BE ACHIEVED.....	14
9. REFERENCES.....	15
10. LIMITATIONS	15
11. COPYRIGHT	16
APPENDIX A CVS	
APPENDIX B PLANT SPECIES LIST	

1. INTRODUCTION

This report has been compiled by URS Corporation Ltd. (URS), on behalf of Regents Park (GP) Estates Ltd. as part of the Department for Communities and Local Government's Code for Sustainable Homes ("the Code") ecological assessment at the site known as St Edmunds Terrace (hereafter referred to as "the Site"), which is proposed for redevelopment.

This ecological assessment specifically relates to Ecology Credits Eco 1 to Eco 4 available within the Code assessment. The format of this report complies with the EcoHomes 2006 and the Code Ecology Report template as provided by the Building Research Establishment (BRE).

All surveys required to complete this report were undertaken by URS. This ecological assessment aims to identify any impacts that the development may have on the environment by identifying, if any, the important ecological features within the Site and detailing how they should be protected. Suitable enhancements to incorporate into the proposed development are also recommended.

The main sections in this report are as follows:

Section 2	A brief outline on the Code, including how the credits can be achieved.
Section 3	The qualification details of those involved in the completion of this report.
Section 4	The methodology used to complete the surveys required for the assessment.
Section 5	A brief description of what is currently on Site.
Section 6	A brief description of the proposed development.
Section 7	Which credits can be achieved.
Section 8	A summary of the credits awarded.

2. CODE FOR SUSTAINABLE HOMES

2.1 Background

The Code was introduced in England in April 2007 to replace and update the BRE's EcoHomes 2006 assessment. The Code is a standard created to provide guidance to the building industry on improving the overall environmental sustainability of new houses, while also providing information to buyers on the environmental performance of their new home. The Code was made mandatory on all new housing developments in May 2008.

Trained registered assessors complete the final assessment awarding the development credits in the following nine issue categories:

- Energy and carbon dioxide (CO₂) emissions;
- Water;
- Materials;
- Surface water run-off;
- Waste;
- Pollution;
- Health and Wellbeing;
- Management; and phenomenal
- Ecology.

Each category includes a number of environmental issues/impacts on the environment, which can be assessed against a performance target and awarded one or more credits. Performance targets are more demanding than the minimum standard needed to satisfy building regulations or other relevant legislation. They represent good or best practice, are technically feasible and can be delivered by the housing industry. Mandatory minimum levels of performance have been set in seven key areas:

- Energy efficiency /CO₂;
- Water efficiency;
- Materials;
- Surface water management;
- Site waste management;
- Household waste management; and
- Lifetime homes (code level 6 only).

Individual dwellings are assessed, rather than groups of dwellings, and are rated on a scale of Code Level 1 to Code Level 6, where 6 is the highest.

The Code assessment is carried out in two stages, one at design stage to provide an interim certification and the second at post construction to confirm compliance to the interim certification.

The ecology credits available aim to reduce the impact on the ecology present on Site by:

- Reducing any adverse impact upon important ecological features on Site pre-development; and
- Providing guidance on designing features to positively enhance the Site's ecology by incorporating new habitats and enhancing those already present.

2.2 How the Ecology Credits Are Achieved

Credits Eco 1 to Eco 4 relate to different aspects of the potential impact on the Site's ecology. Eco 1, Eco 3 and Eco 4 relate to what is currently on Site, compared to what will be on Site post-development. Eco 2 relates to ecological enhancements that compare the Site's ecology post-development.

2.2.1 Eco 1 Ecological Value of Site (1 Credit)

One credit is awarded when it has been demonstrated that the development site is defined as land of inherently 'low ecological value'. Any land of ecological value outside of the construction zone but within the site would need to be fully protected from damage during site preparation and construction works in order to award this credit.

2.2.2 Eco 2 Ecological Enhancement (1 Credit)

One credit is awarded when a suitably qualified ecologist provides appropriate 'key' and 'additional' recommendations that will enhance the ecological value of the site. Confirmation that the developer will be adopting all key recommendations and at least 30% of additional recommendations is also required to gain one credit under Eco 2.

2.2.3 Eco 3 Protection of Ecological Features (1 Credit)

One credit is awarded where all existing features of ecological value within the site are protected and maintained during site clearance, preparation and construction works. This credit can be awarded by default if the entire site has been classified as being land of inherently 'low ecological value' in accordance with Eco 1. It can also be awarded if it has been confirmed by a suitably qualified ecologist that a feature can be removed because of its low ecological value or where an arboriculturalist has confirmed a feature can be removed owing to poor health/condition, as long as all other features are adequately protected in accordance with the ecologists recommendations.

2.2.4 Eco 4 Change in Ecological Value of Site (4 Credits)

Four credits are awarded using the change in ecological value calculations outlined in the Code Technical Guidance –November 2010 (Ref. 1). This calculates the ecological value of the site before and after development, using the number of species present per metre squared (m²). Then the overall change in ecological value is calculated by comparing the ecological value of the site pre- and post-development.

If there is a minor negative change in ecological value, one credit is awarded; if there is a neutral difference, two credits are awarded; and if there is a minor enhancement, three

credits are awarded. The full four credits will be awarded if there is a major enhancement, of more than nine species per hectare as a result of the redevelopment.

3. PROFESSIONAL PROFILES

3.1 Suitably Qualified Ecologist and Report Reviewer

Name: Emma Hatchett

Position: Senior Ecological Consultant at URS

Qualifications: BSc Honours Environmental Biology

Memberships: Full Member of the IEEM

3.1.1 Experience

Emma has completed a BSc Honours in Environmental Biology and supplemented her consultancy experience by undertaking a Postgraduate Certificate in Biological Recording. Emma has over eight years consultancy experience, including five years experience in undertaking various sustainability assessments. Emma specialises in protected species and Phase 1 habitat surveys throughout the United Kingdom. Emma holds survey licenses for bats, great crested newts, native crayfish and dormice.

Emma predominantly undertakes ecological field survey work; in particular Extended Phase 1 habitat surveys, and also conducts Ecological Impact Assessments (EclA), both as part of EIAs and as stand-alone assessments. Emma works within the wider URS ecology team to help develop appropriate protected species mitigation strategies. Her baseline survey experience also includes bat, water vole, great crested newt, otter, dormouse, badger, amphibian and reptile surveys.

3.1.2 Verification of Report

Emma Hatchett, who has verified this report, is a Suitably Qualified Ecologist (SQE) as defined by BRE, that is to say she is a full member of IEEM and is therefore covered by a professional code of conduct.

A full CV is provided in Appendix A of this report.

3.2 Surveyor

Name: Chloe Phelan

Position: Ecological Consultant

Qualifications: BSc Zoology (Hons), MSc in Ecology

Memberships: Associate Member of the IEEM.

3.2.1 Experience

Chloe completed a BSc in Zoology at the University of Leeds in 2006 and recently completed an MSc in Ecology and Management of the Natural Environment at the University of Bristol. This course covered a range of applied ecological skills including surveying, protected species monitoring, habitat creation and restoration, ecological impact assessment, ecological mitigation and project management.

Chloe has gained over three years experience within ecological consultancy since graduating from the University of Leeds. This experience has been both abroad and in the UK at URS.

She predominantly completes ecological field survey work, particularly extended Phase 1 habitat surveys, and EcIA both as part of EIAs and as stand-alone documents. Through the impact assessment process she works with the URS ecology team to help develop appropriate mitigation strategies. Her baseline survey experience also includes reptile, bat, badger, bird and water vole surveys. She has completed multiple BREEAM and Code for Sustainable Homes Ecology Assessments.

A full CV is provided within Appendix A of this report.

4. METHODOLOGY

This section outlines details of the methodology used to carry out the ecological assessment for the Site:

- An extended Phase 1 habitat (Phase 1) survey and a full species list;
- Bat daytime assessment and emergence survey
- A review of landscaping proposals to provide information on post development planting; and
- A compilation of recommendations to enhance the ecological importance of the Site.

4.1 Extended Phase 1 Habitat Survey Methodology

An extended Phase 1 survey of the Site was undertaken, in line with guidance set out by the Joint Nature Conservation Committee (JNCC) (Ref. 2). A Phase 1 survey is a standard technique for rapidly obtaining baseline ecological information over a large area of land. It is primarily a mapping technique and uses a standard set of habitat definitions for classifying areas of land on the basis of the vegetation present. For this survey, the technique was modified (or extended) to provide more detail over a smaller area; give further consideration to fauna; and identify the potential for the Site itself to support protected and/or notable species. For the purposes of this assessment, a full species list of each habitat type within the survey area was recorded with species abundance assessed against the DAFOR scale: entail

- D – Dominant;

- A – Abundant;
- F – Frequent;
- O – Occasional; and
- R – Rare.

It should be recognised that this scale represents relative abundance within each habitat type, rather than regional or national abundances. Incidental records of fauna were also made during the survey and the habitats identified were evaluated for their potential to support protected species and other species of conservation concern, including BAP priority species.

The survey was undertaken on the 26th July 2010 during optimal survey conditions prior to any Site works commencing.

During the extended Phase 1 survey, the buildings and trees within the Site were assessed to determine their potential to support bats, in accordance with guidelines published by the Bat Conservation Trust (Ref. 3). Features looked for included holes, ivy cover and slits in the trees within the Site; and missing/cracked tiles, droppings and staining on the buildings. None of the buildings were entered during the extended Phase 1 habitat survey. The trees and buildings were assessed in line with the following criteria:

- High – Numerous potentially suitable summer roosting sites, including at least one feature that may potentially be used as a hibernaculum or maternity roost, with good connectivity to high quality foraging habitat;
- Medium – Some potentially suitable summer roosting sites with at least moderate connectivity to foraging habitat;
- Low – Very few potentially suitable summer roosting sites with at least some connectivity to foraging habitat; and
- Negligible/None – Feature has no apparently suitable roosting sites or is entirely isolated from foraging habitat.

5. EXISTING SITE ECOLOGY

5.1 Existing Site Flora

5.1.1 Vegetation and Habitats

The Phase 1 habitat types that were recorded during the survey are as follows.

- Scattered trees;
- Amenity grassland;
- Dense scrub;

- Species-poor hedge with trees;
- Buildings;
- Hard standing; and
- Bare ground.

These habitats are described in detail and their distribution mapped in the Ecology Report included in the submission. A list of plant species recorded, in addition to their relative abundance according to the DAFOR scale, is given in Appendix B.

5.1.2 Scattered trees

Numerous scattered broad-leaved and occasional coniferous trees occur within the Site. The majority of the broad-leaved trees are saplings or young trees, dominated by ash (*Fraxinus excelsior*) and sycamore (*Acer pseudoplatanus*) and presumably self-seeded. A number of trees have been removed from the Site since the Phase 1 survey undertaken in 2008, the stumps are now located within areas of dense scrub. Other scattered trees comprise individual planted specimens within amenity grassland / dense, hedge shrub areas. Species present include, ash, sycamore, elder (*Sambucus nigra*), hybrid black poplar (*Populus nigra* subsp.), tree of heaven (*Ailanthus altissima*), lime (*Tilia* sp.), hawthorn (*Crataegus monogyna*), London plane (*Platanus x hispanica*), willow (*Salix* sp.) and alder (*Alnus glutinosa*). A full schedule of trees can be found in the St Edmunds Terrace Arboricultural Report Tree Report as included in the submission.

5.1.3 Amenity grassland

Amenity grassland is the dominant semi-natural habitat within the Site and occurs in the form of several lawn areas, particularly as lawn surrounding the block of flats; within the front and rear gardens of the semi-detached property; and surrounding the covered reservoir infrastructure.

These lawn areas were more overgrown than observed during the survey undertaken in 2008, and dominated by red fescue (*Festuca rubra*). Other grass species including smooth meadow-grass (*Poa pratensis*), perennial rye-grass (*Lolium perenne* L.), Yorkshire-fog (*Holcus lanatus*), creeping bent (*Agrostis stolonifera* L) and Cock's-foot (*Dactylis glomerata* L) were also present. Moss species were locally frequent, as were various forb species including creeping cinquefoil (*Potentilla reptans*), ribwort plantain (*Plantago lanceolata*), dandelion (*Taraxacum officinale* agg.), common mouse-ear (*Cerastium fontanum*), creeping buttercup (*Ranunculus repens* L), daisy (*Bellis perennis*) and cow parsley (*Anthriscus sylvestris*).

5.1.4 Dense Scrub

Dense scrub is found across the Site, dominated by common, widely planted, non-native ornamental species. Species present include green alkanet (*Pentaglottis sempervirens*), St John's wort (*Hypericum perforatum*), cultivated rose species (*Rose* sp.), barberry (*Berberis vulgaris*), cherry laurel (*Prunus laurocerasus*), Portugal laurel (*Prunus*

lusitanica), cotoneaster (*Cotoneaster horizontalis*), honeysuckle (*Lonicera periclymenum*), guelder rose (*Viburnum opulus*), euonymus (*Euonymus sp.*), yew (*Taxus baccata*) and oleaster (*Elaeagnus sp.*). Ivy (*Hedera helix*) typically forms a continuous covering on the ground at the edge of numerous shrub borders and also along fence lines and around mature trees. Many of these beds and borders were also noted to include sapling, self-seeded trees (particularly sycamore and ash) as well as occasional bramble (*Rubus fruticosus* agg.) and nettle (*Urtica dioica*) which have inhabited less managed areas. Many of the dense scrub areas also have scattered, mature, broadleaf trees present.

5.1.5 Species-poor hedge with trees

One hedgerow occurs within the Site, comprising garden privet (*Ligustrum vulgare*) with occasional broad-leaved trees. These trees comprise frequent sapling ash and sycamore and occasional ivy-clad young to mature ash trees. This hedge extends along part of the Site's frontage onto St Edmund's Terrace along the southern boundary.

5.1.6 Buildings

Several buildings occur on-Site, listed as follows:

- B1 – the four-storey block of flats, with brick walls, hanging tiles and a flat roof;
- B2 – a single-storey concrete walled and flat-roofed block of garages;
- B3 and B4 – two-storey, 1950-style semi-detached residential property with brick walls, hanging tiles and pitched, tiled roof;
- B5 – single-storey, flat-roofed, brick walled electricity sub-station; and
- B6 and B7 – wooden panelled garden sheds each with a pitched felt roof.

The Site also includes infrastructure owned by Thames Water, comprising several rectangular structures and a section of piping.

5.1.7 Hard standing

Hard standing and landscaping within the Site comprises driveways, pavements, access roads, patios and yard / storage areas.

5.1.8 Bare ground

Bare ground within the Site is minimal and found in two small areas in the garden of residential property B3.

5.2 Protected and Notable Species

5.2.1 Bats

Of the 17 species of bat found in the UK, five species have been recorded within a 2km radius of the proposed development Site in the last 20 years. The majority of these records are from Regents Park approximately 0.2km southeast. Species recorded in the locality are Daubenton's bat (*Myotis daubentoni*), Leisler's bat (*Nyctalus leisleri*), noctule (*Nyctalus noctula*), common pipistrelle (*Pipistrellus pipistrellus*) and soprano pipistrelle (*Pipistrellus pygmaeus*). The extended Phase 1 survey assessed that a number of trees have low to medium potential to support roosting bats and two of the buildings have low potential to support roosting bats. Further bat survey work, reported in the URS Bat Survey Report included in the submission, confirmed that two of the buildings within the Site are being used as bat roosts.

5.2.2 Other Mammals

There are records of hedgehog (*Erinaceus europaeus*) within the search area, the closest record being 0.6km east of the Site. There have been a further ten records between 0.7km and 1.9km from the proposed development in various directions from the Site.

In relation to other wild mammals, no evidence of fox (*Vulpes vulpes*) or hedgehog activity was noted during the extended Phase 1 habitat survey. However the Site, together with adjoining semi-natural habitats, would be expected to offer potential opportunities for these species. Notably, the dense shrub borders and the accumulated dead leaves at the base of some of these borders provide a potentially suitable habitat for hedgehogs to hibernate.

5.2.3 Birds

A number of records of protected and/or notable species of bird have been recorded for the 2km radius surrounding and including the Site. Species records received include common tern (*Sterna hirundo*), cormorant (*Phalacrocorax carbo*), common starling (*Sturnus vulgaris*), greylag goose (*Anser anser*), little gull (*Larus minutus*), redwing (*Turdus iliacus*), reed bunting (*Turdus iliacus*), house sparrow (*Passer domesticus*), starling (*Sturnus vulgaris*), dunnoek (*Prunella modularis*) and song thrush (*Turdus philomelos*). The majority of these records are from locations within the confines of Regents Park.

There is one record of black redstart (*Phoenicurus ochruros*) within 2km of the Site, located 1km to the east. In addition, the Site lies within the black redstart "Likely Key Area" (Ref. 4). The Site does not currently support habitats that are potentially suitable to support either foraging or nesting black redstarts; however suitable nesting habitat may be created during the demolition and construction period.

Blackbird (*Turdus merula*), feral pigeon (*Columba livia*) and magpie (*Pica pica*) were recorded using the Site during the extended Phase 1 survey. It is considered likely that

the vegetation within the Site, particularly the scrub and scattered trees, is used by a number of common and widespread bird species.

5.2.4 Invertebrates

There are a number of notable invertebrate species recorded within the search area. The majority of these are from Regents Park. There are 12 records of stag beetle within 2km of the Site the closest of which located approximately 0.7km to the southeast of the Site (likely to be Regents Park). It is considered that the dense shrub, hedge and scattered trees present within the Site have some, albeit limited, potential to provide suitable dead wood habitat for stag beetle and other invertebrates.

5.2.5 Herptofauna

There have been two notable amphibian species recorded within the search area. Common toad (*Bufo bufo*) and common frog (*Rana temporaria*); the closest of which was a record of common toad approximately 0.4km to the northeast of the Site. The Site does not currently support any potentially suitable habitat for these species.

There are no records of reptiles within the search area. It has also been confirmed that the adjacent Regents Park and Primrose Hill do not support a population of reptiles (Ref. 5). Due to the lack of reptiles in the surrounding area, the Site is considered unlikely to support reptiles. Therefore no further survey for reptiles was deemed necessary

5.2.6 Flora

The plant species observed and recorded during the survey are either common, widespread, native species or ornamental, planted species. No notable or invasive plant species have been identified on-Site.

5.2.7 Other Protected/Notable Species

No evidence of any other protected/notable species was noted. This Site is considered unlikely to support any other protected or notable species other than those stated above.

6. PROPOSED DEVELOPMENT

The proposed development includes the removal of all buildings and hardstanding currently present within the Site and the construction of apartment accommodation with landscaped planting. The hedge and mature trees along the northern and north-western boundaries are proposed for retention in the overall development scheme.

7. WHICH CREDITS CAN BE ACHIEVED

7.1 Eco 1 Ecological Value of Site

The Site has numerous mature trees within its boundaries and is also known to support roosting bats. However, it is considered that the Site is still of low ecological value, as it

does not support notable or protected habitats and the mature trees and bat roosting sites will not be lost as a result of the development.

The mature trees will be retained as part of the development proposals and will not be disturbed during the development of the Site. The location of the trees to be retained and measures on how they will be protected can be found in the St Edmunds Terrace Arboricultural Report Tree Report as included in the submission.

The bat roosting habitat within the Site is currently limited; the bats are considered to be using hanging roof tiles for temporary roost sites. Before these buildings are removed, bat boxes will be installed on retained trees to ensure there is still suitable roosting habitat for bats on Site. Once the development is operational, it will provide roosting habitat for bats in the form of bat bricks built into one of the new buildings. It is believed that these bat bricks will provide a more valuable roosting habitat for bats than what is currently present.

As the Site is considered as of low ecological value, one credit can be awarded for Eco 1.

7.2 Eco 2 Ecological Enhancement

Key recommendations are outlined in Section 7.2.1 and additional recommendations are outlined in Section 7.2.2. All UK and EU legislation in relation to wildlife, protected species and sites will be abided by, as outlined in the St Edmunds Terrace Ecology Report included in the submission. The key and additional recommendations are beyond the requirements of such laws.

7.2.1 Key Recommendations

The following key recommendations are made in relation to the redevelopment of the Site:

- Ensure a native mix of species is planted in the form of a wild flower garden, a mixed species unmanaged hedgerow and scrub areas.
- Incorporate a green roof into the proposed development.
- Incorporate ten bird boxes of varying type into the scheme, installed at a density of 2/3 per mature tree and at a height of approximately 4m from ground level.
- Incorporate ten bat boxes of varying type into the scheme, installed at a density of 2/3 per mature tree and at a height of approximately 4m from ground level. These can be placed on the same trees as the bird boxes.
- All trees removed to facilitate construction to be replaced one to one with native species of local provenance and wherever possible further trees to be included within the landscape design for the Site.

7.2.2 Additional Recommendations

Additional recommendations include:

- Incorporate ten bat bricks into the new building. Five bat bricks in the northern façade and five on the southern façade, of the closest new building to Primrose Hill, at approximately second storey height.
- Incorporate acid grassland as part of green roof provision.
- Incorporate a variety of insect houses into the proposed development.
- Incorporate hedgehog boxes into the proposed development.
- Incorporate a brown roof into the development.

It has not yet been confirmed that all key recommendations and at least 2 (greater than 30%) of the additional recommendations will be implemented, however these recommendations have been agreed in principle with the design team. If documentary evidence is provided to prove this, then the one credit available can be awarded.

7.3 Eco 3 Protection of Ecological Features

The mature trees around the periphery of the Site will be retained. Retained trees/vegetation will be protected during the construction period, in accordance with British Standard (BS) 5837:2005 Trees in Relation to Construction (Ref. 6), including incorporating suitable root protection zones. Details on measures to protect the trees due to be retained can be found in the St Edmunds Terrace Arboricultural Report Tree Report as included in the submission.

One credit can be awarded as all existing features of ecological value within the Site will be protected and maintained during Site clearance, preparation and construction works.

7.4 Eco 4 Change in Ecological Value of Site

The pre-development Site score provided by the 'Change in Ecological Value Calculator' is 20.29, see Table 1.

Table 1. Pre-Development Site Score

Habitat Type	Area of Habitat Type (approx. m ²)	Number of Species Present	Site Score
Buildings	505	0	0
Bare Ground	45		
Hardstanding	1674	0	0
Amenity Grassland/scattered trees/shrub	1826	57	104,082
Total	4050		
Site Score (total site score / total area)	25.69		

7.4.1 Design Stage

The St Edmunds Terrace Landscape Design Statement, as included in the submission, details the landscaping of the proposed development and includes a full planting list. The post development landscaping plans will comprise at ground level; native trees, hedgerows, shrubs, wildflowers and a green roof on the top of blocks 1, 2 and 3.

The area between the internal driveway and St Edmunds Terrace will be planted with ornamental ground cover, shade tolerant shrubs and hedges, and several native tree species. There will be a managed yew (*Taxus baccata*) hedge along St Edmunds Terrace with native, shade tolerant planting, such as lady-fern (*Athyrium filix-femina*) and English ivy (*Hedera helix*) to the north of the hedge. Tree species planted will include ash, pyramid oak (*Quercus robur* 'Fastigiata'), silver birch (*Betula pendula*) and small leaved lime (*Tilia cordata*).

The courtyards will be planted with lines of small multi stemmed silver birch, have a formal grove of silver birch and potted Japanese maple (*Acer japonicum*) and shrub planting. The courtyards will be formally landscaped areas, so not of high ecological value, however shrubs and groundcovers will be seasonal, providing foraging habitat for birds, butterflies and other insects. Species planted will include wych hazel (*Fothergilla major*) English lavender (*Lavandula angustifolia*) white lavender (*Lavandula angustifolia*) and blue lily turf (*Liriope muscari*).

To the southwest corner there will be low level hedges surrounding native grasses, herbs and flowering species in a framework of ornamental planting to help attract wildlife and increase biodiversity. Species planted will include kidney vetch (*Anthyllis vulneraria*), common knapweed (*Centaurea nigra*), English ivy, oxeye daisy (*Leucanthemum vulgare*), salad burnet (*Sanguisorba minor*), common toadflax (*Linaria vulgaris*) common polypody (*Polypodium vulgare* 'Cornubiense'), cowslip (*Primula veris*), selfheal (*Prunella vulgaris*), common dog-violet (*Viola riviniana*), wood false brome (*Brachypodium sylvaticum*), sweet woodruff (*Galium odoratum*) and lady's bedstraw (*Galium verum*).

Along the western access road low hedges will be planted in large stone clad planters on one side of the access road and a native hedge will also be planted and left unmanaged. This hedgerow planting will create a green corridor along the western boundary, linking the mature trees along St Edmunds Terrace with the greenspace associated with the Thames Water area in the north, providing a foraging and commuting corridor for bats. The unmanaged native hedge will be planted with the following species; field maple (*Acer campestre*), common hazel (*Corylus avellana*), common hawthorn (*Crataegus monogyna*), cherry plum (*Prunus cerasifera*), blackthorn (*Prunus spinosa*) and yew.

The green roof on block 1 and 3 will provide a foraging habitat for native birds, insects and bats. The green roof substrate will be of sufficient depth to support an extensive green roof system, allowing for suitable drainage. It will be planted with an acid grassland seed mix on nutrient poor shallow soil to complement the acid grassland known to be present in the adjacent Primrose Hill (Ref. 7). Some of the species planted will include yellow rattle (*Rhianthus minor*), yarrow (*Achillea millefolium*), sneezewort (*Achillea ptarmica*), fragrant agrimony (*Agrimonia procera*), sweet vernal-grass (*Anthoxanthum*

odoratum), harebell (*Campanula rotundifolia*), crested dog's-tail (*Cynosurus cristatus*), wavy hair-grass (*Deschampsia flexuosa*), common knapweed (*Digitalis purpurea*) sheep's fescue (*Festuca ovina*) and red fescue (*Galium verum*).

It is also proposed that amenity grass will be planed on the roof of block 2 between and below the PV cells.

In addition to the above soft landscaped areas, a number of bird and bat boxes will be incorporated into the proposed development. Ten bird boxes of varying type will be incorporated into the scheme, installed at a density of 2/3 per mature tree and at a height of approximately 4m from ground level. Ten bat boxes will be installed at a density of 2/3 per mature tree and at a height of approximately 4m from ground level. These can be placed on the same trees as the bird boxes. Ten bat bricks will be incorporated into the new building located in closest proximity to Primrose Hill. Five bat bricks will be installed in the northern façade and five on the southern façade at approximately second storey height.

The proposals will help replace and enhance the overall biodiversity value of the Site. It is likely that the level of planting post development will provide no negative change in the ecological value of the Site as a result of the development, i.e. the Site score difference between the post- and pre-development sites will be equal to or greater than zero species.

In the event that documentary evidence is provided to the registered Code assessor, to show that the species planted provide no negative change in the ecological value of the Site, that the Site score difference between the post and pre development sties will be equal to or greater than zero species, two credits of a possible four will be awarded.

8. SUMMARY OF WHICH CREDITS CAN BE ACHIEVED

As a result of the assessment shown in Section 7, Table 2 below summarises the number of ecology credits that can be awarded at this stage.

Table 2. Summary of Credits Awarded

Credit	Credits Available	Credits Likely to be Awarded	Explanation
Eco 1	1	1	The Site is considered of low ecological value
Eco 2	1	1	Once it has been proven that all key recommendations of this report and 30% of additional recommendations will be adopted, this credit can be awarded
Eco 3	1	1	Once evidence is provided that the trees/vegetation retained were protected during the construction period, this credit can be awarded.
Eco 4	4	2	Assuming that documentary evidence is provided to prove that the difference

			between the post and pre development sties will be equal to or greater than zero species, resulting in a neutral change.
Total	7	5	

In summary, it is likely that five credits will be awarded out of a possible seven for Eco 1 to Eco 4.

9. REFERENCES

- Ref. 1 Communities and Local Government (2010) 'Code for Sustainable Homes Technical Guide November 2010'.
- Ref. 2 Joint Nature Conservation Committee (JNCC), (1993); Handbook for Phase 1 Habitat Survey: A technique for environmental audit, revised reprint 2003
- Ref. 3 Bat Conservation Trust, (2007); Bat Surveys – Good Practice Guidelines. Bat Conservation Trust, London.
- Ref. 4 Greenspace Information for Greater London (2008) Data Request for St Edmunds Terrace.
- Ref. 5 Personal communication during telephone call with Royal Parks Officer, September 2009.
- Ref. 6 British Standards Institute (2005), 'British Standard (BS5837): Trees in Relation to Construction.'
- Ref. 7 Harris, Richard (2011) personal communication.

10. LIMITATIONS

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Appendix A CVs

Areas of Expertise

- Environmental Impact Assessment.
- Ecology

Education

MSc. Ecology and Management of the Natural Environment (The University of Bristol) Graduated February 2010.
BSc. Zoology (University of Leeds, Hons. Grade 2.1). Graduated June 2006.

Career Summary

Chloe has gained over four years experience working within ecological consultancy, both abroad and in the UK at URS. She has a BSc (Hons) in Zoology and an MSc in Ecology and Management of the Natural Environment. She predominantly completes Ecological Impact Assessments (EcIA) both as part of a wider EIA and as stand-alone documents, in addition to a variety of baseline surveys, mitigation strategies, ecological constraint assessments, recommendation notes, landscaping recommendations; consultation with landscape architects, local wildlife groups and statutory consultees. Her baseline survey experience includes phase 1 vegetation, herpetofauna, bat, badger, bird, dormice, hedgerow and water vole surveys. She has completed multiple BREEAM and Code for Sustainable Homes Ecology Assessments. Chloe has experience in reptile mitigation and the surveying of rare reptiles and is a member of the Peregrine Working Group in London.

Career Detail

ScottishPower Generation Limited, East Lothian, 2009

- Lead ecologist in gathering baseline data for Cockenzie Powerstation in the Firth of Forth, assessing coastal, inland and marine impacts upon Nature 2000 European Sites and European protected species. Completed the EcIA and assisted in the Habitat Regulation Assessment screening, consultation with statutory consultees and production of Habitat Regulation Assessment report.

Wates Living Space, Surrey, 2010

- Project manager for ecological post planning work required for a housing development in Horley. This involved the completion of an Extended Phase 1 Habitat survey, EcIA, bat surveys, terrestrial herpetofauna surveys and compilation of reptile mitigation strategy.

Notting Hill Housing Ltd. London, 2010

- Lead ecologist in the planning requirements for a housing development known as Douglas Close in Harrow. Completed Ecology BREEAM report, Extended Phase 1 Habitat survey, detailed internal bat assessment and bat activity surveys.

Ballymore Properties limited, London, 2009 and 2010

- Compiled the ecology chapter for the Millharbour Quarter ES and completed a Code for Sustainable Homes and BREEAM Offices 2006 ecology report.
- Lead ecologist in the Thames Road Industrial Estate, Silvertown, planning application. Included the completion of extended Phase 1 habitat survey, constraints report, EcIA, BREEAM report and bat surveys.

Confidential Client, 2010

- Baseline survey work completed for a former Powerstation in Kent planning application, surveys included bats, reptiles, great crested newts and black redstarts.

British Land Property Management Ltd, London, 2010

- Completed ecological works required for 5 Broadgate planning application for a commercial development in the City of London designed by Make Architects. This included EcIA and Ecology BREEAM Report.

Bouygues Immobilier, Meudon, France 2010

- Completed an Ecology BREEAM Europe Offices 2008 report for a green office development in France.

Royal Mail Group Ltd, Northampton, 2010

- Lead ecologist in the completion of EcIA for the development of a former Royal Mail depot in Northampton known as Barrack Road. This involved scoping for protected species such as badgers and bats, completion of phase1 habitat survey and Ecology BREEAM Report.

Kier Southern, Watford, 2009

- Lead ecologist in the required ecological works for the redevelopment of Francis Combe School in Watford. Completed Extended Phase 1 habitat survey, landscaping recommendations, Ecology BREEAM report and EcIA.

The Trustees of The Tate Gallery, London, 2008

- Carried out the required ecological surveys for the Transformation of the Tate Gallery; an Extended Phase 1 Survey and bat survey. Compiled the ecology chapter within the Environmental Statement (ES) and BREEAM Ecology report.

EDCO Design London Ltd. London, 2008

- Undertook BREEAM Ecology report for development on Holloway Road in Islington. Involved liaising with architects and providing landscaping recommendations.

East Road Investments Ltd, London, 2008

- Completed the ecology chapter within the Environmental Statement (ES) for the East Road Development. This involved carrying out an ecological walkover survey scoping for bats and black redstarts.
- A BREEAM ecological report was completed based on the findings of this survey, which included providing suitable recommendations.

City Forum, Frogmore Estates, London, 2008

- Lead ecologist for EIA for a residential led use development located within the London Borough of Islington known as City Forum. Completed Phase 1, EcIA and BREEAM Report.

Englewood Limited, London, 2007

- Compiled the EcIA and BREEAM report for Eileen House EIA and EIA Addendum for a mixed use development located within the London Borough of Southwark.

Professional History URS Corporation Ltd, Wimbledon. October 2007 - Present
URS Corporation, Abu Dhabi. September 2006- February 2007

Affiliations Associate Member of IEEM
Member of the Peregrine Working Group in London
PADI Rescue Diver, 70 logged dives
Emergency First Aid Responder

Areas of Expertise

- Phase I ecological surveys and desktop appraisals
- Phase II NVC surveys
- Protected species surveys including:
 - Reptiles
 - Dormice
 - Bats
 - Badgers
 - Water voles
 - Newts
- Holder of Natural England and Countryside Council for Wales Dormouse License
- Holder of Natural England and Countryside Council for Wales Bat Licenses
- Holder of Natural England and Countryside Council for Wales Great Crested Newt License
- Holder of English Nature White Clawed Crayfish License
- Holder of Personal Track Safety Card since July 2009
- Hedgerow and woodland surveys
- Creating, supervising and coordinating reptile translocation strategies
- Preparing badger license applications
- Consultation with statutory bodies
- Evaluation of ecological interest
- Analysis of bat recordings using BatSound and BatScan
- Provision of Ecological Clerk of Works role including provision of Tool Box Talks to construction personnel

Education

University of Birmingham Certificate in Biological Recording
BSc (Hons) Environmental Biology (2004), Oxford Brookes University

Career Summary

Emma is a Senior Ecologist with over 6 years experience working in ecological consultancy. She has a BSc (Hons) in Environmental Biology and has experience in undertaking data trawls, extended phase I surveys of a variety of sites and some experience of undertaking phase II NVC surveying techniques. Project management has led to experience being gained in all forms of reporting including the preparation of ecological appraisal reports, Environmental Statement chapters, technical and non-technical appendices, ecological management plans and ecological construction method statements. In addition, Emma has experience in preparing more specific reports such as great crested newt, bat, badger and dormouse method statements for licence applications to Natural England; BREEAM assessment reports for industrial sites and new office buildings; Code for Sustainable Homes Assessments for proposed residential sites; and method statements for the undertaking of reptile and water vole translocations. Emma also has experience in undertaking Phase II surveys for the European Protected great crested newt, dormouse, white-clawed crayfish and all species of bat and holds licenses for handling these species. Emma is also experienced in undertaking Phase II surveys for reptiles, water voles and badgers.

Career Detail

- **Redevelopment of existing power station and construction of new road in Walton on Trent, January 2003, Roger Bullivant Ltd** - Update data trawl followed by coordination of all supplied biological records and input into Environmental Statement, otter and water vole surveys, and analysis of public consultation results to form a short briefing note.
- **Housing development in Andover, January 2003 to December 2004, George Wimpey UK Ltd** - Initial ecological appraisal and desktop study followed by coordination of dormouse survey.

- **New housing in Fareham, January 2003, Persimmon Homes Ltd** - Initial ecological data trawl and desktop study followed by reptile survey, nut search and input into fifteen year woodland management plan. Experience in reptile translocation strategy also gained.
- **Redevelopment of hospital site in Walsall, January 2003, Bovis Homes Ltd** - Initial ecological data trawl and production of short briefing note outlining key factors to take into consideration when managing the site.
- **Housing development in Reading, February 2003, Bewley Homes Plc** - Initial ecological data trawl followed by subsequent badger and reptile surveying.
- **Large scale housing development in Aylesbury, February 2003, George Wimpey UK Ltd** - Badger bait marking exercise carried out to assess the usage, by badgers, of land ear-marked for development and therefore calculate loss of habitat that would occur.
- **Housing development in Petersfield, February 2003, Taylor Woodrow Developments Limited** - Identification of receptor site for slow worm translocation, follow up reptile surveying and coordination of destructive search.
- **Redevelopment of buildings at MOD sites in Aldershot and Warminster, March 2003, Waterman Environmental** - Initial ecological scoping via data trawl with follow up reptile and bat surveying.
- **Commercial development adjacent to SSSI in Doncaster, April 2003 to present, Catesby Property Group** - Initial ecological scoping via a data trawl followed by coordination of reptile translocation strategy and identification of a receptor site.
- **Housing development in West Durrington, May 2003 – March 2006, Heron Land Developments Ltd** - Coordination of reptile and dormouse surveys along with newt and water vole surveys.
- **Peatlands expansion in Cumbria, April 2003, English Nature** - Woodland and scrub appraisal with a view to woodland expansion including assessment of value and ability to increase area size of selected woodlands.
- **Housing development in Wiltshire, May 2003, Countryside Properties Ltd** - Identification and coordination of receptor site for crayfish translocation including consultation with statutory bodies and members of the public on sensitive ecological issues.
- **Commercial development in Milton Keynes, June 2003, Gazeley Properties Ltd** - Initial ecological scoping and input into Environmental Statement along with coordination of newt surveys including management of an ecological subconsultant.
- **Expansion of leisure facilities in Devon, June 2003, Bourne Leisure Group** - Ecological appraisal and desktop study with input made to the Environmental statement.
- **Housing development in Princes Risborough, June 2003, Taylor Woodrow Developments Ltd** - Initial ecological scoping in the form of data trawl with input into Environmental Statement ecology chapter and follow up coordination of reptile survey work.
- **Proposed housing development in Reading, June 2003, CALA Homes** - Survey carried out to assess the likelihood of the presence of nesting birds in felled trees and assessment of disturbance if the felled trees were to be removed during bird nesting season.
- **Proposed housing development in Doncaster, August 2003, Catesby Property Group** - Compilation of reptile translocation strategy and coordination with both statutory and non statutory organisations to allow translocation to occur on to a Site of Special Scientific Interest.
- **Proposed housing development in Chatham, August 2003, Croudace Ltd** - Compilation of reptile translocation strategy following English Nature recommendations including consultation with statutory organisations.

- **Proposed housing development in Gloucester, June 2004 – March 2006, QUVL** - Provision of Environmental Clerk of Works to oversee implementation stage of development, writing of site management plan to be implemented prior to first occupation.
- **Proposed housing development in Wellington, Somerset, July 2004 – March 2006, Heron Land Developments Limited** - Coordination of bat, dormouse, hedgerow and newt survey work submission of associated DEFRA licence applications and implementation of mitigation proposals.
- **Proposed football ground redevelopment in Marlow, Buckinghamshire, July 2004 – March 2006, Waterman Environmental** - Initial site assessment followed by phase II surveys for bats, badgers and great crested newts. Provision of environmental statement chapter for ecology and input into illustrative masterplan. Completion of Alternative Site Assessment for input into environmental statement.
- **Proposed housing development in West Sussex, November 2004 – March 2006, The West Durrington Consortium** - Provision of Environmental Clerk of Works to oversee implementation stage of development, writing of site management plan to be implemented prior to first occupation.
- **Proposed farm redevelopment in Bruton, Somerset, July 2004 – September 2005, Private client** - Coordination and implementation of bat, badger, hedgerow and walkover surveys. Provision of associated reports as part of planning application. Suggestion and implementation of mitigation for loss of bat roosts and application for associated DEFRA licence. Application for badger disturbance licence from English Nature.
- **Proposed housing development in Aylesbury, August 2004 – January 2005, The Berryfields Consortium** - Coordination and implementation of badger bait marking exercise and submission of related report to English Nature for approval of mitigation proposals prior to the development of the site.
- **Proposed housing development in Bishop Stortford, September 2004, Bovis Homes Ltd** - Coordination of bat and badger surveys and production of related report. Production of great crested newt survey report.
- **Proposed mixed use development in Cardiff, February 2005** - Completion of bat surveys and dormouse nut search along all suitable hedgerows in line with guidelines set for the Great Nut Hunt.
- **Proposed industrial development in Frome, Somerset, March 2005, Prospect Land Ltd** - Application for great crested newt DEFRA licence and coordination of works to implement proposals set out in the method statement.
- **Sites of Special Scientific Interest adjacent to Railtrack land, March 2005 – July 2005, Railtrack** - Preparation of Site Management Statements on behalf of Railtrack for SSSIs on and adjacent to railway lines.
- **Proposed residential development in Malvern, Worcestershire, May 2005 – March 2006, Barton Willmore** - Completion of great crested newt surveys, initial phase I survey and completion of ecological appraisals, including recommendations for further survey, for two potential developments.
- **Proposed caravan park extension in Weymouth, May 2005** - Completion of update phase I survey and provision of environmental statement chapter for ecology.
- **Proposed housing development in Darlaston, West Midlands, June 2005** - Completion of surveys for native white clawed crayfish using crayfish traps in a canal and nearby ponds.
- **Proposed mixed use development in Taunton, Somerset, June 2005 – October 2005, RPS Group** - Completion of dormouse nest tube survey and provision of dormouse survey report, including recommendations to take into consideration during the planning and construction phases of the development.
- **Proposed social club relocation in Solihull, June 2005, Barton Willmore** - Provision of ecological management plan for land adjacent to a river tributary.

Professional History February 2009 – present, URS Corporation Limited, Birmingham
March 2006 – January 2009, The Environmental Dimension Partnership, Cirencester
January 2003 – March 2006, Waterman CPM, Cirencester

- Training**
- Great Crested Newts and Development
 - Dormice and Development
 - Dormouse Ecology and Conservation
 - Grasses – Flowering ID
 - An Introduction to Extended Phase 1 Habitat Survey
 - Biological Recording
 - Identification of Sedges
 - Song Bird Identification
 - Identification of Aquatic Plants
 - Using a Flora
 - Grassland NVC Survey
 -

Affiliations Full Member of Institute of Ecology and Environmental Management
Member of Bat Conservation Trust

Languages English

Appendix B Plant Species List

Appendix B – Plant Species List

Common name	Species name	ST	AM	ESP	DS	PHT
Alder						
Ash	<i>Fraxinus excelsior</i>	D			F	F
Barberry	<i>Berberis vulgaris</i>				O - R	
Bramble	<i>Rubus fruticosus L. agg.</i>				O	
Bristly oxtongue	<i>Picris echioides</i>		O - R			
Cherry laurel	<i>Prunus laurocerasus</i>				A	
Cherry sp.	<i>Prunus sp.</i>	O - R				
Cock's-foot	<i>Dactylis glomerata</i>		O - R			
Common cat's-ear	<i>Hypochaeris radicata</i>		O			
Common couch	<i>Elymus repens</i>		O - R			
Common mallow	<i>Malva sylvestris</i>				R	
Common mouse-ear	<i>Cerastium fontanum</i>		O			
Common nettle	<i>Urtica dioica</i>		O - R		O	
Conifer	<i>n/a</i>	O - R				
Cotoneaster	<i>Cotoneaster horizontalis</i>				LF	
Cow parsley	<i>Anthriscus sylvestris</i>		O - LF			
Creeping bent	<i>Agrostis stolonifera</i>		O			
Creeping buttercup	<i>Ranunculus repens</i>		O - LA			
Creeping cinquefoil	<i>Potentilla reptans</i>		O-LF			
Cultivated apple	<i>Malus domestica</i>	R				
Cultivated rose	<i>Rosa sp.</i>				O	
Daisy	<i>Bellis perennis</i>		O - LF			
Dandelions	<i>Taraxacum officinale</i>		O			
Dove's-foot crane's-bill	<i>Geranium molle</i>		O - R			
Elder	<i>Sambucus nigra</i>	R				
Euonymus	<i>Euonymus sp.</i>				O - R	
Everlasting-pea	<i>Lathyrus sp.</i>				O - R	
Field maple	<i>Acer campestre</i>	R				
Forsythia	<i>Forsythia sp.</i>				O - R	
Garden privet	<i>Ligustrum ovalifolium</i>				O	D
Green alkanet	<i>Pentaglottis sempervirens</i>				O - R	
Groundsel	<i>Senecio vulgaris</i>		O - R			
Guelder-rose	<i>Viburnum opulus</i>				O - R	
Guernsey fleabane	<i>Conyza sumatrensis</i>		R	LD	O	
Hawkweed sp.	<i>Hieracium sp.</i>		R			
Hawthorn						
Herb-Robert	<i>Geranium robertianum</i>			LD		
Honeysuckle	<i>Lonicera sp.</i>				O - R	
Holly						
Hybrid black poplar	<i>Populus x canadensis</i>	R				
Lime	<i>Tilia sp</i>					
Moss sp.	<i>n/a</i>		LF			
Oleaster	<i>Elaeagnus sp.</i>				LA	

Common name	Species name	ST	AM	ESP	DS	PHT
Perennial rye-grass	<i>Lolium perenne</i>		LF- O			
Petty spurge	<i>Euphorbia peplus</i>		R			
Portugal laurel	<i>Prunus lusitanica</i>					
Red fescue	<i>Festuca rubra</i>		A-D			
Ribwort plantain	<i>Plantago lanceolata</i>		O - LF			
Rough sow-thistle	<i>Sonchus asper</i>		R			
Rowan	<i>Robinia sp</i>					
Self-heal	<i>Prunella vulgaris</i>		R			
Silver birch	<i>Betula pendula</i>					
Smooth meadow-grass	<i>Poa pratensis</i>		LF			
Smooth sow-thistle	<i>Sonchus oleraceus</i>		R			
Spear thistle	<i>Spear thistle</i>		O - R			
St John's-wort	<i>Hypericum sp.</i>				O	
Summer jasmine	<i>Jasminum officinale</i>				O	
Sycamore	<i>Acer pseudoplatanus</i>	F			O	F
Trefoil sp.	<i>Trifolium sp.</i>		R			
White clover	<i>Trifolium repens</i>		R			
Willow						
Wood avens	<i>Geum urbanum</i>				O	
Yarrow	<i>Achillea millefolium</i>		LF			
Yew	<i>Taxus baccata</i>				O	
Yorkshire-fog	<i>Holcus lanatus</i>		O			
ST	Scattered trees					
AM	Amenity grassland					
ESP	Ephemeral / short perennial					
DS	Dense scrub					
PHT	Species-poor hedge with trees					