



The Honourable Society of Lincoln's Inn

Preliminary Ecological Appraisal

July 2015

The Honourable Society of Lincoln's Inn



The Honourable Society of Lincoln's Inn

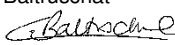


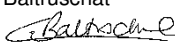


Preliminary Ecological Appraisal

July 2015

The Honourable Society of Lincoln's Inn

Lincoln's Inn
W2A 3TL

Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
A	24 April 2015	Charlotte Baltruschat 	Poppy McDonald 	Mihai Coroi 	First issue
B	21 July 2015	Charlotte Baltruschat 	Iain Bray 	Ric Sandifer 	Second Issue

Information class: Standard

This document is issued for the party which commissioned it and for specific purposes connected with the above-captioned project only. It should not be relied upon by any other party or used for any other purpose.

We accept no responsibility for the consequences of this document being relied upon by any other party, or being used for any other purpose, or containing any error or omission which is due to an error or omission in data supplied to us by other parties.

This document contains confidential information and proprietary intellectual property. It should not be shown to other parties without consent from us and from the party which commissioned it.

Contents

Chapter	Title	Page
	Executive Summary	i
1	Introduction	1
1.1	Background	1
1.2	Aims and Objectives	2
1.3	Zone of Influence	2
1.4	Legislative and Policy Framework	2
2	Methods	3
2.1	Desk Study	3
2.2	Extended Phase 1 Habitat Surveys	3
2.3	Assessment of Conservation Value	3
2.4	Limitations	5
3	Results	6
3.1	Desk Study	6
3.1.1	Designated sites for Nature Conservation	6
3.2	Habitats	6
3.2.1	Overview	6
3.3	Protected and Notable Plant Species	7
3.4	Invasive Non-Native Plant Species	8
3.5	Protected and Notable Animal Species	8
3.5.1	Breeding Birds	8
3.5.2	Bats	8
3.5.3	Great Crested Newts	9
4	Recommendations	10
4.1	Further Surveys	10
4.1.1	Breeding birds	10
4.1.2	Bat inspection	10
4.2	Mitigation and Enhancements	10
4.2.1	Overview	10
4.2.2	General	10
4.2.3	Breeding birds	11
4.2.4	Bats	11
4.2.5	Biodiversity Enhancement	11
5	References	13
	Appendices	15

Appendix A. Summary of Assessment Methods	16
A.1 Bats	16
Appendix B. 17	
Appendix B. Phase 1 Habitat Map	17
Appendix C. Target Notes	18
Appendix D. Photographs	19
Appendix E. Habitat Information to Support BREEAM	25

Executive Summary

Mott MacDonald Ltd was appointed by The Honourable Society of Lincoln's Inn to undertake a Preliminary Ecological Appraisal (PEA) for proposed works at Lincoln's Inn, Newmans Row, London, WC2A 3TL. The proposed works include the expansion and refurbishment of the Great Hall and Library.

The aim of the PEA was to provide an initial assessment of the ecological importance of the site to inform feasibility studies for the proposed redevelopment. This PEA report identifies the potential of the site to support protected habitats and species from evidence gathered from an Extended Phase 1 Habitat Survey. In addition, all plant species were recorded and identified, in preparation for a future BREEAM (Building Research Establishment Environmental Assessment Methodology) assessment, to be completed at a later date.

There are eleven non-statutory designated sites for nature conservation within 1km of the proposed site. It is not expected that any of these sites will be impacted by the works.

An Extended Phase 1 Habitat Survey was undertaken on 1 April 2015 to identify the baseline ecological features which occur within the area of the proposed works. The following ecological issues were identified:

- The buildings and trees on site have low and moderate potential for roosting bats. A further internal inspection of the Great Hall building has been produced to assess the likelihood of bat presence. Following the inspections one feature was identified as being suitable for roosting bats. Both buildings are very well maintained and there are no entry access points to the loft spaces for bats. No signs of bats were identified during the survey. Therefore, adverse effects on bats from the proposed works are considered to be extremely unlikely. The lack of roosting features in addition to the lighting levels and location in the highly urbanised centre of London limits the potential for bats to be present. The works, therefore, can go ahead without any need to mitigate for bats.
- The trees and introduced shrub areas have potential to support breeding birds. Three small trees are planned to be removed during the works. This should be carried out between September and February, which is outside of the core bird breeding season, to reduce the risk of damaging or destroying any active nests. If this is not possible, an ecologist will need to check the area for any active

birds nests at least 48 hours prior to any construction works. Standard mitigation is essential to avoid disturbance during construction to any breeding birds, such as large vibrations or works taking place within 10m of a nest.

1 Introduction

1.1 Background

The Honourable Society of Lincoln's Inn seek to refurbish and improve existing kitchen and catering facilities which are currently inadequate for the needs of the Inn. There is also a need to provide expansion space for the existing library alongside new advocacy training and educational facilities to enhance the function of the Inn. In providing these new facilities, the existing Under Treasurer's residence will need be relocated to another part of the Inn.

To achieve the above proposals, planning and listed building consent are sought for five separate applications proposed at Lincoln's Inn:

- Application 1 – Old Hall Kitchen Refurbishment (Submitted to LB Camden Ref 2015/2413/P & 2015/2517/L)
- Application 2 – Great Hall Refurbishment Works (including Old Hall Temporary Kitchen Works)
- Application 3 – East Terrace Development (Excavation to create a two storey basement containing a lecture theatre, advocacy rooms and study areas)
- Application 4 – Library Extension (including demolition of Under Treasurer's House)
- Application 5 – 15 New Square (Change of use from Office B1 to Residential C3)

This Preliminary Ecology Report has been prepared as part of applications 2, 3 and 4.

Mott MacDonald Ltd was appointed to undertake a Preliminary Ecological Appraisal (PEA) which will form part of the planning application for the proposed development, at The Honourable Society of Lincoln's Inn, Newmans Row, London WC2A 3TL at National Grid Reference TQ 30944 81402. The area of site under development plans covers approximately 6500m².

The BREEAM assessment and management plan will be conducted at a later stage, as the development works are in the first stages at this moment.

The proposed development is understood to comprise expansion and some refurbishment works to the Great Hall and Library building. The Great Hall was constructed in 1845 and is Grade II listed. The refurbishment is to provide additional library storage and a new library reading room, along with two levels of office accommodation. This will be approximately 610m², and connected to the existing building. Additionally, development below the east terrace: this is a two storey development below the existing east terrace of the Great Hall, providing new education facilities including advocacy training and seminar rooms, a lecture theatre and event and social space. This will be approximately 1,325m², and also connected to the existing building.

The development works will commence in May 2016.

1.2 Aims and Objectives

The aim of this report is to provide information regarding any protected and/or notable habitats and species which occur or have the potential to occur on or near the site which may be impacted by the proposed works. The report follows the 'Guidelines for Preliminary Ecological Appraisal' (CIEEM, 2013).

The objectives are to:

- Identify any designated sites for natural conservation and habitats on, near and adjacent to the site;
- Identify any notable and/or protected plant or animal species of conservation value, which may occur on or near the site;
- Identify the presence of any invasive plant species on or adjacent to the site;
- Provide a habitat map with target notes of ecological features as identified above;
- Undertake a preliminary assessment of the potential impacts on any ecological receptors of conservation value identified on, near or adjacent to the site; and,
- Recommend further surveys, mitigation and enhancement measures as appropriate.

1.3 Zone of Influence

The current guidance on ecological assessments (IEEM, 2006) recommends that all ecological features that occur within a 'zone of influence' (Zoi) for a proposed development are investigated. The Zoi includes:

- Areas directly within the land take for the proposed development and access;
- Areas which will be temporarily affected during construction;
- Areas likely to be impacted by hydrological disruption; and
- Areas where there is a risk of pollution and noise disturbance during construction and/or operation.

The Zoi is variable depending on the ecological receptors affected. Given the urban nature of the site, in this case the Zoi is only the footprint of the works. The search for designated sites and historical records extended 1km from the survey site.

1.4 Legislative and Policy Framework

The construction and operational activities for the proposed works must comply with the International, European and UK nature conservation legislation, and with national and local biodiversity policies. The main pieces of legislation in the UK are the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2010 (as amended). The biodiversity policies which are most relevant are the National Planning Policy Framework (NPPF, 2012), Biodiversity 2020, and Greater London Biodiversity Action Plan (BAP).

Under the Natural Environment and Rural Communities (NERC) Act 2006, all public bodies are required to have regard to biodiversity conservation when carrying out their function. Under this act a list of habitats and species that are of principal importance for the conservation of biodiversity in England are published under Section 41.

2 Methods

2.1 Desk Study

A desk study was undertaken of the designated sites for nature conservation, habitats of conservation importance and protected and notable species which occur within 1km of the proposed development area. Data were obtained from the Greenspace Information for Greater London (GiGL), as well as relevant publications, reports and online databases. These included the Multi-Agency Geographic Information for the Countryside (MAGIC), Joint Nature Conservation Committee (JNCC) and the Greater London BAP.

2.2 Extended Phase 1 Habitat Surveys

A field survey, in the form of an extended Phase 1 Habitat Survey was undertaken by a Mott MacDonald ecologist on 1 April 2015. All habitats within the site were identified and mapped in compliance with the 'Handbook for Phase 1 Habitat Survey: a technique for environmental audit' (Joint Nature Conservation Committee, 2010). A full plant species list was completed, in preparation for a BREEAM assessment as were any protected, uncommon or invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended).

An assessment was also undertaken of the likely presence or absence of protected and notable animal species within the Zol of the proposed development. This was based on the known distribution of species, habitat suitability and/or direct evidence such as field signs or observations. The methodologies and assessment criteria used were based on current published guidance where available. Specific assessment criteria for bats used in this report are given in section A.1.

2.3 Assessment of Conservation Value

The conservation importance was assessed for each of the main ecological features (designated sites, habitats and species) that occur within the Zol. The following are some of the criteria that are used in the assessment of the conservation importance: designation of the site; rarity of the species or habitats; presence of Red Data Book (RDB) or endemic species; presence of diverse assemblages of plants or animals; plant communities typical of natural/semi-natural habitats; habitat diversity and connectivity and presence of large populations of animals which are uncommon or threatened in a wider context

The assessment of conservation importance in this report makes reference to the geographical scale of international, national, regional/county, district/borough, local and Zol only (IEEM, 2006). See Table 2.1.

Table 2.1: Assessing Conservation Importance

Conservation Importance	Examples of Ecological Receptors
International	<p>An internationally designated site (SPA, SPA, SAC, Ramsar site, Biogenetic Reserve).</p> <p>A viable area of a habitat type listed in Annex I of the Habitats Directive, or smaller areas of such habitat which are essential to maintain the viability of a larger whole.</p> <p>Any regularly occurring population of an internationally important species, which is threatened or rare in the UK (i.e. it is a UK Red Data Book species or listed as occurring in 15 or fewer 10km squares in the UK) or of uncertain conservation status or of global conservation concern in</p>

Conservation Importance	Examples of Ecological Receptors
	Section 41 of the NERC act 2006. A regularly occurring, nationally significant population of any internationally important species during a critical phase of its life cycle.
National	<p>A nationally designated site (SSSI, ASSI, NNR, Marine Nature Reserve) or a discrete area which meets the published selection criteria for national designation (e.g. SSSI selection guidelines).</p> <p>A viable area of a priority habitat identified in Section 41 of the NERC Act 2006, or of smaller areas of such habitat which are essential to maintain the viability of a larger whole.</p> <p>Any regularly occurring population of a nationally important species which is threatened or rare in the region or county (see local BAP).</p> <p>A regularly occurring, regionally or county significant number of a nationally important species during a critical phase of its life cycle.</p>
Regional/County	<p>Viable areas of key habitat identified in the Regional BAP or smaller areas of such habitat which are essential to maintain the viability of a larger whole;</p> <p>Viable areas of key habitat identified as being of Regional value in the appropriate Natural Area Profile (or equivalent);</p> <p>Any regularly occurring population of a nationally important species which is not threatened or rare in the region or county (see local BAP).</p> <p>Any regularly occurring, locally significant population of a species listed as being nationally scarce (i.e. it occurs in 16-100 10km squares in the UK) or in a Regional BAP or relevant Natural Area (or equivalent) on account of its regional rarity or localisation;</p> <p>A regularly occurring, locally significant number of a County/ Metropolitan "red data book" or BAP species, designated on account of its regional rarity or localisation;</p> <p>A regularly occurring, locally significant number of a County/ Metropolitan important species during a critical phase of its life cycle.</p>
District/Borough	<p>Semi-natural ancient woodland smaller than 0.25 ha;</p> <p>Areas of habitat identified in a sub-County (District/Borough) BAP or in the relevant Natural Area profile (or equivalent);</p> <p>Sites/features that are scarce within the District/Borough or which appreciably enrich the District/Borough habitat resource;</p> <p>A diverse and/or ecologically valuable hedgerow network;</p> <p>A population of a species that is listed in a District/Borough BAP because of its rarity in the locality or in the relevant Natural Area (or equivalent) because of its regional rarity or localisation;</p> <p>A regularly occurring, locally significant number of a District/Borough important species during a critical phase of its life cycle.</p>
Local	Areas of habitat or populations/communities of species considered to appreciably enrich the habitat resource within the context of the parish or neighbourhood.
Site or Zol only	Any other ecological receptors which are not listed above.

As this report is to support a planning application an initial assessment of the likelihood of adverse impacts as a result of the development has been undertaken, using the scale of certain, very likely, likely, unlikely and very unlikely (based on IEEM 2006). These assessments may require review and change as a result of the development of the scheme design.

2.4 Limitations

Ecological surveys are limited by factors such as time of year which affect the ability to detect plants and animals. Optimal survey times vary between species and species groups therefore a single survey visit may overlook or under-record certain species. This Preliminary Ecological Appraisal is therefore unlikely to present a full and complete assessment of the biodiversity of the site because it is based on a single site visit.

The site survey was undertaken on 1 April 2015, which is considered to be within the optimal time of year for most species and species groups.

Due to the height of the building, there may have been features suitable for roosting bats and breeding birds which were not visible during the site visit.

Biological records obtained from records centres do not necessarily represent a full and complete species list for a given area and the absence of a species or habitat record does not prove it is not present. Records are not often collected as a result of systematic surveys and therefore geographic, temporal (annual and seasonal) and species coverage is not often representative.

3 Results

3.1 Desk Study

3.1.1 Designated sites for Nature Conservation

3.1.1.1 Statutory Designated Sites for Nature Conservation

There are no statutory designated sites located within 1km of the proposed works site.

3.1.1.2 Non-statutory Designated Sites for Nature Conservation

There are 11 non-statutory designated sites within 1km of the proposed works site, all of which are Sites of Importance for Nature Conservation (SINCs). One site is of metropolitan importance, two are of borough importance and the remaining eight are of local importance. Table 3.1 below illustrates the designated sites within 1km of the site. None of these sites are likely to be affected by the works, due to both the small works area and the nature of the works. Lincoln's Inn Fields which is adjacent to the works are also unlikely to be affected due to the nature of the works.

Table 3.1: Non-statutory designated sites within 1km of Lincoln's Inn.

Site Name	Designation	Grid Reference	Distance to site
River Thames and tidal tributaries	SINC (Metropolitan)	TQ 302 806	642m South
Temple Gardens	SINC (Borough Grade II)	TQ 312 809	570m South
Middle Temple Garden (Westminster Section)	SINC (Borough Grade II)	TQ 311 808	615m South
Phoenix Garden	SINC (Local)	TQ 299 812	1km West
St Andrew's Gardens	SINC (Local)	TQ 307 824	995m North
Russell Square	SINC (Local)	TQ 301 819	960m NW
Lincoln's Inn Fields	SINC (Local)	TQ 307 813	40m West
Coram's Fields	SINC (Local)	TQ 305 823	970m North
St John's Gardens	SINC (Local)	TQ 316 819	790m NE
Victoria Embankment gardens (Main Garden)	SINC (Local)	TQ 305 805	970m SW
Victoria Embankment gardens (Temple section)	SINC (Local)	TQ 310 808	580m South

Source: Greenspace Information for Greater London (GIGL), 2015.

3.2 Habitats

3.2.1 Overview

The habitats identified within the zone of influence of Lincoln's Inn are shown on the Phase 1 habitat map in Appendix B. A detailed description of the habitats, the dominant plant species and notes on the presence or potential presence of protected species are given in the Extended Phase 1 Target Notes (TN) in Appendix C. Photographs of the ecological features which have been target noted are included in Appendix D. This section presents a brief description of the main habitats present within the site.

3.2.1.1 Amenity grassland

There are two areas of regularly mown amenity grassland comprising perennial ryegrass (*Lolium perenne*) within the site boundary. The larger area covers approximately 960m². The grassland has planted borders. There is also a much smaller amenity grassland area to the north of this, approximately 190m². See TN2 and TN7.

The impacts on amenity grassland are likely but not significant as this habitat type is considered to be of **negligible conservation value**.

3.2.1.2 Hard standing and Buildings

Areas of hard standing include a small road for car access and pedestrian paths to and from the buildings. There is also an area of gravel in between the grassland and the building.

There is one large building (The Great Hall and Library) (TN1), which dominates the area of works and a much smaller building to the north of this which is the Under Treasury's House (see TN10). Both buildings have tiled roofs and are brick built structure. Buildings and hard standing are of negligible conservation value.

3.2.1.3 Introduced Shrub

The borders of the larger amenity grassland area contains introduced shrub including flowering plants and small saplings (see TN3). Species include: violet (*Viola odorata*), crocus sp, tulip (*Tulipa sp*), rose (*Rosa sp*), spurge (*Euphorbia sp*), Japanese maple (*Acer sp*), lords and ladies ornamental (*Arum maculatum*), elder (*Sambucus nigra*), daffodil (*Narcissus sp*), sedge (*Carex sp*), privet (*Ligustrum sp*), and *Eunomyus sp*.

The habitat is considered to be of **site conservation value** only and impacts from the works are probable.

3.2.1.4 Scattered Trees

There are a number of scattered trees around the site, four of these are mature London plane (*Platanus x acerifolia*). See TN4, TN5, TN6 and TN9.

The scattered trees are considered to be of **local conservation value**, and impacts from the works are unlikely given that very little vegetation removal is planned.

3.3 Protected and Notable Plant Species

No records were found for any notable or protected plant species on site.

3.4 Invasive Non-Native Plant Species

There are a number of invasive plant species recorded within 1km of the site, however no invasive non-native plant species were recorded during the survey.

3.5 Protected and Notable Animal Species

3.5.1 Breeding Birds

There is potential for breeding birds within the scattered trees and introduced shrubs. There is potential for breeding birds to use the building, as there were visible ledges which birds such as pigeon could nest on. No protected/notable bird species were recorded during the survey.

The starling (*Sturnus vulgaris*) and the House sparrow (*Passer domesticus*) have also been confirmed as breeding within 1km of the site. Both species are listed as red under the Birds of Conservation Concern (BoCC) and the House sparrow is also protected under Section 41 of the NERC Act.

There are previous records (within 1km) of four Schedule 1 species, eight London BAP species and eight species listed as red under the BoCC. The Black redstart (*Phoenicurus ochruros*) is a Schedule 1 species which was recorded as confirmed breeding within 1km, in addition to the song thrush (*Turdus philomelos*) which is listed as red under BoCC and is a BAP London Priority species. Both of these species could potentially be seen, or breed adjacent to the proposed works site. However, there is little vegetation on site except for the London plane trees, with the potential to support nesting birds. Some common bird species may nest in and around buildings and building materials.

Breeding birds on site are considered to be of **local conservation value**; impacts on these other bird species are considered to be likely as some of them may breed on the site.

All wild birds, their nests and eggs are protected under the Wildlife and Countryside Act 1981 (as amended). It is an offence to take damage or destroy the nest of any wild bird while it is in use or being built. In addition species listed on Schedule 1 of the same act are afforded additional protection from disturbance whilst breeding.

3.5.2 Bats

Suitable habitat to support roosting bats is present in the trees and buildings on site. The London Plane trees surrounding the grassland to the east contain a small number of features with the potential to support roosting bats, including; loose bark, holes and split branches. See Table 3.2.

Table 3.2: Overall bat roosting potential for the trees.

Tree number	Description	Bat roosting potential
4	Mature London Plane tree with hollow knot and loose bark.	Low potential

Tree number	Description	Bat roosting potential
5	Mature London Plane tree with a hole and loose bark.	Low potential
6	Mature London Plane tree with a hole, a split in branch cavity and loose bark.	Moderate potential
9	Mature London Plane tree with loose bark and possible holes. Tag no. 970.	Low potential

The building has at least moderate potential to support roosting bats and the site links directly to areas of suitable bat foraging habitat in Lincoln's Inn Fields. Generally the building is well maintained, however several potential roosting features were recorded such as gaps between roof tiles, vents, and missing pieces of brick mortar which may lead to a suitable wall cavity - this is particularly evident around the chimneys. Due to the height and structure of the building it is likely that further features are present which were not visible at ground level (TN1 and TN10).

Although the site is located in an urban area, immediately to the west across Newman's Road is Lincoln's Inn Fields, which contains many large mature trees and woodland areas within an area covering approximately 28,500m². This area is suitable for foraging bats and has good connectivity to the works site. There are previous records for Common Pipistrelle bat (*Pipistrellus pipistrellus*) and Brown long-eared bat (*Plecotus auritus*) within 1km of the proposed works.

All bat species are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitat and Species Regulations 2010 (as amended). In summary it is an offence to intentionally or deliberately kill, injure, disturb or capture any bats or damage, destroy or obstruct access to any structure used for breeding or resting by them. Seven species are also listed on Section 41 of the NERC Act 2006.

The project site is considered likely to be of **district conservation value** for bats.

3.5.3 Great Crested Newts

There are no waterbodies present on the proposed works site or within 250m of the site. There is no terrestrial habitat suitable to support great crested newts (*Triturus cristatus*). There are no previous records for great crested newts within 1km of the proposed works site.

Great crested newts are protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitat and Species Regulations 2010 (as amended). In summary it is illegal to intentionally or deliberately kill, injure, disturb or capture a great crested newt or damage, destroy or obstruct access to any structure used for breeding or resting. Great crested newts are also listed on Section 41 of the NERC Act 2006.

The project site is considered to be of **negligible value** for great crested newts and it is very unlikely that they are present in the area.

4 Recommendations

4.1 Further Surveys

4.1.1 Breeding birds

The revised scope of works indicates that construction will commence on site in May 2016. This start date is within the peak season for breeding birds, in particular Black Redstart. It is recommended that works including vegetation removal of the three trees are completed outside of the breeding bird season (which runs from April to August). The revised scope of works indicate that it is very unlikely for black redstarts to be affected by any of the proposed works, including disturbance as this species is accustomed to urban environments.

4.1.2 Bat inspection

As features suitable to support roosting bats were identified in the trees and buildings a further internal inspection of the Great Hall building has been produced to assess the likelihood of bat presence. Following the inspections one feature was identified as being suitable for roosting bats. Both buildings are very well maintained and there are no entry access points to the loft spaces for bats. No signs of bats were identified during the survey. Therefore, adverse effects on bats from the proposed works are considered to be extremely unlikely. The lack of roosting features in addition to the lighting levels and location in the highly urbanised centre of London limits the potential for bats to be present. The works, therefore, can go ahead without any need to mitigate for bats.

4.2 Mitigation and Enhancements

4.2.1 Overview

This chapter includes measures to ensure the ecological features on site are protected and enhanced. The information presented below is a summary of the measures which will be detailed in the Ecological Management Plan.

4.2.2 General

If it is decided that vegetation will need to be removed, to facilitate construction, vegetation should be reinstated as part of mitigation measures at this site. A site specific Ecological Management Plan will be designed and implemented as part of the BREEAM assessment, which would detail plans to reinstate and create suitable habitat on site. Species used for reinstatement should be native and locally sourced, and use species-rich mixes where possible to maximise biodiversity.

Best practice measures should be put in place during construction demolition to prevent pollution, following Environment Agency (2014) guidance PPG6 Construction and Demolition Sites: Prevent Pollution. It is important that the four London plane trees are protected during construction and therefore follow The

British Standard 5837:2012 document (BSI, 2014) which advises on the root protection areas (usually 12 times the stem diameter) and also demolition and construction in proximity to existing trees.

4.2.3 Breeding birds

Three trees are planned to be removed on site. It is recommended that the removal is undertaken between September and February which is outside of the core breeding bird season to reduce the risk of damaging or destroying any active nests. Should this not be possible, these habitats should be checked by an ecologist within 24 hours prior to the commencement of works to confirm no active nests will be affected.

It is recommended that the proposed works take into account the nesting and feeding requirements of black redstart as buildings which currently provide suitable nest sites will be expanded and refurbished. At least two species specific nest boxes for black redstart could be fitted to the plant on the roof of the existing Great Hall building and the new building which will be the new library. Open fronted woodcrete boxes (2HW) produced by Schwegler (2014) are recommended. Other bird boxes are also recommended throughout the site to enhance populations of native garden birds such as robins (*Erithacus rubecula*) and blue tits (*Cyanistes caeruleus*).

4.2.4 Bats

Further mitigation, if necessary, will be outlined after the further surveys for bats have been completed.

4.2.4.1 Lighting

The lighting on the East Terrace will be removed and replaced. Recommendations for new lighting will be outlined once the results of the further bat surveys have been completed. Following Bat Conservation Trust Guidelines, low-level lighting is strongly advised if bats are present, as is the position of lighting, so to avoid any roost entrances or foraging flight paths. This can have detrimental effects upon the timings which bats will emerge from a roost and thus the time they have to forage and feed. Artificial lights shining on roost entrances must be avoided where at all possible (Bat Conservation Trust, 2014).

4.2.5 Biodiversity Enhancement

It is recommended the plans for the new building incorporate features to benefit local biodiversity, examples of measure which could be implemented are given below.

4.2.5.1 Bird and bat boxes

A number of bird and bat boxes should be installed in suitable areas around the site, as enhancement measures to increase the available nesting habitat available for birds and roosting habitat for bats. To avoid the bird droppings on the building facade, the boxes could be installed on the structures on the roof of the Great Hall building and also the new building. It is also recommended that at least one bird box is

installed on each of the four London Plane trees. The types of these boxes will be indicated in the Ecological Management Plan. Any boxes that are damaged should be replaced.

5 References

Bat Conservation Trust (2014). Interim Guidance: Artificial lighting and wildlife – recommendations to help minimise the impact of artificial lighting. (Accessed June 2015).

Black Redstarts (2015). Accessed April 2015 online here: <http://www.blackredstarts.org.uk/index.html>

BoCC (Birds of Conservation Concern). 2009. Available here:
<http://www.bto.org/sites/default/files/u12/bocc3.pdf> Accessed: April 2015.

BREEAM (2014). *BREEAM UK New Construction*. Online at: <http://www.breeam.org/page.jsp?id=369> (accessed April 2015).

BSI Standards Publication. (2014). *Trees in relation to design, demolition and construction – Recommendations* BS 5837:2012. (Accessed April 2015).

Buglife (2012). Creating Green Roofs for Invertebrates: A Best Practice Guide [Online]. Available from <http://www.buglife.org.uk/advice-and-publications/publications/habitat-management/creating-green-roof-invertebrates-best> (Accessed April 2015).

CIEEM (2013) *Guidelines for Preliminary Ecological Appraisal*, Winchester: Chartered Institute of Ecology and Environmental Management. Available URL:
http://www.cieem.net/data/files/Resource_Library/Technical_Guidance_Series/GPEA/GPEA_April_2013.pdf. Last accessed 7 April 2015.

Eaton, M. A., Brown, A. F., Musgrove, A. J., Hearn, R., Aebischer, N. J., Gibbons, D. W., Evans A. and Gregory, R. D. (2009) 'Birds of Conservation Concern 3: the population status of birds in the United Kingdom, Channel Islands and Isle of Man', *British Birds*, vol. 102, pp. 296-341.

English Nature (2004). *Bat Mitigation Guidelines*.

Environment Agency (2014). *Construction and Demolition Sites PPG6: Prevent Pollution*.

Hundt, L. (2012) *Bat Surveys: Good Practice Guidelines, 2nd Edition*, London: Bat Conservation Trust.

IEEM (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom*, Winchester: Chartered Institute of Ecology and Environmental Management. Available URL:
http://www.cieem.net/data/files/Resource_Library/Technical_Guidance_Series/EcIA_Guidelines/TGSEcIA-EcIA_Guidelines-Terrestrial_Freshwater_Coastal.pdf. Last accessed 7 April 2015.

Institute of Ecology and Environmental Management (IEEM) (2012). *Guidelines for Preliminary Ecological Appraisal*. Online at
http://www.cieem.net/data/files/Resource_Library/Technical_Guidance_Series/GPEA/GPEA_April_2013.pdf (Accessed October 2014).

Joint Nature Conservation Council (JNCC) (2010). *Handbook for Phase 1 habitat survey – A technique for environmental audit*. JNCC; Peterborough.

Multi-Agency Geographic Information for the Countryside (MAGIC) website: <http://magic.defra.gov.uk/>

Mott MacDonald (2015). The Honourable Society of Lincoln's Inn. Ecological Management Plan.

National Policy Planning Framework (2012) *Department for Communities and Local Government*, London. Available URL: <http://www.communities.gov.uk/documents/planningandbuilding/pdf/2116950.pdf>. Last accessed 7 April 2015.

Schwegler (2014). Open-fronted nest boxes [Online]. Available from <http://www.schwegler-natur.de/index.php?main=produkte&sub=vogelschutz&psub=nisthoehlen-allgemein&pcontent=halbhoehlen-2h-2hw&lang=en> (Accessed April 2015).

Stace (2010). *New Flora of the British Isles*. Third Ed. Cambridge University Press.

Appendices

Appendix A. Summary of Assessment Methods _____	16
Appendix B. 17	
Appendix B. Phase 1 Habitat Map _____	17
Appendix C. Target Notes _____	18
Appendix D. Photographs _____	19
Appendix E. Habitat Information to Support BREEAM _____	25

Appendix A. Summary of Assessment Methods

A.1 Bats

All trees and the building within the site with the potential to support roosting and foraging bats were assessed using the 'Bat Surveys Good Practice Guidelines' (Hundt, 2012). Trees and buildings were categorised using the criteria outlined in Table A.1

Table A.1: Criteria for bat roost potential assessment of a structure.

Bat Roost Potential	Description
Negligible	The structure lacks any features suitable for roosting bats.
Low	The structure may have some interest to roosting bats, e.g. external roosting features such as fascia or soffit boards, but is considered to be sub-optimal to the extent that bats would not be anticipated to use it.
Moderate	The structure exhibits features suitable for use by roosting bats, such as internal and external cavities well insulated from external weather conditions, but is less than ideal in some way. It may be situated in less than ideal habitat, lacking suitable commuting corridors.
High	The structure exhibits a number of features suitable for use by roosting bats e.g. numerous roosting opportunities such as dark, enclosed roof voids; the structure has a high degree of connectivity with likely navigation routes; and the building is located within suitable foraging habitat, likely to be noticed by commuting bats.
Confirmed	Positive signs of bats are recorded within the structure (internally or externally), such as individual bats or bat droppings.

Source: Modified from Hundt, 2012

Appendix B. Phase 1 Habitat Map

Appendix C. Target Notes

TN	Description	Photo No.
1	The Great Hall and Library building. Features are present which are suitable for roosting bats, such as gaps under the tiles on the roof, tall decorative chimneys and towers have small slits within and other small holes and nooks within the brickwork of the building. A full external and internal inspection of the building is recommended.	1
2	Amenity grassland. Well mown and maintained. Perennial rye-grass (<i>Lolium perenne</i>) is the only species. Grassland has introduced shrub borders.	2
3	Introduced shrub borders. Planted shrubs and spring bulbs, including: violet (<i>Viola odorata</i>), crocus sp, tulip (<i>Tulipa sp</i>), rose (<i>Rosa sp</i>), spurge (<i>Euphorbia sp</i>), Japanese Maple (<i>Acer sp</i>), lords and ladies ornamental (<i>Arum maculatum</i>), elder (<i>Sambucus</i>), <i>Geranium sp</i> , daffodil (<i>Narcissus sp</i>), <i>Rhus typhina</i> , privet (<i>Ligustrum sp</i>), <i>Lufula sp</i> and <i>Eunomymus sp</i> .	3
4	Mature London Plane tree with hollow knot and loose bark. Low potential for bats.	4
5	Mature London Plane tree with a hole and loose bark. Low potential for bats.	-
6	Mature London Plane tree with a hole, a split in branch cavity and loose bark. Moderate potential for bats.	-
7	Amenity grassland with scattered small trees and bulb planting under the tree. Perennial rye-grass is the only grassland species. Three different trees, one mature London Plane with low bat potential (loose bark), an elder and a Lime tree (<i>Tilia sp</i>). Same introduced shrub species as before.	6
8	Lime tree with low bat potential, branch cavity.	5
9	Mature London Plane tree with loose bark and possible holes. Low bat potential. Tag no. 970.	-
10	Under Treasure's House. Brick built building with tiled roof. Possible roof space. Low bat potential. Internal inspection recommended. Ornamental shrub planting up the northern external wall. A tree is opposite in introduced shrubs. There are also a small number of climbing species on the Great Hall external wall.	11
11	Hard standing terrace area to the southern side of the Great Hall building.	12

Appendix D. Photographs

Photo	Description	Photo number
	The Great Hall building East facing with main entrance.	1
	Larger area of amenity grassland with stripes in front of the Great Hall.	2
	Introduced shrub borders surrounding the amenity grassland.	3




Photo	Description	Photo number
	One of the London Plane trees with a suitable bat roosting hole feature.	4
	Unknown tree species within smaller amenity grassland area with bulbs underneath.	5
	Smaller section of amenity grassland and a little planting.	6




Photo	Description	Photo number
	Large tower from the Great Hall building with small slits, potential for roosting bats.	7
	The entrance gates to Lincoln's Inn. Large tower with slits in.	8
	Vegetation on the northern section of the works boundary next to the Under the Treasure's House.	9



Photo	Description	Photo number
	Areas of planted introduced shrub in planters.	10
	Air vents on the Under the Treasurer's House building.	11





Photo	Description	Photo number
	Hard standing terrace area to the south of the Great Hall building.	12
	Lincoln's Inn Fields to the west of Lincoln's Inn.	13
	The Great Hall back entrance, west facing.	14

Photo	Description	Photo number
	The southern side of the Great Hall where the amenity grassland ends.	15

Appendix E. Habitat Information to Support BREEAM

Table E.1: Full list of plant species categorised into habitat.

Habitat type	Common name	Latin name	Total number of plant species per habitat
Amenity Grassland TN2, TN7	Perennial rye grass	<i>Lolium perenne</i>	1
Scattered Trees TN, TN4, TN5, TN6, TN8, TN9	London Plane	<i>Platanus x acerifolia</i>	2
	Lime tree	<i>Tilia sp</i>	
Introduced shrub TN3, TN10, TN11	Violet	<i>Viola odorata</i>	14
	Crocus sp		
	Tulip sp	<i>Tulipa sp</i>	
	Rose sp	<i>Rosa sp</i>	
	Spurge	<i>Euphorbia sp</i>	
	Japanese Maple	<i>Acer sp</i>	
	Lords and Ladies ornamental	<i>Arum maculatum</i>	
	Elder	<i>Sambucus nigra</i>	
		<i>Rhus typhina</i>	
	Daffodil	<i>Narcissus sp</i>	
		<i>Luzula sp</i>	
	Garden Privet	<i>Ligustrum ovalifolia</i>	
	<i>Eunomymus sp.</i>		
	<i>Geranium sp</i>		