BREEAM New Construction, Non-domestic buildings (2014) Land Use and Ecology (LE 01 - LE 05) Assessment

Proposed development on land at the end of

Norcutt Road, Twickenham

Presented to MAA Architects

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Executive Summary

The Norcutt Road site supports a very small range of habitat types that are considered to be of low ecological value. The isolated nature of this site means it is unlikely to support notable invertebrates, small mammals, reptiles or amphibians. It is recommended that ecological enhancements are adopted to improved the biodiversity value of the site

It is recommended that a total of **6 credits** may be awarded for Landscape and Ecology out of a possible 10 following receipt of written confirmation that the client has committed to undertaking all the measures outlined within this report. Two credits may be contingent on appropriate planning conditions.

I confirm the information provided in this document is truthful and accurate at the time of completion.

Name of ecologist: Dr. Craig Turner MCIEEM FRGS FLS

Signature of ecologist:

Quality Assurance provided by: Dr Richard Delahay MCIEEM CEcol.

Date: 22/02/2017

1.0 Introduction

Biocensus was commissioned to carry out an ecological review and BREEAM Assessment of the construction of a new development at Norcutt Rd, Twickenham. This report has been commissioned to inform criteria LE1 to LE5 of the assessment under BREEAM New Construction, Non-domestic buildings – Technical Manual SD5076 2.0-2014.

In order to comply with the requirements of BREEAM this report has been compiled by Craig Turner PhD MCIEEM who is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM), with approximately 12 years of experience working as an ecologist for both planning authorities and the private sector.

This report has been informed by a Phase 1 survey completed in January 2014 and an update site survey conducted on 7th February 2017. This report provides a review of this survey information to identify features of ecological interest which may be affected by the development proposals, to inform recommendations for mitigation of impact and to identify potential environmental enhancements. The results of the findings are discussed in relation to the potential to achieve credits under the BREEAM scheme.

The site is located about 1 km northwest of Twickenham (Grid Reference TQ153733) and currently comprises a cleared area of previously developed land covering approximately 0.05 Ha (see Figure 1). The River Crane is about 50 m from the northern site boundary.

Figure 1. Proposed development site.

The site is located to the north of a residential area, with a railway line bordering it to the north. Open green spaces exist beyond this railway line. The site is currently under commercial use, comprising a warehouse structure and hardstanding. Natural vegetation is sparse both within and surrounding the site (see Appendix 1).

Works will involve construction of new a new residence with associated parking.

Figure 2. The proposed development plan.

2.0 Methodology

Desk Study

A desk study was undertaken to establish the presence of any designated statutory or non-statutory conservation sites within a 10 km radius of the site boundary for those sites of international significance and within a 2 km radius for nationally important sites. The Multi Agency Geographic Information for the Countryside (MAGIC) website was consulted for this purpose.

MAGIC, GiGL (Greenspace information for Greater London) an NBN (National Biodiversity Network) online resources were for consulted for records of protected species both on the site and within 500 m.

No protected species records for the site existed. No records of European Protected Species Licenses (as indicated by MAGIC) were evident within 500 m of the site. Records of other species were evident within the search area but due to the nature of the site and surrounding area (i.e. lack of connective habitat) these would not be impacted directly or indirectly.

Site Survey

The site was surveyed on the 7th February 2017 by using the standard Extended Phase 1 Habitat Survey methodology (JNCC, 2010) as recommended by Natural England to identify specific habitats of ecological interest. Sufficient information was gained during the survey to enable classification and assessment of major habitat types and some species were also identified. The survey sought to identify any evidence of the characteristic signs and suitable habitat that would indicate or support protected / notable species.

3.0 Results

Desk Study

Ham Land LNR sits 1 km to the southeast of the site, and Ham Common LNR sites 2.5 km to the east of the site. Bushy Park and Home Park SSSI is 3.5 km to the south of the site and is of special interest for its nationally important saproxylic (dead and decaying wood associated) invertebrate assemblage, population of veteran trees and acid grassland communities. Richmond Park NNR, SSSI and SAC are 2.5 km to the east of the site. The development of the Norcutt Road site would have no impact on any of these protected sites.

Habitats and Flora

The site is currently comprised of an industrial warehouse building and hard-standing (Figure 1) and is located in a densely populated residential and industrial area in Twickenham. The presence of habitat of any significant ecological value is located approx. 20 m to the North of the site, and consists of the River Crane and surrounding green space.

The habitats present on site as described following the Phase 1 habitat handbook coding (Figure 1 and Photos 1 & 2) were:

- Buildings (J3.6) – office building (Photo 1).
- Hard-standing (J4) – comprised of tarmac area (parking and access) (Photo 2).

- Ephemeral/short perennial (J1.3) – colonising vegetation scattered around the site boundary on hard-standing.
- Wall/fence (J2.5) – border the site to the north, east and west.

Currently, the habitats supported on site are of poor ecological value. No plant species were recorded in association with the building or boundary walls/fencing. Several ephemeral/short perennial plant species, indicative of unmanaged/disturbed sites, were recorded around the edges of the hard-standing including willowherb (*Chamerion sp.)*, butterfly bush (*Buddleja davidii)*, smooth sow-thistle (*Sonchus oleraceus)* and tufts of grass (*Poa sp.)*. All species recorded are common and widespread.

Fauna

Amphibians and Reptiles
There are no water bodies on the site and therefore no potential for amphibians to breed on site. The northern boundary of the site sits within 30 m of the River Crane but there is no suitable amphibian and reptile foraging habitat on site. It is therefore considered unlikely that amphibians and reptiles would be present on the site.

Great Crested Newt (GCN)
No open water was recorded on the site. A search of online mapping resources for water bodies on the site and in the surrounding area shows no ponds or standing water within 500 m. Therefore GCNs (*Triturus cristatus*) were scoped out of the survey.

Bats
There is no suitable bat roosting or foraging habitat for bats on the site. However, due to its proximity to the River Crane there is potential for foraging bats in the area and therefore opportunities are available to provide provision for roosting bats within the development proposals.

Badger
No badger (*Meles meles*) setts or other field signs characteristic of badgers were recorded on the site during the survey.

Nesting Birds
No birds were observed during the survey, although a band of scrub along the northern site boundary offers limited suitable nesting and foraging habitat.

4.0 Discussion

Ecological Value

The Norcutt Road site supports a very small range of habitat types that are considered to be of very low ecological value. No valuable ecological features such as important habitats or protected species were present on the site at the time of the survey.

Achievement of BREEAM Credits

BREEAM New Construction, Non-domestic buildings – Technical Manual SD5076 2.0-2014 has been used to assess the ecological impact and performance of the proposed development. The assessment system aims to mitigate the life cycle impacts of new buildings on the environment in a robust and cost effective manner.

The basis of the scheme is a certificate awarded to individual buildings in relation to the award of credits for a set of assessment criteria determined by the Building Research Establishment (BRE). The certificate enables the owners to gain recognition for building environmental performance. Trained personnel, appointed by BRE, assess the building. The number of credits attained is interpreted in the form of an overall rating of *Outstanding*, *Excellent, Very Good, Good or Pass.*

The performance criteria are grouped under the following categories: energy, transport, land use and ecology, and health and wellbeing. This report assesses land use and ecology. The aim is to reduce the ecological impact of the development project, by for example minimising the loss of important wildlife habitats, and maximising the wildlife potential of the site by enhancement.

There are 10 potential ecological credits available within the assessment for Landscape and Ecology and these are detailed below:

LE1 – Site selection

A total of **2 credits** may be awarded under LE1. A single credit may be awarded if at least 75% of the proposed development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years. A second credit may be awarded if the site is deemed to be significantly contaminated as confirmed by a contaminated land specialist's site investigation, risk assessment and appraisal.

In this instance at least 75% of the proposed development's footprint is on an area of land which has previously been developed for use by industrial, commercial or domestic purposes in the last 50 years, but we have no evidence that the land has been assessed as contaminated.

Accordingly, it is recommended that **1 credit** out of a possible 2 is awarded for this criterion.

LE2 – Ecological Value of Site and Protection of Ecological Features

1 credit may be awarded if the construction zone is defined as 'land of low ecological value' and a further **1 credit** if all existing features of ecological value both within and adjacent to the site are adequately protected from damage during clearance, site preparation and construction.

The site to be developed is of very low ecological value. There are no neighbouring ecological features that could be protected.

Accordingly, at present **1 credit** can be awarded out of a possible 2 for LE02.

LE3 – Mitigating Ecological Impact

This criterion requires determination of the overall change in habitat coverage or species diversity before construction compared to after completion of site works. The credit is calculated by inputting the following data into the BREEAM LE 03/LE 04 calculator:

i. The broad habitat type(s) that define the landscape of the assessed site in its existing pre-developed state and proposed state,
ii. The area (m^2) of the existing and proposed broad habitat types.

Alternatively, a suitably qualified ecologist can undertake a site survey and actual species numbers can be used in the calculator. BREEAM credits are awarded on the basis of the change in this figure as follows:

1 credit is awarded where the change in ecological value is less than 0 and equal to or less than –9 species per hectare (i.e. a minimal negative change).

2 credits are awarded where the change in ecological value is equal to or greater than 0 species per hectare (i.e. there is no negative change).

The ecological value calculations for the site pre and post development are given below.

Pre-development ecological value

Plot Type	**Area of Plot Type (m^2)**		**Species No.**		**Species x Area of Plot type**
Built up (J3.6)	100	X	0	=	0
Hardstanding (J4)	350	X	0	=	0
Ephemeral/short perennial (J1.3)	50	X	5	=	250
TOTAL 1	500			TOTAL 2	250
(Total species x area of plot type) / Total site area = (2) / (1) =					0.50

Post-development ecological value

Plot Type	Area of Plot Type (m^2)		Species No.		Species x Area of Plot type
Built up (J3.6)	350	X	0	=	0
Hardstanding (J4)	130	X	0	=	0
Ephemeral/short perennial (J1.3)	20	X	5	=	100
TOTAL 1	500			TOTAL 2	100
(Total species x area of plot type) / Total site area = (2) / (1) =					0.20

Post-development score – pre-development = site score
0.20 – 0.50= -**0.30**

Based on the figures shown in the tables above, the change in ecological value for this site is -0.30 species/hectare, and therefore **1 credit** out of a possible 2 can be awarded.

LE4 – Enhancing Site Ecology

1 credit is awarded if:

i. A suitably qualified ecologist (SQE) has been appointed by the client or their project representative by the end of the Preparation and Brief stage (RIBA Stage 1 or equivalent) to advise on enhancing the ecology of the site at an early stage.
ii. The SQE has provided an ecology report with appropriate recommendations for the enhancement of site ecology at Concept Design stage (RIBA Stage 2 or equivalent).
iii. The report is based on a site visit/survey by the SQE. The early stage advice and recommendations of the ecology report for the enhancement of site ecology have been, or will be, implemented in the final design and build.

If the first credit has been achieved, then a further **1 credit** is available as follows:

iv. The recommendations of the Ecology Report for the enhancement of site ecology have been implemented in the final design and build, and the SQE confirms that this will result in an increase in ecological value of the site, with an increase of six plant species or greater.

An Extended Phase 1 Habitat Survey has been undertaken by a Suitably Qualified Ecologist and recommendations for the protection and enhancement of site ecology have been made. Recommendations arising from the ecological surveys conducted in relation to this development are as follows:

- Landscape planting within the grounds of the development will utilise native trees and shrubs of local provenance, or non-native species of known wildlife value. A list

of proposed species is provided in Appendix 4. The recommended species will provide habitat and a range of food sources, which benefit native wildlife such as insects and foraging birds. The planting should result in an increase of six plant species or greater.

- The inclusion of four bat boxes suitable for species such as common pipistrelle (*Pipistrellus pipistrellus*) which are likely to forage along the River Crane. The boxes should be positioned on North-facing walls (facing the River corridor) at least 4 m high away from external lighting/windows. Bat box examples include Ecosurv Ltd and Bird Brick Houses Ltd (see Appendix 5). Guidance information on bats and lighting for developers is provided by the Bat Conservation Trust (http://www.bats.org.uk/pages/bats_and_lighting.html).

The first credit can be awarded for the SQE assessment. If the developer commits (via an appropriately worded planning condition) to the delivery of these enhancement measures aimed at protecting and enhancing the site ecology, it is recommended that a further credit can be awarded and hence a total of **2 credits** may be awarded.

LE5 – Long Term Impact on Biodiversity

The award of credits under LE5 is based on developers achieving all prerequisite criteria and some of the additional criteria as set out below.

1 credit is awarded where there is a commitment to achieve the pre-requisite criteria and at least two of the additional requirements.

2 credits are awarded where there is a commitment to achieve the pre-requisite criteria and at least four of the additional requirements. The Suitably Qualified Ecologist may confirm that some of the additional criteria are not applicable to the assessed development, and award of credits is adjusted accordingly.

Criteria	Compliance notes	Compliance
Prerequisite Criteria		
Where a Suitably Qualified Ecologist (SQE) is appointed prior to commencement of activities on-site and they confirm that all relevant UK and EU legislation relating to the protection and enhancement of ecology has been complied with during the design and construction process.	As author of this report, I can confirm that I am a suitably qualified ecologist and have been appointed prior to the commencement of any works on site. In addition, the scheme has been conducted in full compliance with relevant UK and EU legislation relating to protection and enhancement of ecology.	✓
Where a landscape and habitat management plan, appropriate to the	A landscape layout plan is recommended to be produced	X

site, is produced covering at least the first 5 years after project completion in accordance with BS 42020:2013 Section 11.1. This is to be handed over to the building owner/occupants for use by the grounds maintenance staff.	for the development that makes reference to management prescriptions covering a 5 year period. This should be secured via a planning condition	
Where additional measures to improve the assessed site's long term biodiversity are adopted, as described below.		X
Additional Criteria		
The principal contractor nominates a Biodiversity Champion with the authority to influence site activities and ensure that detrimental impacts on site biodiversity are minimised in line with the recommendations of a Suitably Qualified Ecologist.	Not relevant	X
The principal contractor trains the site workforce on how to protect site ecology during the project. Specific training must be carried out for the entire site workforce to ensure they are aware of how to avoid damaging site ecology during operations on-site. Training should be based on the findings and recommendations for protection of ecological features highlighted within a report prepared by a Suitably Qualified Ecologist.	Not relevant	X
Where a new ecologically valuable habitat appropriate to the local area is created. This includes a habitat that supports nationally, regionally or locally important biodiversity, and/or which is nationally, regionally or locally important itself; including any UK Biodiversity Action Plan (UK BAP) priority habitats[2], Local Biodiversity Action Plan (LBAP) habitats, those protected within statutory sites (e.g. SSSIs), or those within non-statutory sites identified in local plans. Local biodiversity expertise should be sought during the Preparation and Brief (RIBA Stage 1 or equivalent) to	This could be achieved if enhancements are adopted via a suitable planning condition.	✓

help identify species of local biodiversity importance on-site and ensure that the proposals support local priorities.		
Where flora and/or fauna habitats exist on-site, the contractor programmes site works to minimise disturbance to wildlife. For example, site preparation, ground works, and soft landscape works have been, or will be, scheduled at an appropriate time of year to minimise disturbance to wildlife. Timing of works may have a significant impact on, for example, breeding birds, flowering plants, seed germination, amphibians etc. Actions such as phased clearance of vegetation may help to mitigate ecological impacts. This additional requirement will be achieved where a clear plan has been produced detailing how activities will be timed to avoid any impact on site biodiversity in line with the recommendations of a Suitably Qualified Ecologist.	Not relevant	X

Based on the scores achieved against the pre-requisite and additional criteria, it is recommended that **1 credit** is awarded against LE5. This is contingent on the landscape and management plan being secured via a suitable planning condition.

5.0 Conclusions

It is recommended that a total of **6 credits** are awarded for Landscape and Ecology out of a possible 10 following receipt of written confirmation that the client has committed to undertaking all the measures outlined within this report. The awarded credits are summarised as follows,

- LE01: The site is located on land of which more than 75% was previously developed, and therefore **1 credit** out of a possible 2 has been awarded.
- LE02: The site is of low ecological value but not all existing features of ecological value will be protected from damage during clearance, site preparation and construction, and therefore **1 credit** out of a possible 2 can be awarded.
- LE03: Based on current landscaping plans, there is considered to be a marginal ecological loss associated with the post-development species/ha when compared to the pre-development situation, and therefore **1 credit** out of a possible 2 can be awarded.

- LE04: Following receipt of written confirmation that the client has committed to undertaking the recommendations outlined in this report, **2 credits** out of a possible 2 may be awarded. A planning condition is likely to be required.
- LE05: All of the pre-requisite criteria and one of the additional criteria can be achieved, and therefore **1 credit** out of a possible 2 can be awarded. A planning condition is likely to be required.

6.0 References

Wildlife & Countryside Act (1981), as amended HMSO

BRE (2014) BREEAM New Construction Non-domestic Buildings Technical Manual SD5076 2.0-2014

JNCC (2101) Handbook for Phase 1 Habitat Survey

Appendix 1. Site location

Aerial plan showing the site location in the context of the surrounding environment.

Appendix 2. Plant species recorded on site

Common name	*Latin name*	**Location**	Notes
Butterfly bush	*Buddleja davidii*	Hard-standing	Invasive but good in urban settings for pollinating insects.
Groundsel	*Senecio vulgaris*	Hard-standing	Native species, common and widespread.
Meadow-grass	*Poa sp.*	Hard-standing	Native species, common and widespread.
Smooth sow-thistle	*Sonchus oleraceus*	Hard-standing	Native species, common and widespread.
Willowherb	*Chamerion sp.*	Hard-standing	Native species, common and widespread.
Number of species with ecological value			**5**

Appendix 3. Photographs

Photo 1: Current warehouse (built structure) on site.	
Photo 2: Southern border of the site.	

Photo 3: Current area of hard standing, looking towards northern boundary.	

Appendix 4. Planting recommendations

Ground flora/turf species (Amenity grass)

Perennial Ryegrass	*Lolium perenne*
Smooth Meadowgrass	*Poa pratensis*
Fine Leaf Fescue	*Festuca rubra litoralis*
Chewings Fescue	*Festuca commutata*
Bentgrass	*Agrostis capillaries*

Total = 5

Shrubs (planters)

Berberis darwinii

Berberis thunbergii atropurporea

Ceonothus thyrsiflorus

Choisia ternata 'sundance'

Escallonia 'apple blossom'

Hebe rakainsis

Hebe 'red edge'

Lavandula stoeches 'kew red'

Viburnum davidii

Vinca minor

Mahonia aquifolia

Sedum spectabile 'stardust'

Bergenia 'bressingham white'

Total = 13

Small tree (planter)

Prunus spp.

Sorbus spp.

Total = 2

Climbers to grown up walls and fences

Jasminum Nudiflorum - The winter jasmine has bright yellow flowers from November to February.

Clematis montana– masses of white scented flowers in early spring; vigorous grower to 6m.

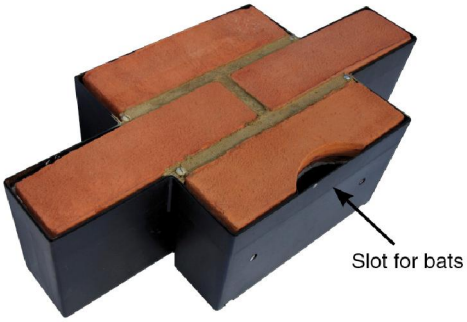
Hedra helix– Climber which provides good cover and flowers attract insects and bats in turn; vigorous grower.

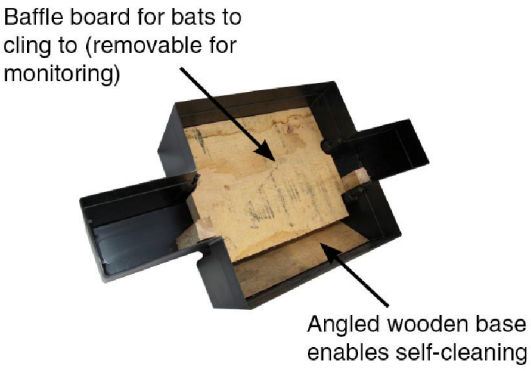
Lonicera japonica - This honeysuckle has yellow flowers in summer, best in shade, evergreen. 3 x 2.5m. 'Halliana' is long-blooming. *Lonicera periclymenum* 'Serotina' (late Dutch) – cream/red flowers.

Total = 4

Appendix 5. Bat Box Options

Option 1 - Bat Brick House - http://www.birdbrickhouses.co.uk/page51.html





An example of an incorporated box.

Option 2 - Habitat Bat Box - http://www.habibat.co.uk/