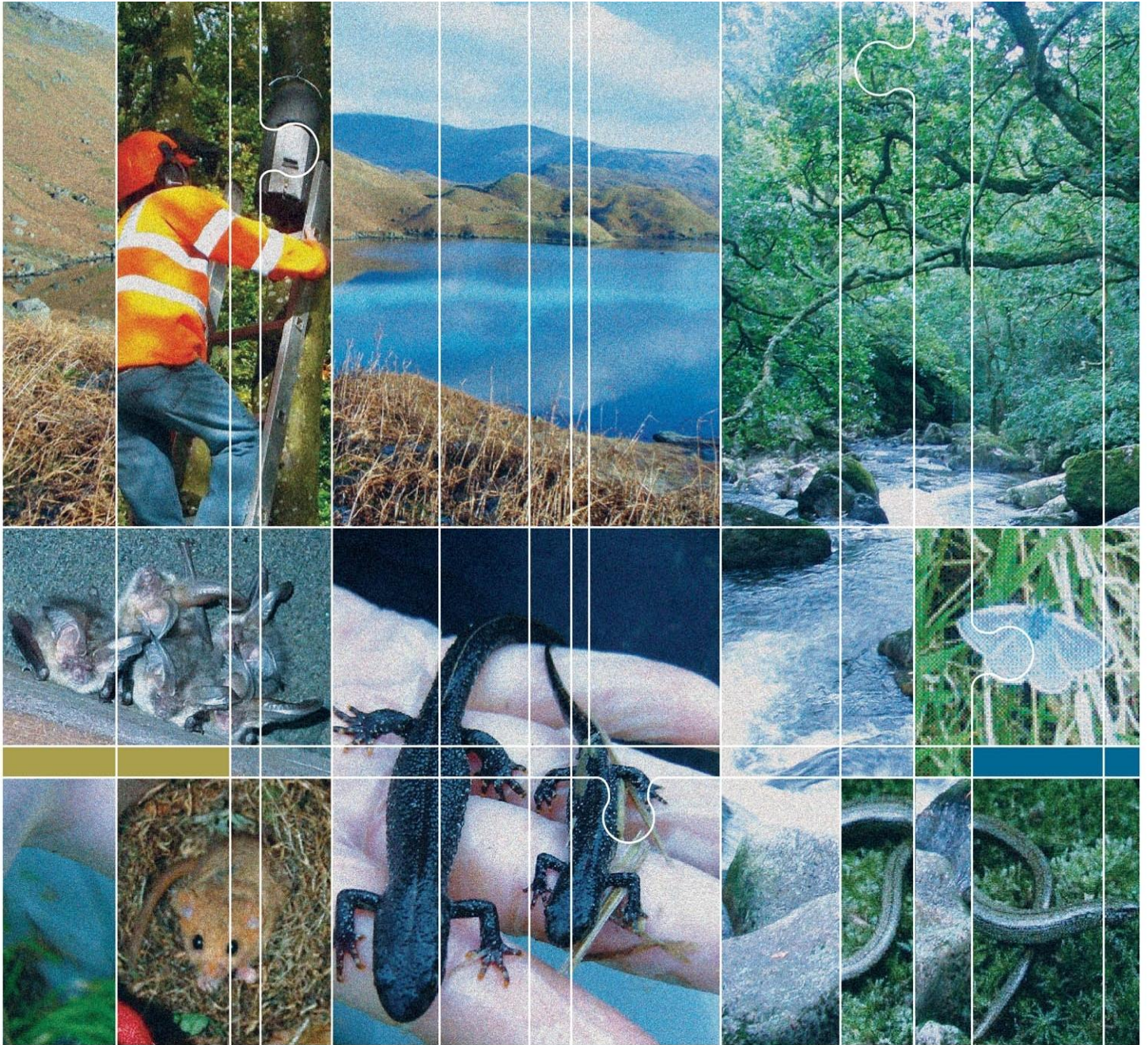


Appendix E – Historical Ecological Report

This report highlights:

- E.1 The impact of overshadowing upon the neighbouring SINC;
- E.2 Historical recommendations on green roof design



Midland Crescent - Ecological Design Advice Stadium Capital Holdings

19 April 2011

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1. Introduction

SITE DESCRIPTION

- 1.1 Capita Symonds Ltd. was commissioned by Stadium Capital Holdings to provide ecological design advice with regard to a proposed development at Midland Crescent / Finchley Road, Hampstead, London (grid reference TQ 261 848).
- 1.2 The Site at Midland Crescent / Finchley Road comprises a triangle of land between two working railway lines, extending westwards from Finchley Road.
- 1.3 The proposal is for a mixed-use building to be constructed, partially on stilts, providing an undercroft area and adjacent linear soft estate located between the building and the railway lines to the north, south and west.
- 1.4 The proposed development is on land that has been identified as being of low ecological value from the ecological appraisal of May 2010¹. This report sets out responses to the following queries:
 - habitats and species appropriate to shaded situations;
 - evergreen vegetation appropriate to a rail side situations; and
 - advice on the impact of shading on the adjacent south-facing bank located to the rear of properties to the south of Rosemont Gardens

¹ Capita Symonds Ltd (May 2010) *Midland Crescent / Finchley Road Ecological Appraisal - Update*

2. Ecological Considerations

2.1 VEGETATION AND WILDLIFE APPROPRIATE TO SHADED SITUATIONS

2.2 In order to incorporate structural diversity into the proposed development and maximise biodiversity opportunities within the Site, the following wildlife installations and habitats are offered for consideration.

2.3 It is recommended that habitats are incorporated into the development with a strong emphasis on microclimates created by virtue of proposed building mass. *Appendix 1* presents a schematic outline of general biodiversity opportunities, including habitat types that may be considered within the context of such a scheme.

DEEP SHADE

2.4 Biodiversity opportunities can be limited within deeply shaded habitats due to the inherent scarcity of natural light available for processes such as photosynthesis in vascular plants, and the thermophysiological needs of animal groups such as invertebrates.

2.5 Within strongly shaded areas presented within the building's undercroft, limited planting is recommended, with a general emphasis on a 'stony meadow' or bare ground habitat types. This habitat should consist of variable aggregates and other suitable materials and include the provision of structured and unstructured log piles and standing deadwood designed to encourage diverse invertebrate species functioning as breeding sites, resting places and hibernacula as well as providing a secondary foraging resource for birds and bats.

2.6 Ideally, deeply shaded areas such as this should be left to colonise naturally overtime, however, sciophilous or shade-loving vascular plants may be introduced as plugs to assist initial establishment. Native plants which have demonstrated success within shaded environments include hart's-tongue fern *Phyllitis scolopendrium*, pendulous sedge *Carex pendula* and ivy *Hedera helix*.

2.7 Deeply shaded areas should be limited in extent with a preference for moderately shaded areas as discussed below.

MODERATE SHADE

2.8 Transitional habitats may then be provided when moving from the building's undercroft to a more open situation. This habitat should include locally prevalent shade tolerant assemblages.

-
- 2.9 A great diversity of plants may suit such a location and may be effectively established via the broadcast of seed or through the laying of pre-established turf and / or plug plants as appropriate. Suitable plants may include locally common forbs including green alkanet *Pentaglottis sempervirens*, herb Robert *Geranium robertianum*, garlic mustard *Alliaria petiolata*, ground ivy *Glechoma hederacea* and white deadnettle *Lamium album*; and other woodland species including primrose *Primula vulgaris*, oxlip *Primula elatior*, wood avens *Geum urbanum*, ramsons *Allium ursinum*, enchanter's nightshade *Circaea lutetiana* etc.
- 2.10 Grasses are recommended to introduce additional ground cover and diversity within this transitional zone and may incorporate shade tolerant species such as crested dogstail *Cynosurus cristatus* red fescue *Festuca rubra* ssp. *commutate*, wood meadow-grass *Poa nemoralis*, common bent *Agrostis capillaris* and tufted hair-grass *Deschampsia cespitosa*.
- 2.11 Supplementary shrub species may be situated within transitional habitat areas including species consistent with a native woodland understory including hawthorn *Crataegus monogyna*, blackthorn *Prunus spinosa* and field maple *Acer campestre*, elder *Sambucus nigra*, spurge-laurel *Daphne laureola* etc. with evergreen shrubs such as holly *Ilex aquifolium* adding year-round colour. Once established, habitats such as this can provide a supplementary nesting and foraging resource for small birds such as dunnock *Prunella modularis* house sparrow *Passer domesticus* and song thrush *Turdus philomelos*.
- 2.12 Additional wildlife installations may be incorporated into the building structure to provide a permanent wildlife resource. Suitable features could include house sparrow nesting sites, insect hibernacula etc.
- 2.13 EVERGREEN VEGETATION APPROPRIATE TO A RAIL SIDE SITUATIONS
- 2.14 Although evergreen vegetation appears attractive by virtue of its inherent screening characteristics, largely deciduous and occasional evergreen planting is recommended for such rail side situations.
- 2.15 Ideally this area would provide a continuum of habitats described above with the inclusion of holly and other shrubby native species scattered throughout.
- 2.16 The inclusion of such hedgerow / shrub species adjacent to an active rail line should not present an issue with reference to root and canopy growth. Species such as hawthorn, blackthorn, holly etc. are often recommended within proximity to active water mains and below ground gas installations as they are restricted in height and have minimal associated root growth and will also require minimal management and maintenance.
- 2.17 It is advised that shrub planting is set back sufficiently from the active rail line in order to minimise future management issues.

-
- 2.18 ADVICE ON THE IMPACT OF SHADING ON THE ADJACENT SOUTH-FACING BANK LOCATED TO THE REAR OF PROPERTIES TO THE SOUTH OF ROSEMONT GARDENS
- 2.19 In order to assess the potential impacts of the proposed development on the adjacent south-facing bank located to the rear of mixed residential and commercial properties to the south of Rosemont Gardens the following information has been reviewed:
- aerial photography;
 - site walkover undertaken on 6 April 2011;
 - CZWG sunlight and shadow study.
- 2.20 The area reviewed during the site walkover on the 6 April 2011 comprises land between the rear of properties to the south of Rosemont Gardens and the rail track, henceforth described as 'the embankment'. This area is steeply sloping in places with an overall height differential of some 10 m falling to the rail track to the south.
- 2.21 Buildings to the north of this area comprise a mixture of two and three storey residential and commercial properties, a number of which have associated basements, of these few have direct access to their rear.
- 2.22 The embankment comprises a relatively uniform habitat dominated by broad-leaved woodland. The diversity of trees within this fairly small area is relatively high (see *Appendix 3*) and of uniform age particularly within the northern section of the embankment. There is localised evidence of management throughout the woodland including the recent cutting of the shrub layer at the foot of the embankment (largely comprising bramble *Rubus fruticosus* agg.) to create an informal footpath with associated timber seating.
- 2.23 The field layer presents a relatively diverse flora within occasional openings / glades, the origin of which appears mixed with occasional non-native bluebells *Hyacinthoides* sp. and primroses *Primula* sp. scattered amongst locally abundant green alkanet, garlic mustard, white deadnettle etc. Ground flora within this largely shaded embankment is dominated by sprawling ivy to the north and bramble to the south adjacent to the railway track.
- 2.24 Trees throughout the site are exhibiting variable levels of environmental stress with tall, suppressed growth.
- 2.25 Review of sunlight and shade models suggest that the proposed building will present maximum shading during the winter months with the eastern portion of the embankment shaded during entire day during the winter solstice. Late March presents a shortening of the building's shadow limited to the south eastern quarter of the embankment. Shadowing during the mid-summer solstice is restricted to the proposed development area and to the adjacent railway line to the north.
- 2.26 If left unmitigated, impacts on the diversity of the adjacent woodland may result in a small, localised simplification of the embankment's field layer particularly within the south east quarter due to the changes in variables affecting plant growth including seed germination conditions and the general availability of light for photosynthesis.

-
- 2.27 In order to address this slight negative impact it is recommended that local management prescriptions are devised and implemented on the embankment with the involvement of the local community. Management opportunities include localised thinning / coppicing of trees, shrubs and bramble; the installation and maintenance of wildlife refugia; and the control of Japanese knotweed and scrub development.

Appendix 1 – Greening Buildings Schematic

GREENING BUILDINGS: BIODIVERSITY OPPORTUNITIES



Key

-  Bats
-  Lower Plants
-  Fungi
-  Invertebrates
-  Plants
-  Birds

A Extensive green / brown roofs

Brown roofs are local substrate, designed to meet specific biodiversity targets; green roofs are shallow 'carpets' of sedum or hardy plants.

B Semi-intensive green roofs

Varied habitat including grasses, wildflower meadows, bulbs, shrubs and woody plants with low build-up.

C Intensive green roofs

Rich habitat of grasses, herbs, shrubs and trees.

D Planters and window boxes

Planters and window boxes planted with native species, installed on sunny and shaded aspects, add trailing and climbing species of flowering and fruiting plants.

E Green walls

Vertical surfaces with naturally colonising vegetation and plants inserted into a purpose built structure.

F Climbers and wall plants

Climbing and trailing plants grown up walls, pillars and trellises.

G Stony meadows

Stony meadows of varying sizes of aggregate, which may or may not become naturally colonised by vegetation.

H Native planting

Native planting of grasses, herbs, shrubs, trees and hedgerows included in all planting schemes (ie, roof, planters, walls, climbing, or in water features).

I Water features

Water features can be designed to be any size or shape and can be planted with native macrophytes or left to colonise naturally.

J Habitat features

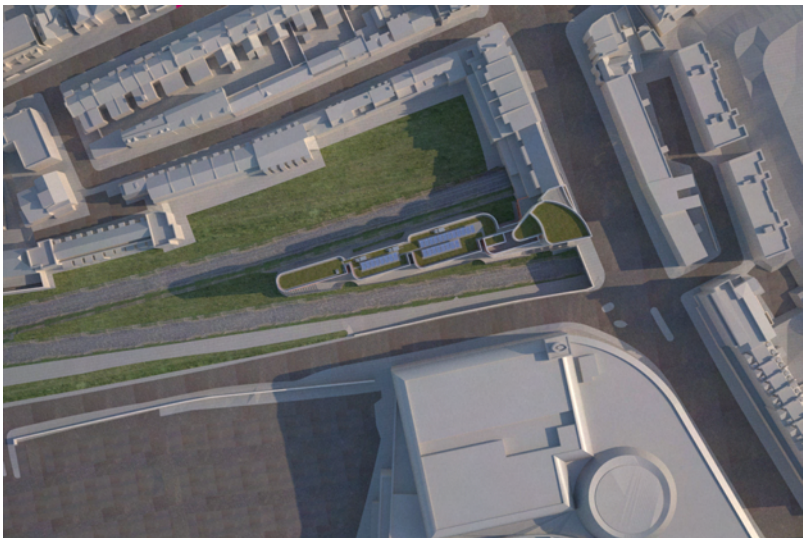
Natural refugia (log piles) and purpose-built boxes providing habitat for invertebrates, breeding birds and roosting bats.



Appendix 2 – Sunlight / Shade Model



21st December 10:00



21st June 08:00



21st March 09:00



21st December 12:00



21st June 12:00



21st March 12:00



21st December 15:30



21st June 18:00



21st March 15:30

Appendix 3 – Vascular plant record

The following table presents species recorded during a walkover of the embankment area on 6 April 2011. Plants recorded present casual observations.

Common Name	Scientific Name
Sycamore	<i>Acer pseudoplatanus</i>
Downy birch	<i>Betula pubescens</i>
Silver birch	<i>Betula pendula</i>
Ash	<i>Fraxinus excelsior</i>
Lime sp.	<i>Tilia</i> sp.
Cherry sp.	<i>Prunus</i> sp.
Aspen	<i>Populus tremula</i>
Cypress sp.	<i>Cypresses</i> sp.
Hawthorn	<i>Crataegus monogyna</i>
Hazel	<i>Corylus avellana</i>
Butterfly bush	<i>Buddleja davidii</i>
Holly	<i>Ilex aquifolium</i>
Goat willow	<i>Salix Caprea</i>
Elder	<i>Sambucus nigra</i>
Laurel	<i>Lauraceae</i> sp.
Bramble	<i>Rubus fruticosus</i> agg.
Ivy	<i>Hedera helix</i>
Common Nettle	<i>Urtica dioica</i>
White Deadnettle	<i>Lamium album</i>
Green alkanet	<i>Pentaglottis sempervirens</i>
Ribwort plantain	<i>Plantago lanceolata</i>
Dandelion	<i>Taraxacum</i> agg.
Daisy	<i>Bellis perennis</i>
Herb Robert	<i>Geranium robertianum</i>
Garlic mustard	<i>Alliaria petiolata</i>
Yarrow	<i>Achillea millefolium</i>
Ground ivy	<i>Glechoma hederacea</i>
Lesser Celandine	<i>Ranunculus ficaria</i>
White clover	<i>Trifolium repens</i>
Red Clover	<i>Trifolium pratense</i>
Cleavers	<i>Galium aparine</i>
Ground ivy	<i>Glechoma hederacea</i>
Dock sp.	<i>Rumex</i> sp.
Ornamental Bluebell sp.	<i>Hyacinthoides</i> sp.
Ornamental Primrose sp.	<i>Primula</i> sp.
Japanese knotweed	<i>Fallopia japonica</i>
Yorkshire fog	<i>Holcus lanatus</i>

Source: Capita Symonds Ltd.

Appendix 4 – Embankment Photographic Record



Recently cleared pathway



Ruderal area adjacent to flats on
Rosemont Road



Aging coppice illustrating suppressed tree growth



Small semi-improved grassland 'glade' maintained by residents.



Grape hyacinth (left) and Japanese knotweed (right) recorded on site

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