

# URBAN GREENING FACTOR AND NET BIODIVERSITY 9.379 – 330 GRAY'S INN ROAD

14/05/2021 by Mark Whittingham, reviewed by Ben Holmes

This design note summarises the applicant's formal response to London Borough of Camden Nature and Conservation Officer, GLA Stage 1 comments on urban greening and biodiversity, and follow up comments received on 07/05/2021.

## SUMMARY OF CONSULTATION RESPONSES

#### LONDON BOROUGH OF CAMDEN NATURE AND CONSERVATION OFFICER (23/12/2020)

In terms of our expectations for biodiverse and biosolar roofs, your documents state 'extensive', which can just cover sedum mats, they also state 'intensive', which is more about the depth of substrate (though the higher UGF score suggests biodiverse). Biodiverse roofs can be extensive or intensive, but extensive or intensive roofs are not necessarily biodiverse (it depends on design and species). The devil is in the detail so we'll want this up front. On the wider biodiversity question, your selection of species in the public and resident's garden areas is quite good, but we want further details on whether there is net increase in biodiversity.

I'll need to look at it further with my Trees and Landscaping colleagues about the loss of the large TPO tree. Certain Cllrs at Committee will challenge its loss so there will need to be sufficient justification and replacement planting (i.e. including trees of a large ultimate size that are visually prominent so contribution highly to amenity).

#### GLA STAGE 1

The applicant should therefore review the urban greening proposed, seeking to improve the quality or quantity, to increase the proposed UGF.

It is requested that further information is provided when the UGF is reviewed and confirmed. The extent of green roofs across the site should also be reviewed, ensuring that opportunities for intensive green roofs have been maximised.

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The applicant should provide evidence how the proposed development secures a net biodiversity gain. If biodiversity net gain is not achievable on the site the applicant should review opportunities for biodiversity offsetting in consultation with the borough.

#### URBAN GREENING FOLLOW UP COMMENTS – 2020/6909/S1

The urban greening comments provided at Stage 1 are summarised below with further comments provided following the receipt of Stage 2 information:

GLA Comments	Applicant Responses
<i>The UGF was calculated to be 0.22 and therefore the design should be reviewed, seeking to improve the quality and quantity to increase the UGF.</i>	It is noted that the development is predominantly commercial in nature (not residential); therefore, a target UGF of 0.3 is applicable.
No review appears to have been undertaken. The UGF has been re-submitted as 0.23 and therefore remains substantially short of the 0.4 target for predominantly residential development. The UGF Response provided at Stage 2 separates the Proposed Development into commercial and residential elements. However, as set out in Policy G5, the UGF should be based on the whole site area and the target score determined by the predominant use. Stage 1 comments therefore remain outstanding. Should, following the design review, the applicant determine that it is not possible to increase the UGF, a note should be provided setting out the options considered and the justification for why they are not possible. The final UGF should be submitted as a drawing with accompanying calculation table, as set out in recently released UGF guidance:	The UGF calculation has been updated in line with the comments received. Please refer to the following section within this report: 'Urban Greening Factor'. The UGF has been recalculated as 0.24 based on the latest areas provided by the landscape architect and architect. Drawings confirming areas of ground-level planting and green roof have been appended to this report, as per the Mayor of London's Urban Greening Factor guidance document (see appendices). The project is unable to meet the target UGF (0.3) due to insufficient area for landscaping and/or green roof. Please refer to the following section within this report for clarification: 'Options to Enhance UGF'.
https://www.london.gov.uk/what- wedo/planning/implementing-london-plan/london-plan- guidance-and-spgs/urbangreening-factor-ugf-guidance-pre- consultation-draft	
<i>Clarification regarding the specification of the proposed woodland.</i> No clarification has been provided. This remains outstanding.	Please refer to the following section within this report for clarification: 'Specification of Ground Level Planting'.
A review of the extent of green roofs should be undertaken, ensuring that opportunities for intensive green roofs have been maximised. Information regarding the proposed species has been provided but no review of the extent of green roofs appears to have been undertaken. This remains outstanding.	Green roofs have been maximised on all suitable roof areas; please refer to the following section within this report for clarification: 'Options to Enhance UGF'.
Calculation of biodiversity net gain. This has been provided. The Scheme has been calculated to deliver a 245% net gain. No further information is required.	No response required.

# **URBAN GREENING FACTOR**

As a predominantly commercial development the proposed scheme is targeting an Urban Greening Factor (UGF) of 0.3, as per London Plan Policy G5.

UGF requirements have been considered from the outset of the design process. An iterative process has been followed to determine the maximum possible UGF that can be achieved on site. This has been carried out as a collaborative exercise between the Ecologist (XCO2, Project Architect (AHMM) and Landscape Architect (East). It was acknowledged from the outset of the process that there would be insufficient space for soft landscaping at ground level to meet the UGF; therefore, the project includes substantial areas of green roof and green wall.

The UGF has been calculated in accordance with the Mayor of London's Urban Greening Factor guidance document. This calculation is presented in Table 1. Drawings confirming the location of each of the surface cover types listed in Table 1 can be found in Appendix A (landscape drawings, showing ground level planting) and Appendix B (roof plans).

Surface Cover Type	Factor
Semi-natural vegetation (e.g. trees woodland, species flower-rich grassland) maintained or established created on site.	1.0
Wetland or open water (semi-natural; not chlorinated) maintained or established created on site.	1.0
Intensive green roof or vegetation over structure. Vegetated sections only. Substrate minimum settled depth of 150mm.	0.8
Standard trees planted in natural soils or in connected tree pits with a minimum soil volume equivalent to at least two thirds of the projected canopy area of the mature tree	0.8
Extensive green roof with substrate of minimum settled depth of 80mm (or 60mm beneath vegetation blanket) – meets the requirements of GRO Code 2014.	0.7
Flower-rich perennial planting – see Centre for Designed Ecology for case-studies.	0.7
Rain gardens and other vegetated sustainable drainage elements	0.7
Hedges (line of mature shrubs one or two shrubs wide) – see RHS for guidance.	0.6
Standard trees planted in pits with soil volumes less than two thirds of the projected canopy area of the mature tree.	0.6
Green wall –modular system or climbers rooted in soil	0.6
Groundcover planting	0.5
Amenity grassland (species-poor, regularly mown lawn).	0.4
Extensive green roof of sedum mat or other lightweight systems that do not meet GRO Code 2014.	0.3
Water features (chlorinated) or unplanted detention basins.	0.2
Permeable paving	0.1
Sealed surfaces (e.g. roofs, external concrete, asphalt, stone)	0.0

Table 1: Urban Greening Factor (UGF) calculation

East	АНММ	Total Area	Score		
160	0	160	160		
N/A	N/A	0	0		
0	836 836 669				
84	0	67			
0	105	105	74		
62	0	62	43		
39	0 39		27		
N/A	N/A	0	0		
17	0 17		10		
110	84 194 1		116		
39	179	218	109		
135	0 135		54		
N/A	N/A	0	0		
7	0	7	1		
364	0	364	36		
944	2,677	3,621	0		

	1,367
	5,647
	0.24

Urban Greening Factor

Total Score Total Area (sqm) The proposals include substantial areas of intensive green roof, further details of the specification and species mix that will be utilised can be found in the 'Specification of Biodiverse Green Roofs' section of this report.

Extensive green roofs have been utilised in areas where it is not possible to implement an intensive green roof system; namely, above the existing Royal National Ear Throat and Nose hospital building. This building (which will be refurbished as part of the proposed scheme) cannot accommodate the structural loadings associated with an intensive green roof system. The project's structural engineer (WSP) has advised that the maximum settled substrate depth that can be accommodated in this area is 80 mm. The Applicant is committed to ensuring the specified extensive green roof meets the requirements of GRO Code 2014.

#### **OPTIONS TO ENHANCE UGF**

It is recognised that the scheme is not currently meeting the target for predominantly commercial developments (0.3). Throughout the design process the project team have endeavoured to ensure that the UGF is maximised as far as possible and that high quality, biodiverse landscaping is provided. Three potential options were investigated by the design team to increase the UGF:

- 1. Increase area of intensive green roof
- 2. Increase area of green wall
- 3. Increase ground level planting

It is not possible to increase the green roof area. As shown in Appendix B this has already been maximised as far as possible. As explained in the previous section of this report it is not possible to convert the remaining area of extensive green roof (above the existing hospital building) to an intensive system. With regards to other roof areas, the Project Architect (AHMM) has provided the following justification for not implementing option 1:

All roof areas that are suitable for green roofs have been maximised, and where viable are specified as intensive green roof. Small areas of roof above lift and stair overruns are not suitable as the footprint is small and maintenance access is impeded. A large portion of the office roof is dedicated to mechanical plant in the form of the shared energy centre ASHPs and is surrounded by a pitched roof profile. The office building requires 0.74 sqm of external amenity space per occupant in line with local plan policy A2. Based on the total floor space proposed, 400 sqm of external amenity is to be provided. On that basis the rooftop terrace at 6th floor cannot be converted to green roof.

With regards to option 2 (increase green wall area) the Project Architect (AHMM) has confirmed the following:

The proposed designs do not have available wall space for this extent of green wall. All available elevations have windows proposed to ensure internal daylight levels, aspect and enjoyment are maximised. The area of additional green wall required to achieve an UGF of 0.3 is the equivalent of the Eastern elevation of the office building which requires windows on this façade to ensure light penetrate deep into the plan, lowering reliance on artificial lighting.

It is, therefore, not possible to increase the proposed area of green wall; this has already been maximised as far as possible.

The Landscape Architect (East) has provided the following justification for not implementing option 3 (increase area of ground level planting):

We have maximised the planted areas where possible whilst maintaining clear ways of access to the buildings and allowed for some clearings to accommodate suitable areas for play equipment. The extent of ground layer planting has been carefully judged to create as much planting as possible for a positive green environment, whilst leaving enough area available for beneficial public uses, such as areas to sit, play, walk and meet. As demonstrated by the above statements and supporting drawings (Appendix A and Appendix B) there is insufficient space to increase areas of soft landscaping, without compromising other key policy requirements; for example, daylight provision, access requirements and provision of amenity space.

## SPECIFICATION OF BIODIVERSE GREEN ROOFS

The applicant is committed to installing biodiverse green roofs wherever technically feasible. The location of green roofs has been indicated by the architect in Appendix B.

All expensive green roofs will include a settled substrate depth of at least 80 mm and will meet the requirements of GRO Code 2014.

All intensive greens roofs will have a settled substrate depth of at least 150 mm.

All green roofs (extensive and intensive) will be biodiverse and include species of ecological value to the local area; including:

- 1. A mixture of plant species included in sward that occur naturally in the area and are used by pollinators recorded in the immediate radius of the site (e.g. 2km)<sup>1</sup>.
- 2. A mixture of plant species that flower at different times thus providing support to pollinating insects and increasing visual attractiveness for people living on site (see Table 2).
- 3. Intensive green roofs will ensure the presence of legumes in the sward which have been shown to increase carbon capture in soil (e.g. recent paper in Nature Communications 2019).

Table 2: Examples of species to include in the biodiverse seed mix for use on in the green roofs for this development (we will work with seed suppliers to derive a suitable mixture of species and pass this to LBC for comment before finalising)

Plant species	Pollinator species
	be of interest to include as target species)
White Clover Trifolium repens	Honeybee
	Bumblebee
Red Clover	Honeybee
Trifolium pratense	Bumblebee
	Bombus hortorum
Lucerne	Honeybee
Medicago sativa	Bumblebee
	butterflies
Chicory	Adia cinerella
cichorium intybus	Apis mellifera
	Azelia zetterstedti
	Bellardia vulgaris
	Bombus lapidarius
	Bombus pascuorum
	Bombus pratorum

<sup>&</sup>lt;sup>1</sup> Preliminary list of pollinating insects within a 2km radius if the site: Tree Bumblebee Bombus hypnorum, Large Redtailed Bumblebee Bombus lapidarius, Honey Bee Apis mellifera, Gooden's Nomad Bee Nomada goodeniana, Hairy Footed Flower Bee Anthophora plumipes, Chocolate Mining Bee Andrena scotica, Common Carder Bee Bombus pascuorum, Flavous Nomad Bee Nomada flava, Grey Mining Bee Andrena cineraria, Grey-patched Mining Bee Andrena nitida, Buff-tailed Bumblebee Bombus terrestris.

	Botanophila striolata
	Coenosia tigrina
	Dilophus febrilis
	Dolichopus plumipes
	Empis bicuspidata
	Episyrphus balteatus
	Eristalis arbustorum
	Eristalis tenax
	Eupeodes corollae
	Haematopota pluvialis
	Helophilus pendulus
	Lonchoptera furcata
	Maniola jurtina
	Melanostoma mellinum
	Melanostoma scalare
	Meligethes sp.
	Muscina assimilis
Caraway	Syrphids
Carum carvi	Wasps
	Solitary bees
	beetles
Bird's-foot trefoil	Honeybee
Lotus corniculatus	bumblebee
Yarrow	Eristalis interrupt
Achillea millefolium	Eristalis arbustorumj
Field scabious Knautia arvensis	Syrphid fly: Melanostoma mellinum
	Solitary be: Andrena hattorfiana
	Bombus lapidarius
	Lepidopterans
	Beetles
Self Heal	hoverflies
Prunella vulgaris	Bombus pascuorum,
	Bombus hortorum
	Apis mellifera
Wild Cervil (Cow Parsley)	Mining bees: Andrena sp
Anthriscus sylvestris	Syrphidae: Eristalis, Syrphus, and Sphaerophoria
	lacewings, beetles and hoverflies
Buckwheat Fagopyrum esculentum	Apis Melifera
	Wild bees (Lasioglossum, Andrena, Hylaeus)
	Syrphinae
Common knapweed Centaurea nigra	social bee species: long and short-tongued species

# SPECIFICATION OF GROUND LEVEL PLANTING

The Landscape Architect (East) has confirmed that the residential garden (categorised as semi-natural vegetation for the UGF calculation) as is composed of a mix of three types of birch tree species (such as River birches, Downy birches and Silver birches in both single and multi-stemmed varieties) set on ground cover planted areas. The ground layer planting is of different native planting mixes, with a predominance of flower-rich wildflower turfs and grasses that will not be frequently cut. Deciduous shrubs and flower-rich vigorous native shrubs suited to growing in woodland gardens are proposed around the edges of the central carpet (such as Buddleja Davidii and Virburnum opulus). It is the author's professional opinion that this planting mix meets the definition of 'semi-natural vegetation'.

A further two types of planting mix are proposed in the areas marked as 'groundcover planting' on the Urban Greening Factor plan (Appendix A), these will also consist predominantly of native species.

The overall planting is to be dense and of naturalistic character with native species that are often found on the untouched railway corridors.

## **NET BIODIVERSITY**

Net biodiversitv change will be addressed usina the Natural England tool (see http://publications.naturalengland.org.uk/publication/5850908674228224). We have populated the tool with the data we have for the site so far (prior to precise measurements of green space - currently estimated from satellite data). The tool predicts a substantial increase in net biodiversity gain (+245%). This is achieved through a combination of the landscaping design and installation of green roofs (as outlined above). Following a detailed review of the landscaping proposals and collaboration with the architect (AHMM) and landscape architect (East) we expect this will be achieved.

The exact figure for change in biodiversity will be calculated post-planning as part of the BREEAM assessment, following completion of the Preliminary Ecological Assessment. The majority of the gains will come from the green roofs (see above), green walls, trees and semi-natural vegetation. In addition the use of artificial boxes (for birds, bats and bees) will further enhance the biodiversity gains. The specific species known to occur in the area will be matched to the provision of these habitats.

#### LOSS OF TPO TREE

The development requires the removal of one walnut tree *Juglans regia*. This 11m mature tree is a non-native tree species that potentially supports only a very small number of insects (four according to <a href="http://www.countrysideinfo.co.uk/woodland\_manage/tree\_value.htm">http://www.countrysideinfo.co.uk/woodland\_manage/tree\_value.htm</a>) and is thus of very limited value in terms of its ecological function. The development cannot go ahead without removing the tree but we have planned the development to enhance net biodiversity (see below) and replace this tree with another native tree species which is of considerably more value to biodiversity (see below).

This tree will be replaced by a more biodiverse species – silver birch *Betula pendula*. We will use a well developed tree (e.g. 4m+ in height) as a replacement. This species can support up to 229 insect species, 126 lichen species and naturally occurs throughout England (see <u>http://www.countrysideinfo.co.uk/woodland\_manage/tree\_value.htm</u>); thus resulting in a gain in biodiversity.

## STATEMENT OF AUTHOR'S QUALIFICATIONS

Professor Mark Whittingham has been a Professor of Applied Ecology at Newcastle University since 2013. He has lead and participated in a large number of research projects (46 funded research projects to date) and his recent focus is on multi-functional land use and ecosystem services. He has published over 160 papers in the peer-reviewed literature (see <a href="https://scholar.google.co.uk/citations?user=FrfyNjUAAAAJ&hl=en">https://scholar.google.co.uk/citations?user=FrfyNjUAAAAJ&hl=en</a>). He is a Fellow of the Royal Society of Biology (elected in 2016) and a Member of the Chartered Institute of Ecology and Environmental Management since 2010. He has run an ecological consultancy (Whittingham Ecology) with his wife since 2008. He has a PhD and a first degree in Ecology. Specifically relevant to the task at hand here he is leading the biodiversity element of a current EU H2020 10 Million Euro project (SUPERG) which is trialling mixtures of seeds to provide benefits for different ecosystem services (of particular note in this context are the ones focussed on providing benefits for pollinating insects and another focussed on carbon capture).

## **APPENDIX A: LANDSCAPE DRAWINGS**



General Notes: © East Architecture landscape urban design limited. Do not scale off drawing. Check all dimensions on site and advise any discrepancies before commencing work. All dimensions in millimetres unless otherwise noted.

Key:

1

Scale: 1:200

-- 13/05/21 Stage 2 - R02 Stage 2 - R01 -- 05/03/21 -- 10/12/20 Stage 2 Rev. Date Description





Permeable paving				
	Lose recycled bricks			
	Granite setts, stone aggregate or similar			
	x			
	Lose gravel			
	Sealed surfaces			
	Recycled bricks			
	Terrazo Setts			
	Polished stone or similar			
	Concrete flags or similar poured surface			

	Client		
East	Groveworld		
Architecture, landscape			
urban design	Project Name		
Unit 3.3	Gray's Inn Road		
Bayford Street Industrial Centre	Drawing Landscape Masterplan		
T 020 7490 3190 E mail@east.uk.com			
	Job No.	Dwg No.	Revision
	212-GIR	L-DIA-105	2-R02
	Status	Scale	Issue Date
	Planning	1:250@ A1	13/05/21

## **APPENDIX B: ROOF PLAN**



	CONSULTANTS	NAME	NOTE	LOCATION /
	CLIENT:	GROVEWORLD	When this drawing is issued in uncontrolled CAD format it will be accompanied by a	$\left  \left  \left$
	STRUCTURAL ENGINEER:	WSP	PDF version and is issued to enable the recipient to prepare their own documents / models / drawings for which they are solely responsible.	1 ha
1	MECHANICAL ENGINEER:	XC02	The recipient should report all drawing errors, omissions and discrepancies to the architect. All dimensions should be checked on site by the contractor and such	
	COST CONSULTANT:	TURNER TOWNSEND	dimensions shall be the contractor's responsibility.	
	ACOUSTIC CONSULTANT:	HANN TUCKER	Allford Hall Monaghan Morris Limited accepts no responsibility or liability for:-	AL M
-	TRANSPORT CONSULTANT:	STEER	- any use of this drawing by parties other than the party for whom it was prepared or	
	DAYLIGHT / SUNLIGHT :	POINT2	- any alterations or additions to or discrepancies arising out of changes to the background information on which the drawings are based that was current at the	
			time of issue, and which occur to that information after it has been issued by AHMM	
-			translation from the original file format to any other file format or from the recipients	1 FEAL
-			that which was used to prepare it	N
			<ul> <li>the accuracy of survey information provided by others or for any costs, claims,</li> <li>proceedings and expenses arising out of reliance on such information</li> <li>any scaling from this drawing other than by the local planning authority solely for</li> </ul>	
			the purposes of the planning application to which it relates	I F FI

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