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## **DENVILLE HALL**

### **SUSTAINABILITY STATEMENT**

Prepared by: CBG CONSULTANTS LTD

**OXFORD:** South House, 3 Farmoor Court, Cumnor Road, OXFORD, OX2 9LU

Tel: 01865 864500

**LONDON:** 38 Warren Street, London, W1T 6AE

Tel: 02073 874 175

**CAMBRIDGE:** 50-60 Station Road, Cambridge, CB1 2JH

Tel: 01223 637746

**MANCHESTER:** 1 St Peters Square, Manchester, M2 3AE

Tel: 0161 5272805

[info@cbgc.com](mailto:info@cbgc.com)

[www.cbgc.com](http://www.cbgc.com)



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All information provided here is based on plans and information available at the time of writing. Prior to implementation of the options discussed, further detailed study, design, and costing, based on ground surveys, structural analysis, over shading studies, etc., as relevant to each renewable/low carbon source, is necessary.

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## 1. INTRODUCTION

This sustainability statement has been prepared by CBG Consultants on behalf of Denville Hall in support of its planning application to Hillingdon Borough Council. It is proposed to extend the existing facility with three new buildings with link structures. Twelve new assisted-living apartments are proposed alongside new communal facilities: a café and dining area, a cinema, a yoga studio and rehabilitation gym.

The proposed design has been assessed against the sustainability policies in the Greater London Authority's London Plan and it is believed that the scheme addresses all the relevant planning criteria.

## 2. PLANNING POLICIES

Hillingdon Borough Council Local Plan contains several policies relating to sustainable design: Part 1 of the Local Plan has core policies relating to environmental improvement while Part 2 of the Local Plan has development management policies relating to environment protection and enhancement. However, as these policies refer to the Greater London Authority's London Plan policies and targets this report will refer to the London Plan policies to demonstrate compliance.

## 3. CLIMATE CHANGE MITIGATION

### 3.1 Energy & Carbon

#### 3.1.1 London Plan Criteria

A brief description of the London Plan policy is below<sup>1</sup>:

*"Policy SI 2 Minimising greenhouse gas emissions*

*A Major development should be net zero-carbon. This means reducing greenhouse gas emissions in operation and minimising both annual and peak energy demand in accordance with the following energy hierarchy:*

- 1) be lean: use less energy and manage demand during operation*
- 2) be clean: exploit local energy resources (such as secondary heat) and supply energy efficiently and cleanly*
- 3) be green: maximise opportunities for renewable energy by producing, storing and using renewable energy on-site*
- 4) be seen: monitor, verify and report on energy performance."*

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<sup>1</sup> The London Plan, March 2021, Page 342

### 3.1.2 Approach

Detailed modelling has been carried out in line with the above guidance. Full details of the approach to minimising energy consumption and carbon emissions are addressed in the Energy Statement written by CBG Consultants (005a11).

Carbon savings have been demonstrated using the London Plan 2021 energy hierarchy (Policy SI 2):

- Be Lean: High specification of building fabric and energy efficient services will minimise energy demand.
- Be Clean: The site is not currently suitable for a local CHP system or connection to a district network. Therefore, no carbon savings are possible using this measure.
- Be Green: Space heating and cooling will be provided by Air Source Heat Pumps (ASHPs) with additional carbon offset from photovoltaics.
- Be Seen: The actual operational energy performance will be monitored and reported for at least five years.

## 4. CLIMATE CHANGE ADAPTATION

### 4.1 Overheating

#### 4.1.1 London Plan Criteria

The London plan requires dynamic overheating in accordance with CIBSE guidance<sup>2</sup>:

*“the results of dynamic overheating modelling which should be undertaken in line with relevant Chartered Institution of Building Services Engineers (CIBSE) guidance, along with any mitigating actions”*

#### 4.1.2 Approach

An Overheating Report has been completed by CBG Consultants (004a11). The report outlines the design changes made to limit the risk of overheating: reducing glazing areas, external shading from balcony surrounds, and a mixture of fixed and moveable external shading. Windows and balcony doors have been modelled as fully open to maximise natural ventilation air flow. However, results showed that most spaces did not comply with the overheating criteria and therefore active cooling is required to maintain acceptable conditions for care home residents during peak summer conditions.

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<sup>2</sup> The London Plan, March 2021, Page 347



## 4.2 Flood Risk

### 4.2.1 London Plan Criteria

The London Plan provides specific guidance on flood risk management<sup>3</sup>:

*“Policy SI 12 Flood risk management*

*Current and expected flood risk from all sources across London should be managed in a sustainable and cost-effective way in collaboration with the Environment Agency, the Lead Local Flood Authorities, developers and infrastructure providers.*

*Development Plans should use the Mayor’s Regional Flood Risk Appraisal and their Strategic Flood Risk Assessment as well as Local Flood Risk Management Strategies, where necessary, to identify areas where particular and cumulative flood risk issues exist and develop actions and policy approaches aimed at reducing these risks. Boroughs should co-operate and jointly address cross-boundary flood risk issues including with authorities outside London.”*

### 4.2.2 Approach

A Flood Risk Assessment report has been completed by London Structures Lab (1521-LSL-XX-XX-RP-C-FRA-R(00)). The report concluded that as the proposed development is in Flood Zone 1 there is a low risk of flooding from fluvial, tidal, groundwater, sewer and reservoir sources (Figure 2).

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<sup>3</sup> The London Plan, March 2021, Page 383

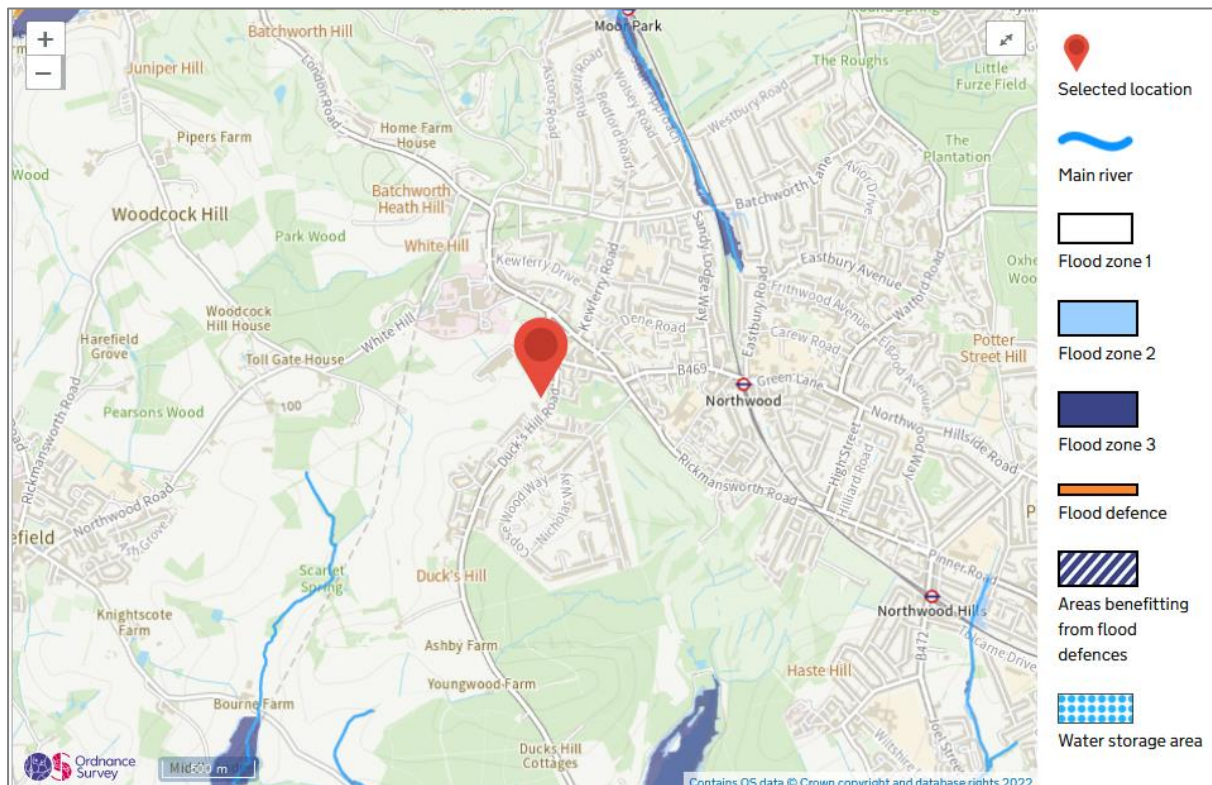


Figure 1 Fulvial Flood Risk

There is a medium risk of surface water flooding due to existing flow paths through the site as shown on Figure 2. The areas proposed for the building are affected by the flow paths. It is proposed that the overland flow routes currently affected by the proposed building layout is accommodated within the layout by creating flow paths under the buildings. Hence the proposals will not impede the existing flows.



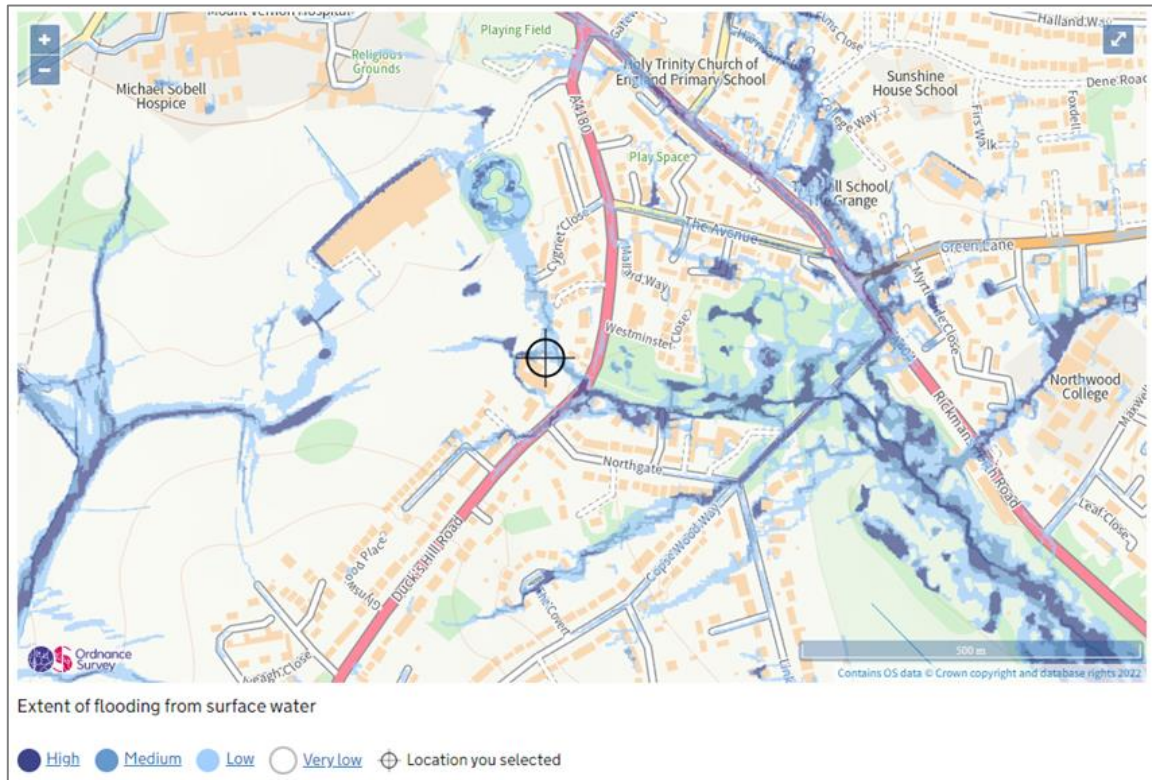


Figure 2 Surface Water (Pluvial) Flood Risk

## 4.3 Sustainable Drainage

### 4.3.1 London Plan Criteria

Policy SI 13 of the London plan addresses sustainable drainage<sup>4</sup>:

*“Policy SI 13 Sustainable Drainage*

*Lead Local Flood Authorities should identify – through their Local Flood Risk Management Strategies and Surface Water Management Plans – areas where there are particular surface water management issues and aim to reduce these risks. Increases in surface water run-off outside these areas also need to be identified and addressed.”*

### 4.3.2 Approach

The overall approach to drainage is to create a well-designed sustainable drainage strategy. The Flood Risk Assessment written by London Structure Lab (1521-LSL-XX-XX-RP-C-SWS-R(00) ) recommends that sustainable drainage measures are provided on site to control and store the surface water. A feasibility study of SuDs options is provided in the Stage 2 Structural Report written by London Structure Lab. The proposals will include flow restrictions as well as water quality improvement measures. The surface

<sup>4</sup> The London Plan, March 2021, Page 385

water network for the development areas will be designed to cater for 1 in 100-year rainfall event plus 40% allowance for climate change. Water Efficiency

#### 4.3.3 London Plan Criteria

The London plan uses the same target<sup>5</sup>:

*“Policy SI 5 Water infrastructure*

*Development proposals should: 1) through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)”*

#### 4.3.4 Approach

The assisted living apartments will be designed to minimise water consumption to help prevent water scarcity. Low-flow sanitary ware and appliances will be specified to comply with the 105 litre per head per day target.

## 5. MATERIALS & WASTE

### 5.1 Construction Waste

#### 5.1.1 London Plan Criteria

The London Plan features two separate policies that relate to materials and waste:

*“Policy SI 7 Reducing waste and supporting the circular economy*

*Resource conservation, waste reduction, increases in material re-use and recycling, and reductions in waste going for disposal will be achieved by the Mayor, waste planning authorities and industry.”<sup>6</sup>*

*“Policy SI 10 Aggregates*

*An adequate supply of aggregates to support construction in London will be achieved by:*

- 1) encouraging re-use and recycling of construction, demolition and excavation waste within London, including on-site*
- 2) extracting land-won aggregates within London*

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<sup>5</sup> The London Plan, March 2021, Page 356

<sup>6</sup> The London Plan, March 2021, Page 365

3) importing aggregates to London by sustainable transport modes.”<sup>7</sup>

### 5.1.2 Approach

A Structural Design Report has been written by London Structures Lab (P01). This report outlines the intention that procurement of materials will heavily favour sustainably sourced and recycled materials where possible:

- Efficiency will be maximised by using materials with low embodied carbon wherever possible, and by recruiting a high proportion of the building fabric as load-bearing.
- Where traditional concrete construction is proposed – for substructure, primarily – the structural specification will look to limit its embodied carbon. Cement replacements, recycled aggregates and recycled reinforcement are readily available in the marketplace and will be prioritised over equivalent products derived from virgin material.
- The existing buildings proposed for demolition will be assessed to identify intra-site circular economy opportunities, both for structural and architectural purposes.

## 6. GREEN INFRASTRUCTURE

### 6.1 Urban Greening

#### 6.1.1 London Plan Criteria

The London Plan provides a specific policy on urban greening with a quantitative target<sup>8</sup>:

*“Policy G5 Urban Greening*

*Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.*

*Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. [...] In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses).”*

#### 6.1.2 Approach

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<sup>7</sup> The London Plan, March 2021, Page 379

<sup>8</sup> The London Plan, March 2021, Page 322

London Garden Designer has calculated an Urban Greening Factor of 0.68 which exceeds the London Plan targets. This has been achieved by retaining and improving many of the existing vegetation on site: 85 new trees will be planted alongside large areas of flower-rich perennial planting and hedgerows.

LONDON GARDEN DESIGNER				05.09.22	
DENVILLE HALL UBG					
LANDSCAPING	SQM		total	- supplier	
	SQM	Units	Factor		
	Lm				
Total size of Site for development	8650				
1 Foot Print of Bldgs A, B, C and Walkway	850				
2 Existing semi natural vegetation ( boundaries to retain)	500		1	500	
3 Wildlife Pond	30		1	30	
4 Standard Trees ( newly planted)	850		0.8	680	
Existing Trees (2/3 rds tree canopy )	1977		0.8	1581.6	
5 Flower rich perennial planting	2850		0.7	1995	
6 Hedges	300		0.6	180	
7 Grass- lawn	1600		0.4	640	
8 Permeable paving					
Driveway and Parking at Front	950		0.1	95	
Driveway and Parking at Rear	850		0.1	85	
Pavers/setts	225		0.1	22.5	
Paths around grounds	400		0.1	40	
9 Site Paving ( not permeable )	400		0	0	

Figure 3: Urban Green Factor calculation

## 6.2 Biodiversity

### 6.2.1 London Plan Criteria

In addition to the urban greening factor, the London Plan has a policy dedicated to biodiversity<sup>9</sup>:

*“Policy G6 Biodiversity and access to nature*

*Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process.”*

### 6.2.2 Approach

London Garden Designer’s proposal is a scheme where the overall ambition is to unify the site, to maximize its potential, protecting and enhancing its amenity value, improving both its biodiversity and green infrastructure. Measures to help achieve this include:

<sup>9</sup> The London Plan, March 2021, Page 326

1. Front garden: The planting design of the new entrance will be more traditional and historically appropriate, with layers of beech and yew hedges, off set with seasonal herbaceous planting. The aim is to also help obscure the road from the inside of this part of Denville Hall. Additionally, the intention is to open up the piece of land between the 2 giant Redwoods. Currently it is overgrown and too dense to enjoy, and based on feedback from the Arboriculturist, the site would benefit from some tree removal and thinning. Our proposal would be to plant some smaller trees, with an understory that doesn't suffocate the Redwoods.
2. Rear Garden: Our aim here is to maintain the large lawn and Monterey Pine, whilst providing deep herbaceous planting borders adjacent to the café Patio. The landscaping around the café, will provide attractive, sensory planting, with some dappled shade, and ornamental water features within. The central lawn will now be connected directly to the beautiful Oak tree (currently fenced off) and woodland garden. There will be a new wheelchair accessible woodland walk, maintaining key trees, thinning out a lot of self-seeded trees, replanting the understory, and providing a Gazebo for rain cover. A wildlife pond will be centrally located off the path, to provide additional interest, and improve habitats and biodiversity.
3. The site has a number of Cat A1 trees of important merit that we would like to enhance as they are lost currently within the overgrown landscape. We are proposing the replanting of up to 85 new trees, that will vary in size from smaller multi stem Acers and Amelanchier's, to larger standard trees appropriate in scale to offset and work harmoniously with the existing trees.
4. Our intention is to work towards a more environmentally sustainable landscape as well as being culturally and aesthetically appropriate.
5. Trees proposed will be more appropriate in size and scale for the situation, and we will use native hedging where appropriate.
6. Planting will be selected to increase biodiversity and attract wildlife where appropriate.
7. Rainwater harvesting may supply some areas with irrigation.
8. Hard landscape materials proposed will be sustainably sourced. Driveways and access roads will be SUDS compliant.
9. We will propose an ongoing management plan after installation to ensure the long- term success and health of the soft landscaping.

## 7. HEALTH & WELLBEING

### 7.1 Air Quality

#### 7.1.1 London Plan Requirements

The London Plan has its own policy dedicated to improving air quality<sup>10</sup>:

*“Policy SI 1 Improving air quality*

*Development Plans, through relevant strategic, site-specific and area-based policies, should seek opportunities to identify and deliver further improvements to air quality and should not reduce air quality benefits that result from the Mayor’s or boroughs’ activities to improve air quality.”*

#### 7.1.2 Approach

Figure 4 shows the air quality management areas (AQMA) in London. The location of Denville Hall is shown by the green dot and is not within an AQMA. An air quality assessment is therefore not required and the proposed development is not expected to have a detrimental impact on the local air quality.

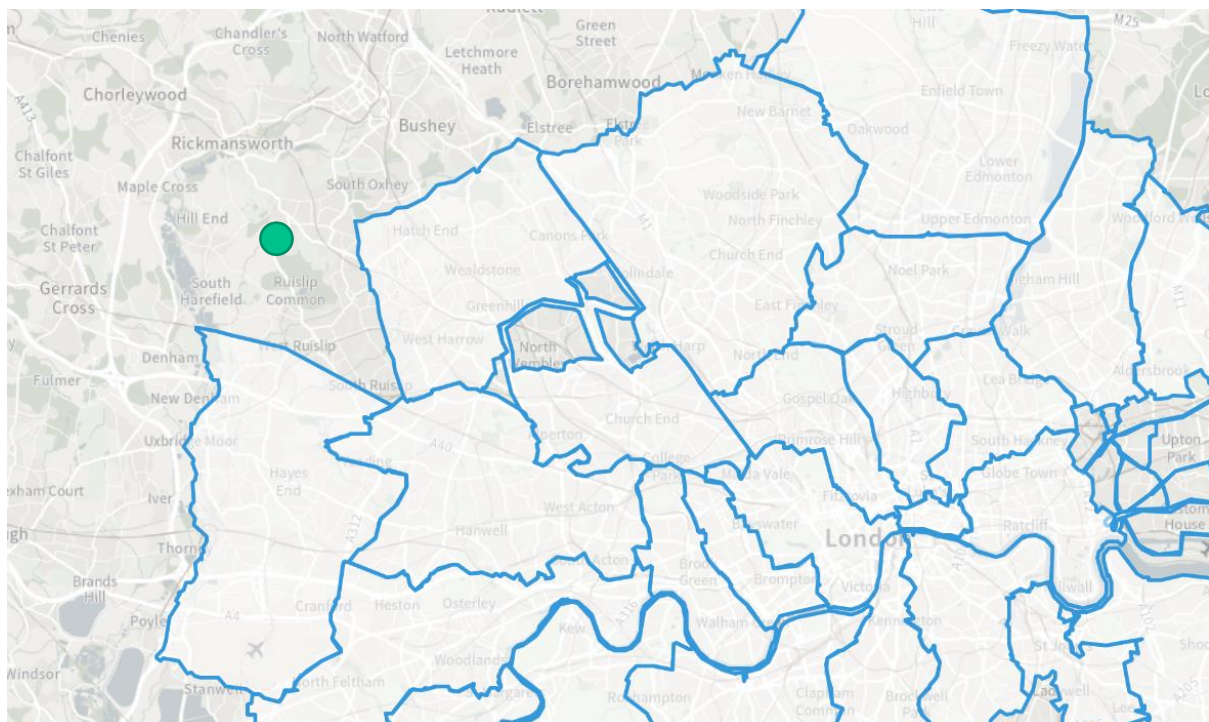


Figure 4: London Air Quality Management Areas (AQMA)

<sup>10</sup> The London Plan, March 2021, Page 335



## 7.2 Noise

### 7.2.1 London Plan Criteria

The London Plan's policies on noise are relatively extensive, so a summary of some of the key criteria is offered below<sup>11</sup>:

*"Policy D14 Noise*

*In order to reduce, manage and mitigate noise to improve health and quality of life, residential and other non-aviation development proposals should manage noise by:*

- *avoiding significant adverse noise impacts on health and quality of life*
- *mitigating and minimising the existing and potential adverse impacts of noise on, from, within, as a result of, or in the vicinity of new development*
- *improving and enhancing the acoustic environment and promoting appropriate soundscapes*
- *separating new noise-sensitive development from major noise sources*
- *promoting new technologies and improved practices to reduce noise at source, and on the transmission path from source to receiver."*

### 7.2.2 Approach

An Environmental Noise Assessment has been completed by Stroma Built Environment Ltd (09-21-88961 – AC – 1v2). Modelling has shown that the predicted noise levels incident on new extension façades correspond to a 'low' risk of having an adverse effect on occupants should they wish to open windows to mitigate overheating, or for any other reason.

Consideration has also been given to the potential adverse impact of noise due to the operation of the new restaurant and café, and the proposed changes to the site's parking arrangements, on nearby noise sensitive premises. These proposals are not expected to result in an adverse impact.

Representative site background noise levels have been used to inform noise limits proposed to control noise emissions from new sources of building services noise introduced by the scheme in line with guidance given in BS 4142:2014 Methods for rating and assessing industrial and commercial sound. It is recommended that the rating level from new building services plant to not exceed 5 dB below the existing site representative background sound level.

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<sup>11</sup> The London Plan, March 2021, Page 153



## 7.3 Daylight

### 7.3.1 London Plan Criteria

The London Plan doesn't specifically address daylight however some guidance is listed under Policy D6<sup>12</sup>:

*"Policy D6 Housing quality and standards*

*The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context, whilst avoiding overheating, minimising overshadowing and maximising the usability of outside amenity space."*

### 7.3.2 Approach

As the London Plan doesn't specifically address daylighting requirements, specialist modelling has not been conducted. However, the proposed scheme has excellent daylighting at the heart of the design to enable occupants to enjoy views of the landscaping. The overheating assessment has also informed the design to avoid excessive solar gains.

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<sup>12</sup> The London Plan, March 2021, Page 125





**OXFORD:** South House, Farmoor Court, Cumnor Road, Oxford, OX2 9LU

Tel: 01865 864500

Email: [oxf@cbgc.com](mailto:oxf@cbgc.com)

**LONDON:** 38 Warren Street, London, W1T 6AE

Tel: 02073 874 175

Email: [lon@cbgc.com](mailto:lon@cbgc.com)

[www.cbgc.com](http://www.cbgc.com)