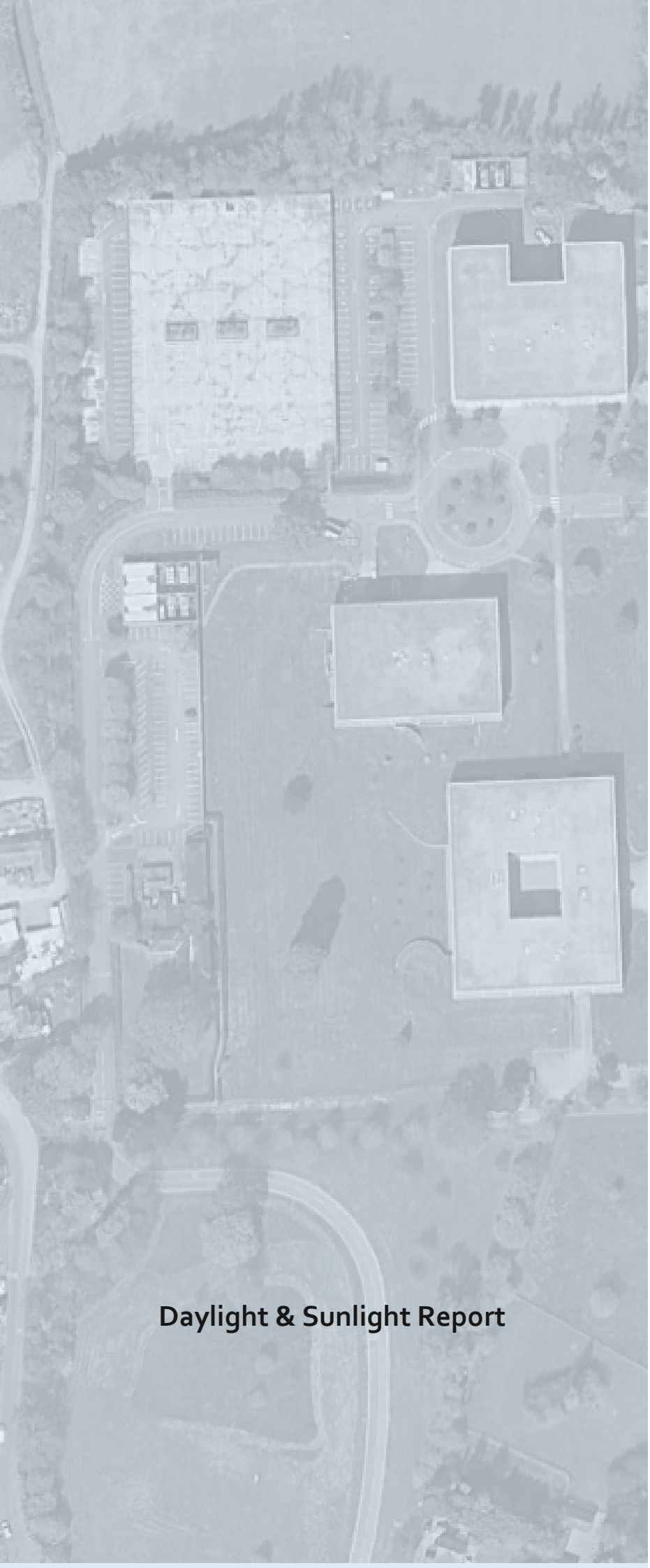
Hayes Park

Daylight and Sunlight Report

May 2023

Development & Light



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Daylight & Sunlight Report

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Client:	Shall Do Hayes Developments Limited
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Contents

Appendices

1 Executive Summary

1.1 Development & Light LLP (DL) have been instructed to undertake a quantitative assessment of the daylight and sunlight effect of the current proposals for Hayes Park, Hayes End Road, Hayes, UB4 8FE, hereafter referred to as 'the site'.

1.2 This report considers the implementation of the proposed Studio Egret West architect's scheme for the change of use of the existing buildings to provide new homes (Use Class C3), together with internal and external works to the buildings, landscaping, car and cycle parking, and other associated works, hereafter referred to as 'the proposed development'. The report focuses on the daylight and sunlight levels within the proposed habitable rooms comprising the new accommodation.

1.3 The assessments contained within this report have been undertaken in accordance with the Building Research Establishment publication 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (Third Edition, published in 2022), more commonly known as 'the BRE guidelines' (Ref 1.1) and the British Standard Daylight in buildings, BS EN 17037 (Ref.1.2). The quality of light within the building has also been considered by reference to CIBSE publication LG 10 Daylighting (Ref.1.3).

1.4 There is full technical analysis contained in this report. In summary, the internal daylight levels have been measured for all habitable rooms comprising the proposed development. The daylight results demonstrate that of the 301 rooms tested, 281 (93%) will comfortably exceed the SDA levels recommended in the BRE guidelines. Furthermore, all (100%) of the lounge-kitchen-dining-rooms 'LKDs' throughout the scheme will comfortably exceed the SDA levels recommended in the BRE guidelines. The daylighting levels within these rooms will be excellent.

1.5 For sunlight, the proposed development is designed in such a way that most apartments will maintain a predominantly south-facing aspect, which is in line with the recommendations of BRE guidance. This is considered good design considering the limitations of refurbishing an existing building. The sun exposure results demonstrate adequate to good levels of amenity to all habitable rooms, which are in-keeping with the recommendations of BRE guidance.

1.6 Overall, the results demonstrate that the layouts have been fully optimised from an internal daylighting perspective given the inherent constraints of refurbishing the existing buildings. The proposed development ensures 100% compliance to all main living spaces, which follows the principles of the BRE guidelines together with the NPPG and London Plan, which acknowledge flexibility on daylighting targets when making best-use of land. The Proposed Development adheres to the NPPF, London Plan, and local policy DMHB 11.

2 Introduction

2.1 The site sits within a wider former business park know as 'Hayes Park'. The red line site area which forms the basis of this application is 3.73 hectares and comprises of Hayes Park South, Hayes Park Central, the surrounding grassland area, and the associated car parking and road areas.

2.2 The wider Hayes Park business park site (which includes Hayes Park North and the adjacent multi-storey car park - but does not form part of this application) extends to 5.22 hectares. The site is accessed from the east from Park Lane and from the west from Hayes Park Road.

2.3 The Hayes Park Central and Hayes Park South buildings are both Grade II* Listed and were designed in the 1960s by American architect Gordon Bunshaft as corporate offices and research laboratories for HJ Heinz UK Limited. The buildings have been occupied by various different occupiers since they were built but are now both vacant. Hayes Park Central has been vacant since September 2020 and Hayes Park South vacant since Summer 2017. Both buildings are three storeys in height and include a basement level used for plant and servicing.

2.4 The site is bound to the east and south by the open parkland, which is private land owned by the Church Commissioners. To the west the site is bound by the agricultural land and the buildings of Home Farm. To the north, the site is bound by Hayes Park North and the adjacent multi-storey car park, with open farmland beyond that.

2.5 The entirety of the site and the much of the surrounding land is located within the Green Belt. Beyond that, there are large areas of low-density terraced housing, which is set back a considerable distance and does not warrant assessment for daylight and sunlight under BRE guidelines. There is a wide selection of parks and leisure facilities in the area, including the Hayes End Recreation Ground, Park Road Green and the Belmore Playing Fields. The nearest town centres are located at Hillingdon Heath Local Centre, 1.6km to the south west, and at Uxbridge Road Hayes Minor Centre, 3.3km to the south east.

2.6 For daylight and sunlight, our testing will focus on the habitable rooms within the 124 new homes within the Hayes Park South and Hayes Park Central buildings:

- **Hayes Park South ('HPS')** – the conversion of this three storey Grade II* Listed building to provide 75 new homes.
- **Hayes Park Central ('HPC')** - the conversion of this three storey Grade II* Listed building to provide 49 new homes.

2.7 The Proposed Development under assessment is the scheme designed by Studio Egret West architects, which has been submitted for planning. The source materials used to create the Proposed Development can be listed as follows:

- SEW drawing set – '2300405_FinalDrawingIssue'

2.8 A schedule of research materials can be found in Appendix 05. Access into the surrounding properties has not been obtained or required given the separation distance from the scheme to the nearest residential receptors, which all satisfy the BRE 25˚ test advocated in the BRE guidelines.

3 Planning Overview

National Planning Policy

National Planning Policy Framework (2021)

3.1 Paragraph 125 c in the context of *"Achieving appropriate densities"* in new housing developments provides that local authorities should take a flexible approach when applying guidance or policies relating to Daylight and Sunlight so long as the resulting scheme would provide acceptable living standards.

National Planning Practice Guidance (Updated July 2019)

3.2 The update to the Government's Planning Practice Guidance contains relevant paragraphs on daylight and sunlight. Paragraph 6 of the Effective Use of Land section of the NPPG (Ref ID: 66-006- 20190722) acknowledges that new development may cause an impact on daylight and sunlight levels enjoyed by neighbouring occupiers. It requires local authorities to assess whether the impact to neighbouring occupiers would be "unreasonable".

3.3 Paragraph 7 states that all developments should maintain acceptable living standards. What this means in practice, in relation to assessing appropriate levels of sunlight and daylight, will depend to some extent on the context for the development as well as its detailed design. For example in areas of high-density historic buildings, or city centre locations where tall modern buildings predominate, lower daylight and daylight and sunlight levels at some windows may be unavoidable if new developments are to be in keeping with the general form of their surroundings.

3.4 In such situations good design (such as giving careful consideration to a building's massing and layout of habitable rooms) will be necessary to help make the best use of the site and maintain acceptable living standards

Regional Planning Policy

Housing Supplementary Planning Guidance "Housing SPG" (London Plan, March 2016, Updated in 2017)

3.5 The Mayor published a Supplementary Planning Guidance on Housing in March 2016. The London Plan sets out the policy framework for development in London. The Supplementary Planning Guidance, *'provides guidance on a range of strategic policies including housing supply, residential density, housing standards, build to rent developments, student accommodation and viability appraisals.'*

3.6 The Housing SPG moves away from the rigid application of the national numerical values provided in the Building Research Establishment publication *Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice (Third Edition, published in 2022)*, more commonly known as 'the BRE guidelines' (Ref 1.1).:

> *"An appropriate degree of flexibility needs to be applied when using BRE Guidelines to assess the daylight and sunlight impacts of new development on surrounding properties, as well as within new developments themselves. Guidelines should be applied sensitively to higher density development, especially in opportunity areas, town centres, large sites and accessible locations, where BRE advice suggests considering the use of alternative targets. This should*

take into account local circumstances; the need to optimise housing capacity; and scope for the character and form of an area to change over time."

3.7 Paragraph 1.3.46 goes on to say that:

"The degree of harm on adjacent properties and the daylight targets within a proposed scheme should be assessed drawing on broadly comparable residential typologies within the area and of a similar nature across London. Decision makers should recognise that fully optimising housing potential on large sites may necessitate standards which depart from those presently experienced but which still achieve satisfactory levels of residential amenity and avoid unacceptable harm."

3.8 The following provides a summary of the relevant guidance relating to daylight and sunlight:

- The SPG recommends that the BRE guidance is applied sensitively to high density development, especially in areas such as town centres, where alternative targets (from the normal standards) may be deemed more appropriate;
- The SPG advises that the application of the BRE guidance needs to be consistent with optimising housing capacity and growth generally in recognition of the need for change in an area;
- The SPG recommends that comparisons should be made with the daylight and sunlight values achieved in comparable areas and typologies across London; and
- The SPG calls for an appropriate degree of flexibility in the application of the BRE guidance to the particular circumstances of London.

<u>The London Plan (2021)</u>

3.9 Policy GG2 promotes high-density, mixed- use places that make the best use of land.

3.10 At Policy D2 'Infrastructure Requirements for Sustainable Densities', the Plan advises that to determine the optimal density of a site, consideration should be given to the site context; its connectivity and accessibility (including both PTAL and access to local services); and the capacity of surrounding infrastructure.

3.11 Under Policy D3 'Optimising Site Capacity Through the Design-Led Approach', the plan states that development design should:

"Enhance local context by delivering buildings and spaces that positively respond to local distinctiveness through their layouts, orientation, scale, appearance and shape, with due regard to existing and emerging street hierarchy, building types, forms and proportions."

3.12 Policy D6 'Housing quality and standards' paragraph F of the London Plan advises that:

"The design of development should provide sufficient daylight and sunlight to new and surrounding housing that is appropriate for its context."

Local Planning Policy

The London Borough of Hillingdon Local Plan Part Two (2020);

3.13 The Council will aim to minimise the impact of the loss of daylight and sunlight and unacceptable overshadowing caused by new development on habitable rooms, amenity space and public open space. The Council will also seek to ensure that the design of new development optimises the levels of daylight and sunlight. The Council will expect the impact of the development to be assessed following the methodology set out in the most recent version of the Building Research Establishments (BRE) "Site layout planning for daylight and sunlight: A guide to good practice".

3.14 Policy DMHB 11, Design of New Development, states:

"...B) Development proposals should not adversely impact on the amenity, daylight and sunlight of adjacent properties and open space."

Guidance

BR209 - Building Research Establishment Guidelines: Site Layout Planning for Daylight and Sunlight 2022, A Guide to Good Practice, Third Edition

3.15 The *Site Layout Planning for Daylight and Sunlight* ("BRE Guidelines") provide advice on site layout planning to achieve good sunlighting and daylighting within buildings, and in the open spaces between them. It is intended for building designers, developers, consultants, and Local Planning Authorities (LPAs). It is intended to be used in conjunction with the British Standard Daylight in buildings, BS EN 17037 (Ref 1.2) and CIBSE publication LG 10 Daylighting – a guide for designers (Ref 1.3).

3.16 The advice it gives is not mandatory and should not be used as an instrument of planning policy. It states:

"This report is a comprehensive revision of the 2011 edition of Site layout planning for daylight and sunlight: a guide to good practice. It is purely advisory and the numerical target values within it may be varied to meet the needs of the development and its location. Appendix F explains how this can be done in a logical way, while retaining consistency with the British Standard recommendations on interior daylighting."

3.17 Through the planning process the local authority will wish to be reassured that the construction of the new scheme will not materially harm the neighbour's daylight and sunlight beyond BRE and British Standard Guidance.

3.18 The BRE guidelines are not mandatory, though local planning authorities and planning inspectors will consider the suitability of a proposed scheme for a site within the context of BRE guidance. Consideration will be given to the urban context within which a scheme is located, and the daylight and sunlight will be one of several planning considerations which the local authority will weigh.

4 Methodology

4.1 It is correct to assess daylight and sunlight in relation to the BRE guidelines. This document is most widely accepted by planning authorities as how to judge the acceptability of a scheme.

4.2 The BRE Guidelines are intended for use for rooms in adjoining dwellings where daylight is required, including living rooms, kitchens, and bedrooms. Windows to bathrooms, toilets, storerooms, circulation areas, and garages need not be analysed. The guidelines may also be applied to any existing non-domestic building where the occupants have a reasonable expectation of daylight; this would normally include schools, hospitals, hotels and hostels, small workshops, and some offices.

4.3 To determine whether a neighbouring existing building may be adversely affected, the initial test provided by the BRE is to establish if any part of the proposal subtends an angle of more than 25˚ from the lowest window serving the existing building. If this is the case then there may be an adverse effect, and more detailed calculations are required to quantify the extent of any impact.

4.4 DL can confirm that all neighbouring buildings would satisfy the BRE 25˚ test and therefore, no detailed testing is required. Furthermore, the overall massing of the two buildings undergoing refurbishment is not materially altering beyond existing heights.

Daylight within New Development

4.5 When it comes to assessing the quality of daylight within new accommodation, the BRE guidelines recommends that one of two approaches are adopted:

- **Illumination Method – Spatial Daylight Autonomy (SDA)**
- **Daylight Factor Method (DFM)**

4.6 For this report, the SDA method has been applied to all habitable rooms in the proposed dwellinghouses. SDA draws upon climate-data and considers a window's orientation when calculating the daylighting levels within a room. As such, the test is considered the most accurate measure of natural lighting.

4.7 We have run our specialist MBS software to deliver the daylight and sunlight tests advocated in the BRE guidelines.

4.8 The UK National Annex gives illuminance recommendations of 100 lux in bedrooms and 150 lux in living rooms. These are the median illuminances, to be exceeded over at least 50% of the assessment points in the room for at least half of the daylight hours. For student accommodation, the BRE guidelines advise that high standards for daylighting should be applied. We have, therefore, tested the student rooms in two stages. Firstly, the rooms have been tested against a 100-lux target, with a second test to establish if the 150-lux target will be met.

4.9 The SDA test requires assessment via detailed computer modelling to simulate the illuminance at calculation points within a proposed space. Internal and exterior surfaces and obstructions have been modelled including their appropriate surface reflectance. Fixtures and fittings have not been included in accordance with BRE guidelines.

4.10 The following reflectance values have been applied to the model when calculating SDA:

- Exterior ground 0.2
- Exterior walls and obstructions - 0.4
- Floors - 0.4
- Interior walls - 0.7
- Ceilings - 0.8

4.11 Glazing transmission factors, including maintenance factors, have been included in the SDA assessment. Frame factors have been applied based on the ratio of glass to overall window aperture area for the type of window to be used and applied as 0.8 throughout our model.

4.12 In accordance with BRE guidelines and design specifications, where clear double glazing with a low emissivity coating is being used, a value of 0.68 to 0.8 diffuse transmittance has been applied throughout the model. A maintenance factor of 0.92 has been applied as well, which is recommended by the BRE for urban locations. A 6mm float glass material has been applied to all glazed balustrades within the 3D model.

4.13 The calculation of illuminance (SDA) has been carried out on a grid of points on a reference plane within each room assessed. The plane has been set at 0.85m from the floor level (sometimes described as the working plane height). A band of 0.3m has been excluded from the assessment grid around the perimeter of each room in accordance with the BRE guideline's recommendations for dwellinghouses.

Sunlight within New Development

4.14 The BRE guidelines state that a south-facing window will, in general, receive most sunlight, while a north-facing one will only receive it on a handful of occasions (early morning and late evening in summer). East- and west-facing windows will receive sunlight only at certain times of the day. A dwelling with no main window wall within 90° of due south is likely to be perceived as insufficiently sunlit. This is usually only an issue for flats. Sensitive layout design of flats will attempt to ensure that each individual dwelling has at least one main living room which can receive a reasonable amount of sunlight. In both flats and houses, the BRE recommends that a sensible approach is to try to match internal room layout with window wall orientation. Where possible, living rooms should face the southern or western parts of the sky and kitchens towards the north or east.

4.15 For interiors, access to sunlight can be quantified. BS EN 17037 recommends that a space should receive a minimum of 1.5 hours of direct sunlight on a selected date between 1 February and 21 March with cloudless conditions. It is suggested that 21 March (equinox) be used. The medium level of recommendation is three hours and the high level of recommendation four hours. For dwellings, at least one habitable room, preferably a main living room, should meet at least the minimum criterion.

5 Internal Daylight & Sunlight Amenity

5.1 The focus of this assessment has been to test all habitable rooms within HPS and HPC that comprise the Proposed Development.

Daylight

5.2 The results are illustrated on drawings 082_04-05_500 to 514 and the tabulated results in Appendix 03.

5.3 The daylight results demonstrate that of the 301 rooms tested, 281 (93%) will comfortably exceed the SDA levels recommended in the BRE guidelines. Furthermore, all (100%) of the lounge-kitchen-dining-rooms 'LKDs' throughout the scheme will comfortably exceed the SDA levels recommended in the BRE guidelines. The daylighting levels within these rooms will be excellent.

5.4 The 20 rooms (7%) with SDA transgressions comprise of 4 bedrooms in HPS and 16 bedrooms in HPC. These rooms are served by windows within the internal courtyard and lightwell of HPS and HPC respectively. Each room is situated underneath projecting wrap-around balconies, which are inherent features of the original buildings.

5.5 The BRE guidelines place less significance upon bedrooms, in daylighting terms, than main living spaces. For this reason, living rooms have been prioritised to make best use of the available light within the lightwell and courtyard. The result is that all main living spaces serving each apartment will comfortably exceed the daylight levels recommended in the BRE guidelines, achieving 100% BRE compliance.

5.6 The transgressions to the 20 bedrooms are further mitigated by the fact that each room opens onto a mix of private and shared amenity spaces, which are a much sought after commodity for residents. Furthermore, fanlights have been provided above the doors to provide light spill into each of the bedrooms from neighbouring LKDs and bathrooms, which is considered good design in terms of enabling balanced lighting within the rooms.

5.7 Overall, the results demonstrate that the layouts have been fully optimised from an internal daylighting perspective given the inherent constraints of refurbishing the existing buildings. The Proposed Development ensures 100% compliance to all main living spaces, which follows the principles of the BRE guidelines together with the NPPG and London Plan, which acknowledge flexibility on daylighting targets when making best-use of land.

5.8 Sunlight

5.9 The tabulated internal sunlight results are enclosed in Appendix 03. The scheme is designed in such a way that most apartments will maintain a predominantly south-facing aspect, which is in line with the recommendations of BRE guidance. This is considered good design considering the limitations of refurbishing an existing building.

5.10 Of the predominantly south-facing windows, a total of 70 rooms will achieve a 'High' rating of over 4 hours direct sunlight access on 21 March. A further 12 rooms will achieve a 'Medium' rating of over 3 hours direct sunlight access on 21 March, and 121 rooms will achieve a 'Minimum' rating of over 1.5 hours direct sunlight access on 21 March.

5.11 Overall, the sun exposure results demonstrate adequate to good levels of amenity to all habitable rooms, which are in-keeping with the recommendations of BRE guidance.

6 Conclusions

6.1 The assessments contained within this report have been undertaken in accordance with the Building Research Establishment publication 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (Third Edition, published in 2022), more commonly known as 'the BRE guidelines' (Ref 1.1) and the British Standard Daylight in buildings, BS EN 17037 (Ref.1.2). The quality of light within the building has also been considered by reference to CIBSE publication LG 10 Daylighting (Ref.1.3).

6.2 There is full technical analysis contained in this report. In summary, the internal daylight levels have been measured for all habitable rooms comprising the proposed development. The daylight results demonstrate that of the 301 rooms tested, 281 (93%) will comfortably exceed the SDA levels recommended in the BRE guidelines. Furthermore, all (100%) of the lounge-kitchen-dining-rooms 'LKDs' throughout the scheme will comfortably exceed the SDA levels recommended in the BRE guidelines. The daylighting levels within these rooms will be excellent.

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References

Ref. 1.1 Building Research Establishment publication 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice' (Third Edition, published in 2022) - available at https://www.bre.co.uk/

[Date accessed: 15. 07.2022]

Ref. 1.2 The British Standard Daylight in buildings, BS EN 17037 - https://www.bsigroup.com/en-GB/

[Date accessed: 07.09.2022]

Ref. 1.3 CIBSE publication LG 10 Daylighting – a guide for designers - https://www.cibse.org/

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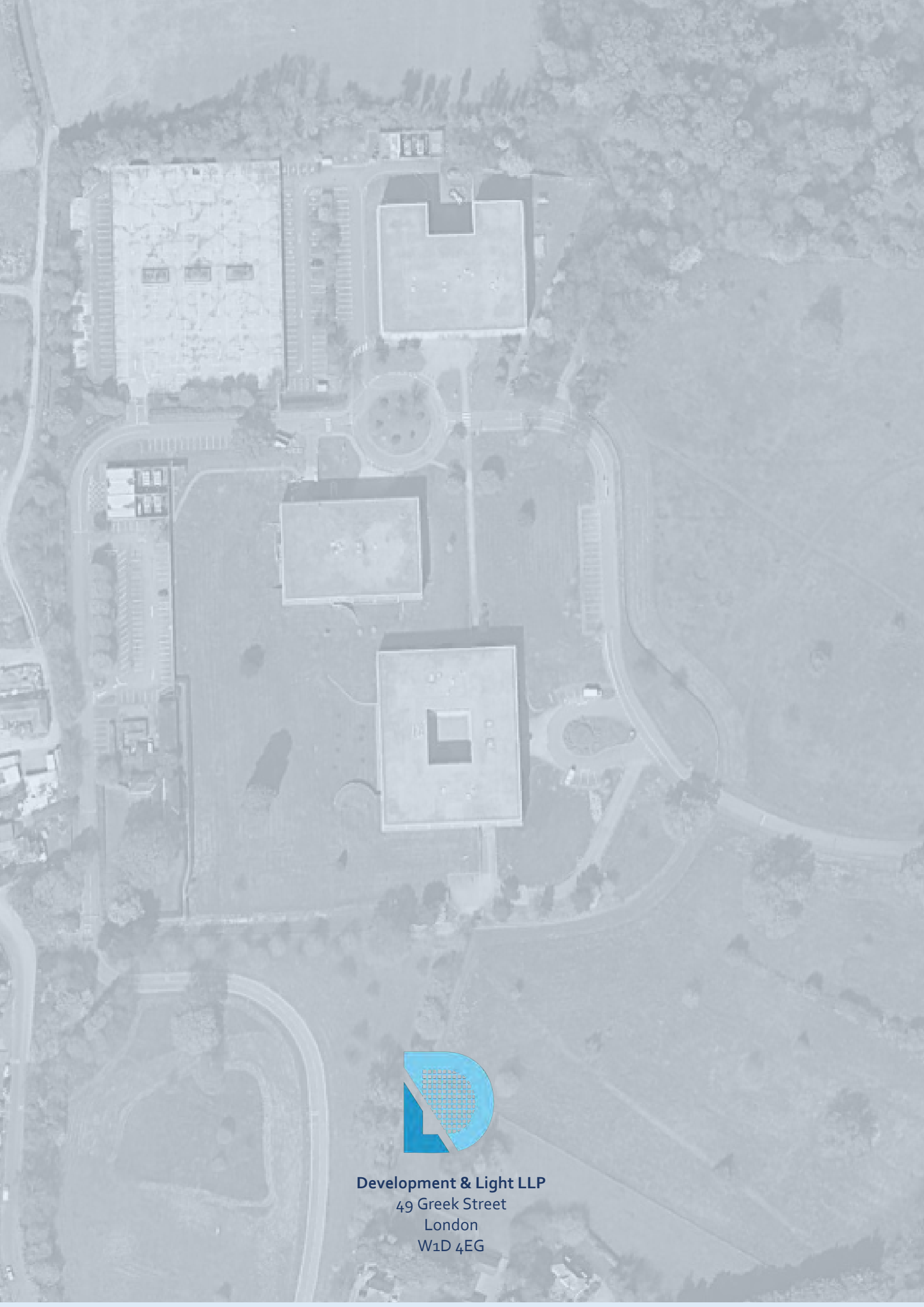

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