Hawkins environmental

Daylight, Sunlight & Overshadowing Assessment:

Ariel Hotel, 118 Bath Road, Harlington

R Ariel Heathrow Opco Limited

30th November 2023

Report Details:

Report Title	Daylight, Sunlight & Overshadowing Assessment
Site	Ariel Hotel, 118 Bath Road, Harlington
Client	R Ariel Heathrow Opco Limited
Report No.	H3852 – DS – v5

Version History:

Version	Date	Notes	Author	Checked
V1	3rd August 2023	Original Issue	Indr Sarvaiya, MSc, BArch.	Nick Hawkins MSc MIEnvSc
V2	3rd August 2023	Minor Amendments	Indr Sarvaiya, MSc, BArch.	Nick Hawkins MSc MIEnvSc
V3	13th September 2023	Minor Amendments	Nick Hawkins MSc MIEnvSc	Nick Hawkins MSc MIEnvSc
V4	15th September 2023	Minor Amendments	Nick Hawkins MSc MIEnvSc	Nick Hawkins MSc MIEnvSc
V5	30th November 2023	Minor Amendments	Nick Hawkins MSc MIEnvSc	Nick Hawkins MSc MIEnvSc

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1. INTRODUCTION

1.1. Overview

Hawkins Environmental Limited has been instructed by R Ariel Heathrow Opco Limited to undertake a daylight, sunlight & overshadowing assessment for the proposed redevelopment of Ariel Hotel, located in the Harlington area of the London Borough of Hillingdon.

It has been identified that the site may require a daylight/sunlight assessment to determine whether the proposed development may affect the levels of daylight and sunlight falling on the windows of adjacent buildings, as well as gardens and outdoor amenity spaces.

As a consequence, a daylight/sunlight assessment has been carried out in accordance with The Building Research Establishment (BRE) report, *"Site layout planning for daylight and sunlight – A guide to good practice"* by PJ Littlefair, S King, G Howlett, C Ticleanu and A Longfield (Third Edition – 2022). This report summarises an assessment of the impacts of the proposed development on the surrounding properties potential to receive daylight and sunlight. A glossary of terms in relation to daylight and sunlight can be found in **Appendix 1**.

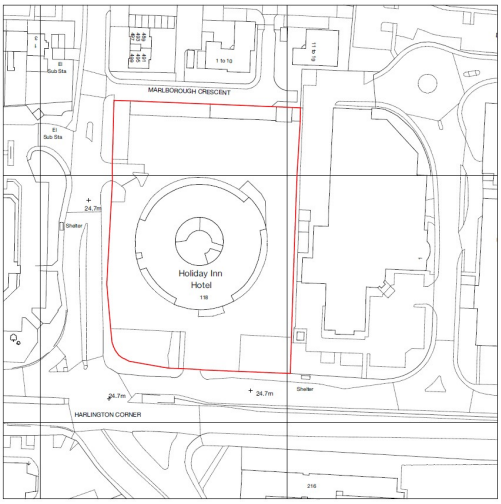
This report should be read in conjunction with the "*H3852 – Ariel Hotel, 118 Bath Road, Harlington - Daylight Assessment Drawings – v4"* which contains the drawings referred to in this report.

1.2. Site Description

The proposed development site is situated off the High Street Harlington, a major road running north/south between the Heathrow Airport and Harlington. The site currently comprises of a four storey hotel with a single storey car wash in the parking area.

The proposal will see the reconfiguration, alteration and extension of existing hotel (providing additional hotel rooms), together with erection of a new apart-hotel building on car park land to the north. A location plan of the proposed site can be seen in **Figure 1.1**.

Figure 1.1: Site Location Plan



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KEY
Site boundary
0 50m
1:1250
N

LOCATION

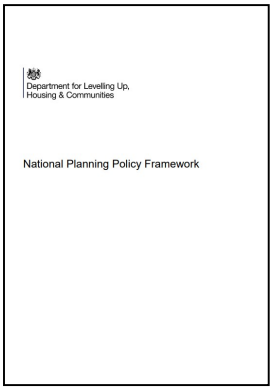
ISSUE

Rev.	Date	Comment
P1	23/11/2023	Planning Issue

PROJECT: 1041 - Ariel Hotel
CLIENT: R Heathrow Ariel Opco Limited
DRAWING NO.: 1041-001
DRAWING: Location Plan
REVISION: P1
Drawn: JM
Checked: AB
Scale: 1:1250@A3
Current Stage: Planning
Date: 23/11/2023

2. PLANNING POLICY

2.1. National Planning Policy Framework (2023)


Department for Levelling Up, Housing & Communities

National Planning Policy Framework

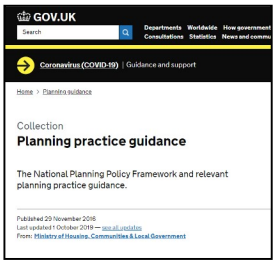
The National Planning Policy Framework (NPPF) was first published on the 27th March 2012 and revised July 2018, February 2019, July 2021 and September 2023. The NPPF outlines the Government's environmental, economic and social policies for England. The NPPF sets out a presumption in favour of sustainable development which should be delivered with three main dimensions: economic; social and environmental (Paragraphs 7, 8, 10 and 11). The NPPF aims to enable local people and their councils to produce their own distinctive local and neighbourhood plans, which should be interpreted and applied in order to meet the needs and priorities of their communities.

The NPPF states that in the planning system *"Planning policies and decisions should contribute to and enhance the natural and local environment by… e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans"* (Paragraph 174).

Since the publication of the revised 2018 version of the NPPF (which has been retained in the 2019, 2021 and 2023 version), the NPPF talks specifically about daylight for the first time. Paragraph 125 states that:

"Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances… local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site (as long as the resulting scheme would provide acceptable living standards)".

2.2. Planning Practice Guidance


GOV.UK

Coronavirus (COVID-19) | Guidance and support

Collection

Planning practice guidance

The National Planning Policy Framework and relevant planning practice guidance.

The Planning Practice Guidance (PPG) was launched on 6th March 2014 and provides additional guidance and interpretation to the Government's strategic policies, outlined within the NPPF, in a web-based resource. This is updated regularly.

The PPG discusses the importance of good design and references daylight and sunlight on a number of occasions, specifically the need to ensure that daylight and sunlight patterns are considered when considering the form and scale of a new building, especially in relation to tall buildings.

In the guidance note "Effective use of land", last updated in 2019, guidance is provided on making effective use of land, including planning for higher density development.

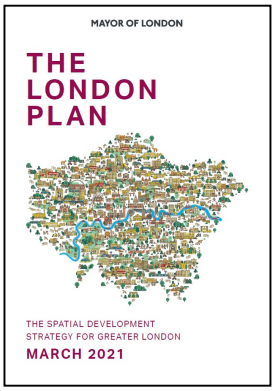
The guidance notes that daylight is a consideration: *"Where a planning application is submitted, local planning authorities will need to consider whether the proposed development would have an unreasonable impact on the daylight and sunlight levels enjoyed by neighbouring occupiers, as well as assessing whether daylight and sunlight within the development itself will provide satisfactory living conditions for future occupants (Paragraph: 006 Reference ID: 66-006-20190722)".*

It goes on to note 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.*

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 (Paragraph: 007 Reference ID: 66-007-20190722)".

Therefore, whilst it is important to ensure that levels of internal daylight within dwellings are maximised, the numerical guidelines are flexible and may vary depending on the context of the site.

2.3. The London Plan (2021)



The New London Plan was formally published on the 2nd of March 2021 and replaces the previous London Plan.

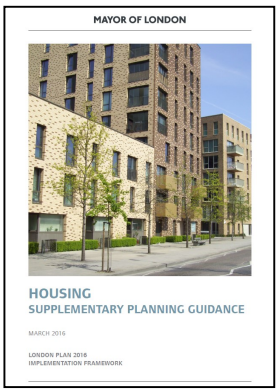
The New London Plan, provides substantial revisions in relation to daylighting. Policy D6 - Housing quality and standards states:

"D. 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".

Policy D9 - Tall buildings states in relation to the environmental impact of tall structures that:

"Wind, daylight, sunlight penetration and temperature conditions around the building(s) and neighbourhood must be carefully considered and not compromise comfort and the enjoyment of open spaces, including water spaces, around the building".

2.4. Housing Supplementary Planning Guidance (2016)



Published in March 2016, the Housing Supplementary Planning Guidance highlights the elements of the London Plan that are relevant to housing development, and where applicable, provides more detail.

One important aspect of the Housing SPG is that it acknowledges that the BRE Guidelines should be applied flexibly. The SPG states:

"Policy 7.6Bd requires new development to avoid causing 'unacceptable harm' to the amenity of surrounding land and buildings, particularly in relation to privacy and overshadowing and where tall buildings are proposed. 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.

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".

The accompanying notes to Standard 32 reinforce this view and state that:

"BRE guidelines on assessing daylight and sunlight should be applied sensitively to higher density development in London, particularly in central and urban settings, recognising the London Plan's strategic approach to optimise housing output (Policy 3.4) and the need to accommodate additional housing supply in locations with good accessibility suitable for higher density development (Policy 3.3). Quantitative standards on daylight and sunlight should not be applied rigidly, without carefully considering the location and context and standards experienced in broadly comparable housing typologies in London".

Standard 32 talks directly about the need for direct sunlight. The standard states:

"All homes should provide for direct sunlight to enter at least one habitable room for part of the day. Living areas and kitchen dining spaces should preferably receive direct sunlight".

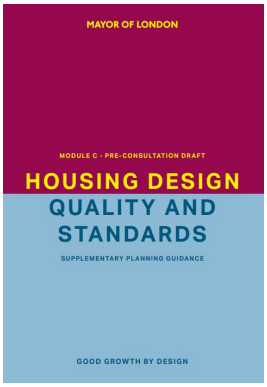
The accompanying notes go on to state that:

"Daylight enhances residents' enjoyment of an interior and reduces the energy needed to provide light for everyday activities, while controlled sunlight can help to meet part of the winter heating requirement. Sunlight is particularly desirable in living areas and kitchen dining spaces… (The) BRE good practice guidelines and methodology can be used to assess the levels of daylight and sunlight achieved within new developments…"

The guidance goes on to state that where Standard 32 cannot be achieved when it is not possible to provide direct sunlight to at least one habitable room:

"… developers should demonstrate how the daylight standards proposed within a scheme and individual units will achieve good amenity for residents. They should also demonstrate how the design has sought to optimise the amount of daylight and amenity available to residents, for example, through the design, colour and landscaping of surrounding buildings and spaces within a development".

2.5. Housing Design Quality and Standards Supplementary Planning Guidance (2020)



Published by the Mayor of London, this as yet unadopted draft (due to be adopted later in 2021) includes new design standards in relation to daylight, sunlight and overshadowing. Much of the guidance replicates and enhances the guidance within the 2016 Housing Supplementary Planning Guidance.

The Guidance notes *"Natural light can be restricted in densely developed areas. However, an appropriate degree of flexibility needs to be applied when using BRE guidelines to assess the daylight and sunlight impacts within proposed new homes, as well as the impact that proposed development would have on surrounding homes and open spaces".*

Specifically in relation to the impact of a development on surrounding properties, the guidance notes that *"Guidelines should be applied sensitively to higher density development, where BRE advice suggests considering the use of alternative targets. This should take into account local circumstances, the need to optimise housing capacity, and the scope for the character and form of an area to change over time".*

"The BRE guidelines apply nationwide, and the default numerical targets provided are purely advisory. These are based on a uniform, 25 degree development angle (vertical obstruction angle) typical of a low-rise suburban location. This corresponds to the Vertical Sky Component (VSC) target of 27 per cent cited in the guidelines. Typical development angles in a city or central urban location are considerably higher. In Central London, development angles of 40 degree or 50 degree are common and can, if well planned, deliver successful schemes. A uniform development angle of 40 degree corresponds to a VSC target of 18 per cent, and 50 degree gives a VSC target of 13 per cent. Such daylight levels have been accepted in many desirable central areas for well over a century…".

"Even with access to good levels of daylight on the outside of a building, it is possible to have low levels of daylight within a building due to design features such as small windows, recessed windows, poor placement of balconies or deep rooms. Therefore, consideration of the retained target VSC should be the principal consideration. Where this is not met in accordance with BRE guidance, it should not be less than 0.8 times its former value (which protects areas that already have low daylight levels)".

"Less weight should be given to the room-based measures of daylight such as 'no-sky line' or average daylight factor as these are dependent on the design of the neighbouring property. Except in exceptional circumstances, design features of neighbouring properties (which the guidance notes could include small windows, recessed windows, poor placement of balconies or deep rooms) should not hamper the development potential of a site".

In relation to levels of daylight within a proposed development, the new guidance recognises for the first time that whilst the target ADF value for a kitchen is 2%, where the *"principal use of rooms designed as a 'living room/kitchen/dining room' is as a living room…, it would be reasonable to apply a target of 1.5 per cent".* Furthermore, the guidance acknowledges the competing requirements for daylight and usable outdoor amenity

space and notes that the need for balconies *"can have significant bearing on the daylight and sunlight levels reaching nearby windows and rooms. Inevitably, any window or room under a balcony will receive much lower daylight and sunlight levels, although the adjacent balcony space will typically have excellent levels of daylight and sunlight amenity. Given this, the Mayor encourages boroughs to allow the daylight levels on the balcony to contribute to the ADF of the adjacent living space"*.

3. ASSESSMENT METHODOLOGY

3.1. Site Layout Planning for Daylight and Sunlight - A Guide to Good Practice (2022)

3.1.1. Overview

The Building Research Establishment (BRE) report, "*Site layout planning for daylight and sunlight – A guide to good practice"* Third Edition 2022 by PJ Littlefair, S King, G Howlett, C Ticleanu and A Longfield (referred to as the BRE Guidance) is almost universally used as the official method in the UK and Ireland for determining whether a development meets good practice standards of daylight and sunlight and for determining the impact of a development on daylight and sunlight availability.

The BRE Guidance contains guidance on how to design developments, whilst minimising the impacts on existing buildings from overshadowing and reduced levels of daylight and sunlight, as well as solar dazzle from sloping buildings. In addition, the BRE Report provides advice on how to design buildings to ensure that they retain good practice levels of daylight and sunlight. As well as advice, the report contains a methodology to assess levels of daylight, sunlight and overshadowing and contains criteria to determine the potential impacts of a new development on surrounding buildings and to determine whether new developments are well lit internally. However, the report does state that the good practice guidelines are not mandatory, but should be considered as a guide to help rather than constrain the designer.

The BRE Report looks at three separate areas when considering the impacts on natural lighting:

1. **Daylight** – i.e. the impacts of diffuse daylight.
2. **Sunlight** – i.e. the impacts of only the direct sunlight; and
3. **Overshadowing** of Gardens and Open Spaces.

It is important to note that the methods contained within the BRE Guidance are not tests to determine whether a development meets the guidance, rather "*A Guide to Good Practice".* Therefore, whilst one should try to achieve the numerical guidance within the report, a transgression from the BRE Guidance does not indicate that the development is unsuitable, nor is it an indication that planning permission should be refused.

The assessment of daylight, sunlight and overshadowing considered several different areas, specifically:

1. The impact of the Proposed Development on levels of daylight reaching surrounding windows;
2. The impact of the Proposed Development on levels of sunlight reaching surrounding windows; and
3. The impact of the Proposed Development on sunlight and shadowing to surrounding gardens and outdoor amenity space.

The BRE Guidance provides a methodology for calculating the amount of daylight and sunlight falling on a window. The Vertical Sky Component (VSC) is used to describe the amount of daylight falling on a window, with the Annual Probable Sunlight Hours (APSH) used to describe the amount of sunlight falling on the window.

3.1.2. BRE Methodology for Determining Sensitive Receptors

The BRE Guidance suggests that the assessment of daylight is required for windows serving 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 assessed. The guidelines also apply to any room that may have a reasonable expectation of daylight, including schools and hospitals. Commercial properties and hotels are deemed to have a greater reliance on supplementary electric lighting and are therefore not included in this assessment. For the purposes of this assessment, only habitable rooms within residential properties surrounding the site have been assessed.

The BRE Guidance suggests that the assessment of sunlight is generally applied to all main living rooms and conservatories. Kitchens and bedrooms are less important, although care should be taken not to block too much sun.

Regarding overshadowing, the BRE Report suggests that the following open spaces should be checked:

- Gardens, usually the main back garden of a house;
- Parks and playing fields;
- Children's playgrounds;
- Outdoor swimming pools and paddling pools;
- Sitting out areas such as those between non-domestic buildings and in public squares; and
- Focal points for views such as a group of monuments or fountains.

3.1.3. BRE Daylight Criteria

To determine the impact on daylight to windows, diffuse daylight of an existing building may be affected by a proposed development if either:

- The Vertical Sky Component (VSC) measured at the centre of an existing main window is less than 27% and less than 0.8 times its former value; or
- The area of the working plane which can receive direct skylight is reduced to less than 0.8 times its former value.

It should be noted that determining the area of the working plane which can receive direct light from the sky (which is often referred to as the No-Sky Line or NSL) is seen as an additional assessment, rather than as an alternative to VSC. However, since plotting the NSL requires knowledge of the room geometry, which is not usually available during an impact assessment, it is not always possible to calculate the NSL since the use of too many assumptions would make the results meaningless and unreliable.

3.1.4. BRE Sunlight Criteria

To determine the impact on sunlight on windows, direct sunlight to existing windows may be affected by a Proposed Development if at the centre of a window:

- Receives less than 25% of Annual Probable Sunlight Hours (APSH) throughout the whole year, or less than 5% APSH between 21st September and 21st March;

- Receives less than 0.8 times its former APSH during either period; and
- Has a reduction in sunlight over the whole year of greater than 4% APSH.

It should be noted that loss of sunlight to windows only needs to be assessed if the window faces within 90° of due south.

The BRE Guidance is explicit that sunlight in living rooms is much more important than to bedrooms or kitchens. The guidance is clear than all window of habitable rooms facing within 90° of due south (regardless of use) should be assessed, as it is still important to ensure impacts to bedrooms and kitchens are minimised, but any impacts to these room uses would be less significant.

3.1.5. BRE Overshadowing Criteria

For a garden or outdoor amenity space to be considered well sunlit, at least 50% of the garden or amenity space must receive at least two hours of direct sunlight on the 21st March. Since the proposed development is situated North of adjoining buildings and its backyard, the proposed building shall have no effect of overshadowing on the surrounding establishment.

3.1.6. BRE Significance Criteria

The BRE Guidance indicates that if the reduction in daylight or sunlight as a consequence of the impact of a development fails to meet the guidelines, the impact *could* be considered significant.

However, the BRE Guidance makes note that the guidance represents *"Best Practice Guidance"* and transgressions from the numerical guidelines within the Guidance does *not necessarily* mean that the development's impact would be significant or unacceptable. The BRE Report states: *"The advice given (in the report) is not mandatory and guide should not be seen as an instrument of planning policy; its aim is to help rather than constrain the designer. Although it gives numerical guidelines, these should be interpreted flexibly since natural lighting is only one of many factors in layout design."*

It should be noted that the numerical targets set out in the main text of the BRE Guidelines have been derived from a low-density suburban housing model of well-spaced two-storey houses, hence the VSC target of 27%, which is equivalent to an obstruction of 25°. This is why reference is made to the circumstances for setting alternative numerical targets in Appendix F of the Guidelines where the nature of an area is dense or higher rise.

Whilst the thresholds contained within the Guidance are an important indicator when determining the impact magnitude and the significance of an impact, the BRE Guidance suggests that professional judgement should be used and the assessment of the impact should rely on a range of factors.

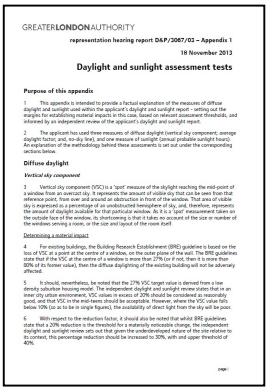
Whilst the threshold of noticeability has a numerical threshold, the method to describe the magnitude of the impact is less rigid and relies on judgement and the consideration of various factors. Appendix H of the BRE Guidance provides guidance on how this can be described. **Table 3.1** shows the impact descriptors on individual receptors.

Table 3.1: Impact Descriptor

Criteria	Impact Descriptor
Where the decrease in daylight or sunlight fails to meet the guidelines, and one or more of the following scenarios apply: • a large number of windows or a large area of open space is affected; • the loss of light is substantially outside the guidelines; • all windows in a particular property are affected; • the affected building or outdoor space has a particularly strong requirement for light, e.g. a living room in a dwelling or a children's playground.	Major Adverse
Where the decrease in daylight or sunlight fails to meet the guidelines, **and** one or more of the scenarios to describe a Minor Adverse Impact applies, **and** one or more of the scenarios to describe a Major Adverse Impact applies.	Moderate Adverse
Where the decrease in daylight or sunlight fails to meet the guidelines, and one or more of the following scenarios apply: • only a small number of windows or limited area of open space is affected; • the loss of light is only just outside the guidelines; • an affected room has other sources of light; • the affected building or outdoor space has a low-level requirement for light.	Minor Adverse
Where the increase/decrease in daylight or sunlight fully meets the guidelines and if there is an increase in daylight or sunlight, the increase is "tiny".	Negligible
Where the increase in daylight or sunlight is small and/or the number of affected windows or area of open space affected is small.	Minor Beneficial
Where the increase in daylight or sunlight is moderate and/or the number of affected windows or area of open space affected is moderate.	Moderate Beneficial
Where the increase in daylight or sunlight is large and/or the number of affected windows or area of open space affected is large.	Major Beneficial

Source: Adapted from Appendix H of the BRE Guidance

3.2. Representation Hearing Report D&P/3067/03 – Daylight & Sunlight Assessment Test (2013)


GREATER**LONDON**AUTHORITY

representation hearing report D&P/3067/03 – Appendix 1

18 November 2013

Daylight and sunlight assessment tests

Purpose of this appendix

1 This appendix is intended to provide a factual explanation of the measures of diffuse daylight and sunlight used within the applicant's daylight and sunlight report – setting out the margins for establishing material impacts in this case, based on relevant assessment thresholds; and informed by an independent review of the applicant's daylight and sunlight report.

2 The applicant has used three measures of diffuse daylight (vertical sky component; average daylight factor; and, no-sky line), and one measure of sunlight (annual probable sunlight hours). An explanation of the methodology behind these assessments is set out under the corresponding sections below.

Diffuse daylight

Vertical sky component

3 Vertical sky component (VSC) is a 'spot' measure of the skylight reaching the mid-point of a window from an overcast sky. It represents the amount of visible sky that can be seen from that reference point, from over and around an obstruction in front of the window. That area of visible sky is expressed as a percentage of an unobstructed hemisphere of sky, and, therefore, represents the amount of daylight available for that particular window. As it is a 'spot' measurement taken on the outside face of the window, its shortcoming is that it takes no account of the size or number of the windows serving a room, or the size and layout of the room itself.

Determining a material impact

4 For existing buildings, the Building Research Establishment (BRE) guideline is based on the loss of VSC at a point at the centre of a window, on the outer plane of the wall. The BRE guidelines state that if the VSC at the centre of a window is more than 27% (or if not, then it is more than 80% of its former value), then the diffuse daylighting of the existing building will not be adversely affected.

5 It should, nevertheless, be noted that the 27% VSC target value is derived from a low density suburban housing model. The independent daylight and sunlight review states that in an inner city urban environment, VSC values in excess of 20% should be considered as reasonably good, and that VSC in the mid-teens should be acceptable. However, where the VSC value falls below 10% (so as to be in single figures), the availability of direct light from the sky will be poor.

6 With respect to the reduction factor, it should also be noted that whilst BRE guidelines state that a 20% reduction is the threshold for a materially noticeable change, the independent daylight and sunlight review sets out that given the underdeveloped nature of the site relative to its context, this percentage reduction should be increased to 30%, with and upper threshold of 40%.

page 1

The BRE Guidance notes that the VSC at the centre of a window should be at least 27%; however, this target was derived from a low density housing model. It has been often stated that this should not therefore be applied equally in all situations. In connection with the development of Holy Trinity Primary School, Dalston in 2013 (planning application 2013/0457 to the London Borough of Hackney), the Greater London Authority conducted an independent review of daylight and sunlight methodologies (Greater London Authority - Representation Hearing Report D&P/3067/03 - Daylight and Sunlight Assessment Tests).

The Hearing Report stated that *"the independent daylight and sunlight review states that in an inner city urban environment, VSC values in excess of 20% should be considered as reasonably good, and that VSC in the mid-teens should be acceptable. However, where the VSC value falls below 10% (so as to be in single figures), the availability of direct light from the sky will be poor"*.

The Hearing Report also notes that flexibility can be applied to determining to determining the impact. In underdeveloped sites, 0.7 times or more the existing VSC may be a more appropriate criterion.

4. ASSESSMENT OF IMPACTS

This section summarises the impact of the proposed development on levels of daylight and sunlight on surrounding windows, as well as the overshadowing of gardens and outdoor amenity space.

4.1. Identification of Receptors

Based the plans of the development, a number of windows that could be affected have been identified. The properties of interest can be seen in the site plan in **Figure 1.1**.

The main properties of interest are:

- 489-499 High Street Harlington (Odd); and
- 1-43 Marlborough Crescent.

4.2. Computer Model

For the purposes of the assessment, a three-dimensional computer model was constructed both with and without the proposed development in place. At this site, Hawkins Environmental were provided with planning drawings of both the proposed and existing site layout, including elevations, plans and sections, in order to model the existing and proposed site layouts.

In addition, information collected from the Local Planning Authority's planning archive have also been used, in the construction of the three-dimensional model. Ordnance Survey information (including Lidar data in relation to building heights) has also been used to construct the three-dimensional computer model.

Wherever possible, survey information has been utilised to add information to the model; however, where details were not present in the survey information, professional judgement has been used to estimate information where necessary.

Drawing No. **H3852_1** to **H3852_10** (found in the supporting document "*H3852 – Ariel Hotel, 118 Bath Road, Harlington - Daylight Assessment Drawings – v4"*) which summarises the daylight/sunlight model, including views of the model from multiple directions, both with and without the proposed development, as well as diagrams showing the locations of the windows under consideration in Drawing No. **H3852_11 to H3852_13**.

4.3. Daylight Assessment

Based on the plans of the site and the positions of the closest buildings, it is possible to calculate the vertical sky component for the residential buildings, for both with and without the proposed development using a Waldram Diagram.

The methodology for calculating the VSC using the Waldram Diagrams is detailed within Appendix B of the Building Research Establishment (BRE) report, "*Site layout planning for daylight and sunlight – A guide to good practice"* Third Edition 2022 by PJ Littlefair, S King, G Howlett, C Ticleanu and A Longfield.

The Waldram Diagram dates back to 1923 and consists of a grid of squares, each representing an equal portion of available daylight. Upon the grid, it is possible to draw projections of obstructions as seen from a reference point, plotted with reference to the azimuth angles and altitude angles measured from a reference point. The area of the diagram un-obscured equates to the VSC. If the Waldram Diagram is totally un-obscured

by obstructions, this represents the maximum possible VSC of 39.6%. The diagram has been designed in such a way that vertical edges remain vertical in projection, but horizontal edges follow the so-called "droop" lines in order to take the cosine law of illumination and the non-uniform luminance of the sky into account. The Waldram Diagram method is a more complex method than the skylight indicator method also described in the BRE report. However, it tends to be more accurate and less open to interpretation and error.

Sample Waldram Diagrams can be seen in Drawing No. **H3852 _14**. **Appendix 2** summarises the results of the daylight assessment.

The results show that out of 108 affected analysed windows, whilst there is a small reduction in daylight to some of the windows, the proposed level of daylight will either exceed 27% VSC, or where it does not exceed 27% VSC, the proposed level of daylight would be greater than 0.8 times the existing. Therefore, the reduction in daylight is unlikely to be noticeable and therefore under the guidance contained within Appendix H of the 2022 BRE Report and replicated in **Table 3.1** of this report, the impact of the proposed development on levels of daylight is considered to be *"negligible"*.

The exception to the above is at 11 windows (No. 16-21, No. 24-27 and No. 34) at 1-10 and 11-19 Marlborough Crescent, where the proposed level of daylight will be both below 27% VSC and less than 0.8 time the existing level of daylight. Therefore, the reductions in daylight may be noticeable.

However, where windows do not fully meet the BRE Guidance, it does *not necessarily* mean that the development's impact would be significant or unacceptable. The BRE Guidance represents *"Best Practice Guidance"* and it notes that the advice given in the report is not mandatory nor adopted planning policy and the numerical guidelines "*should be interpreted flexibly since natural lighting is only one of many factors in layout design".*

For example, it is necessary to have regard to whether or not the affected rooms are dual aspect; whether the windows serve habitable rooms and whether the windows are located close to the boundary of the site. It is also important that the scale of a development is allowed to be consistent with the existing environment and therefore, the results of a daylight assessment should reflect this. The BRE Guidance notes as an example, that in a mews in a historic city centre, a typical obstruction angle may be higher and therefore, a target value VSC of 18% may be more appropriate. This is an approach reinforced by the London Plan's Housing Supplementary Planning Guidance acknowledging that "*Quantitative standards on daylight and sunlight should not be applied rigidly, without carefully considering the location and context and standards experienced in broadly comparable housing typologies in London".*

At the 11 affected windows, which are understood to serve five separate dwellings, the proposed level of daylight would be in excess of 22% VSC at all ground floor windows of 1-10 Marlborough Crescent and in excess of 26% VSC at the first floor of 1-10 Marlborough Crescent and the ground floor of 11-19 Marlborough Crescent. This proposed level of daylight is only a very small deviation from the BRE Guidance, where any proposed level of 27% VSC or more would be considered acceptable.

It should be noted that the Greater London Authority conducted an independent review of daylight and sunlight methodologies (Greater London Authority - Representation Hearing Report D&P/3067/03 - Daylight and Sunlight Assessment Tests) in 2013 and the review stated that in the "*urban environment, VSC values in excess of 20% should be considered as reasonably good, and that VSC in the mid-teens should be acceptable. However, where the VSC value falls below 10% (so as to be in single figures), the availability of direct light from*

the sky will be poor". Given that the proposed level of daylight will be in excess of 22% at all windows, in the context of the urban environment, the proposed level of daylight would be considered *"reasonably good"*. Consequently, whilst it is acknowledged that there will be a noticeable reduction in daylight to a small number of windows, in the context of the guidance, the GLA Hearing report and the context of the urban location adjacent to Heathrow airport, it is considered that these impacts could be considered acceptable.

It is important to note that the NPPF now specifically mentions daylight/sunlight in national planning policy. The NPPF states that:

"Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances…local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site".

As a consequence, the NPPF acknowledges that whilst impacts should always be minimised as far as reasonably possible, other considerations should take priority over impacts on daylight and sunlight. Therefore, providing that is development is not considered to be an over intensification of the site and is considered to be an efficient use of the land, within the context of national planning policy, some minor impacts could be considered acceptable.

4.4. Sunlight Assessment

In order to assess the impact of a development on the levels of sunlight, the APSH has been calculated for those windows which face within 90° of due south and hence fall within the BRE Sunlight criteria.

According to the BRE Report, direct sunlight on an existing window may be affected by a proposed development if the centre of a window receives less than 25% of Annual Probable Sunlight Hours (APSH), or less than 5% APSH between 21st September and 21st March; **and** receives less lean 0.8 times its former APSH during either period; **and** has a reduction in sunlight over the whole year of greater than 4% APSH.

Appendix 2 details the results of the Annual Probable Sunlight Hours (APSH) calculations for the windows under consideration, with sample Sunlight Indicator Diagrams replicated in Drawing No. **H3852_15**.

It can be seen from the results in **Appendix 2** that the windows assessed in relation to sunlight, all fully meet the recommendations contained within the BRE Guidance in relation to sunlight. As a consequence, the impact to these windows are not seen as significant.

4.5. Overshadowing Assessment

This section summarises the overshadowing impacts of the proposed development on gardens and outdoor amenity space. In order to assess the effects of overshadowing on gardens and outdoor amenity space, a three-dimensional model of the development and surrounding buildings has been constructed and the shadows caused by the building on the 21st of March has been assessed. The 21st of March is utilised because the day and night-time periods are of equal length. Furthermore, the 21st of March has been chosen as it is the Spring Equinox and is considered to be the first day of the year when the ability to enjoy one's garden or amenity

space is important. Drawing No. **H3852_36** to **H3852_40** shows the results of the overshadowing assessment on the 21st of March for the existing and proposed site layout.

The Third Edition of the BRE Report, published in 2022, requires at least 50% of the garden should be capable of receiving at least two full hours of direct sunlight on the 21st of March. If this cannot be achieved, providing that the area overshadowed was greater than 0.8 times its former value, no impact would have occurred.

Drawing No. **H3852_36** shows the extent of overshadowing to outdoor amenity space with the existing site layout and Drawing No. **H3852_37** shows the extent of overshadowing to outdoor amenity space with the proposed site layout. The areas marked in yellow receive direct sunlight for at least two hours on the 21st March. **Appendix 2** shows the results of the analysis. The analysis shows that on the 21st of March, whilst there is a small reduction in the amount outdoor amenity space that receives direct sunlight, over at least half of the area will continue to receive direct sunlight and therefore, any impact upon this amenity space is considered to be insignificant.

The exception to the above is at 1-10 Marlborough Crescent, where only around 49% of the front garden area will experience direct sunlight on the 21st March with the proposed development in place, compared to 99% at present. Since 49% is only marginally below the recommended 50% it is therefore considered that there will be a *"minor adverse"* impact to overshadowing at 1-10 Marlborough Crescent.

5. CONCLUSIONS

A daylight/sunlight assessment has been carried out in accordance with The Building Research Establishment (BRE) report, *"Site layout planning for daylight and sunlight – A guide to good practice"* by PJ Littlefair, S King, G Howlett, C Ticleanu and A Longfield (Third Edition – 2022), which summarises the impacts of the proposed development at site Ariel Hotel. 118 Bath Road, Harlington on the surrounding properties potential to receive daylight and sunlight.

The results show that of the 108 windows assessed, 11 of the windows do not fully achieve the guidance contained within the BRE Report, as they will receive a level of daylight with the proposed development of less than 27% VSC and the proposed level of daylight would be less than 0.8 times the existing level; therefore, the reduction in daylight may be noticeable. However, it has been noted that all 11 of these windows fall short of the BRE Guidance by a very small amount and are within the tolerances of the GLA's Hearing Report guidance in relation to London and urban locations. Therefore, it is considered that this minor impact is considered acceptable given it's location.

The NPPF now specifically mentions daylight/sunlight in national planning policy. The NPPF states that:

"Where there is an existing or anticipated shortage of land for meeting identified housing needs, it is especially important that planning policies and decisions avoid homes being built at low densities, and ensure that developments make optimal use of the potential of each site. In these circumstances…local planning authorities should refuse applications which they consider fail to make efficient use of land, taking into account the policies in this Framework. In this context, when considering applications for housing, authorities should take a flexible approach in applying policies or guidance relating to daylight and sunlight, where they would otherwise inhibit making efficient use of a site".

As a consequence, the NPPF acknowledges that whilst impacts should always be minimised as far as reasonably possible, other considerations should take priority over impacts on daylight and sunlight. Therefore, providing that is development is not considered to be an over intensification of the site and is considered to be an efficient use of the land, within the context of national planning policy, this minor adverse impact could be considered acceptable.

Appendix 1
Glossary of Lighting Terms

Appendix 1: Glossary of Daylighting Terms

From the BRE Guidance (2022)

Illuminance	A measure of the amount of light falling on a surface, usually measured in lux.
Target illuminance (E_T)	Illuminance from daylight that should be achieved for at least half of annual daylight hours across a specified fraction of the reference plane in a daylit space.
Minimum target illuminance (E_{TM})	Illuminance from daylight that should be achieved for at least half of annual daylight hours across 95% of the reference plane in spaces with vertical and/or inclined daylight apertures.
Daylight factor (D)	Ratio of total daylight illuminance at a reference point on the working plane within a space to outdoor illuminance on a horizontal plane due to an unobstructed CIE standard overcast sky. Thus a 1% D would mean that the indoor illuminance at that point in the space would be one hundredth the outdoor unobstructed horizontal illuminance.
Target daylight factor	Daylight factor value equivalent to the target illuminance to be exceeded for more than half of annual daylight hours over a specified fraction of the reference plane within a daylit space.
Minimum target daylight factor	Daylight factor value equivalent to the minimum target illuminance to be exceeded for more than half of annual daylight hours over 95% of the reference plane within spaces with vertical and/or inclined daylight apertures.
CIE standard overcast sky	A completely overcast sky for which the ratio of its luminance $L\gamma$ at an angle of elevation γ above the horizontal to the luminance Lz at the zenith is given by: $L\gamma = Lz \frac{(1 + 2 \sin \gamma)}{3}$ A CIE standard overcast sky is darkest at the horizon and brightest at the zenith (vertically overhead).
Daylight, natural light	Combined skylight and sunlight.
No sky line	The outline on the working plane of the area from which no sky can be seen.
Obstruction angle	The angular altitude of the top of an obstruction above the horizontal, measured from a reference point in a vertical plane in a section perpendicular to the vertical plane.
Annual probable sunlight hours	The long-term average of the total number of hours during a year in which direct sunlight reaches the unobstructed ground (when clouds are taken into account).
Sky factor	This is used in rights to light calculations. It is the ratio of the parts of illuminance at a point on a given plane that would be received directly through unglazed openings from a sky of uniform luminance, to the illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. The sky factor does not include reflected light, either from outdoor or indoor surfaces.
Vertical sky component (VSC)	This is a measure of the amount of light reaching a window. It is the ratio of that part of illuminance, at a point on a given vertical plane, that is received directly from a CIE standard overcast sky, to illuminance on a horizontal plane due to an unobstructed hemisphere of this sky. Usually the 'given vertical plane' is the outside of a window wall. The VSC does not include reflected light, either from the ground or from other buildings.
Reference plane or working plane	Horizontal, vertical, or inclined plane in which a visual task lies. Normally the working plane may be taken to be horizontal, 0.85 m above the floor in houses and factories, 0.7 m above the floor in offices.
Assessment grid	Grid of calculation points on the reference plane that is used to calculate daylight factor or illuminance from daylight. Also known as calculation grid.
(Solar) irradiance	A measure of the amount of solar radiation (including infrared and ultraviolet radiation as well as daylight) falling on a surface. Usually measured in Watts per square metre.

Appendix 2
Results of the BRE Analysis

Daylight Impact Assessment Results

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
489-499 High Street	Ground	1	32.44	29.89	0.92	YES	92°
489-499 High Street	Ground	2	33.56	31.69	0.94	YES	91°
489-499 High Street	Ground	3	33.64	32.15	0.96	YES	91°
489-499 High Street	Ground	4	34.00	32.80	0.96	YES	91°
489-499 High Street	Ground	5	34.31	33.32	0.97	YES	91°
489-499 High Street	First	6	34.42	32.65	0.95	YES	92°
489-499 High Street	First	7	35.60	34.30	0.96	YES	91°
489-499 High Street	First	8	35.72	34.68	0.97	YES	91°
489-499 High Street	First	9	35.97	35.14	0.98	YES	91°
489-499 High Street	First	10	36.18	35.49	0.98	YES	91°
489-499 High Street	Second	11	36.43	35.50	0.97	YES	92°
489-499 High Street	Second	12	37.48	36.77	0.98	YES	91°
489-499 High Street	Second	13	37.55	36.95	0.98	YES	91°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
489-499 High Street	Second	14	37.64	37.13	0.99	YES	91°
489-499 High Street	Second	15	37.74	37.29	0.99	YES	91°
1-10 Marlborough Crescent	Ground	16	35.64	23.59	0.66	NO	182°
1-10 Marlborough Crescent	Ground	17	35.20	23.22	0.66	NO	182°
1-10 Marlborough Crescent	Ground	18	33.52	21.60	0.64	NO	182°
1-10 Marlborough Crescent	Ground	19	35.13	22.54	0.64	NO	182°
1-10 Marlborough Crescent	Ground	20	34.90	22.37	0.64	NO	182°
1-10 Marlborough Crescent	Ground	21	34.66	22.21	0.64	NO	182°
1-10 Marlborough Crescent	First	22	36.99	27.47	0.74	YES	182°
1-10 Marlborough Crescent	First	23	36.64	27.19	0.74	YES	182°
1-10 Marlborough Crescent	First	24	34.93	25.52	0.73	NO	182°
1-10 Marlborough Crescent	First	25	36.55	26.54	0.73	NO	182°
1-10 Marlborough Crescent	First	26	36.33	26.34	0.73	NO	182°
1-10 Marlborough Crescent	First	27	36.12	26.15	0.72	NO	182°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
1-10 Marlborough Crescent	Second	28	37.46	31.13	0.83	YES	182°
1-10 Marlborough Crescent	Second	29	37.28	30.99	0.83	YES	182°
1-10 Marlborough Crescent	Second	30	36.63	30.35	0.83	YES	182°
1-10 Marlborough Crescent	Second	31	37.05	30.34	0.82	YES	182°
1-10 Marlborough Crescent	Second	32	36.86	30.13	0.82	YES	182°
1-10 Marlborough Crescent	Second	33	36.68	29.91	0.82	YES	182°
11-19 Marlborough Crescent	Ground	34	32.27	25.50	0.79	NO	182°
11-19 Marlborough Crescent	Ground	35	31.81	25.89	0.81	YES	182°
11-19 Marlborough Crescent	Ground	36	31.31	26.21	0.84	YES	182°
11-19 Marlborough Crescent	Ground	37	30.81	26.39	0.86	YES	182°
11-19 Marlborough Crescent	Ground	38	30.29	26.47	0.87	YES	182°
11-19 Marlborough Crescent	Ground	39	29.88	26.57	0.89	YES	182°
11-19 Marlborough Crescent	First	40	33.77	28.18	0.83	YES	182°
11-19 Marlborough Crescent	First	41	33.27	28.43	0.85	YES	182°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
11-19 Marlborough Crescent	First	42	32.75	28.62	0.87	YES	182°
11-19 Marlborough Crescent	First	43	32.23	28.70	0.89	YES	182°
11-19 Marlborough Crescent	First	44	31.73	28.70	0.90	YES	182°
11-19 Marlborough Crescent	First	45	31.34	28.73	0.92	YES	182°
11-19 Marlborough Crescent	Second	46	34.64	30.61	0.88	YES	182°
11-19 Marlborough Crescent	Second	47	34.20	30.72	0.9	YES	182°
11-19 Marlborough Crescent	Second	48	33.73	30.77	0.91	YES	182°
11-19 Marlborough Crescent	Second	49	33.26	30.73	0.92	YES	182°
11-19 Marlborough Crescent	Second	50	32.82	30.63	0.93	YES	182°
11-19 Marlborough Crescent	Second	51	32.49	30.58	0.94	YES	182°
35-43 Marlborough Crescent	Ground	52	33.77	32.23	0.95	YES	180°
35-43 Marlborough Crescent	Ground	53	31.97	30.76	0.96	YES	180°
35-43 Marlborough Crescent	Ground	54	25.26	24.33	0.96	YES	180°
35-43 Marlborough Crescent	Ground	55	27.43	27.08	0.99	YES	180°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
35-43 Marlborough Crescent	Ground	56	26.31	25.70	0.98	YES	180°
35-43 Marlborough Crescent	Ground	57	22.30	21.39	0.96	YES	180°
35-43 Marlborough Crescent	First	58	35.79	34.44	0.96	YES	180°
35-43 Marlborough Crescent	First	59	34.54	33.46	0.97	YES	180°
35-43 Marlborough Crescent	First	60	27.81	26.97	0.97	YES	180°
35-43 Marlborough Crescent	First	61	34.86	34.38	0.99	YES	180°
35-43 Marlborough Crescent	First	62	25.10	25.07	1.00	YES	180°
35-43 Marlborough Crescent	First	63	31.49	31.21	0.99	YES	180°
35-43 Marlborough Crescent	First	64	30.42	29.91	0.98	YES	180°
35-43 Marlborough Crescent	First	65	25.85	25.08	0.97	YES	180°
35-43 Marlborough Crescent	Second	66	37.66	36.45	0.97	YES	180°
35-43 Marlborough Crescent	Second	67	36.59	35.78	0.98	YES	180°
35-43 Marlborough Crescent	Second	68	30.89	30.33	0.98	YES	180°
35-43 Marlborough Crescent	Second	69	35.12	34.34	0.98	YES	180°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
35-43 Marlborough Crescent	Second	70	34.37	33.51	0.97	YES	180°
35-43 Marlborough Crescent	Second	71	30.48	29.53	0.97	YES	180°
20-34 Marlborough Crescent	Ground	72	29.44	27.93	0.95	YES	180°
20-34 Marlborough Crescent	Ground	73	33.28	32.00	0.96	YES	180°
20-34 Marlborough Crescent	Ground	74	33.28	32.13	0.97	YES	180°
20-34 Marlborough Crescent	Ground	75	32.59	31.59	0.97	YES	180°
20-34 Marlborough Crescent	Ground	76	32.67	32.21	0.99	YES	180°
20-34 Marlborough Crescent	Ground	77	33.50	33.23	0.99	YES	180°
20-34 Marlborough Crescent	First	78	31.32	30.02	0.96	YES	180°
20-34 Marlborough Crescent	First	79	35.57	34.42	0.97	YES	180°
20-34 Marlborough Crescent	First	80	35.62	34.58	0.97	YES	180°
20-34 Marlborough Crescent	First	81	35.35	34.43	0.97	YES	180°
20-34 Marlborough Crescent	First	82	32.40	31.60	0.98	YES	180°
20-34 Marlborough Crescent	First	83	35.47	34.84	0.98	YES	180°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
20-34 Marlborough Crescent	First	84	34.90	34.45	0.99	YES	180°
20-34 Marlborough Crescent	First	85	35.35	35.10	0.99	YES	180°
20-34 Marlborough Crescent	Second	86	34.68	33.58	0.97	YES	180°
20-34 Marlborough Crescent	Second	87	36.87	35.82	0.97	YES	180°
20-34 Marlborough Crescent	Second	88	36.84	35.86	0.97	YES	180°
20-34 Marlborough Crescent	Second	89	36.68	35.79	0.98	YES	180°
20-34 Marlborough Crescent	Second	90	34.40	33.60	0.98	YES	180°
20-34 Marlborough Crescent	Second	91	36.63	35.96	0.98	YES	180°
20-34 Marlborough Crescent	Second	92	36.35	35.85	0.99	YES	180°
20-34 Marlborough Crescent	Second	93	36.53	36.18	0.99	YES	180°
20-34 Marlborough Crescent	Ground	94	32.27	30.94	0.96	YES	180°
20-34 Marlborough Crescent	Ground	95	32.89	31.37	0.95	YES	180°
20-34 Marlborough Crescent	Ground	96	33.40	31.79	0.95	YES	180°
20-34 Marlborough Crescent	Ground	97	33.76	32.10	0.95	YES	180°

Building Name	Floor	Window ID	Vertical Sky Component %			Meets BRE Guide?	Window Orientation
			Existing	Proposed	Ratio*		
20-34 Marlborough Crescent	Ground	98	33.91	32.25	0.95	YES	180°
20-34 Marlborough Crescent	First	99	35.18	34.04	0.97	YES	180°
20-34 Marlborough Crescent	First	100	35.51	34.20	0.96	YES	180°
20-34 Marlborough Crescent	First	101	36.41	35.11	0.96	YES	180°
20-34 Marlborough Crescent	First	102	35.95	34.52	0.96	YES	180°
20-34 Marlborough Crescent	First	103	36.01	34.58	0.96	YES	180°
20-34 Marlborough Crescent	Second	104	36.78	35.64	0.97	YES	180°
20-34 Marlborough Crescent	Second	105	36.89	35.68	0.97	YES	180°
20-34 Marlborough Crescent	Second	106	37.08	35.83	0.97	YES	180°
20-34 Marlborough Crescent	Second	107	37.12	35.88	0.97	YES	180°
20-34 Marlborough Crescent	Third	108	37.73	36.60	0.97	YES	180°

Sunlight Impact Assessment Results

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
489-499 High Street 1 46 38 0.83 YES 13 5 0.38 YES 489-499 High Street 2 46 40 0.87 YES 13 7 0.54 YES 489-499 High									
489-499 High Street	1	46	38	0.83	YES	13	5	0.38	YES
489-499 High Street	2	46	40	0.87	YES	13	7	0.54	YES
489-499 High Street	3	47	42	0.89	YES	13	8	0.62	YES
489-499 High Street	4	45	41	0.91	YES	12	8	0.67	YES
489-499 High Street	5	46	43	0.93	YES	12	9	0.75	YES
489-499 High Street	6	48	43	0.90	YES	13	8	0.62	YES
489-499 High Street	7	48	44	0.92	YES	13	9	0.69	YES
489-499 High Street	8	47	45	0.96	YES	13	11	0.85	YES
489-499 High Street	9	47	46	0.98	YES	13	12	0.92	YES
489-499 High Street	10	47	47	1.00	YES	13	13	1.00	YES
489-499 High Street	11	48	47	0.98	YES	13	12	0.92	YES
489-499 High Street	12	48	48	1.00	YES	13	13	1.00	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
489-499 High Street	13	48	48	1.00	YES	13	13	1.00	YES
489-499 High Street	14	48	48	1.00	YES	13	13	1.00	YES
489-499 High Street	15	49	49	1.00	YES	14	14	1.00	YES
1-10 Marlborough Crescent	16	81	63	0.78	YES	26	8	0.31	YES
1-10 Marlborough Crescent	17	79	62	0.78	YES	26	9	0.35	YES
1-10 Marlborough Crescent	18	72	55	0.76	YES	26	9	0.35	YES
1-10 Marlborough Crescent	19	82	64	0.78	YES	24	6	0.25	YES
1-10 Marlborough Crescent	20	82	64	0.78	YES	24	6	0.25	YES
1-10 Marlborough Crescent	21	81	64	0.79	YES	23	6	0.26	YES
1-10 Marlborough Crescent	22	84	74	0.88	YES	26	16	0.62	YES
1-10 Marlborough Crescent	23	79	68	0.86	YES	26	15	0.58	YES
1-10 Marlborough Crescent	24	72	61	0.85	YES	26	15	0.58	YES
1-10 Marlborough Crescent	25	84	71	0.85	YES	26	13	0.50	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
1-10 Marlborough Crescent	26	84	70	0.83	YES	26	12	0.46	YES
1-10 Marlborough Crescent	27	83	70	0.84	YES	25	12	0.48	YES
1-10 Marlborough Crescent	28	86	80	0.93	YES	28	22	0.79	YES
1-10 Marlborough Crescent	29	86	80	0.93	YES	28	22	0.79	YES
1-10 Marlborough Crescent	30	81	75	0.93	YES	27	21	0.78	YES
1-10 Marlborough Crescent	31	86	77	0.90	YES	28	19	0.68	YES
1-10 Marlborough Crescent	32	86	77	0.90	YES	28	19	0.68	YES
1-10 Marlborough Crescent	33	86	78	0.91	YES	28	20	0.71	YES
11-19 Marlborough Crescent	34	80	69	0.86	YES	22	11	0.50	YES
11-19 Marlborough Crescent	35	77	69	0.90	YES	20	12	0.60	YES
11-19 Marlborough Crescent	36	76	68	0.89	YES	19	11	0.58	YES
11-19 Marlborough Crescent	37	77	72	0.94	YES	20	15	0.75	YES
11-19 Marlborough Crescent	38	74	70	0.95	YES	18	14	0.78	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
11-19 Marlborough Crescent	39	74	69	0.93	YES	18	13	0.72	YES
11-19 Marlborough Crescent	40	82	74	0.90	YES	24	16	0.67	YES
11-19 Marlborough Crescent	41	79	72	0.91	YES	21	14	0.67	YES
11-19 Marlborough Crescent	42	78	73	0.94	YES	20	15	0.75	YES
11-19 Marlborough Crescent	43	79	75	0.95	YES	21	17	0.81	YES
11-19 Marlborough Crescent	44	77	73	0.95	YES	19	15	0.79	YES
11-19 Marlborough Crescent	45	77	73	0.95	YES	19	15	0.79	YES
11-19 Marlborough Crescent	46	83	77	0.93	YES	25	19	0.76	YES
11-19 Marlborough Crescent	47	81	76	0.94	YES	23	18	0.78	YES
11-19 Marlborough Crescent	48	81	77	0.95	YES	23	19	0.83	YES
11-19 Marlborough Crescent	49	81	78	0.96	YES	23	20	0.87	YES
11-19 Marlborough Crescent	50	79	76	0.96	YES	21	18	0.86	YES
11-19 Marlborough Crescent	51	79	76	0.96	YES	21	18	0.86	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
35-43 Marlborough Crescent	52	77	77	1.00	YES	26	26	1.00	YES
35-43 Marlborough Crescent	53	71	70	0.99	YES	25	24	0.96	YES
35-43 Marlborough Crescent	54	55	54	0.98	YES	20	19	0.95	YES
35-43 Marlborough Crescent	55	57	56	0.98	YES	21	20	0.95	YES
35-43 Marlborough Crescent	56	52	52	1.00	YES	18	18	1.00	YES
35-43 Marlborough Crescent	57	43	43	1.00	YES	14	14	1.00	YES
35-43 Marlborough Crescent	58	81	81	1.00	YES	28	28	1.00	YES
35-43 Marlborough Crescent	59	73	73	1.00	YES	26	26	1.00	YES
35-43 Marlborough Crescent	60	59	59	1.00	YES	23	23	1.00	YES
35-43 Marlborough Crescent	61	86	86	1.00	YES	28	28	1.00	YES
35-43 Marlborough Crescent	62	56	56	1.00	YES	21	21	1.00	YES
35-43 Marlborough Crescent	63	69	69	1.00	YES	24	24	1.00	YES
35-43 Marlborough Crescent	64	64	64	1.00	YES	23	23	1.00	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
35-43 Marlborough Crescent	65	54	54	1.00	YES	19	19	1.00	YES
35-43 Marlborough Crescent	66	87	87	1.00	YES	29	29	1.00	YES
35-43 Marlborough Crescent	67	87	87	1.00	YES	29	29	1.00	YES
35-43 Marlborough Crescent	68	70	70	1.00	YES	23	23	1.00	YES
35-43 Marlborough Crescent	69	80	80	1.00	YES	25	25	1.00	YES
35-43 Marlborough Crescent	70	79	79	1.00	YES	27	27	1.00	YES
35-43 Marlborough Crescent	71	64	64	1.00	YES	23	23	1.00	YES
20-34 Marlborough Crescent	72	61	61	1.00	YES	22	22	1.00	YES
20-34 Marlborough Crescent	73	77	77	1.00	YES	24	24	1.00	YES
20-34 Marlborough Crescent	74	78	77	0.99	YES	24	23	0.96	YES
20-34 Marlborough Crescent	75	72	71	0.99	YES	22	21	0.95	YES
20-34 Marlborough Crescent	76	76	75	0.99	YES	22	21	0.95	YES
20-34 Marlborough Crescent	77	81	81	1.00	YES	24	24	1.00	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
20-34 Marlborough Crescent	78	64	64	1.00	YES	25	25	1.00	YES
20-34 Marlborough Crescent	79	81	81	1.00	YES	26	26	1.00	YES
20-34 Marlborough Crescent	80	83	83	1.00	YES	27	27	1.00	YES
20-34 Marlborough Crescent	81	79	79	1.00	YES	27	27	1.00	YES
20-34 Marlborough Crescent	82	69	69	1.00	YES	25	25	1.00	YES
20-34 Marlborough Crescent	83	85	85	1.00	YES	27	27	1.00	YES
20-34 Marlborough Crescent	84	83	83	1.00	YES	28	28	1.00	YES
20-34 Marlborough Crescent	85	87	86	0.99	YES	29	28	0.97	YES
20-34 Marlborough Crescent	86	78	78	1.00	YES	27	27	1.00	YES
20-34 Marlborough Crescent	87	88	88	1.00	YES	30	30	1.00	YES
20-34 Marlborough Crescent	88	87	87	1.00	YES	29	29	1.00	YES
20-34 Marlborough Crescent	89	86	86	1.00	YES	29	29	1.00	YES
20-34 Marlborough Crescent	90	71	71	1.00	YES	27	27	1.00	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
20-34 Marlborough Crescent	91	86	86	1.00	YES	28	28	1.00	YES
20-34 Marlborough Crescent	92	87	87	1.00	YES	29	29	1.00	YES
20-34 Marlborough Crescent	93	87	87	1.00	YES	29	29	1.00	YES
20-34 Marlborough Crescent	94	80	80	1.00	YES	22	22	1.00	YES
20-34 Marlborough Crescent	95	80	80	1.00	YES	22	22	1.00	YES
20-34 Marlborough Crescent	96	82	82	1.00	YES	24	24	1.00	YES
20-34 Marlborough Crescent	97	82	82	1.00	YES	24	24	1.00	YES
20-34 Marlborough Crescent	98	81	81	1.00	YES	23	23	1.00	YES
20-34 Marlborough Crescent	99	84	84	1.00	YES	26	26	1.00	YES
20-34 Marlborough Crescent	100	85	84	0.99	YES	27	26	0.96	YES
20-34 Marlborough Crescent	101	86	86	1.00	YES	28	28	1.00	YES
20-34 Marlborough Crescent	102	84	84	1.00	YES	26	26	1.00	YES
20-34 Marlborough Crescent	103	84	84	1.00	YES	26	26	1.00	YES

Window Ref	ID	Annual Probable Sunlight Hours %				Winter Probable Sunlight Hours %			
		Existing	Proposed	Ratio*	Meets BRE Guide?	Existing	Proposed	Ratio*	Meets BRE Guide?
20-34 Marlborough Crescent	104	88	88	1.00	YES	30	30	1.00	YES
20-34 Marlborough Crescent	105	88	88	1.00	YES	30	30	1.00	YES
20-34 Marlborough Crescent	106	88	88	1.00	YES	30	30	1.00	YES
20-34 Marlborough Crescent	107	87	87	1.00	YES	29	29	1.00	YES
20-34 Marlborough Crescent	108	88	88	1.00	YES	30	30	1.00	YES

Overshadowing Impact Assessment Results

	Percentage of the Garden/Outdoor Amenity Space Which Receives Direct Sunlight for at Least Two Hours on the 21st March			
Receptor	Existing	Proposed	Ratio*	Meets BRE Guide?
1-10 Marlborough Crescent	99%	49%	0.49	NO
11-19 Marlborough Crescent	100%	82%	0.82	YES
489-499 High Street	100%	96%	0.96	YES

*= Ratio of proposed levels compared to existing levels