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CONSULTING LIMITED

**Client: Joshua Faith**

# Daylight and Sunlight Assessment for the Development at 20 Howitt Road, London, NW3 4LL

**February 2022**

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## Contents Amendment Record

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**Herrington Consulting Limited**

**Canterbury Office**
Unit 6 – Barham Business Park
Elham Valley Road
Barham
Canterbury
Kent, CT4 6DQ
Tel +44 (0)1227 833855

**London Office**
Unit 52.11 Woolyard
52 Bermondsey Street
London
SE1 3UD

www.herringtonconsulting.co.uk





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# Contents

# 1 Background and Scope of Appraisal

## 1.1 Study Objectives

Herrington Consulting has been commissioned by Joshua Faith to assess the potential impact of the proposed development at 20 Howitt Road, London, NW3 4LL, in relation to daylight, sunlight and overshadowing on the neighbouring buildings. The key objectives of the assessment are to:

- assess the baseline conditions at the site;
- analyse the potential impacts of the development on the daylight and sunlight currently received by the neighbouring building;
- assess these impacts in line with any relevant planning policies and best practice guidance.

In addition to the assessment of impacts on the neighbouring buildings, this study also includes an assessment of the natural daylight and sunlight that will be available within the habitable rooms of the proposed development at lower ground level.

## 1.2 Site Location

The site is situated in the area of Belsize Park and is located within administrative boundaries of the London Borough of Camden. The location of the site is shown in Figure 1.1 and the site plan included in Appendix A.1 of this report gives a more detailed reference to the site location and layout.

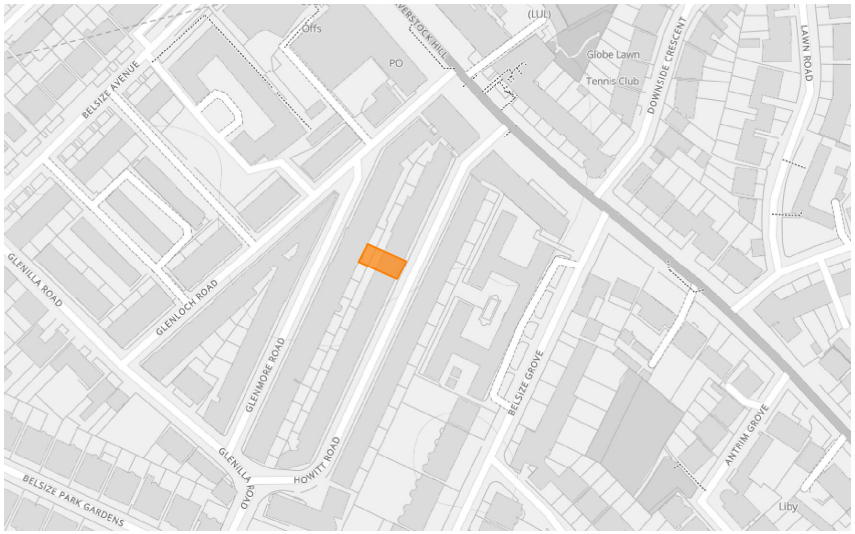



*Figure 1.1 – Location map (Contains Ordnance Survey data © Crown copyright and database right 2011)*

## 1.3 The Development

The proposal for development is to build a single-storey ground floor extension and to convert the lower ground level. Drawings of the proposed scheme are included in Appendix A.1 of this report.

# 2 Policy and Guidance

## 2.1 National Planning Policy

***National Planning Policy Framework (Revised July 2021)***

Paragraph 125 on 'Achieving appropriate densities' states that *"c) 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)."*

***Guidance on Effective Use of Land (Revised July 2019)***

The guidance states that: *'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.'*

Further to this, it also 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.*

*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.'*

## 2.2 Regional Planning Policy

***The London Plan – The Spatial Development Strategy for Greater London – (March 2021)***

Policy D6 on Housing quality and standards states that

*C) Housing development should maximise the provision of dual aspect dwellings and normally avoid the provision of single aspect dwellings. A single aspect dwelling should only be provided where it is considered a more appropriate design solution to meet the requirements of Part B in Policy D3 Optimising site capacity through the design-led approach than a dual aspect dwelling, and it can be demonstrated that it will have adequate passive ventilation, daylight and privacy, and avoid overheating.*

*'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'.*

***The London Plan – Supplementary Planning Guidance on Housing (2016)***

Policy 7.6Bd on 'Standards for privacy, daylight and sunlight' *requires new development to avoid causing 'unacceptable harm' to the amenity of surrounding land and buildings, particularly in relation to privacy and overshadowing'*. It also states that '*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'*

In the 'Standards for privacy, daylight and sunlight', Paragraph 1.3.46 states 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'. Similarly,* Paragraph 2.3.47 on 'Daylight and Sunlight' includes the following statement '*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 on 'Daylight and Sunlight' states that '*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'*.

## 2.3 Local Planning Policy

***Camden Local Plan (2017)***

Policy A1 'Managing the impact of development' under Protecting amenity states that: 'The Council will seek to protect the quality of life of occupiers and neighbours. We will grant permission for development unless this causes unacceptable harm to amenity. The factors we will consider include: … f. sunlight, daylight and overshadowing'. Section 6.5 states that: 'Loss of daylight and sunlight can be caused if spaces are overshadowed by development. To assess whether acceptable levels of daylight and sunlight are available to habitable, outdoor amenity and open spaces, the Council will take into account the most recent guidance published by the Building Research Establishment'.

Paragraph 3.141 under High Quality accessible homes states that 'Many aspects of housing quality have a critical impact on the health and wellbeing of occupiers. These aspects of quality include the external environment, the condition of the property and its state of repair and decoration, accessibility, internal space and number of bedrooms, separation between functions such as kitchens, living rooms and bedrooms, adequate noise insulation, and daylight and sunlight and all of which can affect physical and mental health and influence life chances.'

Paragraph 7.32 relating to Design of housing states that 'All residential developments are required to be designed and built to create high quality homes. The Council will seek to ensure that residential development, both new build and change of use: …has good natural light and ventilation'

***Camden Planning Guidance: Basements (January 2021)***

*Paragraph 2.7 under Policy A5 states that 'where basement accommodation is to provide living space (possibly for staff), it will be subject to the same standards as other housing in terms of space, amenity and sunlight.'*

***Camden Planning Guidance: Design (January 2021)***

*Paragraph 5.12 states "proposals should assess the impacts of the scheme from a design perspective and the contribution it makes to townscape character including: (…) • the effects of the proposal on the amenity of adjacent residential properties with regard to daylight, sunlight, outlook, light pollution/spillage, privacy or the working conditions of occupants of adjacent non-residential buildings;'*

***Camden Planning Guidance: Housing (January 2021)***

*Section Natural light, Daylight/sunlight states that 'All the habitable rooms must have direct natural light, particularly the main living room. The applicant must ensure that the levels of daylight and sunlight that enter habitable rooms comply with BRE standards and that the report for 'Daylight and Sunlight' is submitted with the proposal'*

*Section Amenity of neighbours states that 'The proposal should not have a significant detrimental impact to neighbouring amenity in terms of neighbouring outlook, privacy, sunlight, daylight, noise or vibration.'*

## 2.4 Best Practice Guidance

In the absence of official national planning guidance / legislation on daylight and sunlight, the most recognised guidance document is published by the Building Research Establishment and entitled 'Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice', Third Edition, 2022; herein referred to as the 'BRE Guidelines'.

The BRE Guidelines are not mandatory and themselves state that they should not be used as an instrument of planning policy, however in practice they are heavily relied upon as they provide a good guide to approach, methodology and evaluation of daylight and sunlight impacts.

Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets. The document states that the intention of the guide is to aid rather than constrain the designer. The Guide is not an instrument of planning policy, therefore whilst the methods given are technically robust, it is acknowledged that some level of flexibility should be applied where appropriate.

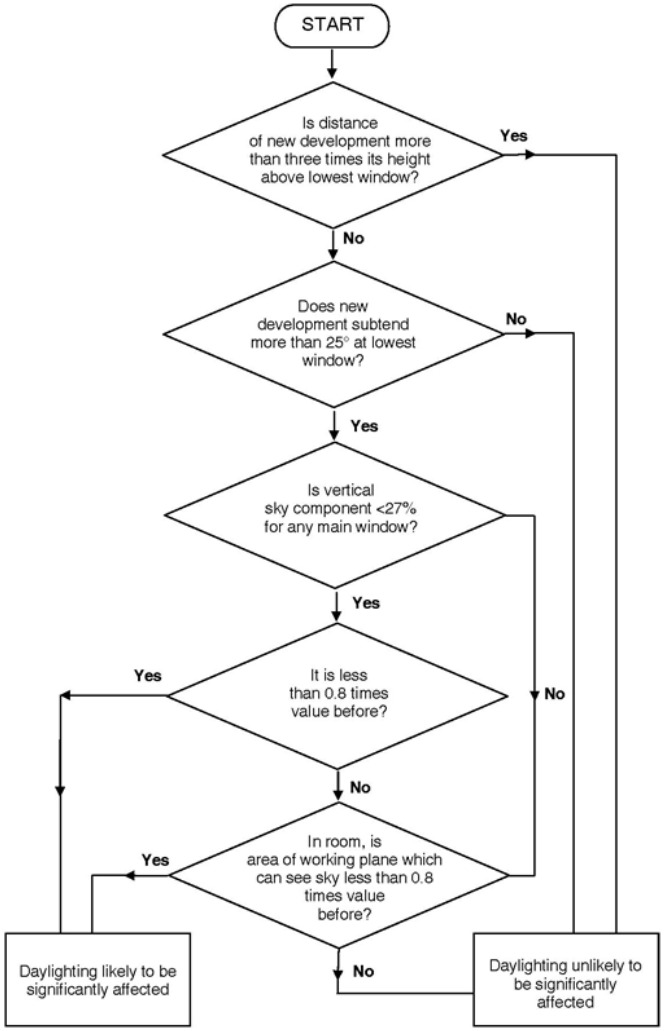
# 3 Assessment Techniques

## 3.1 Background

Natural light refers to both daylight and sunlight. However, a distinction between these two concepts is required for the purpose of analysis and quantification of natural light in buildings. In this assessment, the term '*Daylight*' is used for natural light where the source is the sky in overcast conditions, whilst '*Sunlight*' refers specifically to the light coming directly from the sun.

The primary objective of this assessment is to quantify the impacts of the proposed development on the adjacent building[s] and therefore the methods employed by this study are focussed on this objective. These methodologies are described in the following sections of this report and follow the hierarchical approach set out by the BRE Guidelines. The 'decision chart' outlining this process (Figure 20 of the Guidelines) has been reproduced for clarity.

The BRE guidelines are primarily intended for use for residential rooms in adjoining dwellings. However, they may also be applied to any existing non-domestic buildings where the occupants have a reasonable expectation of daylight, which could include schools, hospitals, hotels and offices in specific circumstances. For dwellings, it states that living rooms, dining rooms and kitchens should be assessed. Bedrooms should also be checked, although it states that they are less important. Other rooms, such as bathrooms, toilets, storerooms, circulation areas and garages need not be assessed.



## 3.2 Vertical Sky Component (VSC)

The Vertical Sky Component (VSC) calculation is the ratio of the direct sky illuminance falling on the outside of a window, to the simultaneous horizontal illuminance under an unobstructed sky. The standard CIE (Commission Internationale d'Éclairage) Overcast Sky is used and the ratio is expressed as a percentage. For example, a window that has an unobstructed view over open fields would benefit from the maximum VSC, which would be close to 40%. For a window to be considered as having a reasonable amount of skylight reaching it, the BRE Guidelines suggests that a minimum VSC value of 27% should be achieved. When assessing the impact of a new development on an existing building the BRE Guidelines sets out the following specific requirement:

*If the VSC with the new development in place is both less than 27% and less than 0.8 times its former value, then the reduction in light to the window is likely to be noticeable.*

This means that a reduction in the VSC value of up to 20% its former value would be acceptable and thus the impact would be considered negligible. It is important to note that the VSC is a simple geometrical calculation, which provides an early indication of the potential for daylight entering the space. It does not, however, assess or quantify the actual daylight levels inside the rooms.

## 3.3 No Sky Line

The No Sky Line, or sometimes referred to as No Sky View method, describes the distribution of daylight within rooms by calculating the area of the 'working plane', which can receive a direct view of the sky. The working plane height is generally set at 850mm above floor level within a residential property and 700mm within a commercial property. When assessing the potential impacts on the daylight available to the neighbouring properties, the BRE Guidelines state that if the area within a room receiving direct skylight is reduced by less than 0.8 following the construction of a new development, the impact will be noticeable to the occupants. This is also true if the No Sky Line encroaches onto key areas like kitchen sinks and worktops.

The BRE Guidelines state that the main rooms should be tested, this would include living rooms, dining rooms and kitchens. While bedrooms should be included in the analysis, these are acknowledged as less important. If daylight is expected in non-domestic buildings, each of these room should be included in analysis.

## 3.4 Annual Probable Sunlight Hours

It is also possible to quantify the amount of sunlight available to a new development and the recognised methodology for undertaking this analysis is the Annual Probable Sunlight Hours (APSH) method.

To pass this test the centre point of the window will need to receive more than one quarter (25%) of the APSH, including at least 5% APSH in the winter months between 21st September and the 21st March. The BRE Guidelines state that if 'post-development' the available sunlight hours are both less than the amount above and less than 0.8 times their 'pre-development' value, either over the whole year or just within the winter months, then the occupants of the existing building will notice the loss of sunlight. In addition, if the overall annual loss is greater than 4% of APSH, the room may appear colder and less pleasant.

For new development and especially where existing buildings are being re-developed, it is important to acknowledge that these are aspirational targets intended to aid and not constrain the designer.

These aspirational targets were derived to improve the amenity of single dwellings that typically comprise a living room, kitchen and bedrooms; the objective being to maximise sunlight in the main living areas. However, for buildings that contain multiple apartments, it is rarely possible to configure the internal layout such that all rooms receive direct sunlight as it is inevitable that some windows will be situated on an elevation that faces within 90 degrees of due north.

It is therefore important to understand that when assessing the provision of sunlight to a building containing multiple dwellings, the BRE Guidelines seek only to maximise the amount of sunlight received. They do not set absolute targets.

## 3.5 Overshadowing

The BRE Guidance suggests that where new development may affect one or more amenity areas, then analysis can be undertaken to quantify the loss of sunlight resulting from overshadowing. Typical examples of areas that could be considered as open spaces or amenity areas are main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out areas, such as in public squares and focal points for views, such as a group of monuments or fountains. Amenity areas in the form of balconies are not recommended to be assessed under the BRE Guidelines due to their small size and often significant obstruction.

***Sun Hours on Ground***

The BRE Guidelines recommend that for a garden or amenity area to appear adequately sunlit throughout the year, at least 50% of an amenity area should receive at least 2 hours of sunlight on 21st March. The BRE Guidelines also suggest that if, as a result of a new development, an existing garden or amenity area does not meet these guidelines, and the area which can receive some sun on the 21st March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable.

When undertaking this analysis, sunlight from an altitude of 10° or less has been ignored as this is likely to be obscured by planting and undulations in the surrounding topography. Driveways and hard standing for cars is also usually left out of the area used for this calculation. Fences or walls less than 1.5 metres high are also ignored. Front gardens which are relatively small and visible from public footpaths are omitted with only main back gardens needing to be analysed.

The Guidelines also state that "normally, trees and shrubs need not be included, partly because their shapes are almost impossible to predict, and partly because the dappled shade of a tree is more pleasant than a deep shadow of a building". This is especially the case for deciduous trees, which provide welcome shade in the summer whilst allowing sunlight to penetrate during the winter months.

***Transient Overshadowing***

The BRE Guidelines suggest that where large buildings are proposed, which may affect a number of open spaces or amenity areas, it is useful and illustrative to plot a shadow plan to show the location of shadows at different times of the day and at key times during the year. Typically, the 21st March, the 21st June, and 21st December are used to represent the annual variance of sun position, noting

that the position of the sun in the sky during the spring equinox (21st March) is equivalent to that of the autumn equinox.

The BRE Guidelines provide no criteria for the significance of transitory overshadowing other than to suggest that by establishing the different times of day and year when shadow would be cast over surrounding areas, provides an indication as to the significance of the likely effect of a new development. The assessment of transient overshadowing effects is therefore based upon expert judgment, taking into consideration the likely effects of the various baseline conditions and comparing them with the likely significant transient overshadowing effects of the redevelopment proposals.

## 3.6 Internal Assessment Analysis

The BRE recommended assessment techniques to assess the internal daylight and sunlight availability are discussed in Section 8.

# 4 Assessment Methodology

## 4.1 Method of Baseline Data Collation

The following data and information has been used to inform this study:

- OS Mastermap mapping
- Measured survey data (Target Surveys – April 2022)
- Scheme drawings in AutoCAD format (Ko Architects – October 2022)
- Photographic information provided 21st October 2022
- 3D Building model of proposed development in Sketch Up format (provided by Ko Architect October 2022)
- Aerial photography (Google Maps and Bing)

## 4.2 Identification of Key Sensitive Receptors

The BRE Guidelines are intended for use for rooms and adjoining dwellings where daylight is required, including living rooms, kitchens and bedrooms. Windows to bathrooms, toilets, storerooms circulation areas and garages are not deemed as requiring daylight and therefore are not identified as sensitive receptors. The BRE document also states that the guidelines may also be applied to any non-domestic building where the occupants have a reasonable expectation of daylight. This would normally include schools, hospitals, hotels, hostels, small workshops and some offices.

The first step in this process is to determine the key sensitive receptors, i.e. which windows may be affected by the proposed development. Key receptors are those windows that face, or are located broadly perpendicular to the proposed development.

If a window falls into this category, the second step is to measure the obstruction angle. This is the angle at the level of the centre of the lowest window between the horizontal plane and the line joining the highest point of nearest obstruction formed from any part of the proposed development. If this angle is less than 25° then it is unlikely to have a substantial effect on the diffuse daylight enjoyed by the existing window and the window is not deemed to be a sensitive receptor. A graphical representation of the 25° rule is illustrated in Figure 4.1 below.

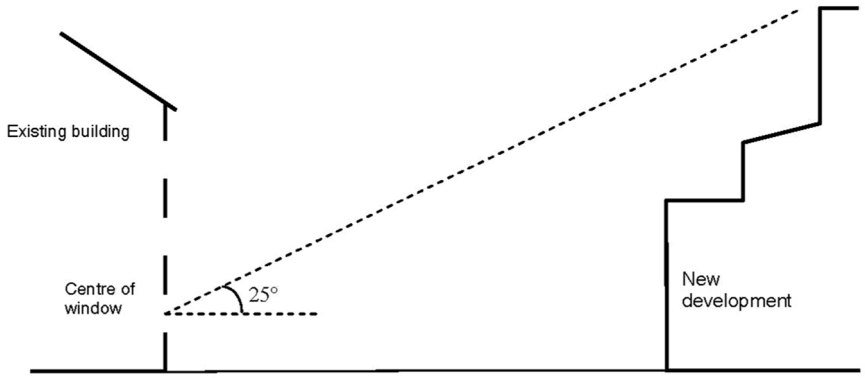



*Figure 4.1 – Graphical representation of the 25° Rule (indicative buildings used for illustration purposes only)*

As part of this assessment a digital three-dimensional model of the study area has been created for both the 'pre' and 'post' development scenarios. Images of these models are shown by the drawings appended to this report.

Using the 3D model, it is possible to identify all windows having an obstruction angle no greater than 25°. Impacts to these windows are therefore deemed to be negligible in line with the criteria set out within the BRE Guidelines.

There are, however, circumstances where the 25°*degree* rule is not wholly appropriate, for example where the development facing the window does not create a uniform obstruction along the skyline, or where the proposals are not directly adjacent to the receptor window. In these situations, professional judgement is used to differentiate between windows that require more detailed analysis and those that will clearly not be impacted. Where any level of uncertainty exists, the window is taken forward for detailed analysis.

Windows serving non-habitable spaces are not included within the assessment as these are not identified by planning policy or by the BRE Guidelines to be sensitive to changes in daylight and sunlight. Therefore, as part of the identification of sensitive receptor process, the use of each room is, where possible, established and windows serving non-habitable spaces such as toilets, store rooms, stairwells and circulation spaces are identified. Typically kitchens that have a floor area less then 13m$^2$ are not considered to be habitable spaces in their own right.

Windows serving rooms within commercial premises are assumed to be non-habitable and in accordance with the BRE Guidelines are not identified as sensitive receptors. However, there are special cases where it can be assumed that some non-domestic uses could be deemed to have a reasonable expectation of daylight and therefore could be taken forward for more detailed analysis. Typically, these could be school classrooms, hospital wards, art studios etc, but professional judgement is generally relied upon to determine this and where considered appropriate, windows serving commercial premises are included.

Drawings showing the location of all sensitive receptors that have been assessed as part of this study are included in Appendix A.2 of this report.

In summary, habitable rooms in the following residential building have been identified as potential sensitive receptors and have therefore been tested.

- 18 Howitt Road

## 4.3 Numerical Modelling

The numerical analysis used in this assessment has been undertaken using the Waldrum Tools (Version 6.0.0.8) software package.

## 4.4 Calculation Assumptions

The following assumptions have been made when undertaking the analysis:

- When assessing the VSC the calculation is based on the centre point of the window position.
- When assessing the daylighting for internal rooms and in the absence of specific information, the following parameters are assumed:
  - For new buildings, the glazing type is assumed to be double glazing (Pilkington K Glass 4/16/4 Argon filled) with a light transmittance value

of 0.78 (value for double glazed unit not per pane). For existing buildings, a value of 0.68 has been assumed.

- Correction factor for frames and glazing bars = 0.8
- Where information from the designer is not available, the following values are used to derive the Maintenance Factor applied to the transmittance values.

| Type of window | Maintenance Factor | |
|---|---|---|
| | Rural/ suburban | Urban |
| Vertical, no overhang | 0.96 | 0.92 |
| Vertical, sheltered from rain by balcony/overhang | 0.88 | 0.76 |
| Sloping rooflight | 0.92 | 0.84 |
| Horizontal rooflight | 0.88 | 0.76 |

*Table 4.1 – Parameters used for deriving Maintenance Factor*

- Where information on internal room layouts of adjacent properties is not known, best estimates as to room layout and size have been made in order to undertake No Skyline analysis.

- Where the internal arrangements and room uses have been estimated, it should be noted that this has no bearing upon the tests for VSC or APSH because the reference point is at the centre of the window being tested and windows have been accurately drawn from the survey information where possible. It is relevant to the daylight distribution assessment, but in the absence of suitable plans, estimation is a conventional approach.

- In areas where survey data has not been provided or needs to be supplemented with additional information, photographs, OS mapping and brick counts have been used in the process of building the 3D model of the surrounding and existing buildings.

- When analysing the effect of the new building on the existing buildings, the shading effect of the existing trees has been ignored. This is the recommended practice where deciduous trees that do not form a dense belt or tree line are present (BRE Guidelines – Appendix H). This is because daylight is at its scarcest and most valuable in the winter when most trees will not be in leaf.

- In situations where windows are deeply set-back beneath balconies or other overhanging features, it is common for these rooms to have low VSC values as a result of the obstruction caused by the balcony. It widely accepted and acknowledged within the BRE Guidelines that the presence of balconies can mask the impact of a proposed development when using the VSC test and therefore the Guidelines suggest that the window should be tested both 'with' and 'without' the balcony in place. If the ratio of change with the development in place, but with the balconies removed, remains above 0.8, then it can be concluded that it is the presence of the balcony rather than the introduction of a new building that is the main factor in the relative loss of light.

- The reflectance values used in the numerical analysis are shown in table 4.2 below and are used unless specified otherwise by the designer:

| Surface | Material/Finish | Value |
|---|---|---|
| Internal walls | Cream Walls | 0.5 |
| Internal ceiling | White plaster finish | 0.7 |
| Internal flooring | Tiles/Carpet | 0.2 |
| Exterior walls and obstructions | *Standard value applied* | 0.2 |
| Exterior ground | *Standard value applied* | 0.2 |

*Table 4.2 – Reflectance values*

- The calculation of illuminance or daylight factor is carried out on a grid of points on a reference plane within each room assessed. The plane is set 0.85m from the floor level. This assessment grid excludes a band of 0.3m from the walls, unless otherwise specified.

- BS EN 17037 gives an equation for maximum grid spacing. However, in line with the recommendation of the BRE Guidelines for domestic rooms a maximum grid spacing of 0.3m is adopted.

## 4.5 Assessment criteria

The numerical assessment criteria specified within the BRE Guidelines is designed to identify the threshold at which point a change in daylight or sunlight would become 'noticeable' to the occupants. Consequently, where the results of the daylight/sunlight analysis demonstrate compliance with the BRE criteria it can be concluded that the impact will be negligible. However, a point that should be stressed here is that 'noticeable' does not necessarily equate to 'unacceptable' and the BRE's standard target values should not always be considered as pass/fail criteria. Whilst the BRE Guidelines provide numerical guidance for daylight, sunlight and overshadowing, these criteria should not be seen as absolute targets since, as the document states, the intention of the guide is to help rather than constrain the designer. The Guide is not an instrument of planning policy, therefore whilst the methods given are technically robust, it is acknowledged that some level of flexibility should be applied where appropriate.

Consequently, based on the numerical assessment criteria set out with the BRE Guidelines and the use of professional judgment, the following assessment criteria have been established and are used in describing the impacts of the proposed development.

| Significance | Description | Change Ratio |
|---|---|---|
| Negligible | No alteration or a small alteration from the existing scenario. Results demonstrate full compliance with the BRE assessment criteria and therefore occupants are unlikely to notice any change. | 1.0 to 0.8 |
| Minor adverse | An alteration from the existing scenario which may be marginally noticeable to the occupant. This may include a marginal infringement of the numerical levels suggested in the BRE Guidelines, which should be viewed in context. A typical change ratio for this level of significance would be 0.7 | 0.7 to 0.8 |
| Moderate adverse | An alteration from the existing scenario which may cause a moderate noticeable change to the occupant. This may consist of a moderate infringement of the numerical BRE assessment criteria. | 0.6 to 0.7 |
| Major adverse | An alteration from the existing scenario which may cause a major noticeable change to the occupant. This may consist of a significant infringement of the numerical BRE assessment criteria. | Less than 0.6 |

*Table 4.3 – Daylight & Sunlight Impact Descriptors*

# 5 Discussion of Daylighting Impacts

Based on the results of the numerical analysis summarised in Appendix A.3, it is possible to draw conclusions on the impacts that the proposed development will have on the neighbouring buildings. These are based on the principle numerical tests that are discussed below.

## 5.1 Vertical Sky Component Assessment

The BRE Guidelines operate on the general principle that where the retained VSC is 27% or greater, or where the retained VSC has not reduced to less than 0.8 times its former value, then the reduction in daylight is unlikely to be noticeable to the building's occupants and thus the impact can be deemed negligible. The results of the VSC analysis are summarised below.

| Property | No. Windows Tested | Windows meeting BRE Guidelines | | VSC Windows Transgressions | | |
|---|---|---|---|---|---|---|
| | | No. | % | Minor adverse | Moderate adverse | Major adverse |
| 18 Howitt Road | 6 | 5 | 83% | 0 | 1 | 0 |
| **Total** | **6** | **5** | **83%** | **0** | **1** | **0** |

*Table 5.1 – Results of Vertical Sky Component (VSC) Analysis*

Inspection of the results of this test show that the majority of windows either retain a VSC value greater than 27% post development, or have a ratio of change that is 0.8 or above and therefore are fully compliant. Consequently, in line with the assessment criteria set out within the BRE Guidelines it is possible to conclude that the impact will be **negligible**.

There is however, one window at No 18 Howitt Road which is showing a transgressional result. Whilst a reduction in VSC of this magnitude does indicate a potentially noticeable change, the BRE Guidelines are quite clear in stating that this does not necessarily mean that the degree of change is unacceptable.

In this case, the affected window on the ground floor serves a kitchen dining room which is served by additional windows that do not experience a transgressional result. Consequently, the results of the VSC analysis in isolation are not necessarily indicative of the impact of the daylighting levels within the room itself. One of the ways in which the BRE Guidelines recommends quantifying the potential impact in this situation is to take the weighted average VSC value for the room under both the existing and proposed scenarios and base the ratio of change on the averaged ratio of change value.

In this instance, when the weighted average of windows serving the kitchen dining room is calculated, the 'existing' scenario weighted VSC is 21.32% and the 'proposed' VSC weighted average is 19.01%. This results in a ratio of change of 0.89 which is well above the 0.8 BRE Guideline value. This therefore demonstrates that when the impact on the room itself is examined in detail, the reduction in daylight will be within the permitted tolerances set out within the guidelines.

## 5.2 No Sky Line Assessment

In order to pass the No Sky Line Assessment, the BRE Guidelines state that the area of the working plane within the room that has a view of the sky should not be reduced to less than 0.8 times its former value as a result of new development. One benefit of the daylight distribution test is that the resulting contour plans show where the light falls within a room, for both the existing and proposed conditions, and a judgement can be made as to whether the room will retain light to a reasonable depth.

In Appendix D of the BRE guidance, it states in D3 that '*In most cases the position of the no sky line has to be found from plans. The calculation can only be carried out where room layouts are known. Using estimated room layouts is likely to give inaccurate results and is not recommended. However, where plans are available, for example on the local authorities online planning portal, the calculation should be carried out*'.

In this case, the dimensions and layouts of the habitable rooms of No. 18 Howitt Road have been reproduced from information obtained via the planning portal (Application numbers: 2019/4775/P) alongside photos provided by the architect.

The results of the No Sky Line/Daylight Distribution analysis are summarised below.

| Property | Number of Rooms Tested | Rooms that meet BRE Guidelines | | No Sky Line No. of Rooms Experiencing Transgressions | | |
|---|---|---|---|---|---|---|
| | | No. | % | Minor adverse | Moderate adverse | Major adverse |
| 18 Howitt Road | 2 | 2 | 100% | 0 | 0 | 0 |
| **Total** | **2** | **2** | **100%** | **0** | **0** | **0** |

*Table 5.2 – Results of No Sky Line (NSL) Analysis*

From the results summarised above, it can be seen that as a result of the proposed development, the impact on the daylight distribution within the assessed rooms will be negligible. The reduction in the area of the working plane that has a direct view of the sky will be less than 20% therefore occupants are unlikely to notice any change.

## 5.3 Summary of Daylighting Impacts

The proposed development at 20 Howitt Road, London, NW3 4LLhas been evaluated against the criteria set out by the BRE Guidelines for the assessment of the potential impacts on the daylight of the neighbouring properties. One property has been identified as a sensitive receptor for this study, 18 Howitt Road, and therefore, the habitable rooms and the windows serving the rooms within this property have been assessed.

When the magnitude of reduction is considered, it is evident that this will be within the acceptable limits set out within the BRE Guidelines. Consequently, it is possible to conclude that any changes to the daylight received by the habitable

rooms of the neighbouring buildings will not be significant and is unlikely to be noticeable by the occupants.

# 6 Sunlight and Overshadowing Analysis

## 6.1 Annual Probable Sunlight Hours Assessment

The Annual Probable Sunlight Hours (APSH) tests have been carried out using the numerical model described in Section 4.3. The assessment requirements for the APSH test, as set out in the BRE Guidelines, have been reiterated below. For the assessment to conclude that the sunlighting of the existing dwelling could be adversely affected, all three of the following tests need to have been failed:

**Test A** - Does the window receive less than 25% of the APSH, or less than 5% the APSH between 21st September and 21st March?

**Test B** - Does the assessed window receive less than 0.8 times its former sunlight hours during either the 'whole year' or 'winter' period?

**Test C** - Is the reduction in sunlight received over the whole of the year greater than 4% of the APSH?

However, these tests are only applicable to windows that face within 90 degrees of due south. Consequently, in line with the guidelines and assessment methodologies set out within the BRE document, the analysis of sunlight impacts has only been carried out for these windows. Windows facing within 90 degrees of due north are not analysed and impacts are deemed to be negligible.

It should also be noted that where rooms have windows on more than one elevation, it is acceptable to sum the non-coincident sunlight hours to achieve a 'room total'. This approach is acknowledged by the BRE Guidelines and facilitates a greater understanding of the sunlight received within a room by taking into account the fact that some windows will receive sunlight at different times during the day.

When examining the results of the three sunlight tests, it is first necessary to understand why there are three separate tests and more importantly, why it is not necessary to pass all three to demonstrate that there is no adverse impact. The BRE Guidelines clearly state that for the proposed development to be considered to have an adverse effect on the available sunlight to neighbouring windows, all three tests would need to have been failed.

This is because sunlight is not assessed in terms of its contribution to the overall lighting levels within the room. The value attributed to sunlight is its transient presence and the way in which it can make a room appear bright and cheerful. There are also therapeutic values associated with sunlight and therefore it can be seen that these are not quantitative metrics that can be assessed using a single pass/fail criteria test. It is also necessary to understand that the amount of sunlight received by a window is strongly influenced by the orientation of the window elevation and any surrounding obstructions.

As a consequence of these factors, the assessment methodology embodied within the three separate tests allows the change in sunlight to be assessed in terms of the magnitude of change, absolute change and the retained level of sunlight. To conclude that a new development has no adverse impact, all that is required is for one of the three tests to be passed. The APSH test has been carried out and the detailed results of the analysis are included in Appendix A.3 and a summary of the results are shown in Table 6.1 below.

| Property | Number of Rooms Tested | Annual | | | Winter | | |
|---|---|---|---|---|---|---|---|
| | | Rooms that meet BRE Guidelines | | No. of Rooms Experiencing Adverse Impacts | Rooms that meet BRE Guidelines | | No. of Rooms Experiencing Adverse Impacts |
| | | No. | % | | No. | % | |
| 18 Howitt Road | 1 | 1 | 100% | 0 | 1 | 100% | 0 |
| **Total** | **1** | **1** | **100%** | **0** | **1** | **100%** | **0** |

*Table 6.1 – Results of APSH Analysis*

When the results of the APSH analysis summarised in Table 6.1 and Appendix A.3 are inspected, it can be seen that all windows and rooms pass at least one of the three sunlight tests. Consequently, it has been demonstrated that the proposed scheme will have a negligible impact on neighbouring buildings.

## 6.2 Sun on the Ground

The BRE Guidelines acknowledge that good site layout planning for daylight and sunlight should not limit itself to providing good natural light inside buildings. Sunlight in the space between buildings has an important effect on the overall appearance and ambiance of a development.

The 2022 BRE Guidelines suggest that the Spring Equinox (21st March) is a suitable date for the assessment and therefore using the specialist software described in Section 4.3, the path of the sun is tracked to determine where the sun would reach the ground and where it would not.

The BRE guidelines recommend that at least half of a garden or amenity area should receive at least 2 hours of sunlight on March 21st or the area which receives 2 hours of direct sunlight should not be reduced to less than 0.8 times its former value (i.e. there should be no more than a 20% reduction).

Typical examples of areas that could be considered as open spaces or amenity areas are main back gardens of houses, allotments, parks and playing fields, children's playgrounds, outdoor swimming pools, sitting-out areas, such as in public squares and focal points for views.

The gardens of the following properties have been identified as sensitive amenity areas and the results of the sun on the ground analysis are summarised in Table 6.2.

- Rear gardens to No. 18 Howitt Road
- Rear gardens to No. 22 Howitt Road

The graphical results of the overshadowing analysis are included in Appendix A.2.

| Amenity area | Percentage of area lit for 2 hours or more on the 21st March | | Ratio of change | Compliant with BRE criteria? |
|---|---|---|---|---|
| | Existing | Proposed | | |
| Rear gardens to No. 18 Howitt Road | 31% | 30% | 0.95 | Yes |
| Rear gardens to No. 22 Howitt Road | 51% | 51% | n/a | Yes |

*Table 6.2 – Results of the Sun on Ground analysis*

From the above results, it can be seen that with the proposed scheme in place, the area of amenities that benefits from two hours or more of direct sunlight on the 31st March will not be reduced by more than 20% which is the acceptable reduction limit prescribed by the BRE Guidelines.

Consequently, it can be concluded that the proposed development will not result in a noticeable increase in overshadowing to the neighbouring gardens.

## 6.3 Transient Overshadowing

Where amenity areas are used at specific times of day or year, it is useful and illustrative to comment on the overshadowing that will occur throughout the day and at different times of the year. However, with traditional rear gardens and public open spaces that are potentially used all year round, it is acknowledged by the BRE Guidelines that the 21st March equinox is used, as this represents a much worst case than an assessment during the summer when shadows are shorter and impacts of new development are less magnified.

It is also worth highlighting that whilst the BRE Guidelines do not provide any thresholds or assessment criteria for overshadowing analysis carried out at any date other than the 21st March. All that is quoted in the Guidelines is an acknowledgement that some degree of transient overshadowing should be expected from new development. Consequently, unless there is a specific reason to assess overshadowing at a specific time of day, the use of transient shadow plots is not recommended by the BRE Guidelines.

In this situation, it is not considered that any of the amenity areas that are potentially affected by the proposed development would be described as being sensitive to overshadowing at any particular time of day. Consequently, transient overshadowing is not considered appropriate for this assessment.

## 6.4 Solar Glare

Solar glare or dazzle can affect neighbouring buildings and pose potential hazards for road users under certain circumstances. The BRE Guidelines highlight two particular cases where this can be a problem; these being where there are large areas of reflective glass or cladding on the façade, or where large areas of glass or cladding slope back such that high-altitude sunlight can be reflected along the ground.

When the proposed design is considered, it can be seen that the building does not slope back, nor does it include large areas of reflective glass or cladding. Given the building design and the BRE Guideline's stance on this matter, it is not considered necessary or appropriate to incorporate an analysis of solar glare.

# 7 Daylight and Sunlight Provision to Proposed Development

The updated third edition of the BRE Guidelines no longer supports the use of the Average Daylight Factor (ADF) method of calculating illuminance within a room and now recommends two methodologies. These are based on the assessment methods included within the BS EN 17037:2018, but with the adaptions as set out in the UK National Annex. The two methods are described as follows.

## 7.1 Illuminance Method

The Illuminance method involves using climatic data based on the location of the site to calculate the illuminance of the specified reference plane resulting from natural daylight entering the room via windows and other glazed apertures. The analysis is carried out across an assessment grid on the reference plane for at least hourly intervals for a typical year. The objective of this test is to achieve a target illuminance ($E_T$), which varies depending on room use, across at least half of the reference plane. This level of illuminance needs to be achieved for at least half of the daylight hours.

For UK dwellings, there are specific recommendations for daylight provision, and these are set out in the UK National Annex. These minimum recommendations for habitable rooms acknowledge the specific challenges faced in the UK and these are used throughout this appraisal. The minimum illuminance recommendations are:

- 100 lux for bedrooms;
- 150 lux in living rooms; and
- 200 lux in kitchens.

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. The National Annex also states that the recommended levels over 95% of a reference plane need not apply to dwellings in the UK.

## 7.2 Daylight Factor Method

In the same way as for the illuminance method, this method calculates the Daylight Factor (DF) at each calculation point on an assessment grid within each room. DF is the illuminance at a point on the reference plane in a space, divided by the illuminance on an unobstructed horizontal surface outdoors. The CIE standard overcast sky is used, and the ratio is expressed as a percentage.

Given that the numerical modelling process uses an overcast sky model, the orientation of the windows serving the room has no bearing on the daylight availability. However, in order to account for different climatic conditions at different locations around the UK National Annex provides daylight factor targets ($D_T$) corresponding to the target illuminances for locations of differing latitude. These are shown in Table 9.1 and for each assessment, the targets associated with the location with the closest latitude are adopted.

| Location | $D_T$ for 100 lx (Bedroom) | $D_T$ for 150 lx (Living room) | $D_T$ for 200 lx (Kitchen) |
|---|---|---|---|
| **St Peter (Jersey)** | 0.6% | 0.9% | 1.2% |
| **London (Gatwick Airport)** | 0.7% | 1.1% | 1.4% |
| **Birmingham** | 0.6% | 0.9% | 1.2% |
| **Hemsby (Norfolk)** | 0.6% | 0.9% | 1.3% |
| **Finningley (Yorkshire)** | 0.7% | 1.0% | 1.3% |
| **Aughton (Lancashire)** | 0.7% | 1.1% | 1.4% |
| **Belfast** | 0.7% | 1.0% | 1.4% |
| **Leuchars (Fife)** | 0.7% | 1.1% | 1.4% |
| **Oban** | 0.8% | 1.1% | 1.5% |
| **Aberdeen** | 0.7% | 1.1% | 1.4% |

*Table 7.1 – Median Target daylight factors ($D_T$)*

The recommendations are met if the median of the daylight factors calculated in a room meets or exceeds the specific target for room type and location.

## 7.3 Principles of Analysis

When considering the provision of daylight to the proposed development, there are two tests for daylight; Illuminance and Daylight Factor. Both of these tests have been applied to the habitable rooms within the development and the results are discussed in the following sections. The detailed numerical outputs are included in the appendix to this report.

When setting the target illuminance value ($E_T$), it is important to account for rooms that have a shared use, as it is necessary to apply the highest target. For example, in a bedroom/sitting room in student accommodation or studio apartment, the value for a living room should be used as the occupants would be spending the majority of the daylight hours using the space as a living room.

However, in the case of a living/dining/kitchen area, the BRE Guidelines fully acknowledge that in the majority of situations, the kitchen element of these open plan living areas is not treated as a habitable space. Therefore, it is acceptable to adopt the target for the dominant room use, i.e. a living room. It is, nevertheless, still necessary to include the kitchen space as part of the assessment area, albeit that the interpretation of the daylighting results reflects the non-habitable status of the kitchen area.

It is also conventional to assume that where the layout of the rooms and fenestration on lower floors is repeated on the floors above, then providing the daylighting provision on the lower floors meets the specific requirements, then it can be inferred that the rooms on the floors above will also meet the target criteria.

## 7.4 Results of the Illuminance Analysis

Using the analytical techniques and assumptions discussed, the illuminance within each habitable room has been calculated.

For each room, the percentage of the assessment area that meets or exceeds the target illuminance value ($E_T$) is presented in the detailed outputs included in the appendix of this report. To meet the assessment criteria, 50% or more of the assessment area will need to achieve illuminance that meets or exceeds $E_T$. The results are summarised in Table 7.2 below.

| Property | Room Reference | Room Use | % Area Meeting Required Lux | Meets BRE Criteria |
|---|---|---|---|---|
| 20 Howitt Road | R1 | Bedroom | 100% | Yes |
| | R2 | Living Room | 100% | Yes |

*Table 9.2 – Summary of Illuminance Analysis*

From the results in Table 7.2 it can be seen that all rooms within the proposed lower ground habitable rooms exceed target illuminance value ($E_T$).

## 7.5 Results of the Daylight Factor Analysis

Again, using the analytical techniques and assumptions described, the daylight factor analysis has been undertaken. Using the appropriate targets for the latitude of the subject site (refer to Table 7.1) the detailed outputs from the daylight factor analysis are included in the appendix to this report. Based on the principle that the recommendations set out within the BRE Guidelines are met if the median daylight factor over 50% of the reference plane is achieved, the results are summarised in Table 7.3 below.

| Property | Room Reference | Room Use | % Area Meeting Required DF | Meets BRE Criteria |
|---|---|---|---|---|
| 20 Howitt Road | R1 | Bedroom | 100% | Yes |
| | R2 | Living Room | 100% | Yes |

*Table 9.3 – Summary of Daylight Factor Analysis*

## 7.6 Summary of Daylight Provision

From the results above, it can be seen that the all habitable rooms meet the target values set out within the BRE Guidelines for the illuminance test. The UK National Annex to BS EN 17037 states that the provision of natural daylight will be adequate provided that at least one of the two daylight tests are passed and therefore given that the more complex and detailed test has shown full compliance, the provision of daylight to the proposed development is considered to be adequate.

## 7.7 Sunlight Exposure Analysis

The BRE Guidelines provide guidance in respect of sunlight quality for new developments stating: “in housing, the main requirement for sunlight is in living rooms, where it is valued at any time of the day, but especially in the afternoon. Sunlight is also required in conservatories. It is viewed as less important in bedrooms and in kitchens where people prefer it in the morning rather than the afternoon.”

When considering the provision and access to sunlight, the quantitative methods set out within BS EN 17037 are used and based on these, the BRE Guidelines recommend that a space, preferably a main living room should receive a minimum of 1.5 hours of direct sunlight under cloudless conditions on the 21st March (equinox).

The BS EN 17037 criterion applies to rooms of all orientations, although it is recognised that if a room faces significantly north of due east or west it is unlikely to be met.

It should be noted that where rooms have more than one window, it is acceptable to sum the non-coincident sunlight hours to achieve a ‘room total’. This approach is acknowledged by the BRE Guidelines and facilitates a greater understanding of the sunlight received within a room by taking into account the fact that some

windows will receive sunlight at different times during the day. The detailed outputs from the sunlight analysis are presented in Appendix A.3 of this report.

The results appended show that the living room on the lower ground level receives a high level of sunlight hours. Whilst the bedroom does not meet the recommended sunlight level for a habitable room the BRE Guidelines recommends that living rooms should be prioritised for sunlight and that bedrooms are considered less important.

The BRE Guidelines acknowledge that it is not always possible to orientate every window serving a habitable room within 90 degrees due south and it is inevitable that there will be some windows facing within 90 degrees of due north in order to make efficient use of a development site. When taking into consideration the provision of direct sunlight to the development as a whole, the overall level is considered to be adequate.

# 8 Conclusions

The detailed analysis undertaken as part of this assessment has examined the impact of the proposed development at 20 Howitt Road, London, NW3 4LL, on the amount of daylight enjoyed by the neighbouring buildings. One property has been identified as a sensitive receptor for this study, 18 Howitt Road, and therefore, the habitable rooms and the windows serving the rooms within this property has been tested.

In line with the assessment criteria prescribed by the BRE Guideline, it has been shown that the reduction in daylighting to the windows/rooms of the neighbouring building will be within the acceptable limits set out within the BRE Guidelines. Consequently, it is possible to conclude that any changes to the daylight received by the habitable rooms of the neighbouring buildings will not be significant and is unlikely to be noticeable by the occupants.

The assessment of the impact of the proposed development on the sunlight enjoyed by the neighbouring buildings has also shown that despite some reductions seen in the number of probable sunlight hours enjoyed by these windows, these are again within the limits prescribed by the BRE Guidelines as being acceptable. Furthermore, the assessment of the sunlight available to the neighbouring amenity areas indicates that all of the amenity areas will experience little change to the sunlight levels they currently enjoy.

In summary, the development proposals have been appraised in line with the guidelines set out in the BRE document. When assessed against the criteria for establishing whether the proposed development will have a significant impact, it has been possible to conclude that the development will not result in a notable reduction in the amount of either daylight or sunlight enjoyed by the neighbouring buildings.

In addition to the impact on its neighbours, the provision of natural daylight and sunlight to the habitable rooms within the lower ground of the proposed development itself has also been quantified. Using detailed numerical modelling applications, the Daylight Factor, Illuminance and Sunlight Exposure have been quantified for each room. In line with the assessment criteria prescribed by the BRE Guidelines, it has been shown that for all rooms, the provision of natural daylight will meet or exceed the minimum required threshold set out in the BRE Guidelines. Consequently, it can be concluded that these habitable spaces will be well lit and will have a reduced reliance on supplementary electric lighting.

It has also been possible to demonstrate that on the lower ground level, the main living area will receive at least 1.5hr of direct sunlight. As a consequence of the light and additional visual interest provided by this direct sunlight, the amenity value of these rooms will be enhanced.

# A Appendices

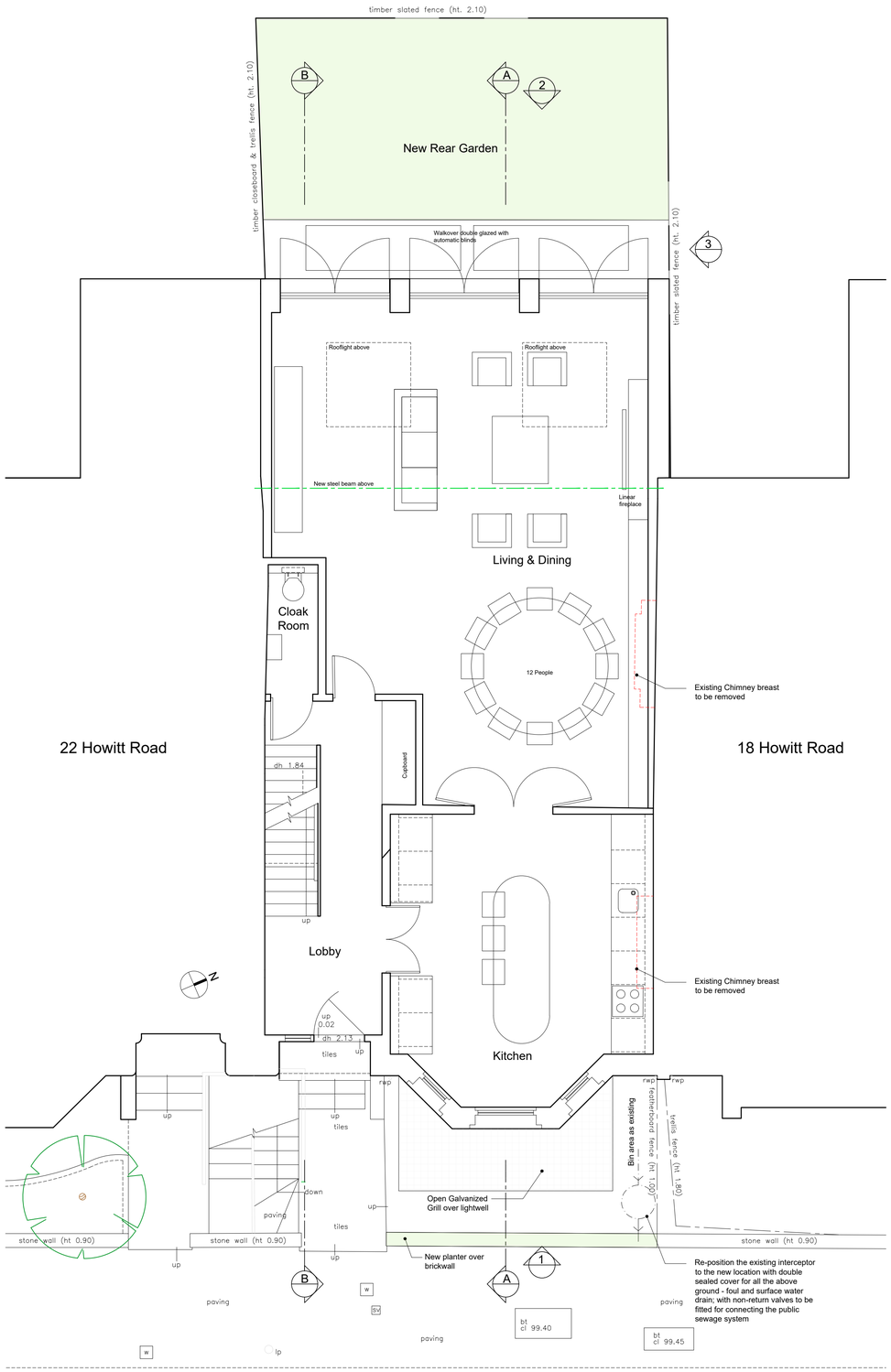
Appendix A.1 – Scheme Drawings

Appendix A.2 – Graphical Model Outputs

Appendix A.3 – Tabulated Results for Daylight & Sunlight Calculations (Impact on Neighbours)

Appendix A.4 – Tabulated Results for Daylight & Sunlight Calculations (Provision to New Development)

# Appendix A.1 – Scheme Drawings




1 Proposed Ground Floor Plan 0 1 3m


2 Proposed Front Elevation 1 0 1 3m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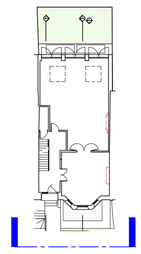

# Planning

Revisions

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**Ko** Architects
2/F, 7 Mulgrave Chambers
26-28 Mulgrave Road | Sutton SM2 6LE
T 020 8780 3397
E postbox@koandpartners.co.uk

| | |
|---|---|
| Client: | **J Faith** |
| Project: | **20 Howitt Road, London, NW3 4LL** |
| Dwg: | LOCATION PLAN, PROPOSED FRONT ELEVATION AND GROUND FLOOR PLANS |
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| Revision: | - |
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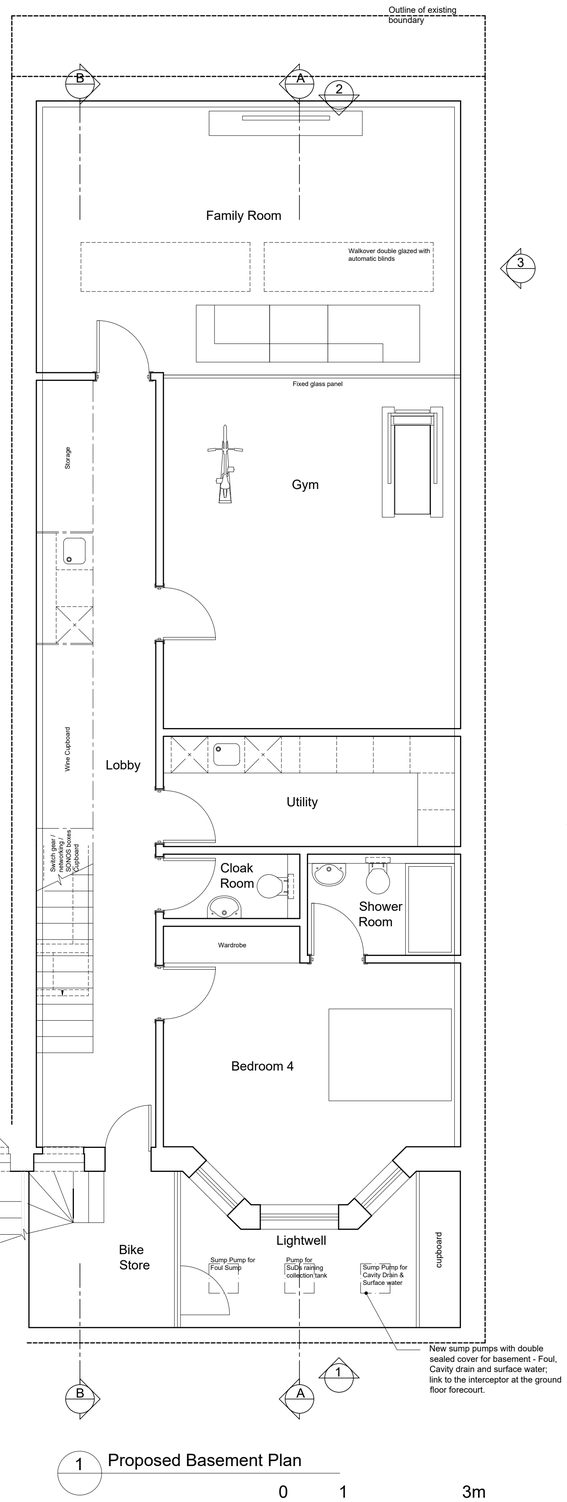


1 Proposed Basement Plan

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2 Proposed Rear Elevation 2

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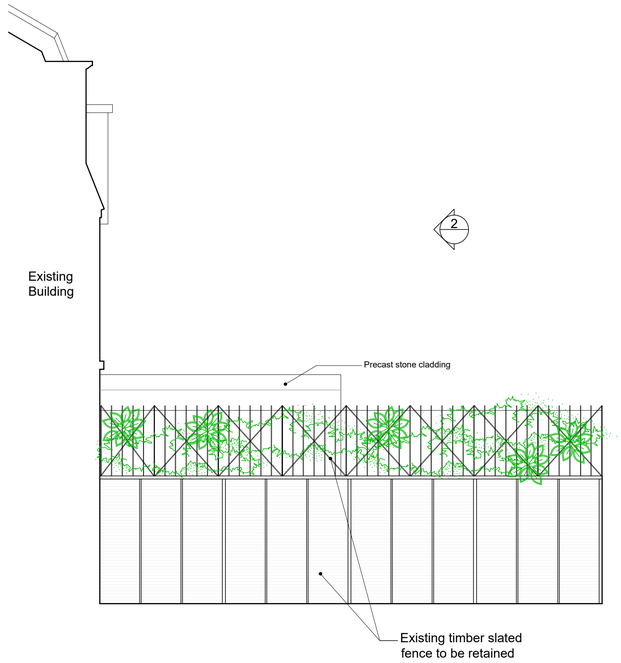


3 Proposed Side Elevation 3

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Artist Impression of Proposed Rear Extension


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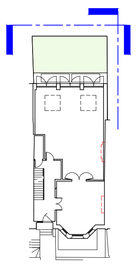

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**Ko** Architects
2/F, 7 Mulgrave Chambers
26-28 Mulgrave Road | Sutton SM2 6LE
T 020 8780 3397
E postbox@koandpartners.co.uk

| | |
|---|---|
| Client: | **J Faith** |
| Project: | **20 Howitt Road, London, NW3 4LL** |
| Dwg: | LOCATION PLAN, PROPOSED REAR & SIDE ELEVATIONS AND BASEMENT PLAN |
| Dwg No: | 522-A02 |
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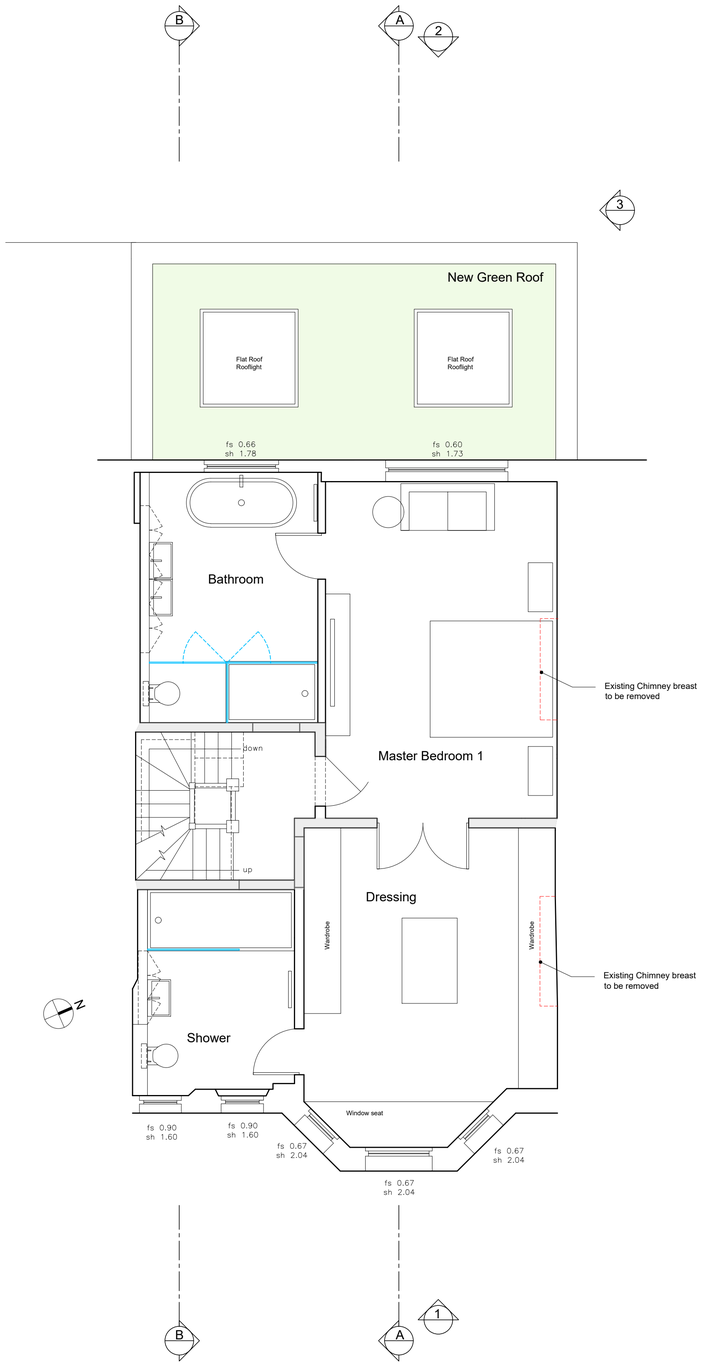


1 Proposed First Floor Plan

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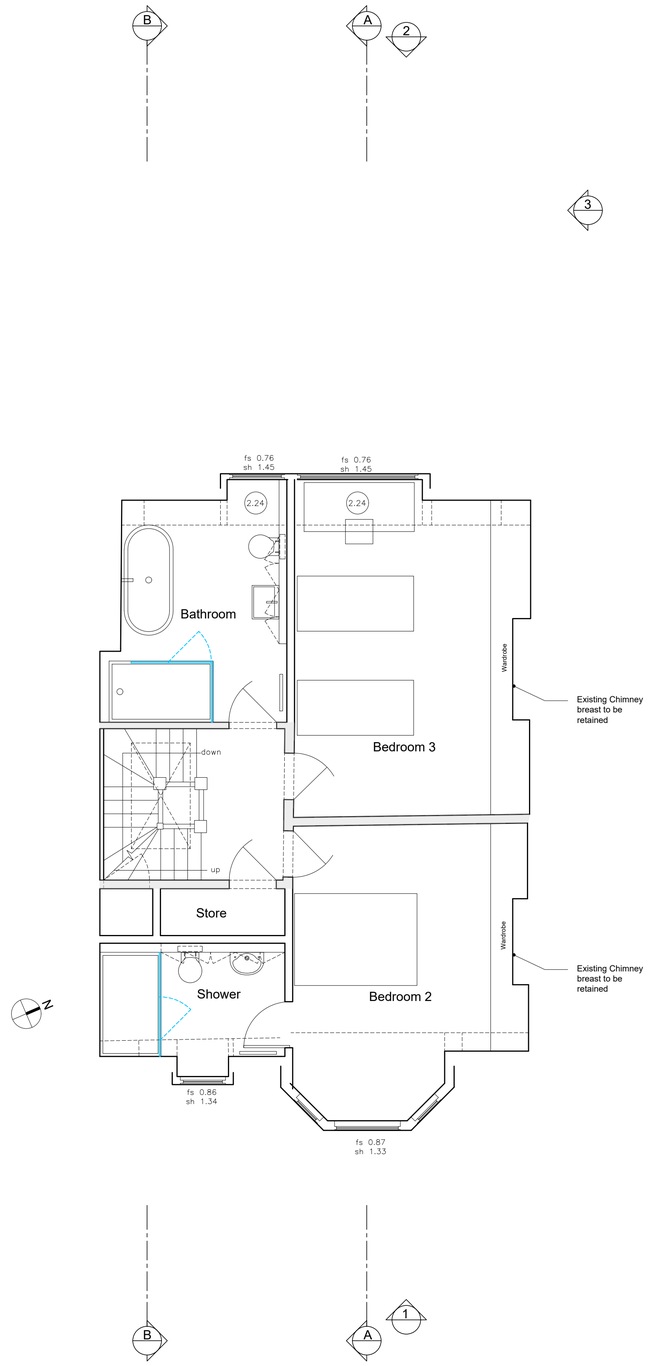


2 Proposed Second Floor Plan

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**Ko** Architects
2/F, 7 Mulgrave Chambers
26-28 Mulgrave Road | Sutton SM2 6LE
T 020 8780 3397
E postbox@koandpartners.co.uk

| | |
|---|---|
| Client: | **J Faith** |
| Project: | **20 Howitt Road, London, NW3 4LL** |
| Dwg: | LOCATION PLAN, PROPOSED FIRST AND SECOND FLOOR PLANS |
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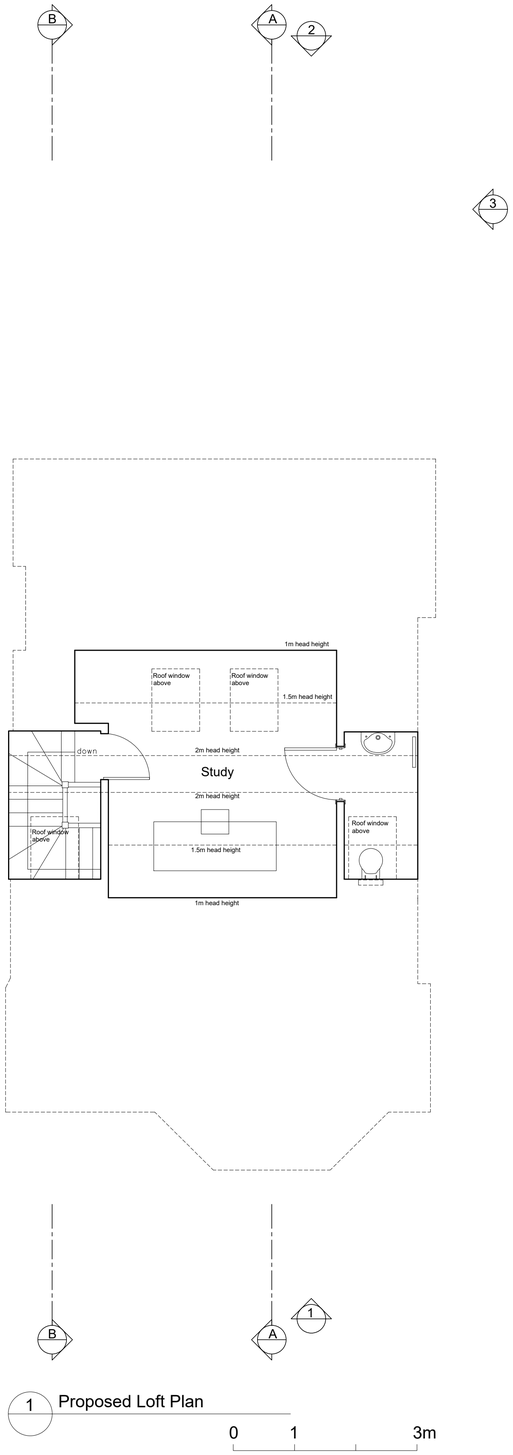


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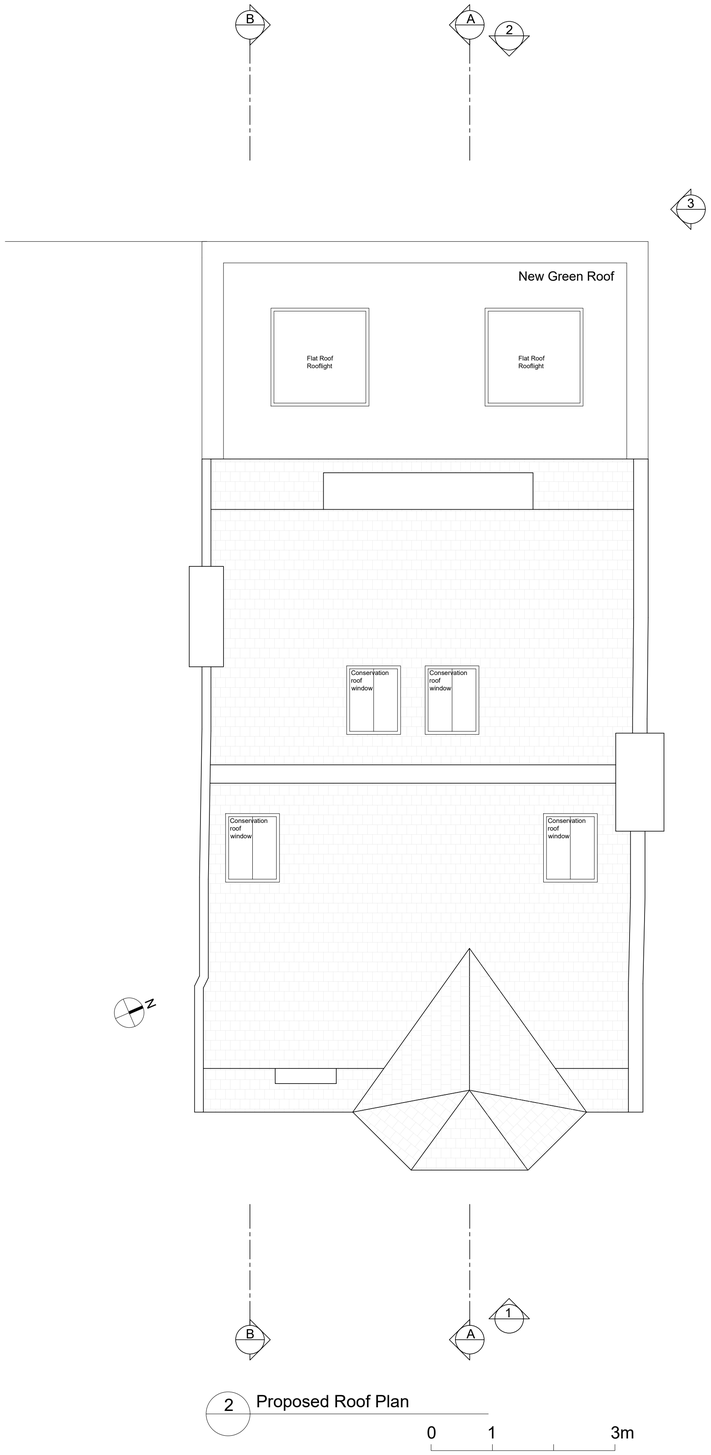


2 Proposed Roof Plan

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Location Plan Scale 1:1250

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**Ko** Architects
2/F, 7 Mulgrave Chambers
26-28 Mulgrave Road | Sutton SM2 6LE
T 020 8780 3397
E postbox@koandpartners.co.uk

| | |
|---|---|
| Client: | **J Faith** |
| Project: | **20 Howitt Road, London, NW3 4LL** |
| Dwg: | LOCATION PLAN, PROPOSED LOFT FLOOR AND ROOF PLANS |
| Dwg No: | 522-A04 |
| Revision: | - |
| Date: | FEB 2023 |
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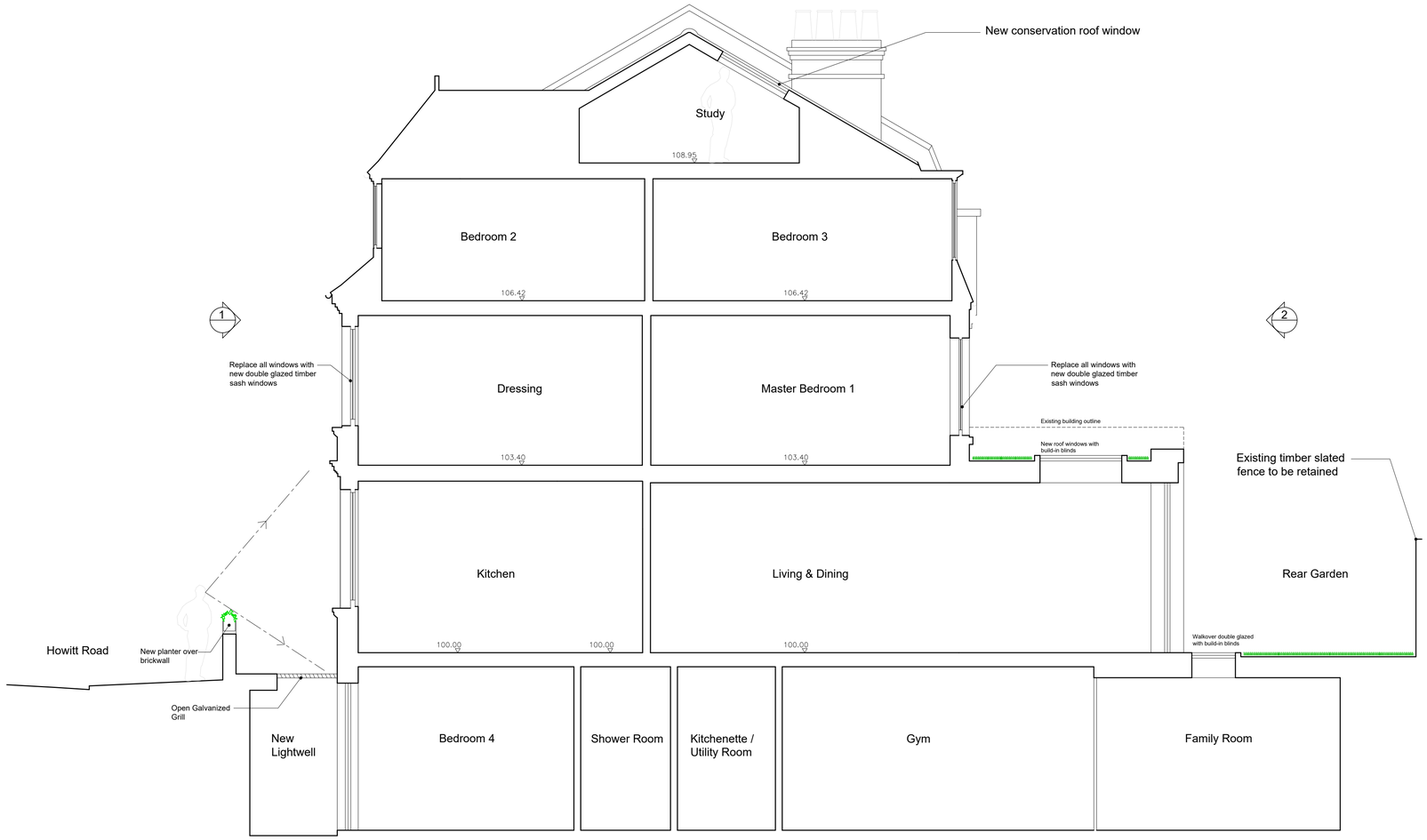


1 Proposed Section A

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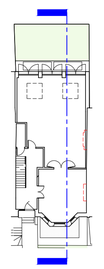

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**Ko** Architects
2/F, 7 Mulgrave Chambers
26-28 Mulgrave Road | Sutton SM2 6LE
T 020 8780 3397
E postbox@koandpartners.co.uk

Client: **J Faith**
Project: **20 Howitt Road, London, NW3 4LL**
Dwg: LOCATION PLAN, PROPOSED SECTION A

Dwg No: 522-A05 Revision: -
Date: FEB 2023
Scale: 1:50 @A1


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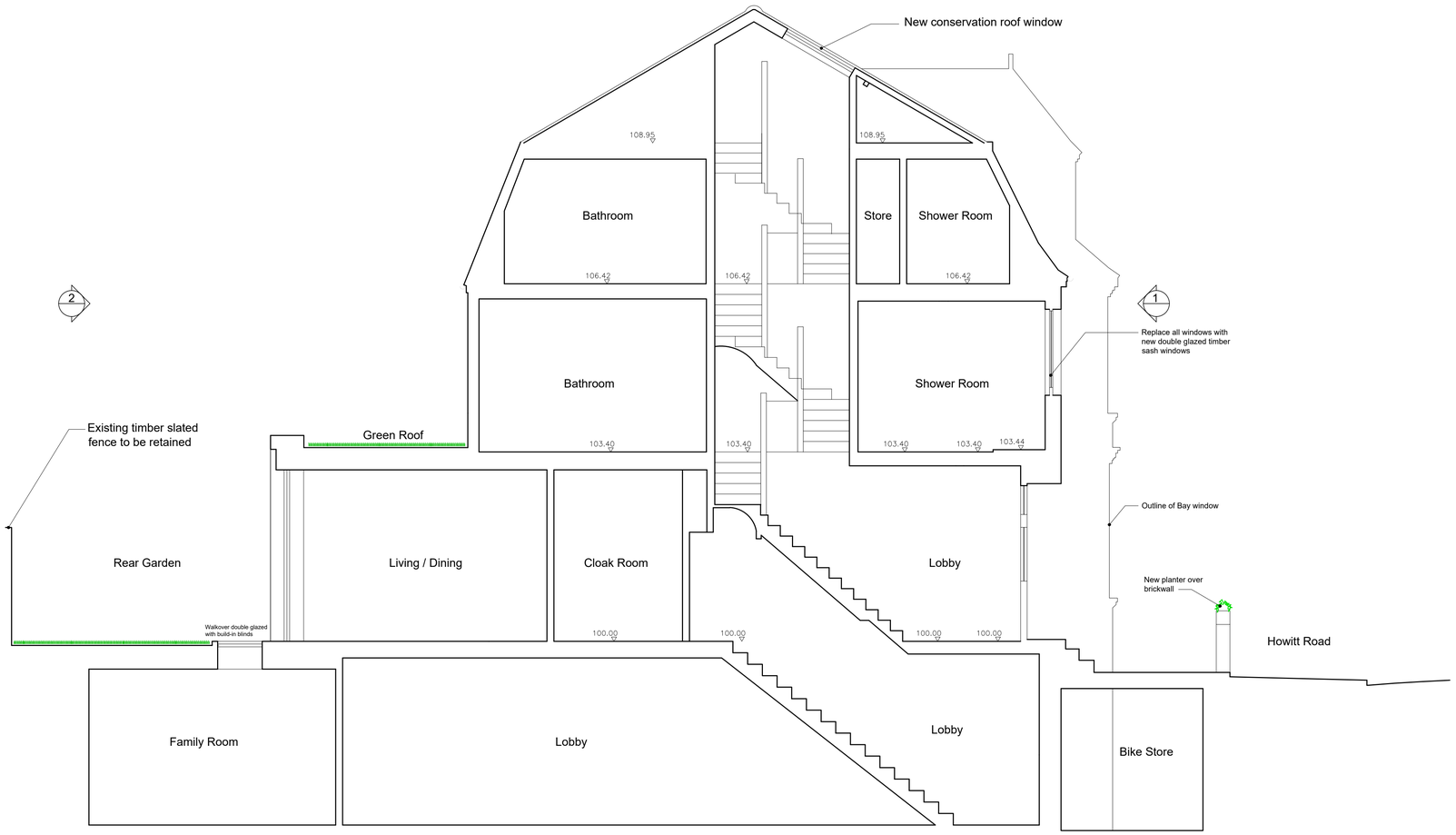


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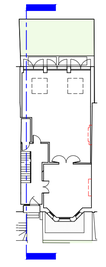

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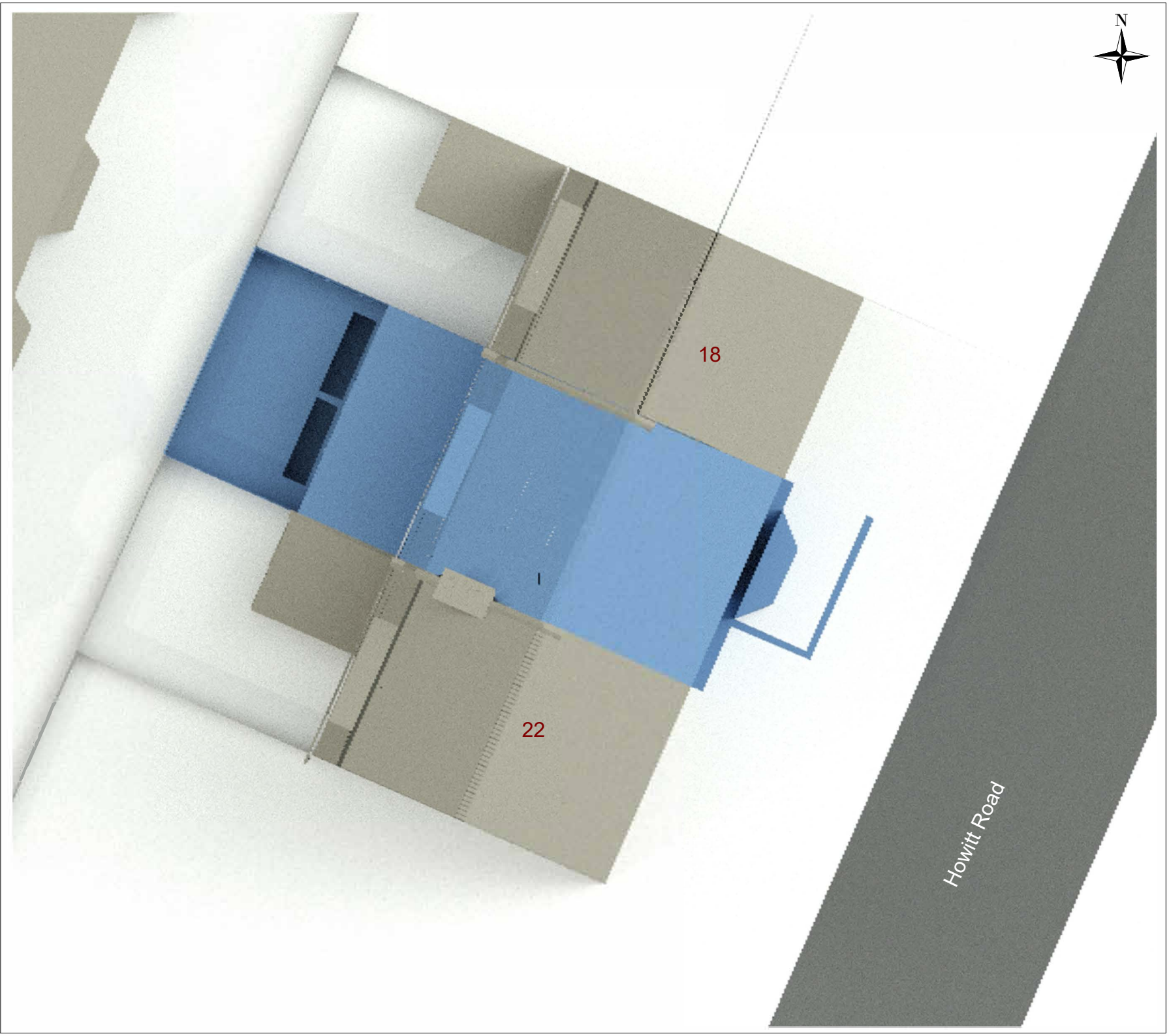
**Ko** Architects
2/F, 7 Mulgrave Chambers
26-28 Mulgrave Road | Sutton SM2 6LE
T 020 8780 3397
E postbox@koandpartners.co.uk

Client: **J Faith**
Project: **20 Howitt Road, London, NW3 4LL**
Dwg: LOCATION PLAN, PROPOSED SECTION B

Dwg No: 522-A06 Revision: -
Date: FEB 2023
Scale: 1:50 @A1

# Appendix A.2 – Graphical Model Outputs




herrington
CONSULTING LIMITED

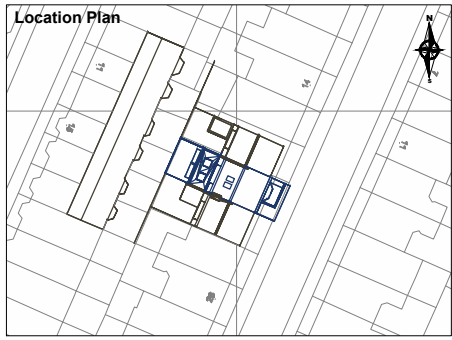
Unit 6 - Barham Business Park
Elham Valley Road
Canterbury
Kent CT4 6DQ

Tel : 01227 833855
enquiries@herringtonconsulting.co.uk
www.herringtonconsulting.co.uk

**Legend**

- Proposed Buildings
- Surrounding Buildings

**Location Plan**



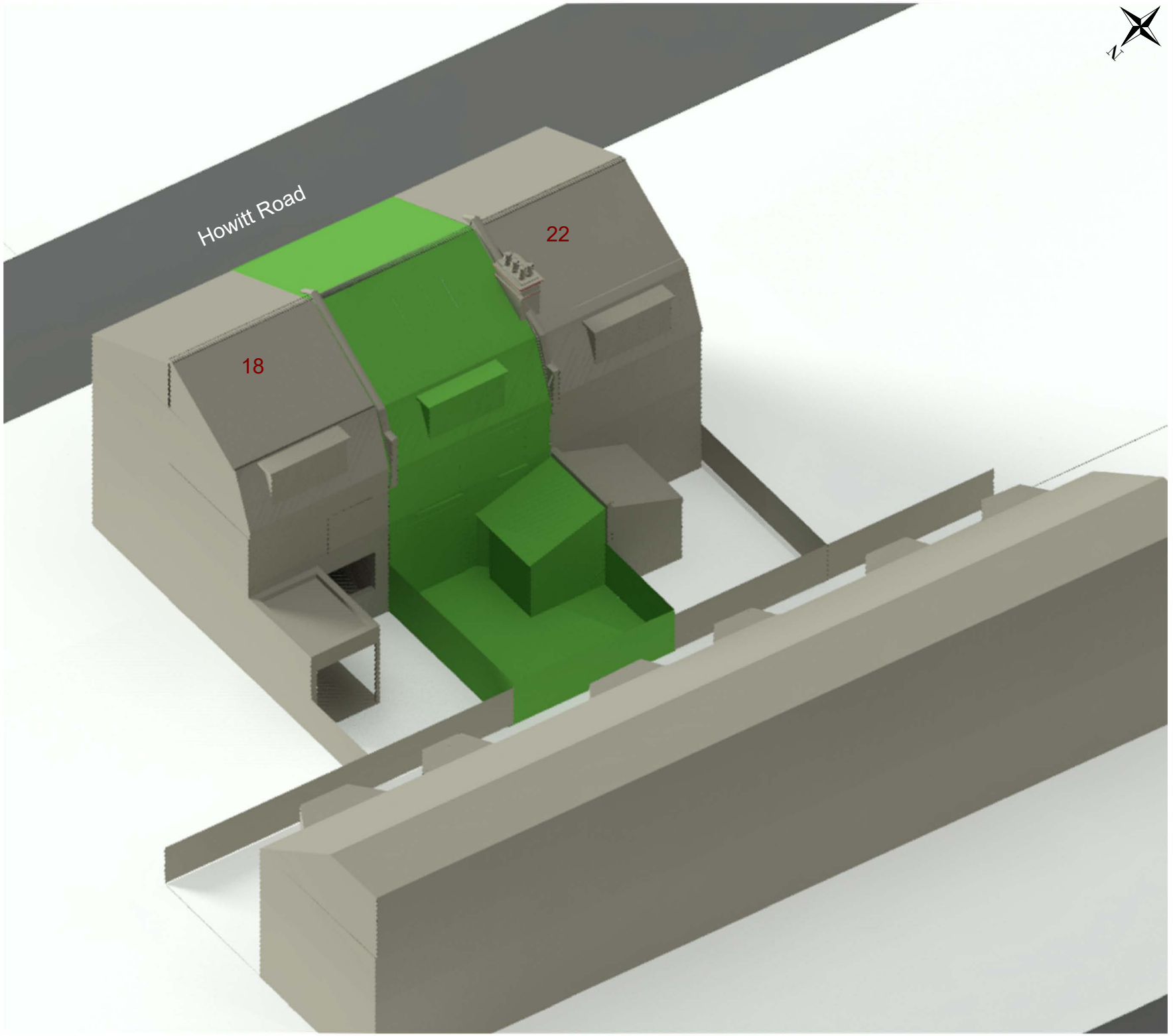
| Rev | Description | Date |
|---|---|---|
| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

| DWG REF. | DWG No. |
|---|---|
| 3D Model - Location Plan | 3601_01 |

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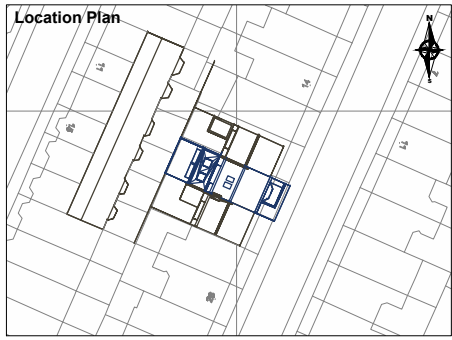
**Legend**

- Existing Buildings
- Surrounding Buildings

**Location Plan**



| Rev | Description | Date |
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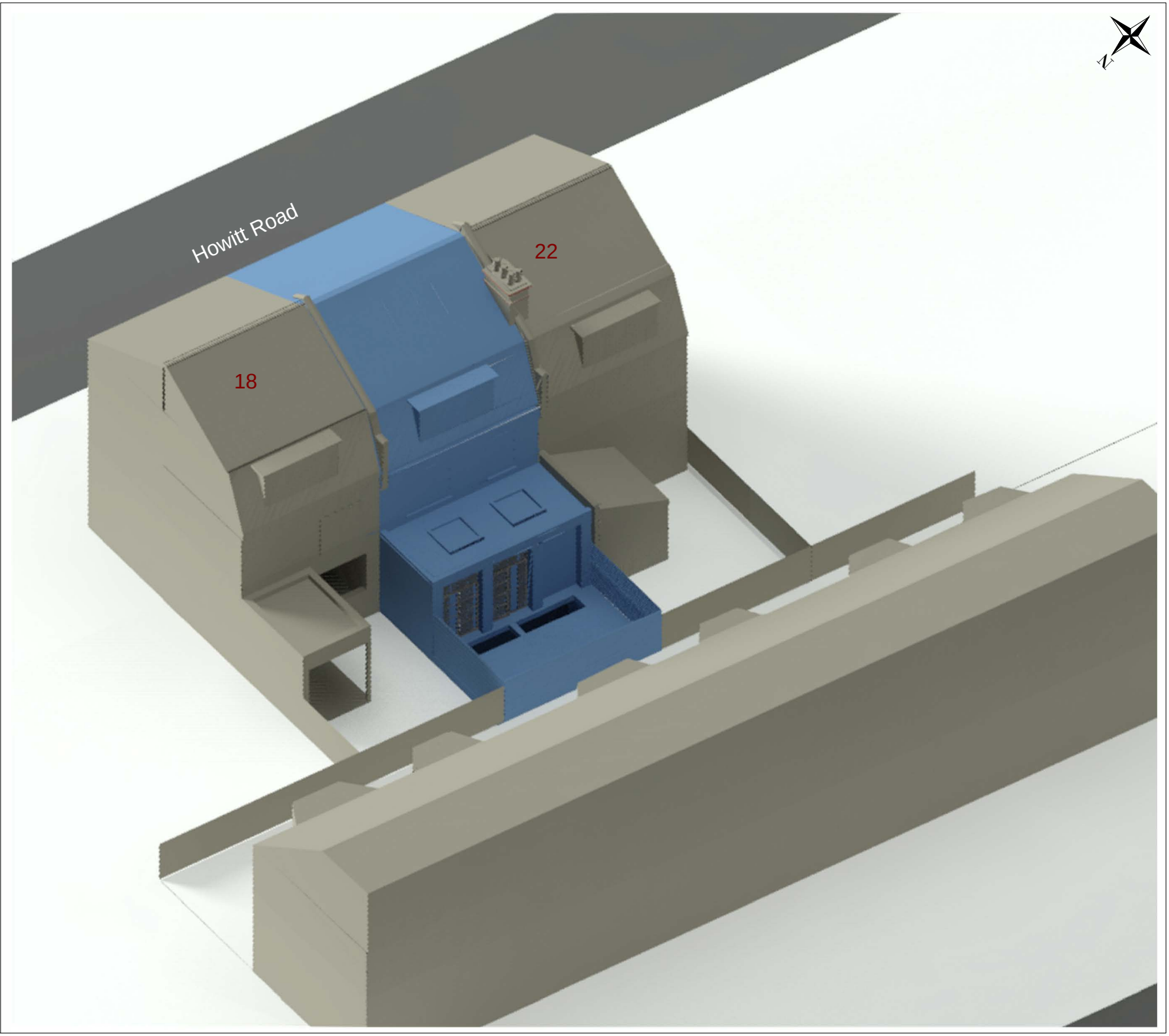
| | | |
| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

| DWG REF. | DWG No. |
|---|---|
| 3D Model - Existing Site Scenarios | 3601_02 |

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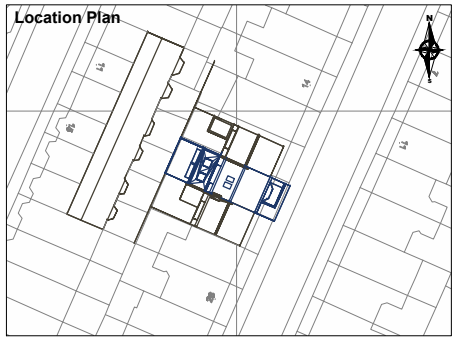
**Legend**

- Proposed Buildings
- Surrounding Buildings

**Location Plan**



| Rev | Description | Date |
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| 00 | First issue | 08/11/2022 |

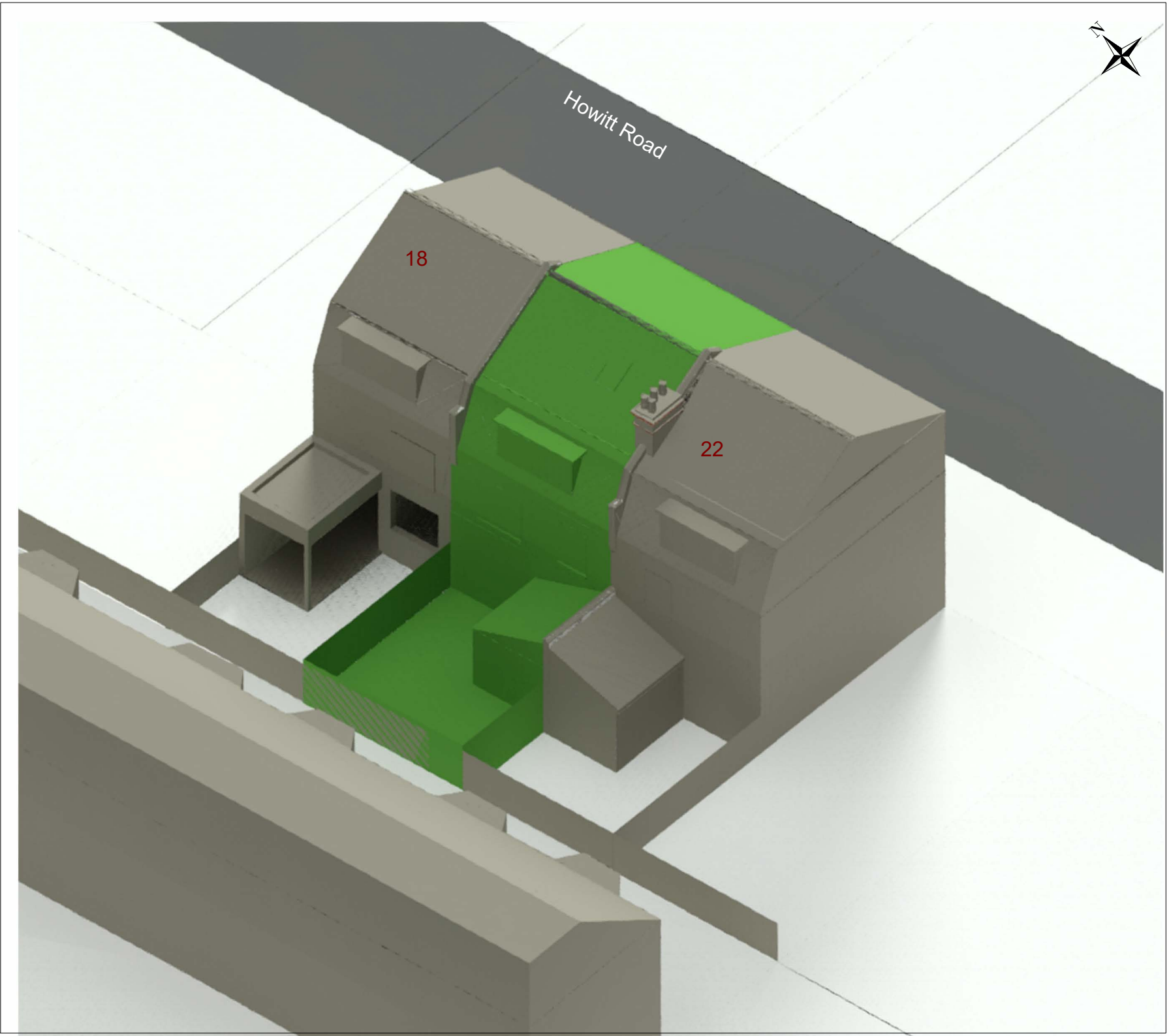
CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

DWG REF.: 3D Model - Proposed Site Scenarios

DWG No.: 3601_03

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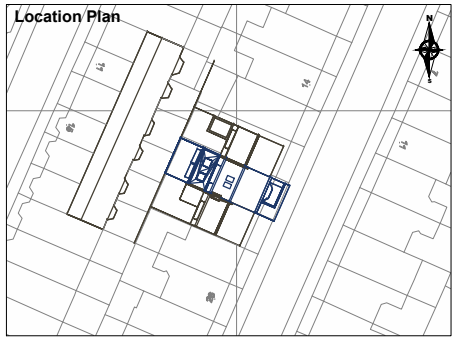
**Legend**

- Existing Buildings
- Surrounding Buildings

**Location Plan**



| Rev | Description | Date |
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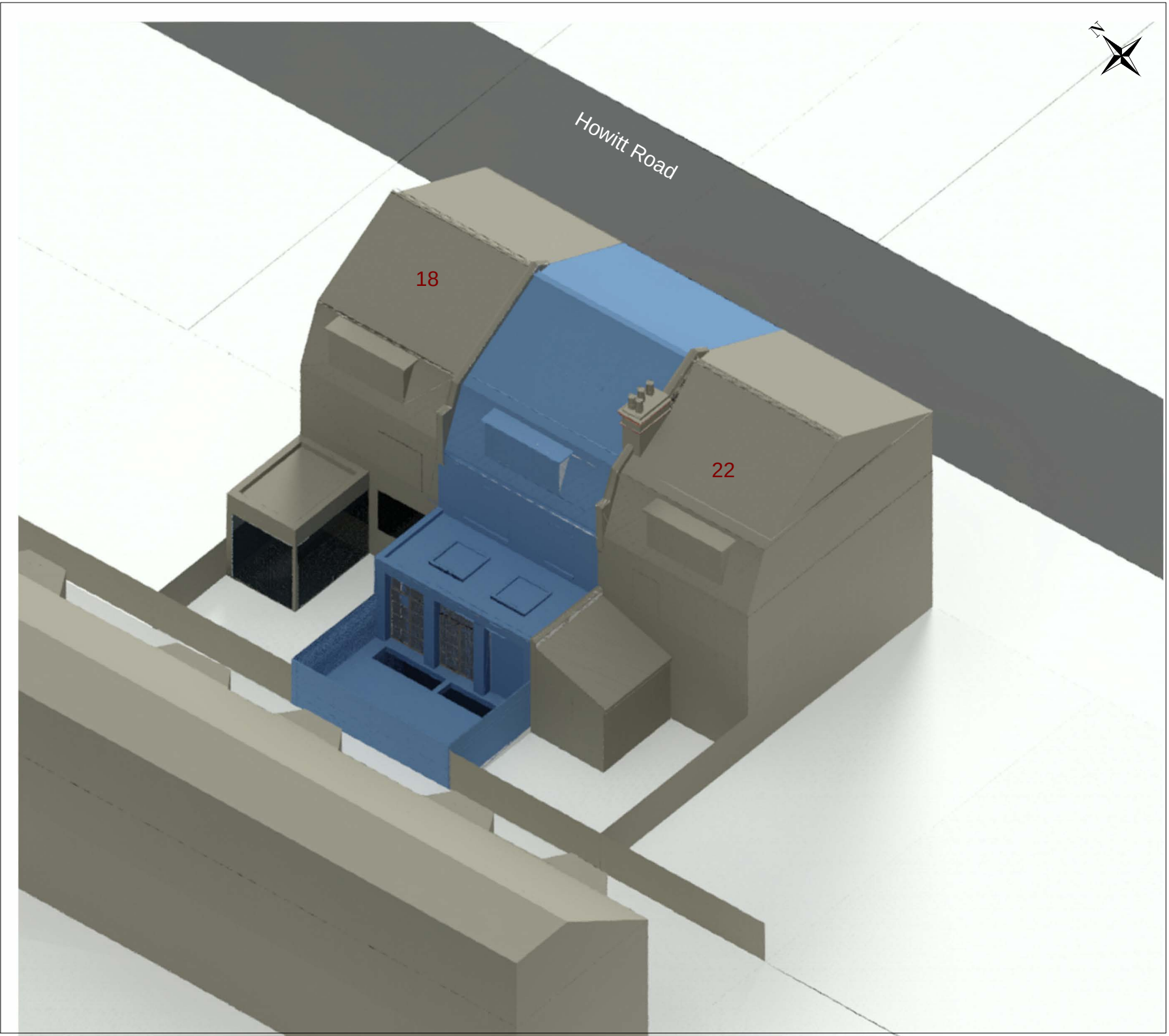
| | | |
| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

| DWG REF. | DWG No. |
|---|---|
| 3D Model - Existing Site Scenarios | 3601_04 |

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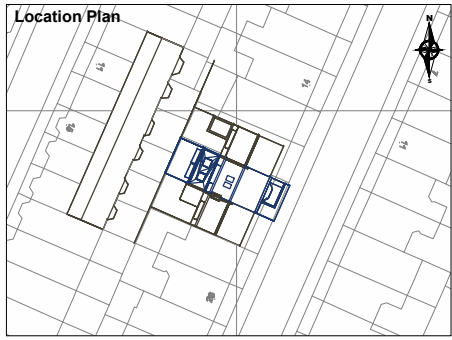
**Legend**

- Proposed Buildings
- Surrounding Buildings

**Location Plan**



| Rev | Description | Date |
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| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

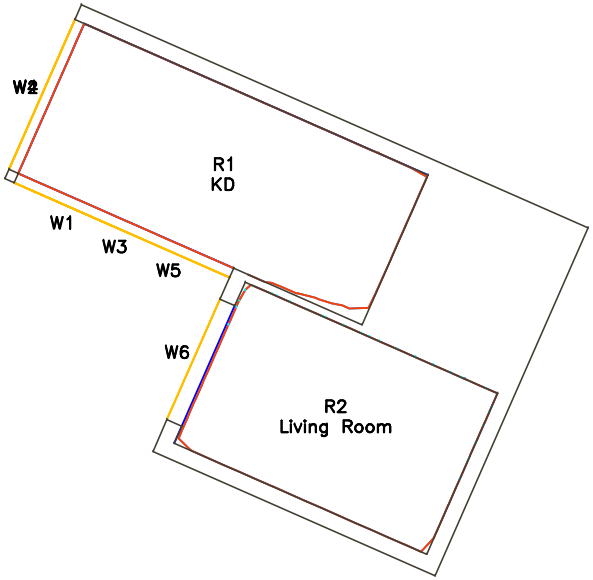
PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

DWG REF.: 3D Model - Proposed Site Scenarios and Location of Window Receptors

DWG No.: 3601_05

18 Howitt Road
Ground Floor Plan

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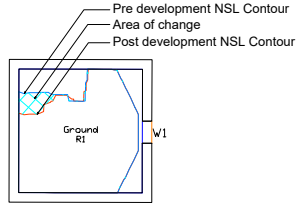
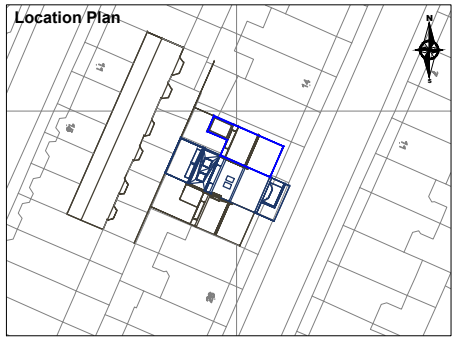
**Legend**




**Location Plan**



| Rev | Description | Date |
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| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

| DWG REF. | DWG No. |
|---|---|
| DD contours | 3601_06 |


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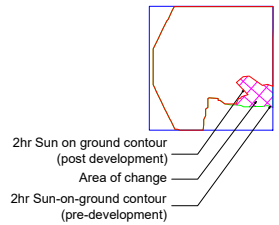
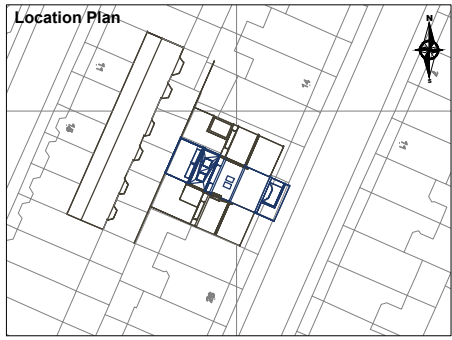
**Legend**




**Location Plan**



| Rev | Description | Date |
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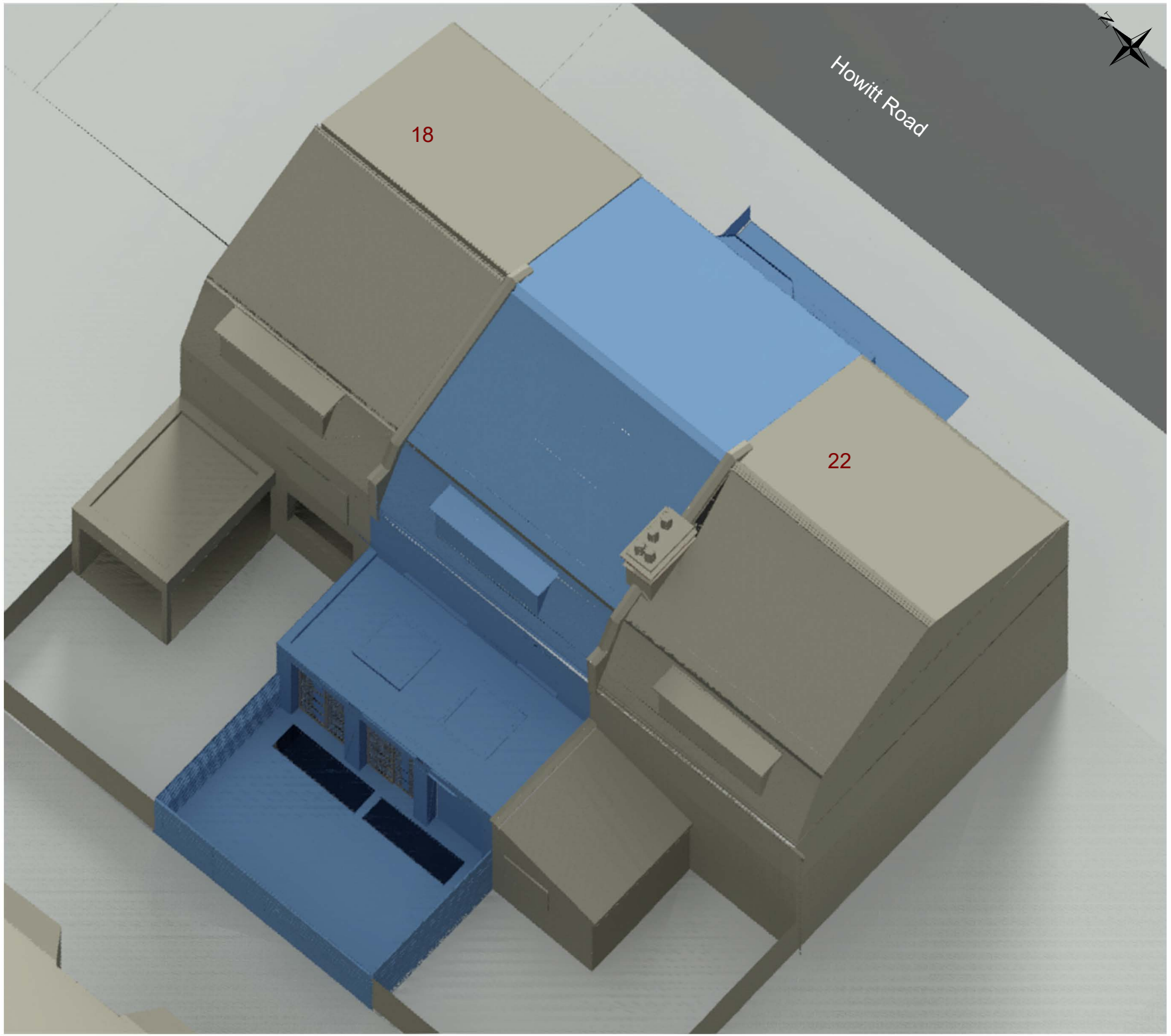
| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

| DWG REF. | DWG No. |
|---|---|
| 2hr SoG amenity contours | 3601_07 |

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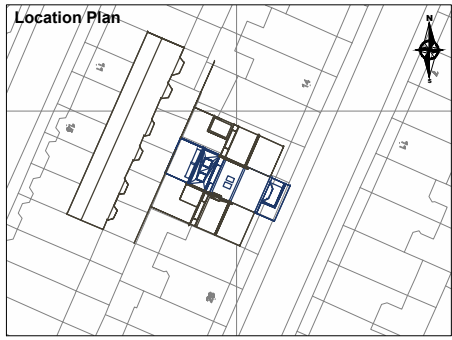
**Legend**

- Proposed Buildings
- Surrounding Buildings

**Location Plan**



| Rev | Description | Date |
|---|---|---|
| 00 | First issue | 08/11/2022 |

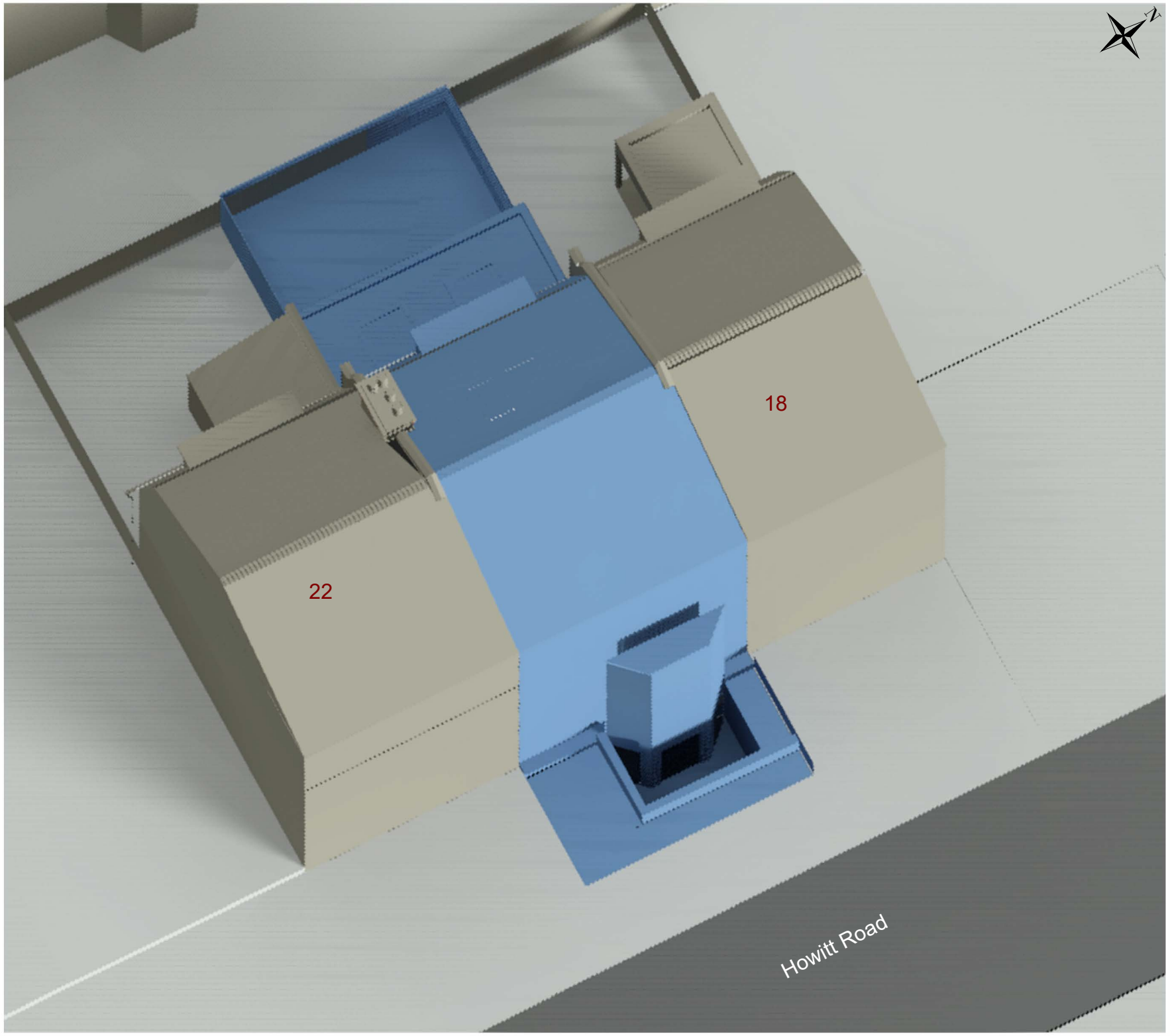
CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

DWG REF.: 3D Model - Proposed Site Scenarios and Location of Window Receptors

DWG No.: 3601_08

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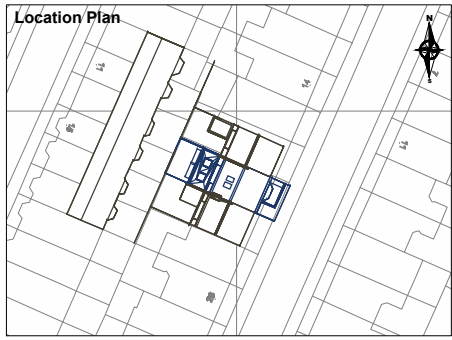
**Legend**

- Proposed Buildings
- Surrounding Buildings

**Location Plan**



| Rev | Description | Date |
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| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

DWG REF.: 3D Model - Proposed Site Scenarios and Location of Window Receptors

DWG No.: 3601_09

20 Howitt Road
Basement Floor Plan


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**Legend**

% of Area Meeting Required Lux

**Location Plan**

| Rev | Description | Date |
|---|---|---|
| 00 | First issue | 08/11/2022 |

CLIENT: Joshua Faith

PROJECT: 20 Howitt Road, London

| SCALE | PROJ REF | ANALYST | DRAWN BY |
|---|---|---|---|
| Not to scale | 3601 | AM | LR |

DWG REF.: SDA contours

DWG No.: 3601_10

# Appendix A.3 – Tabulated Results for Daylight and Sunlight Calculations (Impact on Neighbours)

Project Name: 3601_Model
Project No.: 1
Report Title: Daylight & Sunlight Analysis - Neighbour
Date of Analysis: 07/11/2022

| Floor Ref. | Room Ref. | Property Type | Room Use | Window Ref. | | VSC | Pr/Ex | Meets BRE Criteria | Window Orientation | Room VSC | Pr/Ex | Meets BRE Criteria | Annual | Pr/Ex | Meets BRE Criteria | Winter | Pr/Ex | Meets BRE Criteria | Total Suns per Room Annual | Pr/Ex | Meets BRE Criteria | Total Suns per Room Winter | Pr/Ex | Meets BRE Criteria |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **18 Howitt Road** | | | | | | | | | | | | | | | | | | | | | | | | |
| Ground | R1 | Residential | KD | W1 | Existing | 18.98 | 0.83 | YES | 204° | | | | 35.00 | 0.83 | YES | 6.00 | 0.33 | NO | | | | | | |
| | | | | | Proposed | 15.83 | | | | | | | 29.00 | | | 2.00 | | | | | | | | |
| | | | | W2 | Existing | 24.07 | 1.00 | YES | 294°N | | | | 24.00 | *North | *North | 5.00 | *North | *North | | | | | | |
| | | | | | Proposed | 24.07 | | | | | | | 24.00 | | | 5.00 | | | | | | | | |
| | | | | W3 | Existing | 21.99 | 0.85 | YES | 204° | | | | 37.00 | 0.89 | YES | 8.00 | 0.50 | YES | | | | | | |
| | | | | | Proposed | 18.72 | | | | | | | 33.00 | | | 4.00 | | | | | | | | |
| | | | | W4 | Existing | 28.40 | 1.00 | YES | 294°N | | | | 27.00 | *North | *North | 6.00 | *North | *North | | | | | | |
| | | | | | Proposed | 28.40 | | | | | | | 27.00 | | | 6.00 | | | | | | | | |
| | | | | W5 | Existing | 15.73 | 0.67 | NO | 204° | | | | 28.00 | 0.68 | NO | 4.00 | 0.00 | NO | | | | | | |
| | | | | | Proposed | 10.58 | | | | | | | 19.00 | | | 0.00 | | | | | | | | |
| | | | | | | | | | | 21.32 | 0.89 | YES | | | | | | | 40.00 | | | 10.00 | | |
| | | | | | | | | | | 19.01 | | | | | | | | | 37.00 | 0.93 | YES | 7.00 | 0.70 | YES |
| | R2 | Residential | Living Room | W6 | Existing | 24.88 | 0.83 | YES | 294°N | | | | | *North | *North | | *North | *North | | | | | | |
| | | | | | Proposed | 20.67 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | 24.88 | 0.83 | YES | | | | | | | | | | | | |
| | | | | | | | | | | 20.67 | | | | | | | | | | *North | *North | | *North | *North |

Project Name: 3601_Model
Project No.: 1
Report Title: Daylight Distribution Analysis - Neighbour
Date of Analysis: 07/11/2022

| Floor Ref. | Room Ref | Room Attribute | Property Type | Room Use | | Room Area | Lit Area Existing | Lit Area Proposed | Pr/Ex | Meets BRE Criteria |
|---|---|---|---|---|---|---|---|---|---|---|
| **18 Howitt Road** | | | | | | | | | | |
| Ground | R1 | | Residential | KD | Area m2 | 17.13 | 16.93 | 16.93 | | |
| | | | | | % of room | | 98.81% | 98.81% | 1.00 | YES |
| | R2 | | Residential | Living Room | Area m2 | 13.52 | 13.39 | 13.39 | | |
| | | | | | % of room | | 99.00% | 98.99% | 1.00 | YES |

Project Name: 3601_Model
Project No.: 1
Report Title: Two hours Sunlight to Amenity Analysis - Neighbour
Date of Analysis: 07/11/2022

| Floor Ref | Amenity Ref | | Amenity Area | Lit Area Existing | Lit Area Proposed | Pr/Ex | Meets BRE Criteria |
|---|---|---|---|---|---|---|---|
| **18 Howitt Road** | | | | | | | |
| Ground | Rear Garden | Area m2 | 33.36 | 10.37 | 9.89 | 0.95 | YES |
| | | Percentage | | 31% | 30% | | |
| **22 Howitt Road** | | | | | | | |
| Ground | Rear Garden | Area m2 | 38.20 | 19.48 | 19.48 | 1.00 | YES |
| | | Percentage | | 51% | 51% | | |

# Appendix A.4 – Tabulated Results for Daylight and Sunlight Calculations (Provision to New Development)

Project Name: 3601_Model DSAi_Regions
Project No.: 1
Report Title: SDA BS En17037 Analysis - Proposed Scheme
Date of Analysis: 04/11/2022

| | | | | | | | | | Criteria | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Floor Ref | Room Ref | Property Type | Room Use | Room Area m2 | Effective Area | Median Lux | Area Meeting Req Lux | % of Area Meeting Req Lux | Req Lux | Req % of Effective Area | Req % of Daylight Hours | Daylight Hours | Meets Criteria |
| **Proposed Buildings** | | | | | | | | | | | | | |
| Basement | R1 | Residential | Bedroom | 16.65 | 12.13 | 178 | 12.13 | 100% | 100 | 50% | 50% | 4380 | YES |
| | R2 | Residential | Living Room | 29.28 | 22.99 | 459 | 22.99 | 100% | 150 | 50% | 50% | 4380 | YES |

Project Name: 3601_Model DSAi_Regions
Project No.: 1
Report Title: Daylight Factor Analysis - Proposed Scheme
Date of Analysis: 04/11/2022

| | | | | | | | | | Criteria | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Floor Ref | Room Ref | Property Type | Room Use | Room Area m2 | Effective Area | Median DF | Area Meeting Req DF | % of Area Meeting Req DF | Req DF | Req % of Effective Area | Median Diffuse Horizontal Illuminance | Meets Criteria |
| **Proposed Buildings** | | | | | | | | | | | | |
| Basement | R1 | Residential | Bedroom | 16.65 | 12.13 | 1.40% | 12.13 | 100% | 0.70% | 50% | 14100 | YES |
| | R2 | Residential | Living Room | 29.28 | 22.99 | 4.70% | 22.99 | 100% | 1.10% | 50% | 14100 | YES |

Project Name: 3601_Model DSAi_Regions
Project No.: 1
Report Title: Sunlight Exposure Analysis - Proposed Scheme <Report Title>
Date: 04/11/2022

| Floor Ref | Room Ref | Room Attribute | Property Type | Room Use | Window Ref | Window Orientation | Proposed Sunlight Exposure | Rating |
|---|---|---|---|---|---|---|---|---|
| **Proposed Buildings** | | | | | | | | |
| Basement | R1 | | Residential | Bedroom | W1 | 69°N | 0 | |
| | | | | | W2 | 114° | 0 | |
| | | | | | W3 | 159° | 0 | |
| | | | | | | | 0 | Failed |
| Basement | R2 | | Residential | Living Room | W4 | 90° Hz | 4.1 | |
| | | | | | W5 | 90° Hz | 3.9 | |
| | | | | | | | 4.1 | High |