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CONSULTING LIMITED

Client: Rob Turner

Daylight and Sunlight Assessment for the Development at
4 Privett Road, Waterlooville, Havant, PO7 5HJ

April 2023

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1 Background and Scope of Appraisal

1.1 Study Objectives

Herrington Consulting has been commissioned by Rob Turner to assess the potential impact of the proposed development at 4 Privett Road, Waterlooville, Havant, PO7 5HJ, in relation to daylight, sunlight and overshadowing on the neighbouring building. 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.

1.2 Site Location

The site is situated in the area of Widley in the county of Hampshire. 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 for a two-storey front extension. 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

There is no reference to daylight or sunlight in the Hampshire County Council planning policy.

2.3 Local Planning Policy

Havant Borough Council Design Guide SPD (December 2011)

Paragraph 5.07 states that '*The design of new homes should maximise the amount of penetrable daylight to dwellings, whilst balancing other considerations such as privacy and the visual impact of the street. It is recommended that new dwellings should meet the daylight standards set out in BS8206 Part II (which also accords with the Code for Sustainable Homes Standard). For houses and flats, the impact of adjoining structures on the level of daylight available is particularly important in living rooms, dining rooms and kitchens. Daylight in bedrooms may also be considered, but is generally considered less important except where this is the main private accommodation such as in residential homes. Detailed proposals should also take account of local circumstances like level difference between properties and orientation.*'

Paragraph 5.08 states that '*New developments should not result in the loss of light to existing buildings. Acceptable daylight to interiors can be provided once there is a 25 degree vertical angle from a point 2 metres above the ground on*

the facing external facade. (This results in a 10 metre minimum separation distance between dwellings).'

Paragraph 5.09 states that '*In order to assess this, draw a reference point 2m above ground level (taking into account any slope corresponding to the top part of ground floor windows) and draw a section in a plane perpendicular to the face of the building. If none of the obstructing building is within the horizontal > 25 degrees, then there will be potential for good daylight to the building. This is illustrated in Figure 4.8 below. If an obstructing building exceeds this relative height, then further analysis can be carried out to quantify the amount of skylight falling on a vertical window known as the 'vertical sky component', which is set out in more detail in the BRE report Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice published in 2002.*'

Paragraph 5.10 states that '*It is not always possible or reasonable to require all dwellings to have sunlit rooms. However, the extensive obstruction of sunlight to an existing property or its garden by the construction of a new building or extension is likely to be unacceptable. Therefore applicants should consider the effects of loss of sunlight to existing properties and should aim to mitigate these effects wherever possible. This is particularly important where neighbouring properties are taking advantage of the sun's orientation for solar gain. Further information and tables for calculating sunlight availability at different times of the year are available in the BRE guide.*'

Paragraph 5.38 states that '*It is important that gaps are retained between buildings. This helps form the pattern of development in an area, which in turn influences local character. Therefore, side extensions which have a negative effect on the gap between buildings should be resisted. This is particularly important for two storey extensions, which can also cause adverse effects on neighbouring properties, such as overshadowing. In general, the extension should not be closer than two metres from the boundary with neighbouring properties.'*

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', Second Edition, 2011; herein referred to as the 'BRE Guidelines'.

An updated version of these guidelines was published on the 8th June 2022 and is referred to as 'Site layout planning for daylight and sunlight: a guide to good practice (BR 209 2022 edition)'. This version includes changes to the 2011 edition methodologies used for analysing the daylight and sunlight impacts of new development on neighbouring buildings. Given the significant amount of analysis carried out before the publication of the 2022 Guidelines, the 2011 Guidance has been applied in this case.

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.

In conjunction with the BRE Guidelines further guidance is given within the British Standard (BS) 8206-2:2008: 'Lighting for buildings - Part 2: Code of practice for daylighting'.

In this assessment, the BRE Guidelines have been used to establish the extent to which the Proposed Development meets current best practice guidelines. In cases where the Development is likely to reduce light to key windows the study has compared results against the BRE criteria.

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.

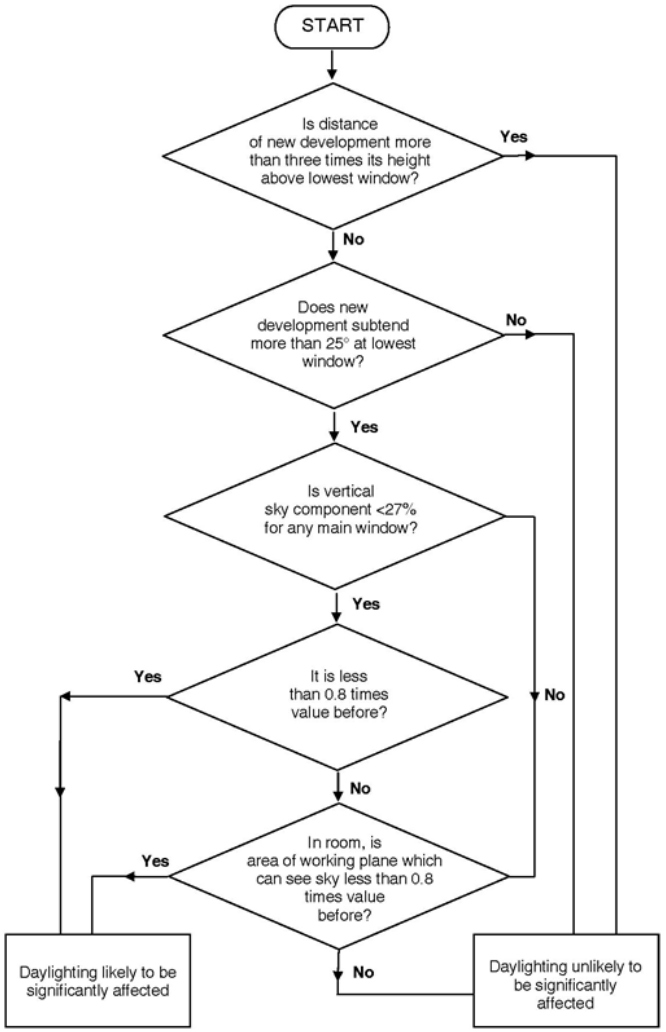
3 Assessment Techniques

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.

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
- Scheme drawings hand drawn in PDF format (Thorns Young Architectural)
- Photographic information provided by Robert Tutton Town Planning Consultants Ltd (March 2022 and March 2023).
- Measurements of neighbouring windows provided by Thorns Young (February & March 2023)
- 3D Building model constructed using photogrammetric techniques (provided by BlueSky 31/03/2022 based on satellite imagery from 2020 to 12.5cm accuracy)
- 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.

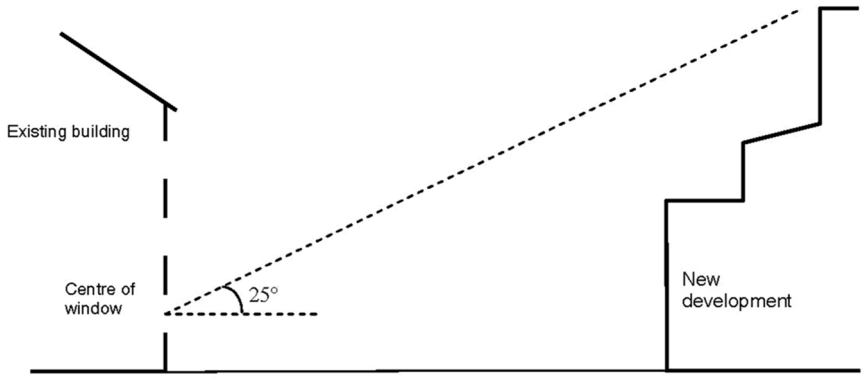


Figure 4.1 – Graphical representation of the 25° Rule (indicative buildings used for illustration purposes only)

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 buildings have been identified as potential sensitive receptors and have therefore been tested.

- 2 Privett Road
- 6 Privett Road

4.3 Numerical Modelling

The numerical analysis used in this assessment has been undertaken using the Waldrum Tools (Version 6.0.0.10) 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.
- 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 where possible.

- 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.

- Where the results of the detailed analysis are presented in the appendix to 2 decimal places, these values may be rounded to a single decimal place when interpreting the results and discussing compliance with assessment criteria. This is to fit with the convention adopted within the BRE Guidelines where all ratio of change values are expressed to one decimal place.

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. Where rooms have multiple windows that serve the same area of the room, the BRE Guidelines recommend calculating a 'weighted average' for each window VSC result. The results of the average VSC result for each room are summarised in Table 6.1 and the detailed results for all windows are included in Appendix A.3.

Property	No. Rooms Tested	Rooms meeting BRE Guidelines		VSC Rooms Transgressions		
		No.	%	Minor adverse	Moderate adverse	Major adverse
2 Privett Road	5	5	100%	0	0	0
6 Privett Road	5	4	80%	1	0	0
Total	**10**	**9**	**90%**	**1**	**0**	**0**

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

Inspection of the results of this test show that the majority of the rooms 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** to these rooms.

When the room experiencing a transgressional result in No. 6 Privett Road is examined in more detail, it can be seen that this room is served by an obscure glazed door which is overhung by part of the roof and an additional window. The windows are both north facing and situated in the rear ground floor extension of this property. These windows are identified in Figure 5.1.

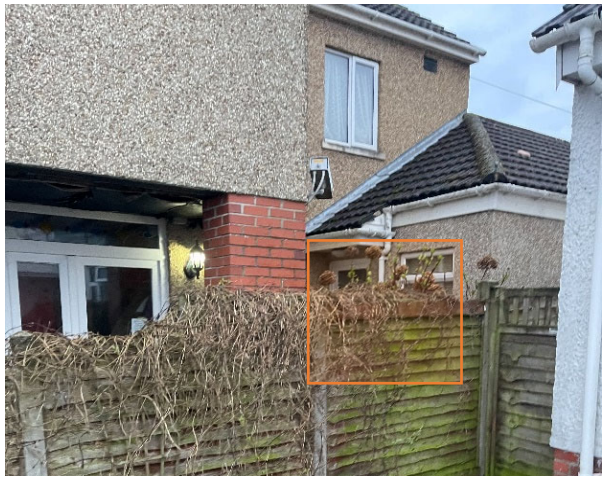


Figure 5.1 – Location of windows in 6 Privett Road

Firstly, it should be noted that the owner of No. 4 Privett Road believes this room to be a secondary entrance hall and if this is the case, this room would be classed as non-habitable and not subject to the daylight and sunlight analysis. However, as we cannot confirm this, these results are included in the assessment report.

When looking at the VSC results in more detail it is clear that both of the windows have a very constrained view of the sky from the front main building of No. 6 Privett Road itself. As a result, these windows retain a very low VSC value under current conditions and therefore, any reasonable change in massing on the proposed development site will result in an unusually large ratio of change.

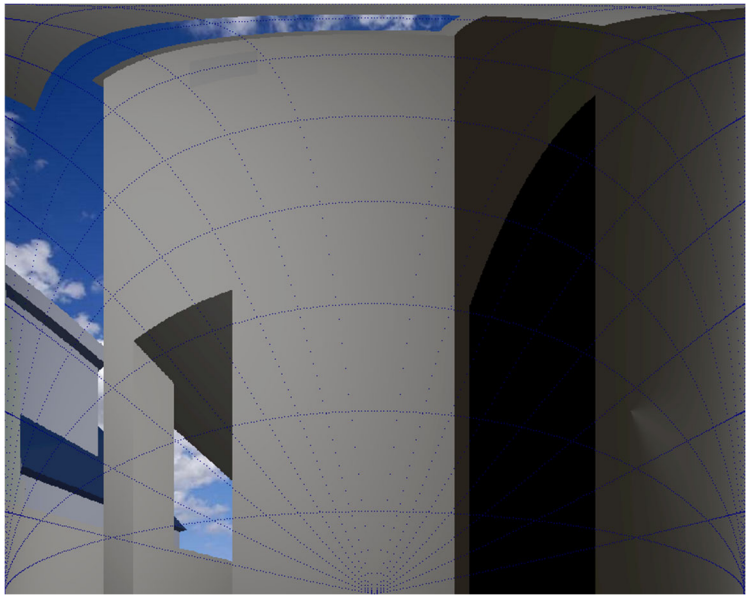


Figure 5.2 – View from W5 of 6 Privett Road showing proposed development in blue on far left side.

For example, Figure 5.2 shows the view from the ground floor glazed door at No. 6 under the proposed site scenario, where a transgressional result is being registered. It can be seen that the proposed building in blue is only taking up a very small part of the sky view, but as the window is already heavily constrained by its own surroundings, the small change in sky view caused by the proposed development results in a disproportionately large ratio of change.

The absolute reduction value in VSC from this window is 1.62% from 4.82% in the existing scenario to 3.2% in the proposed scenario. This loss is very unlikely to be noticeable to the occupant, especially given that this door appears to have frosted glazing. Overall, the absolute reduction in VSC, based on the weighted average result for the two windows is 2.38%, a reduction from 8.38% to 6.0%. Therefore, again it is unlikely that there will be any noticeable reduction in daylight availability to this room.

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 this case, the dimensions and layouts of the habitable rooms within No. 2 Privett Road have been reproduced from information obtained via estate agent details and the location of external windows have also been confirmed from measurements taken by Thorns Young. There are no internal floor layouts

available for No. 6 and therefore an estimate of the room dimensions and layouts has been made. There is photographic evidence that the front room is an entrance hallway and is therefore treated as a non-habitable room. The remaining rooms within this property have been marked as 'Unknown'. This is normal practice and allows us to test the room as a worst case. The room dimensions have been modelled to again assess a 'worst case' scenario, assuming that the rooms do not have any other additional windows which do not face the proposed development.

In order to verify the accuracy of the 3D model with regards to the location and heights of the No. 2, 4 and 6 Privett Road, a 3D photogrammetric model was purchased. This was to ensure our 3D model was as robust as possible based on the information available to us. The model purchased from BlueSky World is based on satellite imagery from 2020 and has as a vertical accuracy of 12.5cm. This has been further supported by photographs taken on site.

The results of the No Sky Line/Daylight Distribution analysis are summarised in Table 5.2.

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
2 Privett Road	5	5	100%	0	0	0
6 Privett Road	5	5	100%	0	0	0
Total	**10**	**10**	**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 4 Privett Road, Waterlooville, Havant, PO7 5HJ has 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. Two properties have been identified as sensitive receptors for this study, No. 2 Privett Road and No. 6 Privett Road, and therefore, the habitable rooms and the windows serving the rooms within these properties have been tested.

When the magnitude of reduction is considered, it is evident that the majority of rooms will be within the acceptable limits set out within the BRE Guidelines. For the one room falling marginally below the BRE values in 6 Privett Road, whilst remembering the importance of the BRE Guidelines to be used in a flexible manner, the small 'absolute' reduction of 2.38% in VSC should not inhibit the development to the proposed site. 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 are 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.

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.	%	
2 Privett Road	3	2	67%	1	3	100%	0
6 Privett Road	1	1	100%	0	1	100%	0
Total	**4**	**3**	**75%**	**1**	**4**	**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 the majority of rooms pass at least two of the three sunlight tests.

There is one room at No. 2 Privett Road which is experiencing a potentially noticeable reduction in annual sunlight to one of its four windows. However, as this room is served by more than one window it means that this room will still receive direct sunlight throughout the year from three other unaffected windows, including during the winter months where no reduction is seen.

It should also be taken into account that a whilst bedrooms should be assessed, the BRE does not consider bedrooms as important as living rooms or kitchens. In this case, the main living areas within this property will not experience a noticeable reduction in sunlight. Consequently, it has been demonstrated that although the proposed scheme will result in a potentially noticeable reduction in sunlight to one window, these reductions should not be considered unacceptable.

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 2011 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.

However, from inspection of aerial photographs and site-specific photos, it is evident that there are no rear gardens or amenity areas in close proximity to the proposed development and therefore there is no potential for adverse impacts from overshadowing.

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 Conclusions

The detailed analysis undertaken as part of this assessment has examined the impact of the proposed development at 4 Privett Road, Waterlooville, Havant, PO7 5HJ, on the amount of daylight enjoyed by the neighbouring buildings. Two properties have been identified as sensitive receptors for this study, 2 Privett Road and 6 Privett Road, and therefore, the habitable rooms and the windows serving the rooms within these properties have been tested.

In line with the assessment criteria prescribed by the BRE Guideline, it has been shown that the reduction in daylighting to the majority of windows and rooms of the neighbouring buildings will be within the acceptable limits set out within the BRE Guidelines. For the one room not meeting the weighted average test in 6 Privett Road, it has been shown that this room will experience a very small 'absolute' reduction of 2.38% in VSC. This is unlikely to be noticeable to the occupant and should not inhibit the proposed development site.

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 mostly within the BRE standard acceptable reduction threshold. Whilst there is one bedroom which is shown to experience a potentially noticeable reduction in annual sunlight at 6 Privett Road, it should be considered that the main living areas within this property are unaffected and the three additional windows serving this bedroom are also unaffected.

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 daylight enjoyed by the neighbouring buildings.

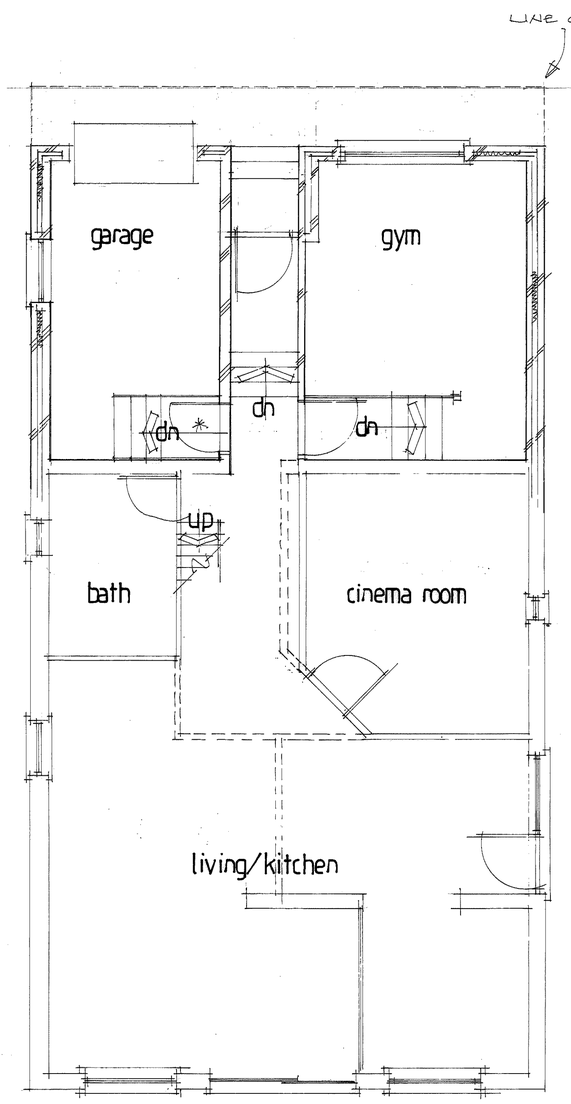
A Appendices

Appendix A.1 – Scheme Drawings

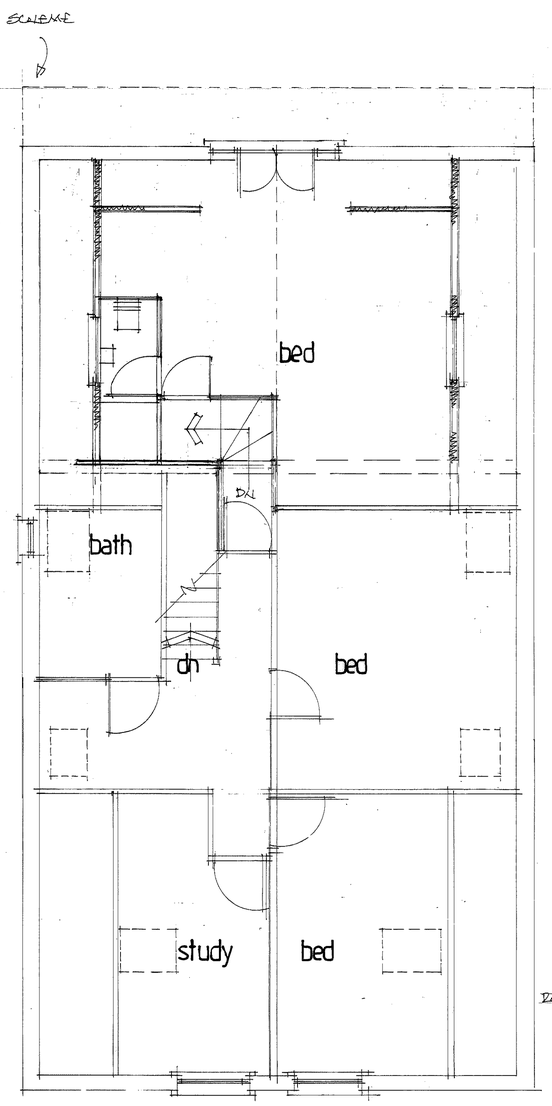
Appendix A.2 – Graphical Model Outputs

Appendix A.3 – Tabulated Results for Daylight & Sunlight Calculations

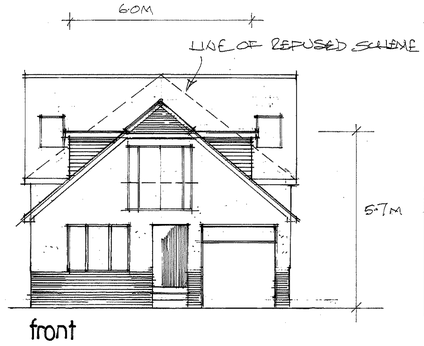
Appendix A.1 – Scheme Drawings



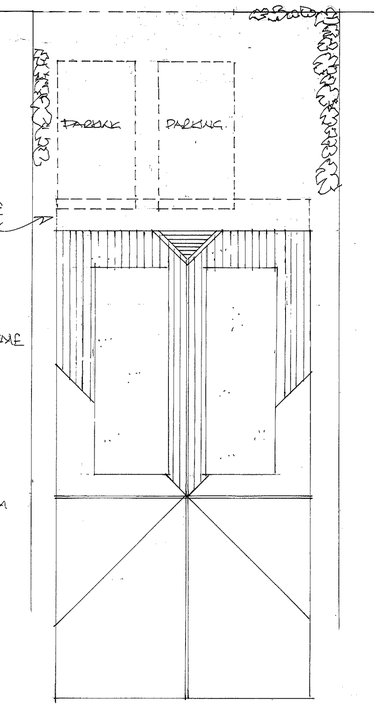
ground floor



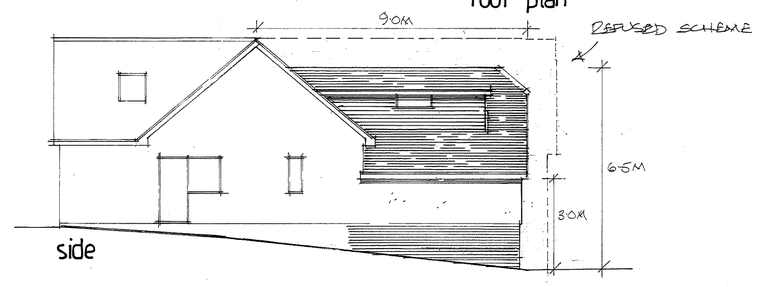
first floor



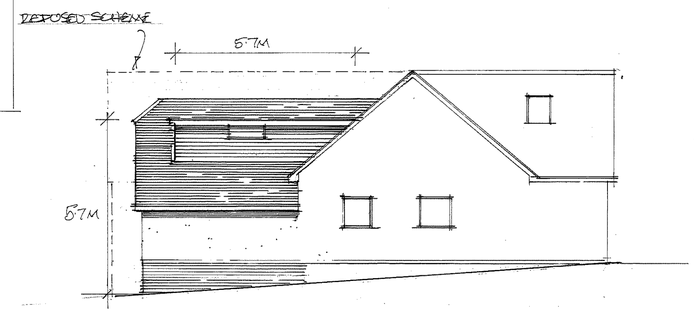
front



roof plan



side



side

0 1. 2. 3. 4. 5. scale 1:50. m.

0. 2. 4. 6. 8. 10. scale 1:100.m.

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Principal Contractor to ensure full compliance with the amended CDM Regulations (2015) if the project requires.

This drawing, unless noted, does not represent compliance with the Party Wall Act 1996 and if required, all agreements are to be in place before works commence.

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Do not scale from this drawing except for the purpose of Local Authority Planning department.

	Date	Revision
D	OCT. 22	Planning amendments
C	OCT. 22	Planning amendments
B	SEP. 22	Planning amendments
A	MAY 22	Planning amendments

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Client

MR. R. TORNER

Job Title

4, ARNETT ROAD
WIDLEY
WATERLOOVILLE

Drawing Title

PROPOSED PLANS AND ELEVATIONS.

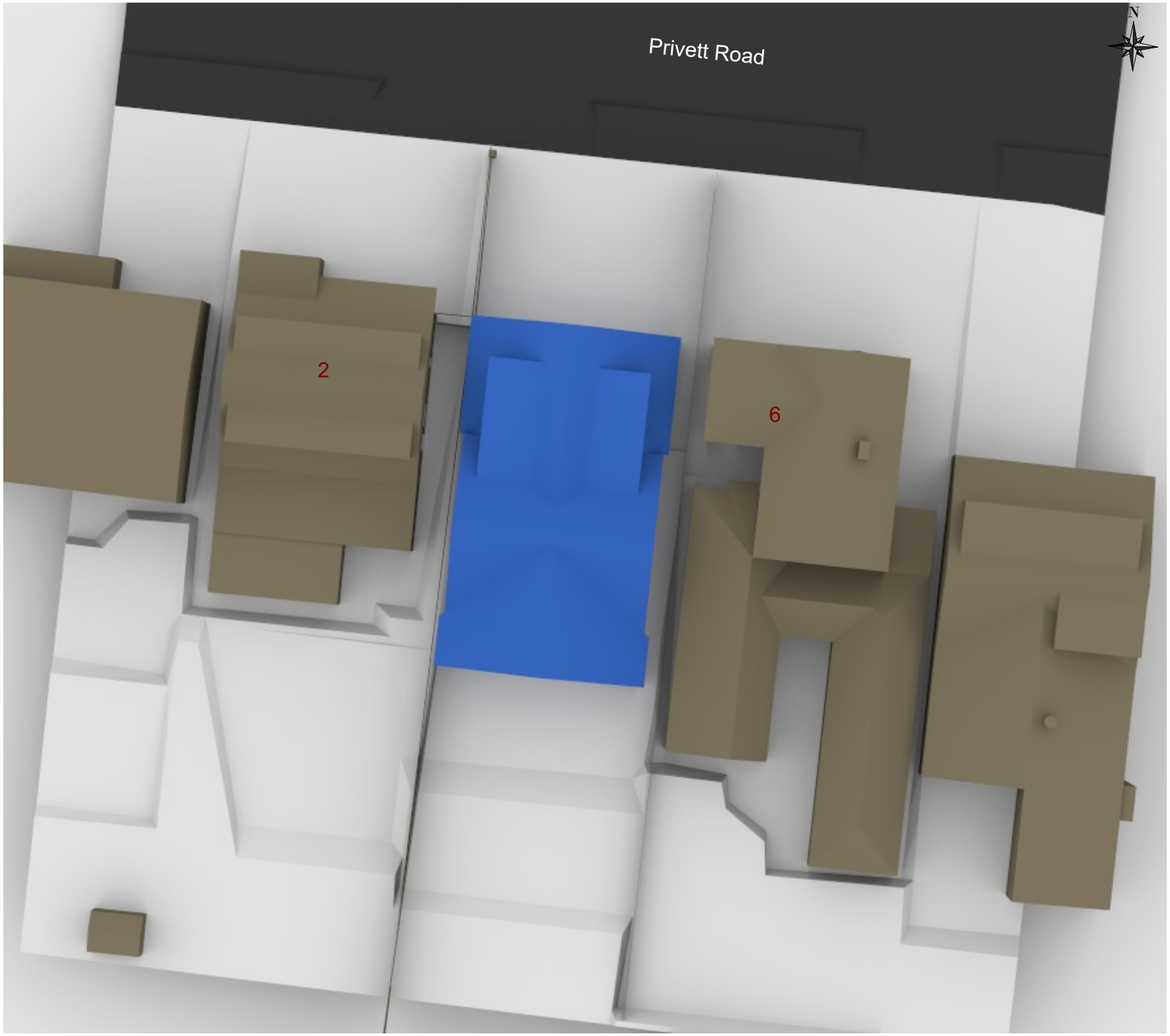
Scale 1:50 + 1:100

Date APRIL 21 | Drawn by CAL

Drg. No. 5072:21:2 | Rev. D C B A

ARCHITECTURAL 594 x 841mm A1.

Appendix A.2 – Graphical Model Outputs



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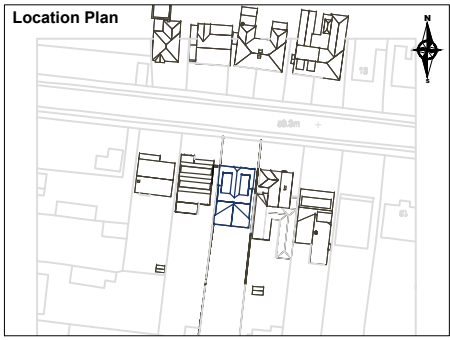
Legend

Proposed Buildings
Surrounding Buildings

Location Plan



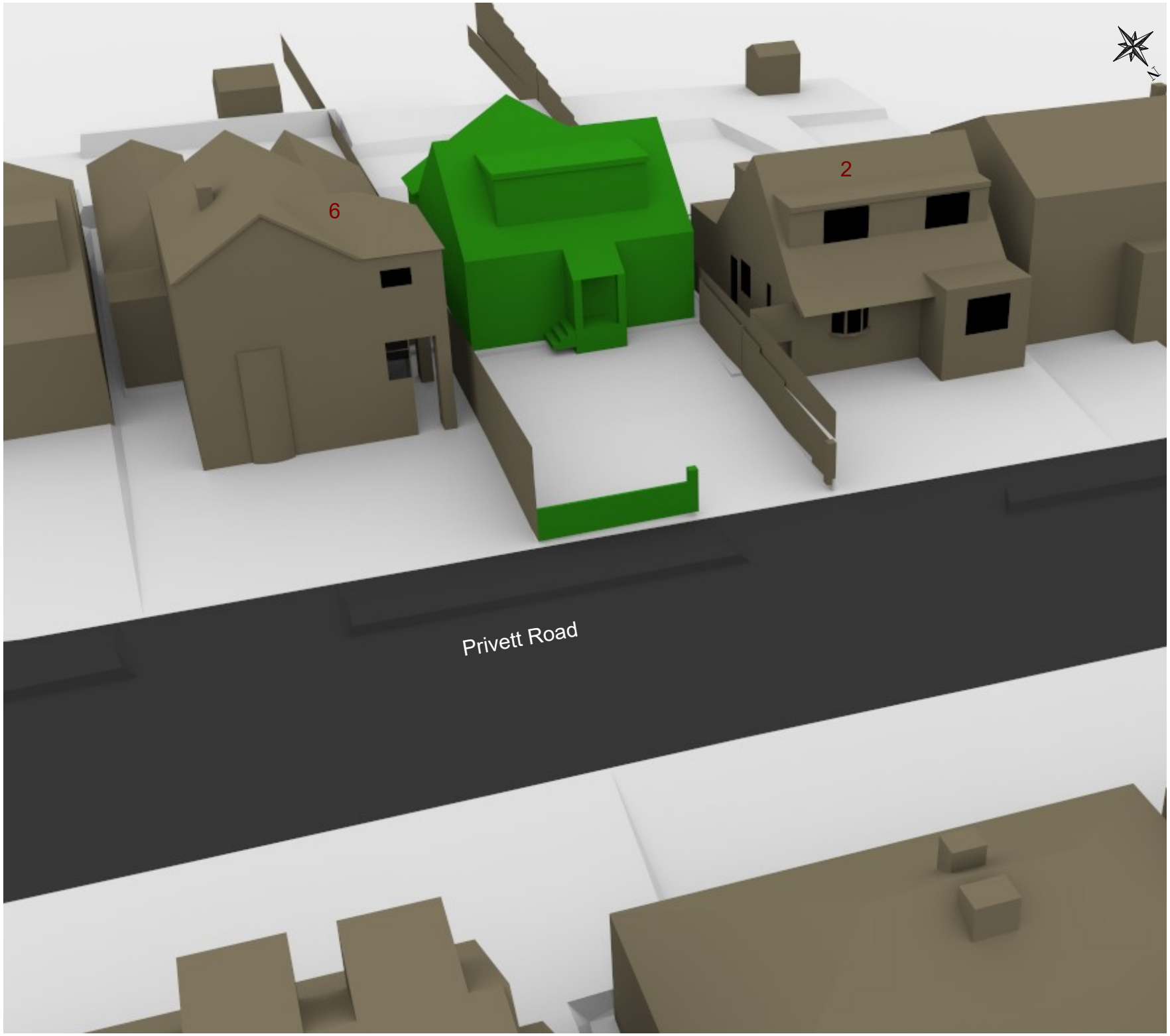
Rev	Description	Date
02	Amended Scheme	17/03/2023
01	Amended Scheme	09/11/2022
00	First issue	25/05/2022

CLIENT
Dr. Rob Turner

PROJECT
Privett Road, Waterlooville

SCALE	PROJ REF	ANALYST	DRAWN BY
Not to scale	3414	KC	LR

DWG REF.	DWG No.
3D Model - Location Plan	3414_01



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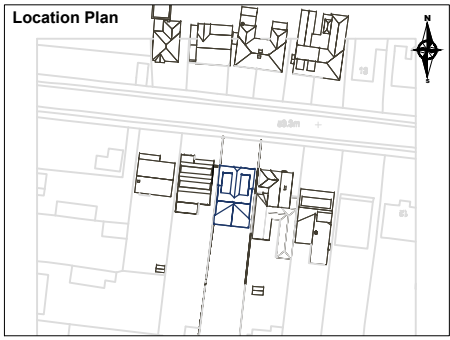
Legend

Existing Buildings
Surrounding Buildings

Location Plan



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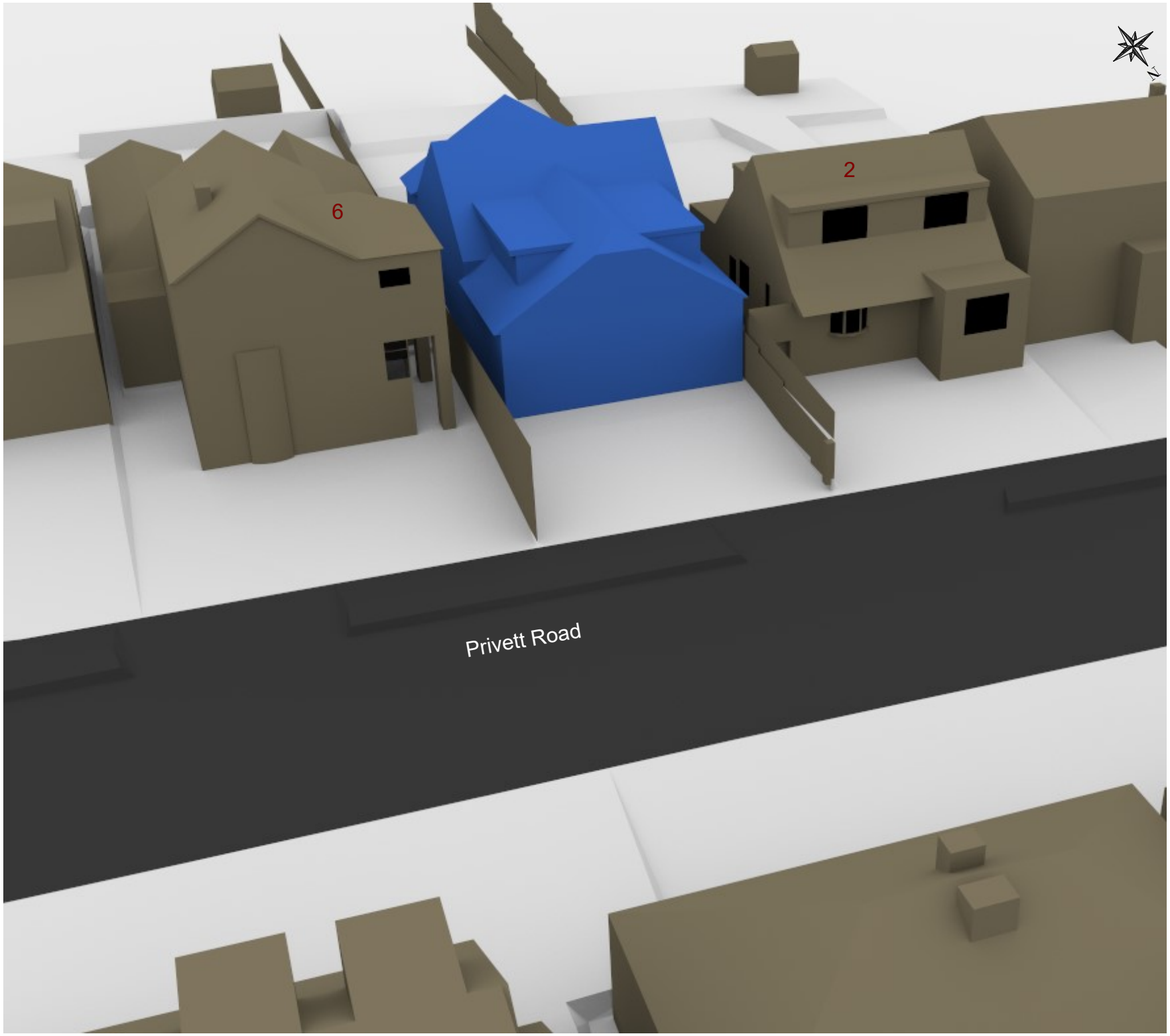
PROJECT
Privett Road, Waterlooville

SCALE	PROJ REF	ANALYST	DRAWN BY
Not to scale	3414	KC	LR

DWG REF.
3D Model - Existing Site Scenarios
Location of Window Receptors

DWG No.
3414_02



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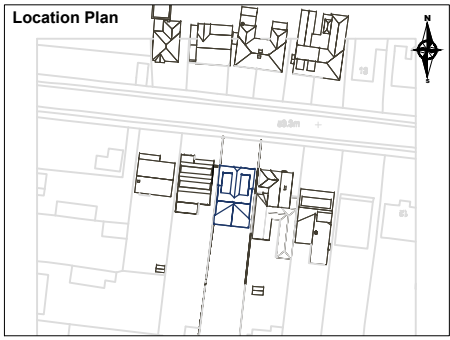
Legend

Proposed Buildings
Surrounding Buildings

Location Plan



Rev	Description	Date
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01	Amended Scheme	09/11/2022
00	First issue	25/05/2022

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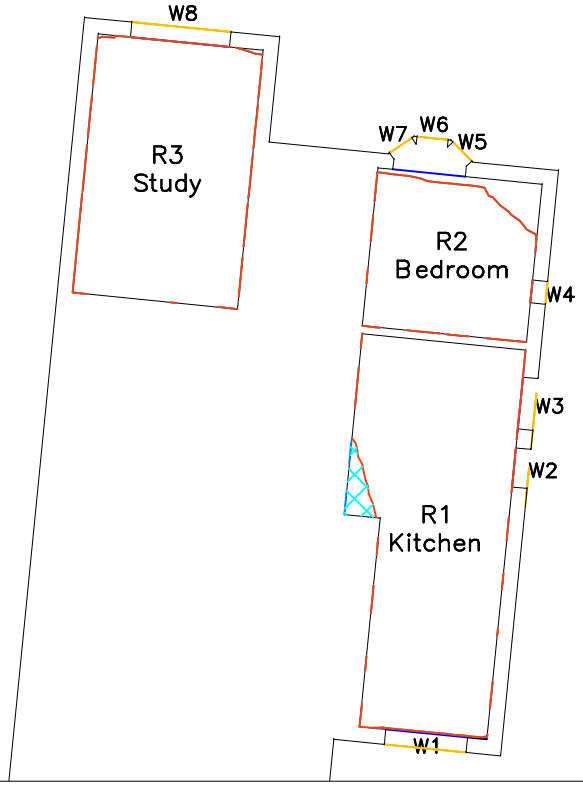
PROJECT
Privett Road, Waterlooville

SCALE	PROJ REF	ANALYST	DRAWN BY
Not to scale	3414	KC	LR

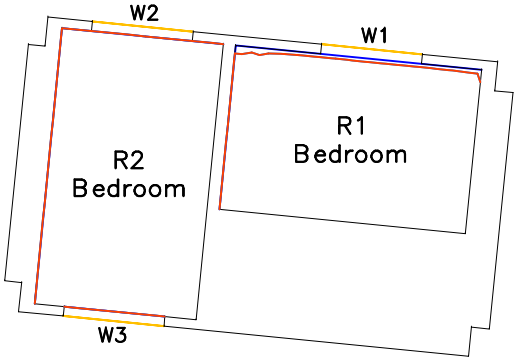
DWG REF.
3D Model - Proposed Site Scenarios
Location of Window Receptors

DWG No.
3414_03

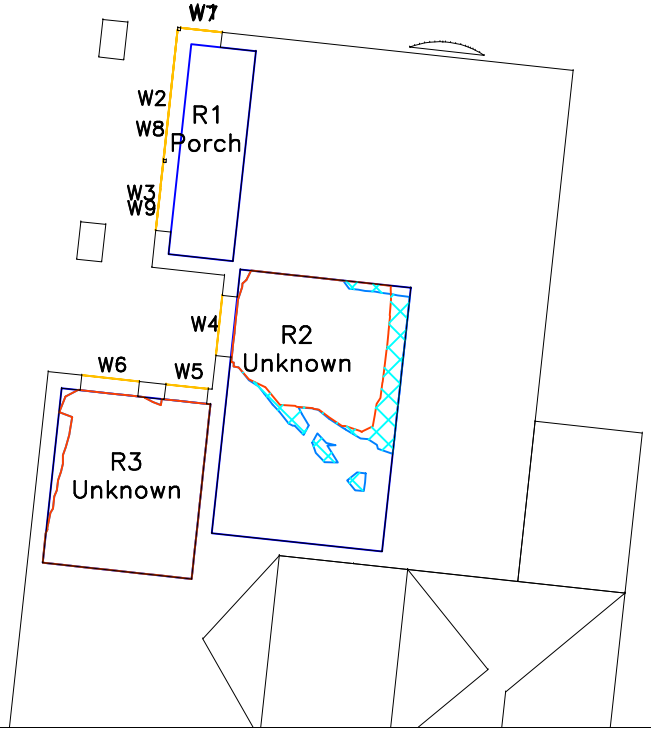
2 Privett Road
Ground Floor



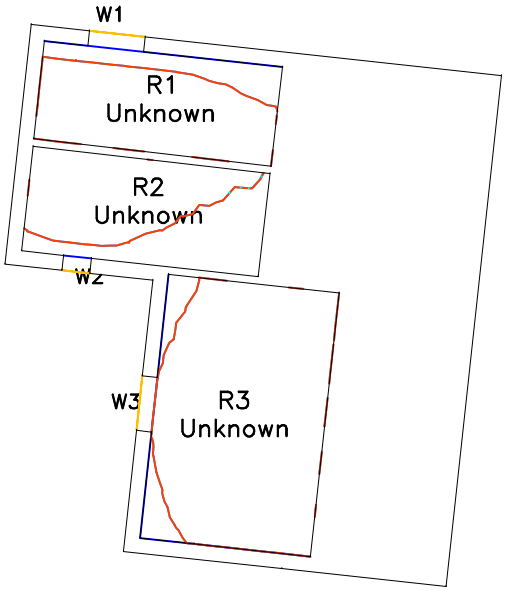
2 Privett Road
First Floor



6 Privett Road
Ground Floor



6 Privett Road
First Floor



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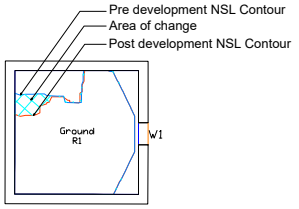

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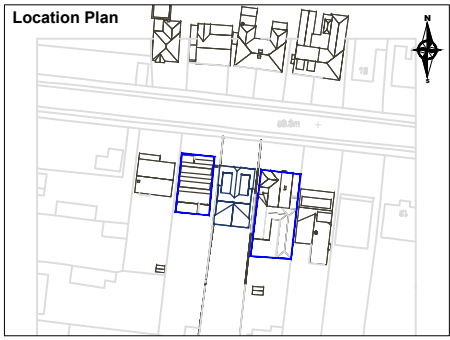

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01	Amended Scheme	09/11/2022
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PROJECT
Privett Road, Waterlooville

SCALE	PROJ REF	ANALYST	DRAWN BY
Not to scale	3414	KC	LR

DWG REF.	DWG No.
NSL contours	3414_04

Appendix A.3 – Tabulated Results for Daylight and Sunlight Calculations

Project Name: Privett Road, Waterlooville
Project No.: 3414
Report Title: Daylight & Sunlight Analysis - VSC & APSH Analysis
Date of Analysis: 15/03/2023

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
2 Privett Road																								
Ground	R1	Residential	Kitchen	W1	Existing	31.22	1.00	YES	186°				65.00	1.00	YES	21.00	1.00	YES						
					Proposed	31.24							65.00			21.00								
				W2	Existing	12.14	0.62	NO	96°				9.00	1.00	YES	3.00	1.00	YES						
					Proposed	7.55							9.00			3.00								
				W3	Existing	22.59	0.51	NO	96°				19.00	0.68	NO	3.00	1.00	YES						
					Proposed	11.42							13.00			3.00								
										22.82	0.80	YES							71.00			21.00		
										18.28									65.00	0.92	YES	21.00	1.00	YES
	R2	Residential	Bedroom	W4	Existing	25.27	0.56	NO	96°				31.00	0.45	NO	2.00	1.00	YES						
					Proposed	14.15							14.00			2.00								
				W5	Existing	13.42	0.99	YES	45°N				3.00	*North	*North	0.00	*North	*North						
					Proposed	13.31							2.00			0.00								
				W6	Existing	19.87	1.00	YES	6°N				2.00	*North	*North	0.00	*North	*North						
					Proposed	19.87							2.00			0.00								
				W7	Existing	11.98	1.00	YES	326°N				0.00	*North	*North	0.00	*North	*North						
					Proposed	11.98							0.00			0.00								
										17.73	0.85	YES							33.00			2.00		
										15.03									17.00	0.52	NO	2.00	1.00	YES
	R3	Residential	Study	W8	Existing	38.78	1.00	YES	6°N					*North	*North		*North	*North						
					Proposed	38.78																		
										38.78	1.00	YES												
										38.78										*North	*North		*North	*North
First	R1	Residential	Bedroom	W1	Existing	39.08	1.00	YES	6°N					*North	*North		*North	*North						
					Proposed	39.07																		
										39.08	1.00	YES												
										39.07										*North	*North		*North	*North
	R2	Residential	Bedroom	W2	Existing	39.06	1.00	YES	6°N				11.00	*North	*North	0.00	*North	*North						
					Proposed	39.06							11.00			0.00								
				W3	Existing	37.76	1.00	YES	186°				81.00	1.00	YES	27.00	1.00	YES						
					Proposed	37.77							81.00			27.00								
										38.41	1.00	YES							92.00			27.00		
										38.42									92.00	1.00	YES	27.00	1.00	YES

Project Name: Privett Road, Waterlooville
Project No.: 3414
Report Title: Daylight & Sunlight Analysis - VSC & APSH Analysis
Date of Analysis: 15/03/2023

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
6 Privett Road																								
Ground	R1	Residential	Porch	W1	Existing	38.92	1.00	n/a	6°N					*North	*North		*North	*North						
(External images confirm this room is non-habitable)					Proposed	38.91																		
				W2	Existing	8.55	0.42	n/a	276°N					*North	*North		*North	*North						
					Proposed	3.62																		
				W3	Existing	12.72	0.54	n/a	276°N					*North	*North		*North	*North						
					Proposed	6.84																		
				W7	Existing	39.30	1.00	n/a	6°N					*North	*North		*North	*North						
					Proposed	39.28																		
				W8	Existing	1.00	0.35	n/a	276°N					*North	*North		*North	*North						
					Proposed	0.35																		
				W9	Existing	12.22	0.53	n/a	276°N					*North	*North		*North	*North						
					Proposed	6.53																		
										13.12	0.70	n/a												
										9.24										*North	*North		*North	*North
	R2	Residential	Unknown	W4	Existing	12.37	0.88	YES	276°N					*North	*North		*North	*North						
					Proposed	10.87																		
										12.37	0.88	YES												
										10.87										*North	*North		*North	*North
	R3	Residential	Unknown	W5	Existing	4.82	0.66	NO	6°N					*North	*North		*North	*North						
					Proposed	3.20																		
				W6	Existing	12.73	0.74	NO	6°N					*North	*North		*North	*North						
					Proposed	9.41																		
										8.38	0.72	NO												
										6.00										*North	*North		*North	*North
First	R1	Residential	Unknown	W1	Existing	39.09	1.00	YES	6°N					*North	*North		*North	*North						
					Proposed	39.09																		
										39.09	1.00	YES												
										39.09										*North	*North		*North	*North
	R2	Residential	Unknown	W2	Existing	32.44	1.01	YES	186°				73.00	1.00	YES	21.00	1.00	YES						
					Proposed	32.63							73.00			21.00								
										32.44	1.01	YES							73.00			21.00		
										32.63									73.00	1.00	YES	21.00	1.00	YES
	R3	Residential	Unknown	W3	Existing	33.21	1.01	YES	276°N					*North	*North		*North	*North						
					Proposed	33.52																		
										33.21	1.01	YES												
										33.52										*North	*North		*North	*North

Project Name: Privett Road, Waterlooville
Project No.: 3414
Report Title: No Sky Line / Daylight Distribution Analysis
Date of Analysis: 15/03/2023

Floor Ref.	Room Ref	Property Type	Room Use		Room Area	Lit Area Existing	Lit Area Proposed	Pr/Ex	Meets BRE Criteria
2 Privett Road									
Ground	R1	Residential	Kitchen	Area m2	18.13	18.08	17.66		
				% of room		99.72%	97.38%	0.98	YES
	R2	Residential	Bedroom	Area m2	8.38	7.55	7.55		
				% of room		90.07%	90.07%	1.00	YES
	R3	Residential	Study	Area m2	13.79	13.75	13.75		
				% of room		99.74%	99.74%	1.00	YES
First	R1	Residential	Bedroom	Area m2	13.04	12.71	12.71		
				% of room		97.48%	97.48%	1.00	YES
	R2	Residential	Bedroom	Area m2	14.37	14.37	14.37		
				% of room		100.00%	100.00%	1.00	YES
6 Privett Road									
Ground	R1	Residential	Porch	Area m2	4.38	4.38	4.38		
				% of room		99.89%	99.89%	1.00	n/a
	R2	Residential	Unknown	Area m2	14.54	7.49	6.18		
				% of room		51.49%	42.50%	0.83	YES
	R3	Residential	Unknown	Area m2	8.41	8.07	8.07		
				% of room		95.87%	95.86%	1.00	YES
First	R1	Residential	Unknown	Area m2	7.57	5.97	5.97		
				% of room		78.92%	78.92%	1.00	YES
	R2	Residential	Unknown	Area m2	7.95	4.87	4.87		
				% of room		61.21%	61.25%	1.00	YES
	R3	Residential	Unknown	Area m2	14.54	13.47	13.47		
				% of room		92.61%	92.61%	1.00	YES