E & S BRISTOL
Energy & Sustainability Services

Daylight & Sunlight Report

Proposed Extension to; 3 The Avenue, Clevedon BS21 7EB

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EXECUTIVE SUMMARY

E & S Bristol have been instructed by Earlsfield Town Planning to carry out a Daylight and Sunlight Assessment for the proposed residential extension at 3 The Avenue, Clevedon.

The proposed scheme has been carefully designed to provide the current occupants with adequate daylight and sunlight levels throughout the year, with careful consideration not to impact negatively on the natural daylight received by the neighbouring buildings. The main scope of the daylight and sunlight study is to assess the impact of the proposed development on the existing surrounding properties and open spaces in terms of daylight and sunlight.

To ensure that this assessment can be appropriately evaluated against North Somerset Councils Residential Design Guide (January 2013), the analysis has been carried out in accordance with BRE's guide 'Site Layout Planning for Sunlight and Daylight: A Guide to Good Practice', P J Littlefair (2011).

The daylight and sunlight assessment has been carried out using the following checks on the existing properties and outdoors spaces;

- Sunlight provision to main amenity spaces

Initially a total of 7 existing buildings adjacent to the site were identified which may be impacted upon by the proposed development. Following further investigation, it has been found due to the distance of the existing building facades to the proposed extension, 6 of the 7 properties need not be assessed. The remaining property does not have any windows which face the site, plus this dwelling lies South-West of the proposed extension, therefore according to BRE criteria, its daylight and sunlight will also not be affected and does not need to be analysed.

There are however 3 garden amenity spaces which were identified at potential risk of shadowing from the proposed extension. These being the rear gardens of 52, 54 and 56 Cambridge Road. A sunlight analysis has been carried out before and after the extension to determine the impact the proposals have on the adjacent gardens.

This report confirms in summary, the proposal will have a very low impact on the light receivable by its neighbouring properties and the loss of sunlight is insignificant. All assessed garden amenity spaces achieve the targets as outlined in the BRE guidance both before and after proposed extension.

E & S Bristol confirms that the proposed development design achieves a high level of compliance with the BRE recommendations.

INTRODUCTION

E & S Bristol have been instructed by Earlsfield Town Planning to prepare a daylight and sunlight study to assess the impact of a proposed extension to the dwelling at 3 The Avenue, Clevedon on the existing surrounding properties and open spaces in terms of daylight and sunlight levels.

The proposal is for a two-storey side extension to the property, with additional lower ground excavation providing access to the rear garden and additional residential accommodation. The proposal has been designed to respect the form of the existing building and the existing street scene

Daylight and sunlight availability of the existing properties as well as sunlight provision in outdoor amenity spaces have been considered. Daylight and sunlight analysis and calculations have been carried out in accordance with BRE's 'Site Layout Planning for Sunlight and Daylight: A Guide to Good Practice' (2011) P J Littlefair, which is generally accepted as good practice by planning authorities.

The BRE Guide gives advice on site layout to achieve provision of daylight and sunlight both within buildings and in the open spaces between them. The BRE guide aims to aid designers in considering the relationship between new and existing buildings to ensure that each retains the potential to achieve good daylighting and sunlight levels. BRE guidelines have been drafted primarily for use with low density suburban developments and should therefore be used flexibly when dealing with dense urban sites and extensions to existing buildings.

This report summarises an assessment of the impacts of the proposed development on the surrounding properties potential to receive daylight and sunlight.

The properties identified which could potentially be affected by the proposed development are 52, 54 and 56 Cambridge Road, 1, 1a, 4 and 6 The Avenue.

Taking guidance from the 'Site layout planning for daylight and sunlight' the Vertical Sky Component and Annual Probable Sunlight Hours tests will be carried out on any relevant windows of these dwellings. Furthermore, an availability of sunlight assessment will be carried out on the garden spaces of 52, 54 and 56 Cambridge Road.

The site will be assessed before and after the proposed development to confirm if the daylight or sunlight levels have been impeded.

ASSESSMENT CRITERIA

Daylight and Sunlight

The provision of daylight is as important as ensuring low levels of noise, or low levels of odour, in maintaining the enjoyment of one's property. Adequate levels of daylight are important not only to light and heat the home, but also for an occupant's emotional wellbeing. Daylight is widely accepted to have a positive psychological effect on human beings and there is a great deal of evidence to suggest that people who are deprived of daylight are more susceptible to depression and mood swings. This is common in northern countries, such as Norway, Iceland and Canada where daylight is scarce during the winter months.

When assessing the effects of proposed building projects on the potential to cause issues relating to light, it is important to recognise the distinction between daylight and sunlight. Daylight is the combination of all direct and indirect sunlight during the daytime, whereas sunlight comprises only the direct elements of sunlight. On a cloudy or overcast day diffused daylight still shines through windows, even when sunlight is absent.

Rights of Light

Right of light is protected in England and Wales under common law, adverse possession or by the Prescription Act 1832. Unlike right to freedom from smell and noise, a Right of Light must be acquired before it can be enforced.

Natural light is a commodity that cannot be bought, sold or even transferred between parties. Rights can be registered, granted by deed or simply acquired by having a minimum of 20 years enjoyment of light through a window or opening. Once a window has received over 20 years of unobstructed daylight, it automatically earns itself a Right of Light. Such rights are, for Land Registration purposes, overriding interests. They are valid whether or not they are registered on the title deeds to the property which claims the right.

The right to light is for light from the sky alone; no right to sunlight exists. The right is only to the amount of light that is 'sufficient for ordinary purposes' and does not compare directly with the recommendations of BS 8206-2 'Lighting for buildings. Code of practice for daylighting'

Generally, it is accepted practice that, provided a developer ensures that any room of an adjoining property has more than 50% of the room lit to an adequate level, then it is likely that compensation will be an adequate remedy. If a room is adequately lit in over 75% then there is less grounds for a claim. It is usually only when a developer constructs a building which is likely to take more than 50% of the light away from a room that actions may arise.

In this instance 1a The Avenue would not ordinarily qualify for a right to light due to the age of the property.

METHODOLOGY

Daylight

Impact on existing properties

The design of a new development should safeguard potential for daylight to reach nearby buildings. Otherwise, obstruction caused by newly built sites may make surrounding properties look gloomy and unattractive.

BRE guidelines are intended for use to assess living areas in adjoining dwellings or main occupied spaces in non-domestic buildings where daylight is required. The methodology to assess the impact on daylight access of the properties surrounding the new development is as follows:

Angular check

This test should only be used where the proposed development is of a reasonably uniform profile and is directly opposite the existing building. A plane is drawn at 25 degrees from the horizontal at the centre of an existing window. If the new development intersects with this plane, i.e. the obstruction angle is greater than 25°, daylight access of the assessed window may be reduced. A more detailed assessment should be then carried out to calculate the loss of daylight to the existing window.

Buildings that are not directly facing the new development may still experience a change to their lighting condition and therefore the 45° approach method should be applied to assess the impact. A horizontal plane should be drawn from the highest point of the proposed development angled at 45 degrees downward. If existing windows fall within the area created by the existing building, proposed development and the angled plane, these should also be included in the assessment.

Vertical Sky Component method (VSC)

The Vertical Sky Component (VSC) quantifies the amount of available daylight received at a particular window and measured on the outer pane of the window. This is the ratio, expressed as a percentage, of the direct illuminance falling on a reference point (usually the centre of the window) to the simultaneous horizontal illuminance under an unobstructed sky (overcast sky conditions). The maximum value of VSC for a completely unobstructed vertical windowpane is 40%.

In order to maintain good levels of daylight the BRE guidance recommends that the VSC of a window should be 27% or greater. However, the 2011 BRE Handbook makes allowance for different target values in cases where a higher degree of obstruction may be unavoidable such as historic city centres or modern high-rise buildings. The guide states that the 27% value is:

"..purely advisory and different targets may be used on the special requirements of the proposed development or its location".

If the VSC is less than 27% then further assessment should be carried out to compare existing and proposed daylight levels received by an existing window.

Comparison Method

The comparison test considers the VSC results of the baseline/existing condition and the VSC results assuming that the new development is in place. The 2011 BRE Handbook states that where the proposed VSC is less than 27%, the comparison with the existing situation should be analysed and if the VSC is less than 0.8 times its former value, occupants of the existing building may notice a reduction in the amount of daylight.

Sunlight

Impact on existing properties

The impact of the new development on the sunlight levels of neighbouring residential buildings has been carried out in accordance with the BRE Guide. The methodology is based on guidelines set out in the 2011 BRE Handbook. The methodology to assess the impact on the sunlight access of the properties surrounding the new development is as follows:

Angular check

This test should only be used where the proposed development is of a reasonably uniform profile and is directly opposite the existing building. A plane is drawn at 25° from the horizontal at the centre of an existing window. If the new development intersects with this plane, i.e. the obstruction angle is greater than 25°, daylight access of the assessed window may be reduced. A more detailed assessment should be then carried out to calculate the loss of sunlight to the existing window.

Annual Probable Sunlight Hours

The BRE guide recommends that main living room windows should receive at least 25% of the total annual probable sunlight hours, including at least 5% of the annual probable sunlight hours during the winter months between 21st September and 21st March. Sunlight availability will be adversely affected if both the total number of sunlight hours falls below these targets and is less than 0.8 times the amount before the development.

Overshadowing

Gardens and open spaces Existing spaces

The methodology is based on guidelines set out in the 2011 BRE Handbook that states the following:

"The availability of sunlight should be checked for all open spaces where it will be required. This would normally include: private gardens (usually the main back garden of a house), parks and playing fields, children's playgrounds..."

BRE Guide recommends that for a garden or amenity to appear adequately sunlit throughout the year, at least half of it should receive at least two hours of sunlight on 21 March (Spring Equinox).

The guide suggests that where buildings that may affect a number of amenity spaces are proposed it is useful to plot a shadow plan to show the location of shadows at different times of the day on 21 March.

The methodology to assess the sunlight impact of the amenity spaces is as follows: sunlight provision is considered adequate if at least 50% of the amenity space receives two hours of sunlight on 21 March. If otherwise, then a comparison between the existing and proposed conditions is required to test whether the amenity space receives at least 80% of sunlight of its former value. If this is the case the BRE guidance states that the loss of sunlight is negligible.

Proposed Development

The proposal is for a two-storey side extension to the property, with additional lower ground excavation providing access to the rear garden and additional residential accommodation. The proposal has been designed to respect the form of the existing building and the existing street scene.

Figure 1: Existing Site Location Plan

Figure 2: Proposed Site Location Plan

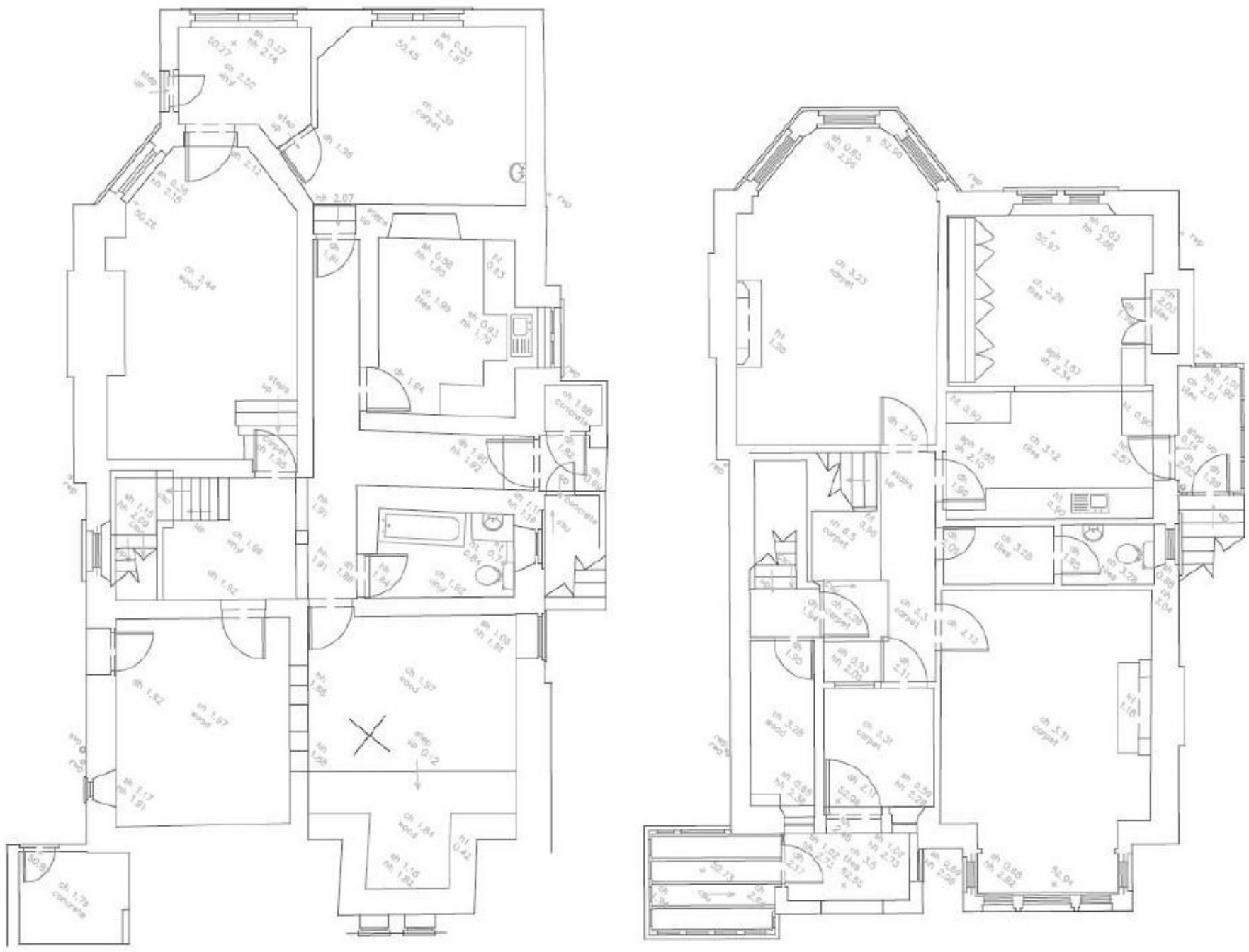

Figure 3: Existing Lower Ground and Ground Floor Plans

Figure 4: Proposed Lower Ground and Ground Floor Plans

Figure 5: Existing Front and Rear Elevations

Figure 5: Proposed Front and Rear Elevations

BUILDING MODEL

As Existing Model

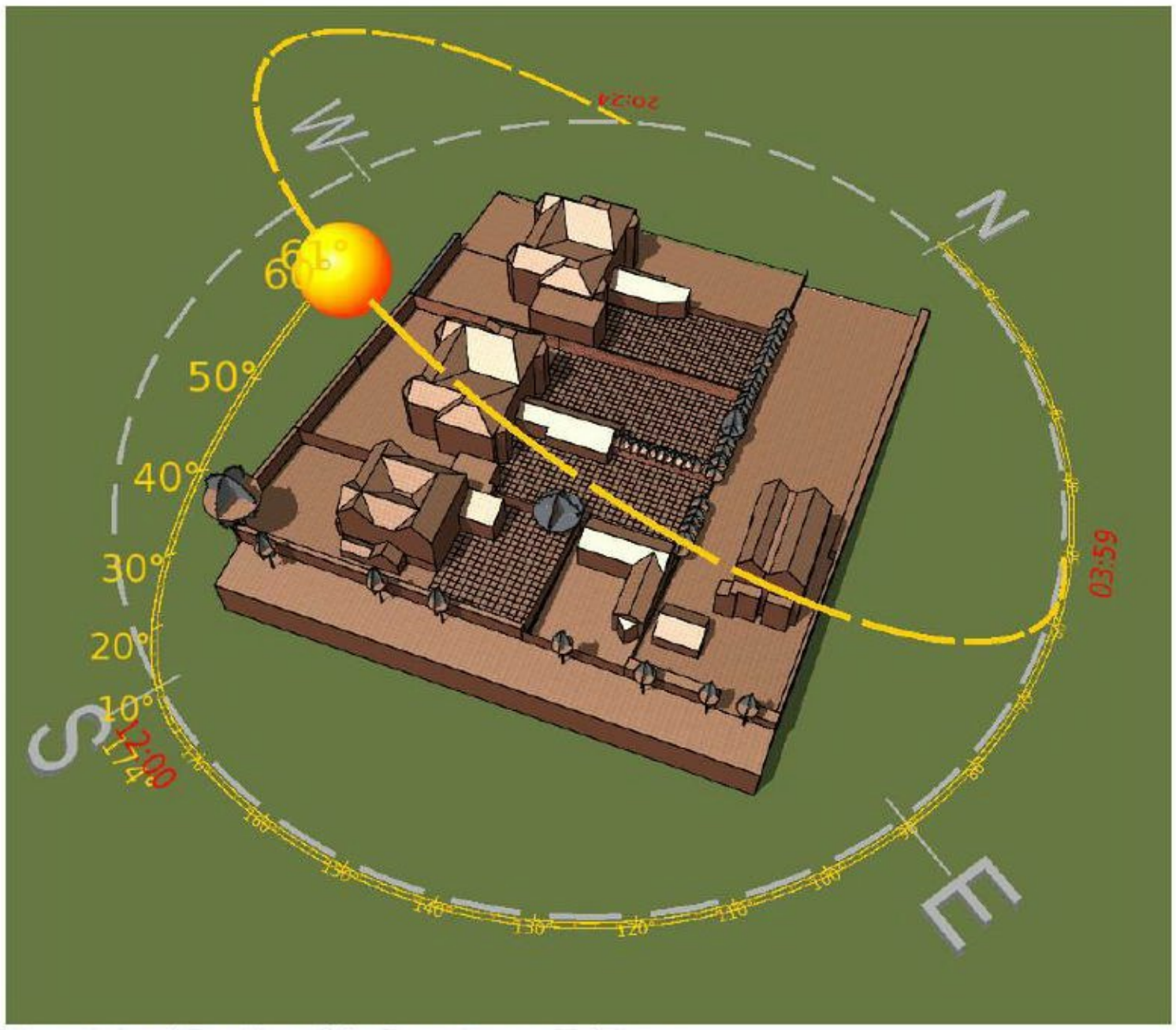

Figure 6: South East View of the Site at 2pm on 20th June

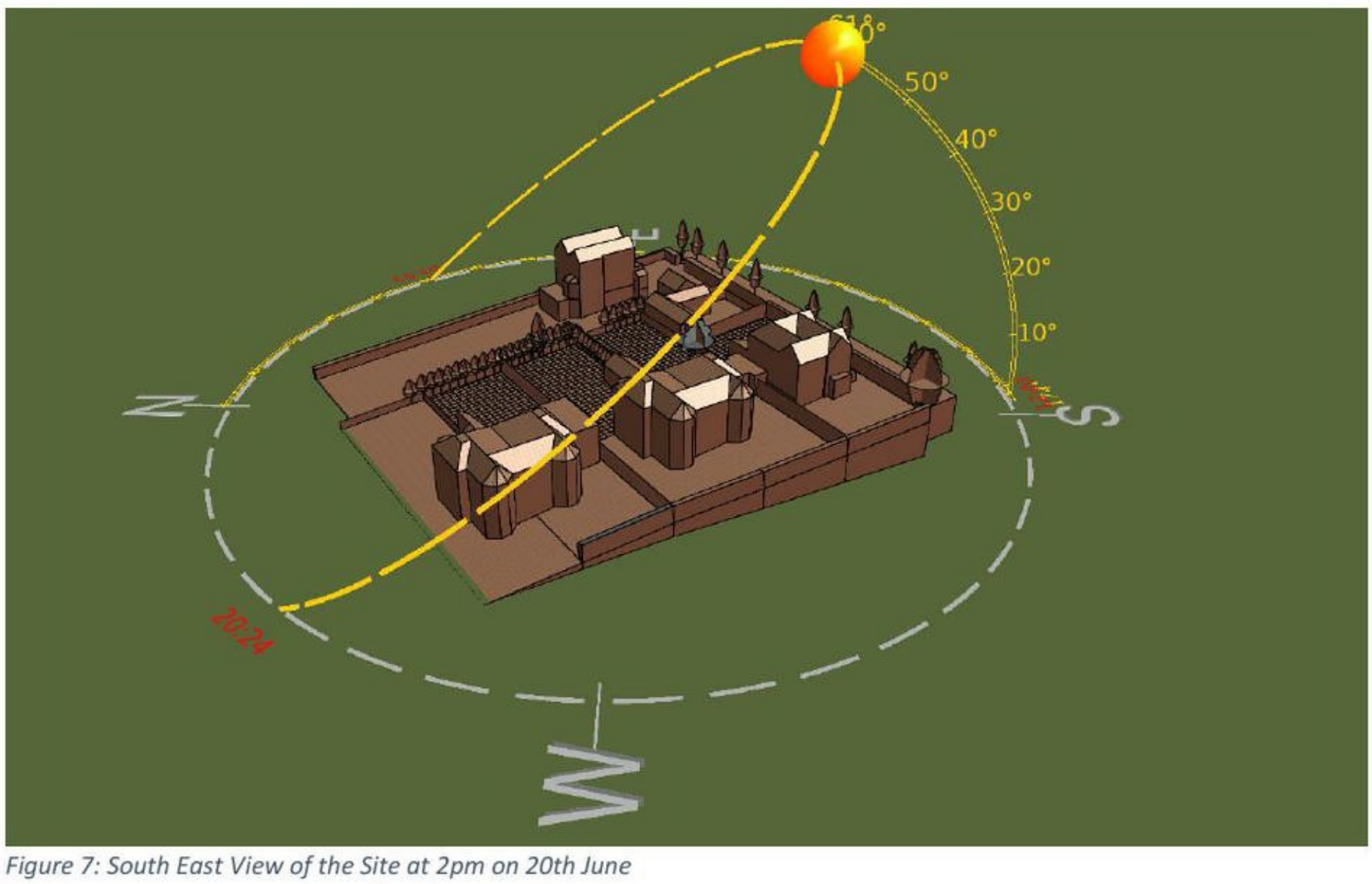

Figure 7: South East View of the Site at 2pm on 20th June

As Proposed Model

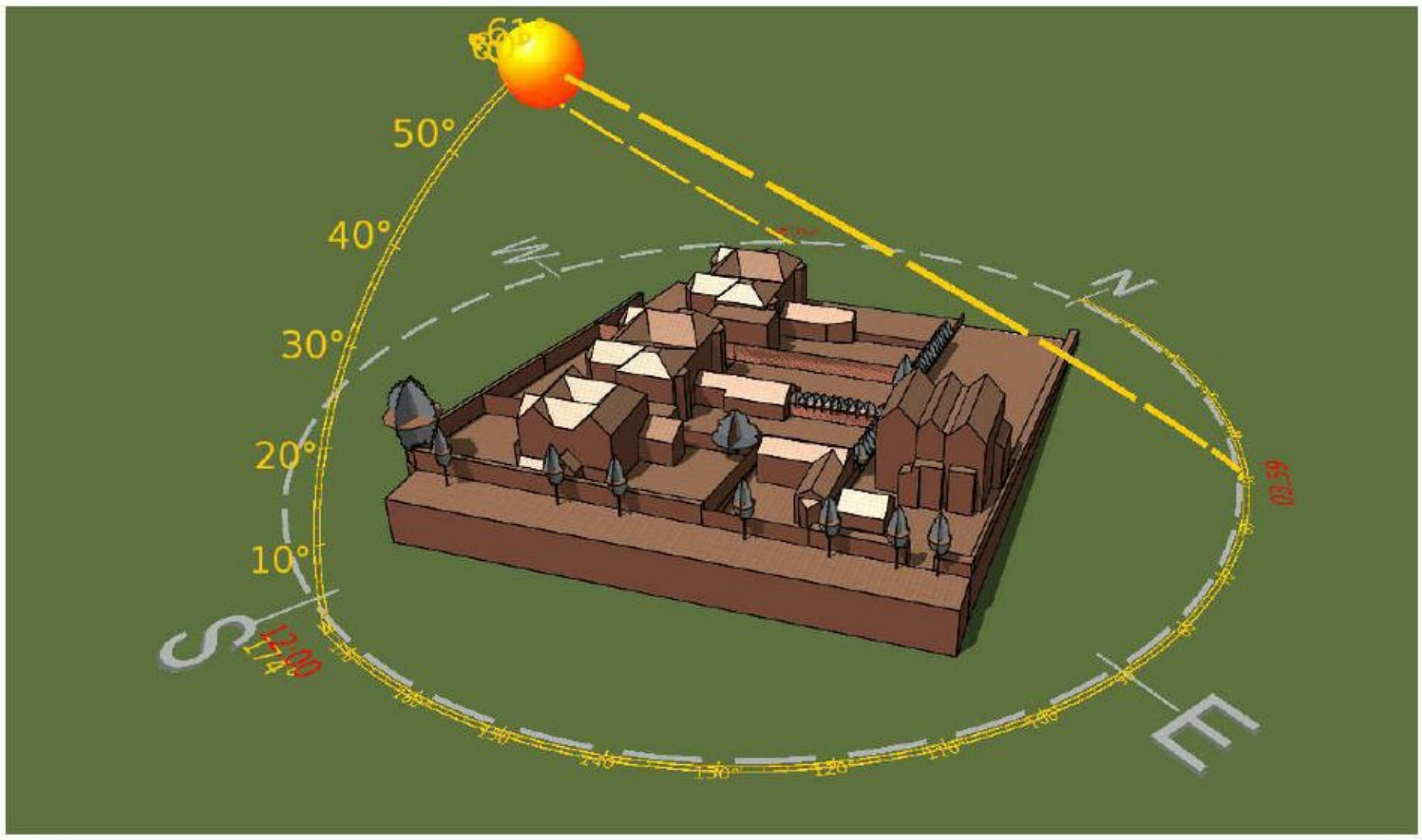

Figure 8: South East View of the Site at 2pm on 20th June

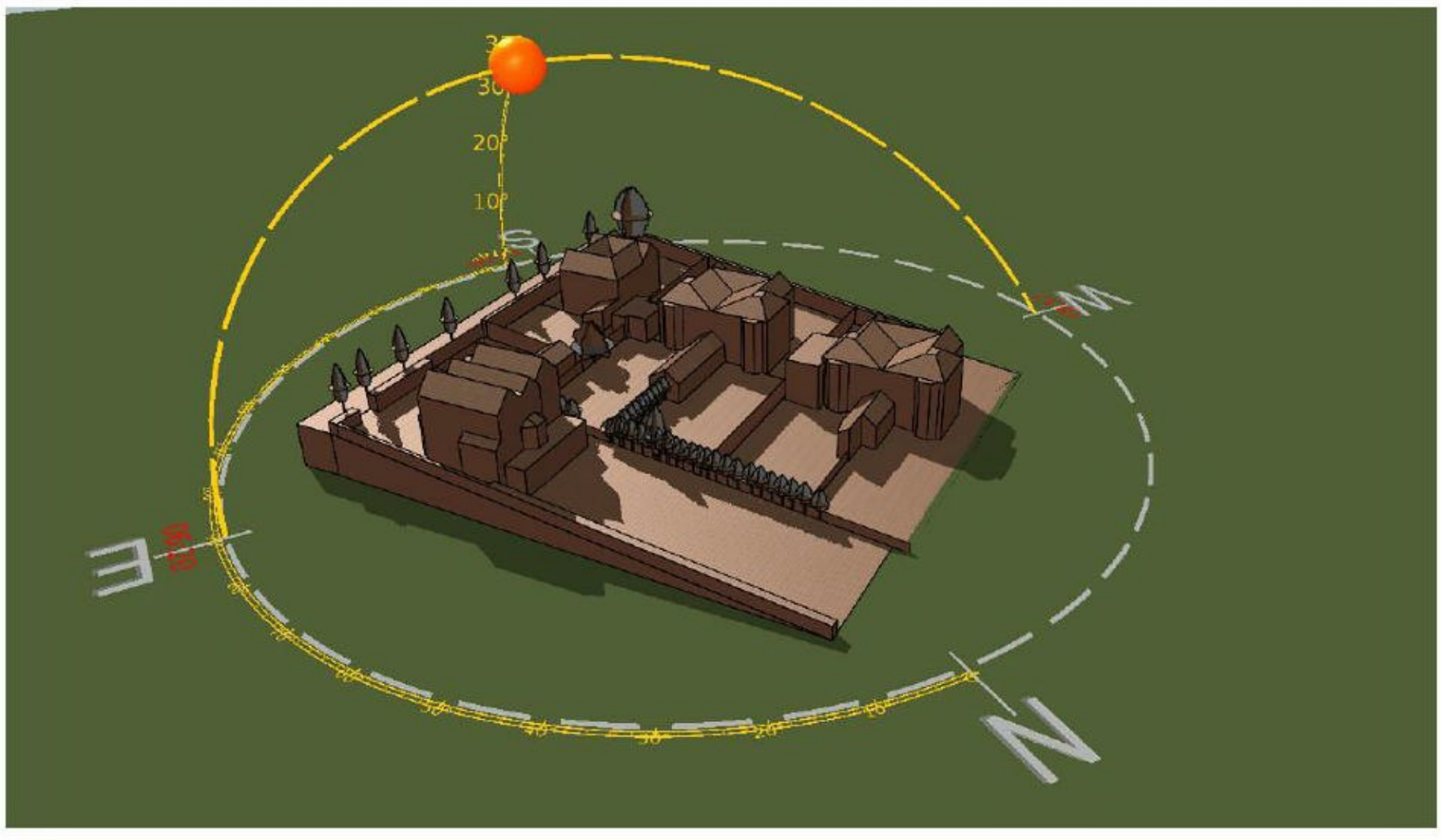

Figure 9: North East View of the Site at 12pm on 21st March

Information to build the model has been sourced from Earlsfield Town Planning, Will Falconer Architect, Anthony Brooks Surveys (Topography) and the planning application for 1 The Avenue, North Somerset Council Reference Number: 01/P/2076/F.

DAYLIGHT AND SUNLIGHT ASSESSMENT

The criteria for selecting the properties to assess are to select window locations at habitable rooms of existing buildings which may be impacted by the proposed development. These locations are at windows that are closest to the site and which either face directly on to the site or have an unobstructed view of the site. These rooms are also at lowest residential floor levels. From an initial inspection, dwellings 52, 54 and 56 Cambridge Avenue and 1, 1a, 4 and 6 The Avenue could potentially be obstructed.

The BRE Guide states *"Loss of light to existing windows need not be analysed if the distance of each part of the new development from the existing window is three or more times its height above the centre line of the existing window. In these case the loss of light will be small. Thus if the new development were 10m tall, and a typical existing ground floor window would be 1.5m above the ground, the effect on the existing buildings more than 3 x (10 – 1.5) = 22.5m away need not be analysed."*

In this instance, the extension from ground to ridge height is 10.2m. Using a worst case approach, and suggesting the windows were 0m above ground, buildings which are over 30.6m away need not be considered. (Calculated as; 3 x (10.2 – 0) = 30.6).

Based on this methodology from the BRE all of the dwellings (except 1a The Avenue) are far enough away from the extension that loss of light will be insignificant and need not be analysed for loss of daylight or sunlight. Whilst 1a the Avenue is within the 30.6m boundary, this property does not have any windows which face the site, plus this dwelling lies South-West of the proposed extension, therefore its daylight and sunlight will not be affected.

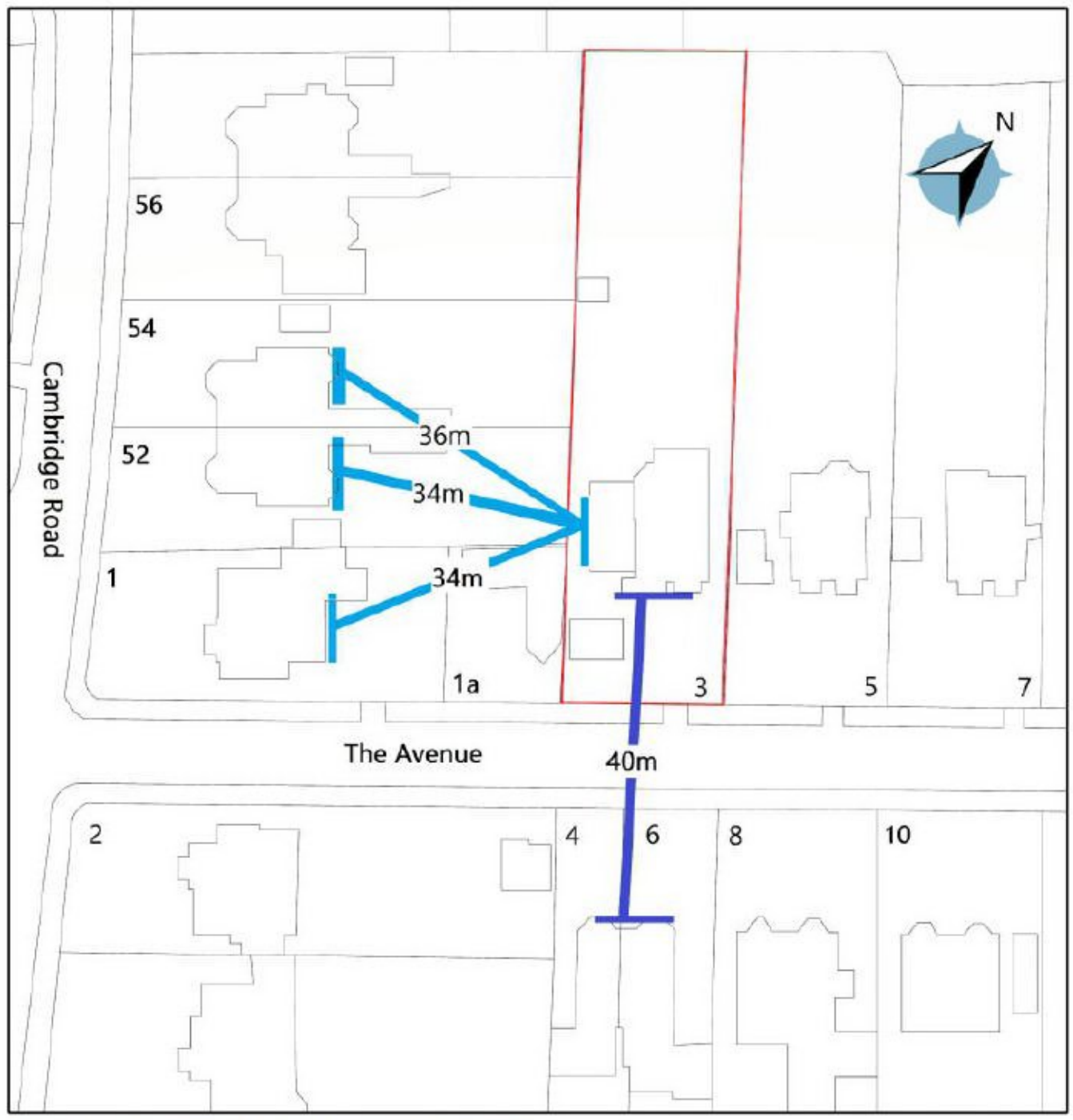

Figure 10: Distance of Neighbouring Property

GARDEN AMENITY SPACE

The recommendations set out in the BRE guide explain how to ensure that spaces between buildings are not permanently in shade for a large part of the year. Fences and hedges over 1.5 m tall, and large trees are also factored into the calculations.

It is recommended that for it to appear adequately sunlit throughout the year, at least half of a garden or amenity area should receive at least two hours of sunlight on 21 March. If as a result of new development an existing garden or amenity area does not meet the above, and the area which can receive two hours of sun on 21 March is less than 0.8 times its former value, then the loss of sunlight is likely to be noticeable. If a detailed calculation cannot be carried out, it is recommended that the centre of the area should receive at least two hours of sunlight on 21 March.

Garden Space Results

Property	Areas exceeding 2 hours Sunshine Before Extension	Areas exceeding 2 hours Sunshine After Extension	Reduction	Overall Result
52 Cambridge Road	61.21%	61.21%	0.00%	Pass
54 Cambridge Road	65.64%	65.12%	0.52%	Pass
56 Cambridge Road	96.87%	96.87%	0.00%	Pass

All three garden spaces assessed will receive at least 2 hours of sunlight on the 21st March in over 50% of over the area and therefore can be considered compliant with the guidance.

The extension has no impact on the garden spaces to 52 and 56 Cambridge Road, and the impact to 54 Cambridge Road is negligible.

The following images shows the predicted results with respect to the spaces receiving at least 2 hours of sunlight on 21st March, across the gridded cells. The areas shown below are split in 1m cells – any areas which fall below 2 hours on the amenity areas will be shown as grey.

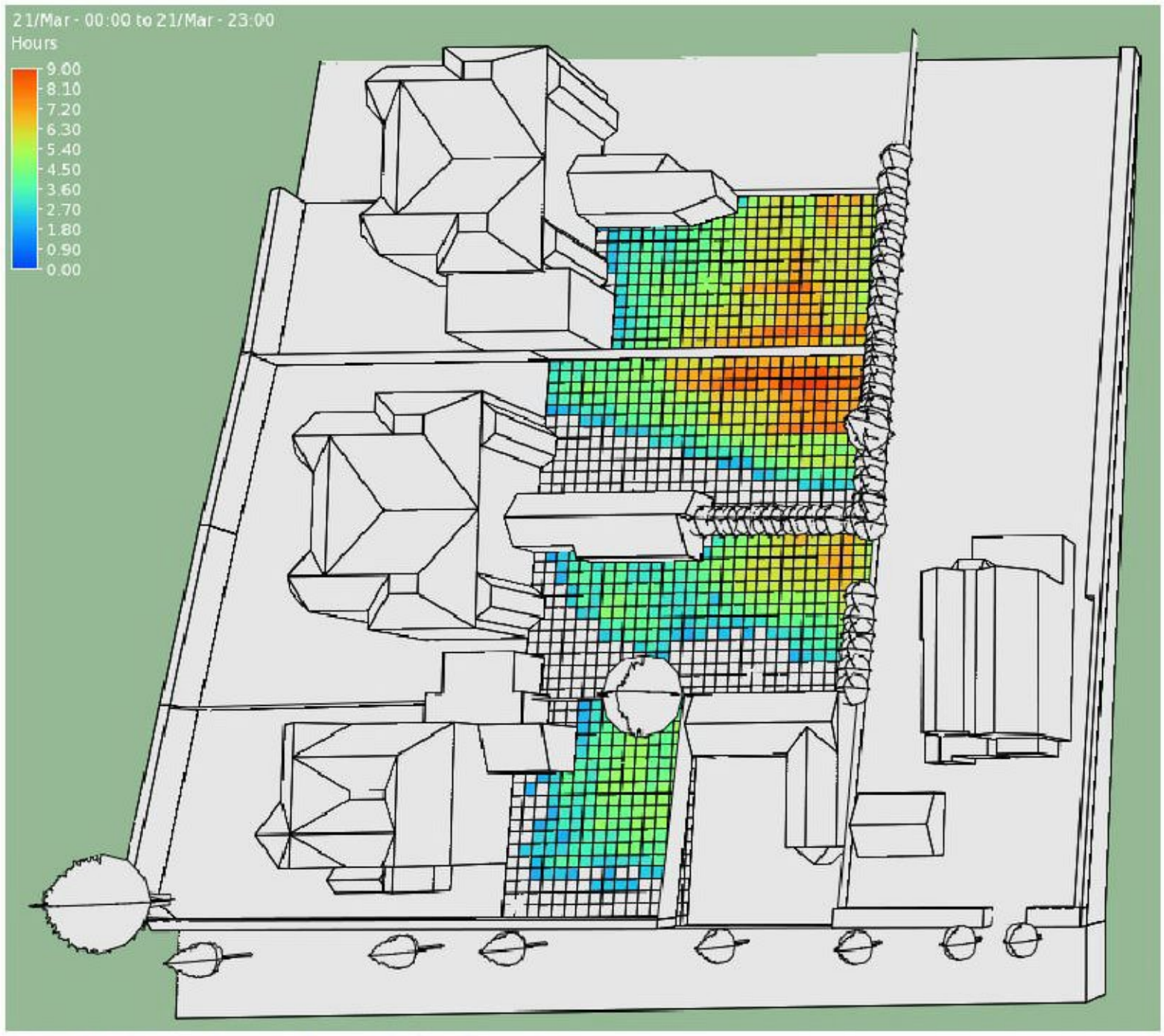

Figure 11: Garden Amenity Spaces Before Extension

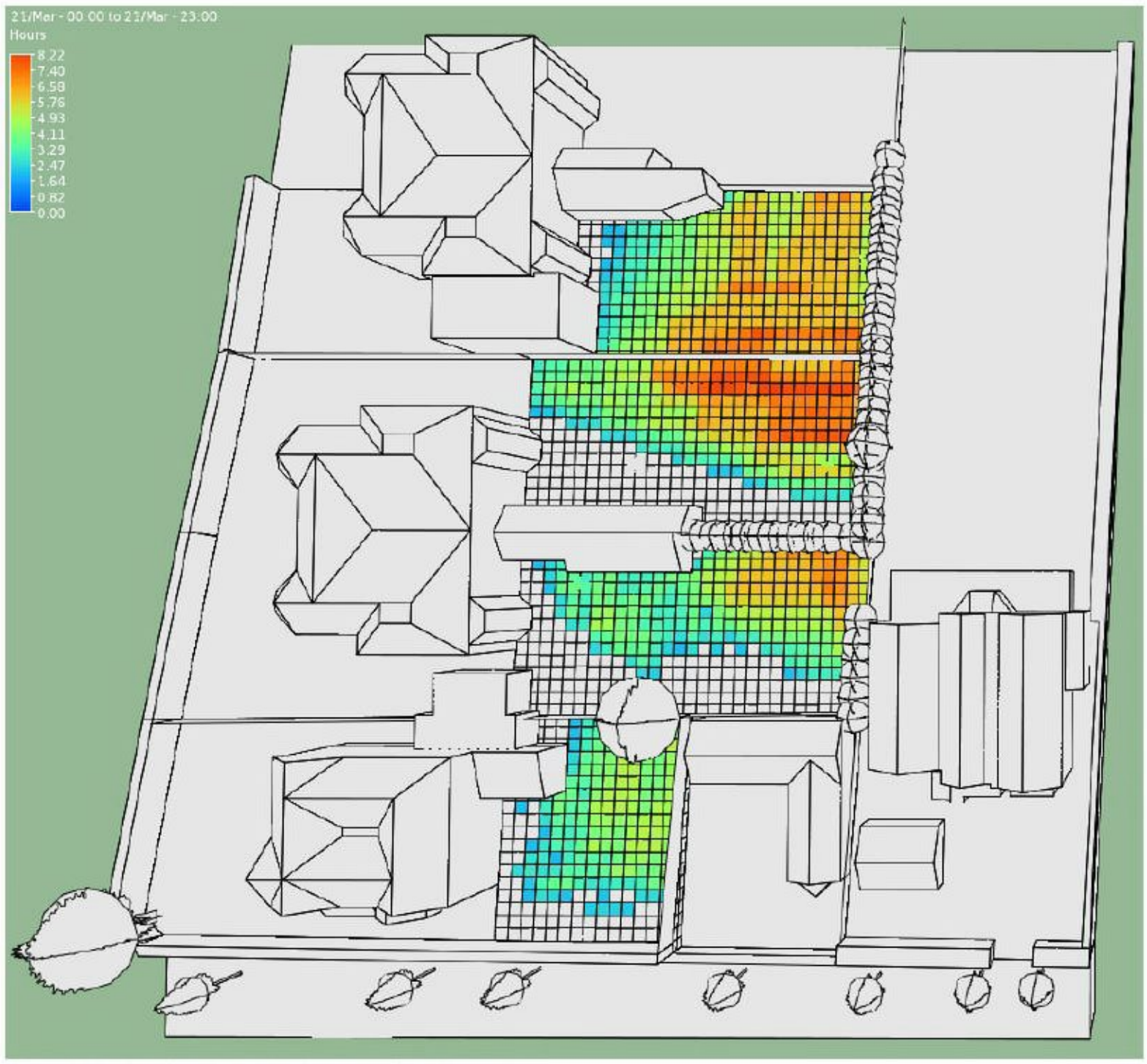

Figure 12: Garden Amenity Spaces After Extension

SUMMARY

Calculations were conducted in accordance with the BRE Report and the RICS Rights of Light Practice Standards in order to determine the extent to which the proposed extension to 3 The Avenue, Clevedon will affect the levels of daylight and sunlight at the relevant adjacent properties.

Based on the above analysis only garden spaces to 3 properties need be assessed for the impact the proposed extension may have on the daylight and sunlight availability. Of the 7 properties initially highlighted to be at potential risk, following BRE methodology, only 1 property was found to be close enough to be considered for analysis. This single dwelling has all of its windows facing south east and south west with no windows to habitable rooms which face the property, furthermore this dwelling lies to the south west of the site, so does not need to be analysed for loss of daylight or sunlight.

The overshadowing assessment shows that the garden spaces comply with the BRE criterion in terms of sunlight provision on the 21st March, with all 3 gardens exceeding the 50% threshold of the space receiving sunlight fore than 2 hours.

The extension has no impact on the garden spaces to 52 and 56 Cambridge Road, and the impact to 54 Cambridge Road is negligible.

The proposed development has been designed with care so that it has minimum visual impact on its surroundings, achieving as much sunlight hours as possible despite un-avoidable site constraints and limitations.

In summary, the proposal will have a low impact on the light receivable by its neighbouring properties and the loss of light is insignificant.