Daylight and Sunlight and Overshadowing Assessment

59 Maresfield Gardens

For LOM Architecture and Design

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About us:
XCO2 Energy are a low-carbon consultancy working in the built environment. We are a multi-disciplinary company consisting of both architects and engineers, with specialists including CIBSE low carbon consultants, Code for Sustainable Homes, EcoHomes and BREEAM assessors and LEED accredited professionals.

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Executive Summary

A daylight and sunlight analysis was carried out for the proposed development at 59 Maresfield Gardens, located within the London Borough of Camden.

This report outlines the results of the analysis for the planning application, assessing the daylight and sunlight impacts on surrounding developments.

The methodology set out in this report is in accordance with BRE's "*Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice*" by PJ Littlefair (2011) which is accepted as good practice by Planning Authorities.

The following assessments were carried out:

- Daylight: 25 Degree Line
- Daylight: Vertical Sky Component
- Sunlight: Sunlight Access
- Sunlight: Sunlight Overshadowing

A computer modelling software was used to carry out the daylight and sunlight impact assessment.

Daylight Assessment

The daylight analysis indicated that 32 out of the 39 windows analysed passed the 25 degree line test. The remaining 7 windows will receive VSC levels above the BRE requirement of 27%. The proposed development will have no notable daylight impact on surrounding windows.

Sunlight Assessment

A total of 11 windows were analysed as part of the sunlight assessment. 6 of the 11 windows passed the 25 degree line test, whilst the remaining 5 windows will have annual and winter probable sunlight hours exceeding the BRE requirements. The proposed development will have no significant impact on sunlight less to surrounding windows.

Overshadowing Assessment

A Solar Access Analysis was undertaken on two potentially impacted amenity areas to the north and northwest for the full 24 hours on 21st March. At least half of both assessed amenity areas will receive a minimum of 2 hours of sunlight on 21st March. The proposed development is not considered to have any significant adverse impact on sunlight access to existing amenity spaces.

Summary

In summary, all of the existing windows on properties surrounding the proposed development passed the relevant BRE tests for daylight and sunlight access. All amenity spaces in close proximity to the proposed development will receive at least 2 hours of sunlight on 21 March. Therefore the proposed development will not cause any significant negative impact to daylight and sunlight access for surrounding properties and amenity spaces.

Introduction

This report assesses the daylight, sunlight and overshadowing impacts that the proposed new build residential development may have on the existing properties and open spaces surrounding the site.

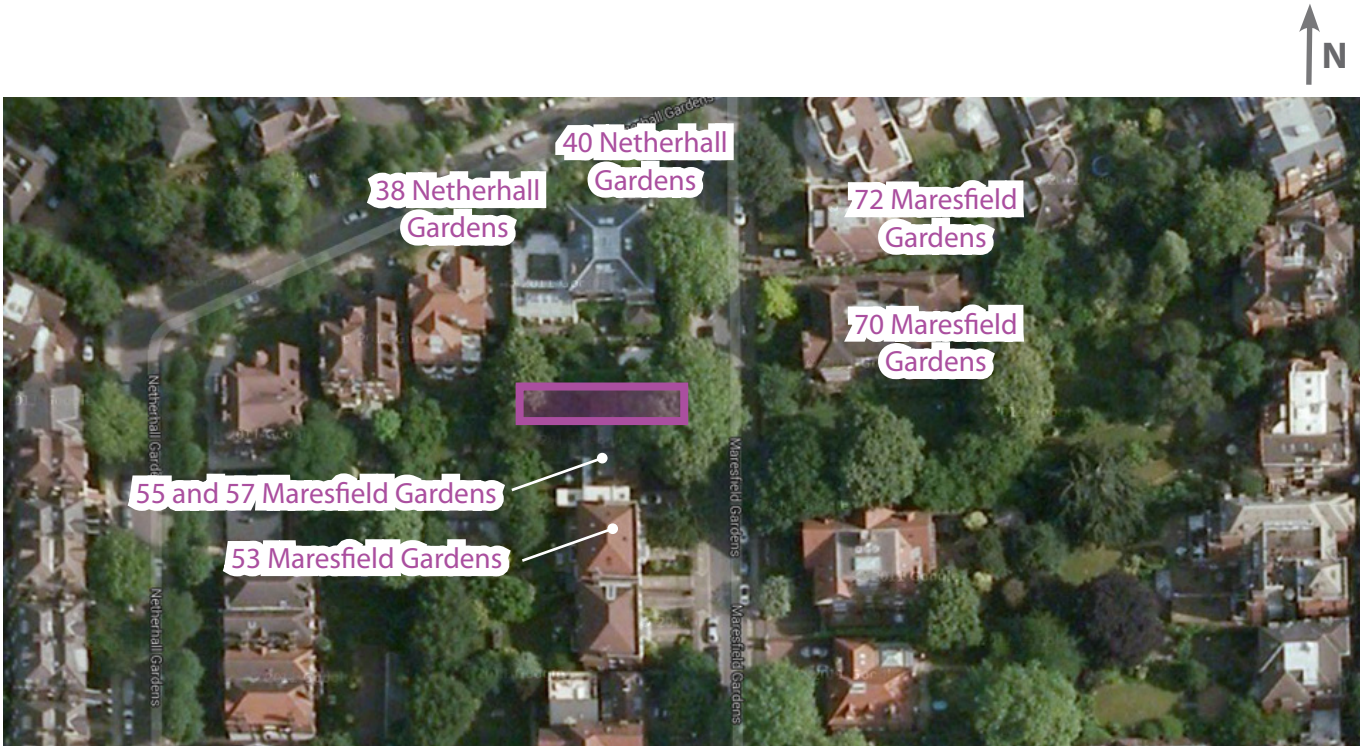
The approach is based on the BRE's "Site Layout Planning for daylight and sunlight, a Guide to good practice" PJ Littlefair 2011, which is generally accepted as good practice by Town and Country Planning authorities.

It should be noted that although the numerical values stated in the BRE provide useful guidance to designers, consultants and planning officials, these are purely advisory and may vary depending on context. Dense urban areas, for example, may often experience greater site constraints when compared to low-rise suburban areas, and thus a high degree of obstruction is often unavoidable.

Site

The proposed development at 59 Maresfield Gardens comprises of a three storey single dwelling with an additional basement level, located to the west of Maresfield Gardens in the London Borough of Camden. The development will replace a double storey dwelling currently present on site.

Site analysis was carried out for the site to identify any potential daylight and sunlight impacts on the surrounding developments. Relevant properties that may be impacted by the proposed development are annotated in the figure below.



Plan of surrounding areas for proposed development at Maresfield Gardens. Site area highlighted in pink.

Methodology

The following methodology was used to carry out the daylight, sunlight and overshadowing assessments. The methodology is based on the guidelines set out in the BRE "*Site Layout Planning for Daylight and Sunlight, A Guide to Good Practice" (2011).*

Daylight

1. Daylight to surrounding windows

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, the internal daylight levels of the surrounding windows may be reduced. When an obstruction of the 25 degree plane occurs, a more detailed assessment involving the Vertical Sky Component of the affected window would need to be carried out.

2. Absolute Vertical Sky Component

The Vertical Sky Component is the ratio of the direct sky illuminance falling on the vertical wall at a reference point, to the simultaneous horizontal illuminance under an unobstructed sky. To maintain good levels of daylight, the Vertical Sky Component of a window needs to be 27% or greater. If the VSC is less than 27%, then a comparison of existing and proposed levels of VSC level would need to be calculated.

3. Relative Vertical Sky Component

Good levels of daylighting can still be achieved if VSC levels are within 0.8 of their former value.

Sunlight

Access to sunlight (APSH)

The BRE test relates mainly to existing living room windows, although care should be taken to ensure that kitchens and bedrooms receive reasonable amounts of sunlight.

An Annual Probable Sunlight Hour (APSH) assessment is carried when:

- there is an obstruction within the 25 degree line, calculated from the centre of the window
- the proposed development is situated within 90 degrees due south of the window

The APSH assessment states that the existing living room window should receive at least:

- 25% of annual probable sunlight hours throughout the year and
- 5% of annual probable sunlight hours during the winter months and
- the difference between the APSH is not less than 0.8 times its former value; or
- Reduction in sunlight received over the whole year is greater than 4% of annual probable sunlight hours

The term 'annual probable sunlight hours' refers to the long-term average of the total of hours during a year in which direct sunlight reaches the unobstructed ground (when clouds are taken into account). The 'winter probable sunlight hours' is used to mean the same but only for the winter period (21 September – 21 March).

In order for a window to receive adequate sunlight access, it must achieve at least 372 hours of annual probable sunlight during the year and 22 hours of winter probable sunlight. Note that the BRE guidance expects the above to be met for living room windows only.

Overshadowing

Sunlight to Amenity Spaces

Open spaces should retain a reasonable amount of sunlight throughout the year. The BRE states that for an amenity space to "appear adequately sunlit throughout the year, at least half of the area should receive at least two hours of sunlight on 21 March".

The following sections presents the daylight, sunlight and overshadowing assessment results for the proposed development.

Daylight Assessment

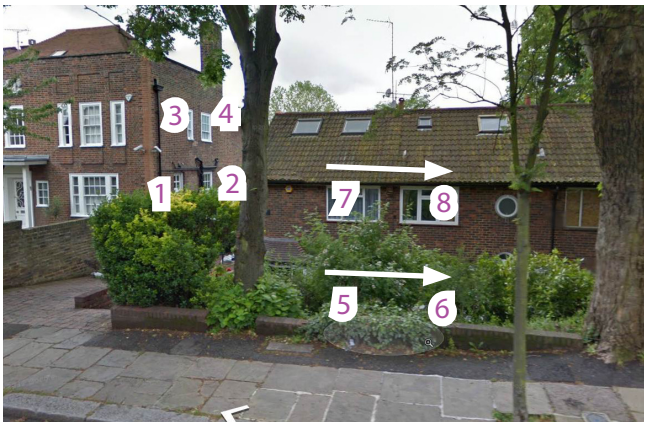
All surroundings windows that could potentially be impacted by the proposed development have been included in the daylight assessment. The assessed windows are as follows:

- North facing windows on 53 Maresfield Gardens to the south (window nos. 1-4)
- East facing windows on terraced houses at 55 and 57 Maresfield Gardens to the south (window nos. 5-8)
- East facing windows on Netherhall Gardens to the northwest (window nos. 9-12)
- South facing windows on 40 Netherhall Gardens to the north (window nos. 13-23)
- West facing windows on 70 and 72 Maresfield Gardens to the east (windows no. 24-39).

A total of 39 windows located on the residential properties surrounding the proposed development have been identified as facing the proposed development and therefore may suffer from daylight impacts.

Solar envelope analysis indicated that 32 of the 39 windows will have passed the 25 degree line test. The remaining 7 windows will receive VSC levels above the BRE requitement of 27%. Figures showing solar envelope analysis results, as well as a summary of the daylight assessment results are shown in the following pages.

The proposed development is not considered to have any negative impact on daylight access to the surrounding properties.

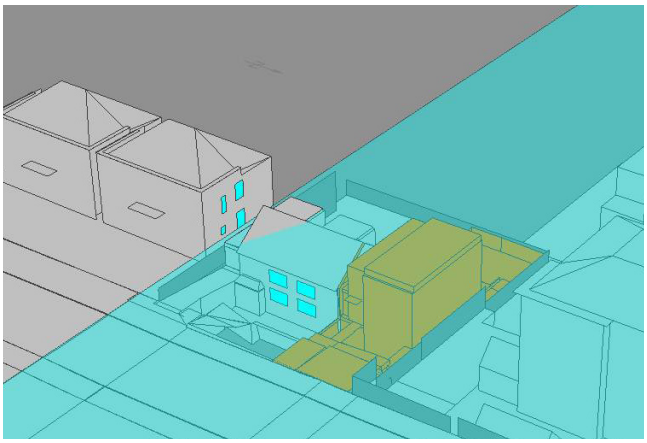


Potentially affected windows on 53, 55 and 57 Maresfield Gardens

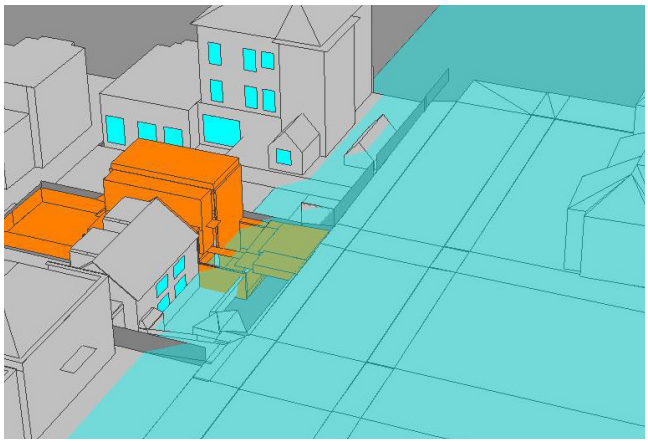
Potentially affected windows on 38 Netherhall Gardens

Potentially affected windows on 40 Netherhall Gardens

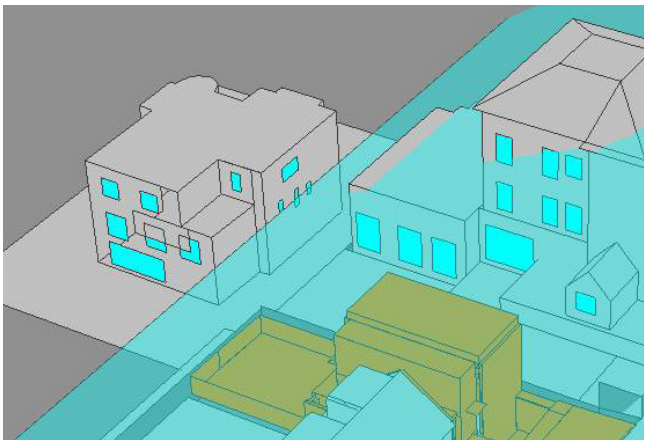
Potentially affected windows on 70 and 72 Maresfield Gardens



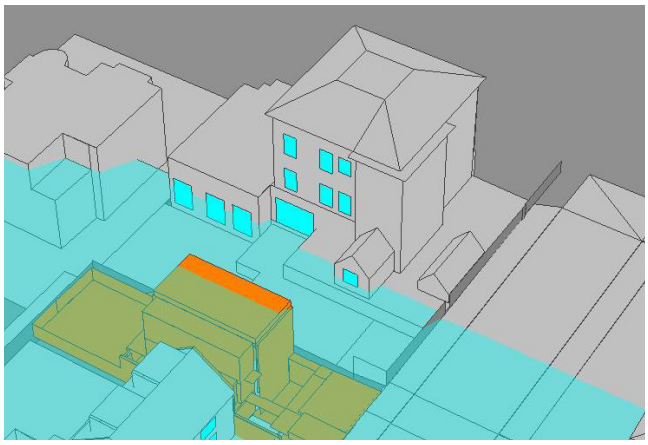
25° line emanating from ground floor windows of 53 Maresfield Gardens



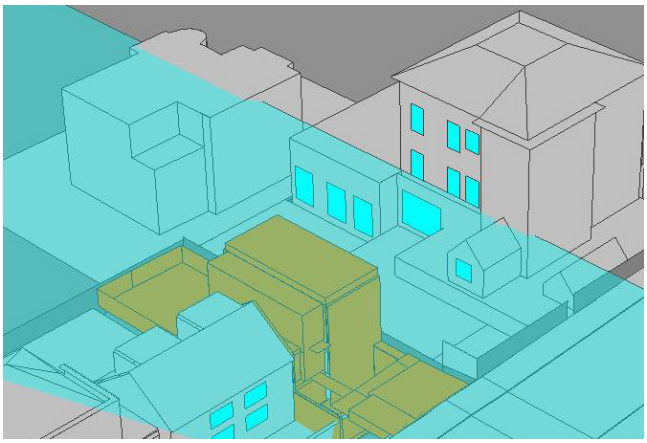
25° line emanating from ground floor windows of 55 and 57 Maresfield Gardens



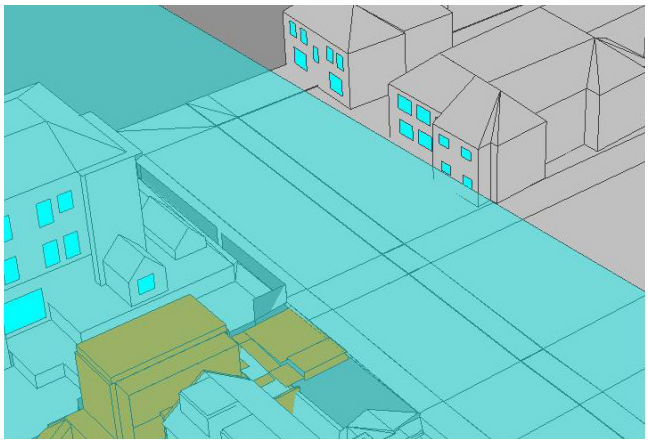
25° line emanating from first floor east facing windows of 38 Netherhall Gardens



25° line emanating from ground floor windows of 40 Netherhall Gardens



25° line emanating from first floor windows of 40 Netherhall Gardens



25° line emanating from ground floor windows of 70 and 72 Maresfield Gardens

Daylight Assessment Results Summary

Window No.	25 degree line test	VSC proposed	Relative VSC	PASS / FAIL
1-4	Pass	-	-	PASS
5	Not pass	33.8%	-	PASS
6	Not pass	34.5%	-	PASS
7-12	Pass	-	-	PASS
13	Not pass	33.0%	-	PASS
14	Not pass	33.1%	-	PASS
15	Not pass	32.7%	-	PASS
16	Not pass	29.1%	-	PASS
17	Not pass	33.7%	-	PASS
18-39	Pass	-	-	PASS

Number of windows	39
Windows passing 25 degree line	32
Windows with a VSC greater than 27%	7
Windows that have a VSC of at least 80% of existing value	0
Windows that do not meet either criteria	0

Sunlight Assessment

Sunlight assessment was carried out on the existing facades offsite to determine acceptable sunlight levels. Note the sunlight tests only apply to those windows which face within 90 degrees of due south.

For the proposed development at 59 Maresfield Gardens, a total of 11 offsite windows were analysed in the sunlight assessment (windows no. 13-23). Window nos. 18-23 passed the 25 degree line test and will therefore automatically pass the sunlight assessment. Window nos. 13-17 will have annual and winter probable sunlight hours both exceeding the BRE requirements. A summary of the sunlight assessment results are presented below.

The proposed development is not considered to have any negative impact on sunlight access to the surrounding properties.

Sunlight Assessment Results Summary

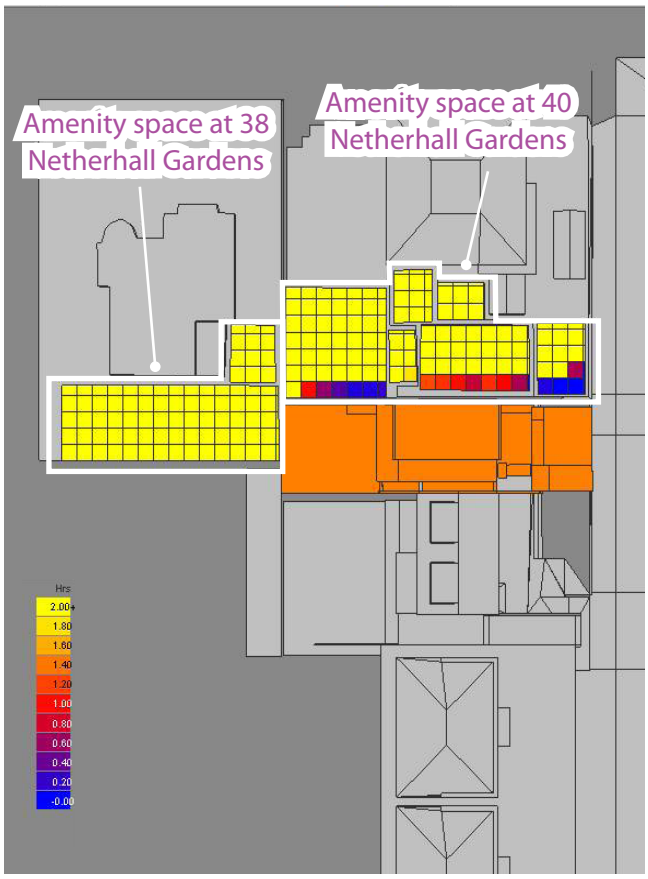
Window No.	25 degree line test	Annual probably sunlight hours (Target 372 hours)	Winter probable sunlight hours (Target 22.3 hours)	PASS / FAIL
13	Not pass	945	305	PASS
14	Not pass	974	296	PASS
15	Not pass	985	296	PASS
16	Not pass	790	265	PASS
17	Not pass	1068	323	PASS
18-23	Pass	-	-	PASS

Number of windows	11
Windows passing 25 degree line	6
Windows with annual and winter probable sunlight above BRE requirements	5
Windows that do not meet either criteria	0

Overshadowing Assessment

A review of the site plan showed that there are two private gardens located to the north and northwest of the development (at 38 and 40 Netherhall Gardens) that may suffer from overshadowing impact.

A Solar Access Analysis was undertaken on these two amenity areas for the full 24 hours on 21 March. The image opposite show that at least half of the amenity spaces will have a minimum of 2 hours of sunlight on 21 March which meets BRE requirements. The proposed development is not considered to have any significant adverse impact on sunlight access to the gardens.



Overshadowing of private gardens to the north and northwest of the development. 59 Maresfield Gardens site highlighted in orange.

Conclusion

The daylight analysis indicates that the impact on surrounding properties arising from the proposed development at 59 Maresfield Gardens will be well within acceptable limits.

Daylight Assessment

The daylight analysis indicated that 32 out of the 39 windows analysed passed the 25 degree line test. The remaining 7 windows will receive VSC levels above the BRE requirement of 27%. The proposed development will have no notable daylight impact on surrounding windows.

Sunlight Assessment

A total of 11 windows were analysed as part of the sunlight assessment. 6 of the 11 windows passed the 25 degree line test, whilst the remaining 5 windows will have annual and winter probable sunlight hours exceeding the BRE requirements. The proposed development will have no significant impact on sunlight less to surrounding windows.

Overshadowing Assessment

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Summary

In summary, all of the existing windows on properties surrounding the proposed development passed the relevant BRE tests for daylight and sunlight access. All amenity spaces in close proximity to the proposed development will receive at least 2 hours of sunlight on 21 March. Therefore the proposed development will not cause any significant negative impact to daylight and sunlight access for surrounding properties and amenity spaces.