BRE Daylighting Calculations and Sunlighting Study

4A Elystan Street, London

HUUK Architects Limited
Introduction

HUUK Architects have been appointed to undertake a daylighting and sunlighting study on the effects of the proposed third floor level rear extension on the existing residential properties located on Elystan Street and Whitehead’s Grove.

Summary of Results

The new extension will not have a significant effect on the diffuse skylight enjoyed by the existing dwellings.
The new extension will not have a significant effect on the sunlight enjoyed by the existing dwellings.

Analysis

The following calculations are based on the planning application drawings:

088-PL-01A – Site Plan
088-PL-02A – Existing Floor Plans
088-PL-03A – Proposed Floor Plans
088-PL-04A – Existing Front (South West) Elevation
088-PL-05A – Proposed Front (South West) Elevation
088-PL-06A – Existing Side (South East) Elevation
088-PL-07A – Proposed Side (South East) Elevation
088-PL-08A – Existing Rear (North East) Elevation
088-PL-09A – Proposed Rear (North East) Elevation
088-PL-10A – Existing Side (North West) Elevation
088-PL-11A – Proposed Side (North West) Elevation
088-PL-12A – Existing Section (Through Lightwell)
088-PL-13A – Proposed Section (Through Lightwell)
088-PL-14 – Existing Section (Through Bedroom)
088-PL-15 – Proposed Section (Through Bedroom)

The calculations have been carried out in accordance with the criteria outlined in Sections 2.1 (Skylight) and 3.1 (Sunlight) of the Building Research Establishment Report Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice.

The window reference points have been placed on the centrelines of windows (at a level 2000mm above the base of the relevant storey) to the habitable rooms (assumed to be habitable rooms as we have been unable to gain access to determine function, although we believe that these are first and second floor level bedrooms and bathrooms) of the
existing residential properties located on Elystan Street and Whitehead’s Grove. Windows to (assumed) habitable rooms which do not coincide with a reference point are, generally, within 4m of a window reference point and should achieve similar results to the adjacent window reference point. Windows to rooms at ground floor level of the existing buildings have not been assessed as they are not affected by the proposed development (the new storey is below the level of the existing and proposed parapet as seen from ground floor level). Accordingly, only the upper storey (first and second floor) windows of the existing buildings have been assessed. Existing buildings to the South (former pub) and North East (beyond 21 Whitehead’s Grove) of the proposed extension have not been assessed as they are not affected by the proposed development.

**Daylighting**

The Skylight Indicator in Appendix A of *Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice* has been used to calculate the Vertical Sky Component. This calculation method is used to calculate the Vertical Sky Component at a window reference point (or room) with non-continuous or complex obstructions. This method is more accurate than the BRE Guidelines ‘first check’ calculation method which strikes a section in a plane perpendicular to each main face of the building to assess whether any of the obstructing buildings subtends an angle (measured from the window reference point) greater than 25° to the horizontal.

The BRE Guidelines state that if the Vertical Sky Component is greater than 27% then enough skylight should still be reaching the window of the existing building. Any reduction below this level should be kept to a minimum. If the Vertical Sky Component, with the new development in place, is both less than 27% and less than 0.8 times its former value, then occupants of the existing building will notice the reduction in the amount of skylight.

**Sunlighting**

The Sunlight Availability Indicator in Appendix A of *Site Layout Planning for Daylight and Sunlight – A Guide to Good Practice* has been used to calculate the annual probable sunlight hours at the window reference points.

The BRE Guidelines state that if a window reference point can receive more than 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21 September and 21 March, then the room should still receive enough sunlight. The BRE Guidelines state that any reduction in sunlight access below this level should be kept to a minimum. If the available sunlight hours are both less than the amount given and less than 0.8 times their former value, either over the whole year or during the winter months, then the occupants of the existing building will notice the loss of sunlight.
Calculations and Results

Reference Point One – 6 Elystan Street First Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 9.5%
- Vertical Sky Component with the extension in place = 9.5%

**SUMMARY: NO REDUCTION IN SKYLIGHT**

Sunlighting Calculations

- Windows facing within 90° of due north need not be analysed

Reference Point Two – 25 Whitehead’s Grove First Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 8.5%
- Vertical Sky Component with the extension in place = 8.0%

**REDUCTION RATIO = 0.94 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**

Sunlighting Calculations

- Annual Probable Sunlight Hours as existing = 8.0% (of which 0.0% are in the winter months)
- Annual Probable Sunlight Hours as proposed = 7.0% (of which 0.0% are in the winter months)

**REDUCTION RATIO = 0.88 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**
Reference Point Three – 23 Whitehead’s Grove First Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 15.0%
- Vertical Sky Component with the extension in place = 15.0%

**SUMMARY: NO REDUCTION IN SKYLIGHT**

Sunlighting Calculations

- Annual Probable Sunlight Hours as existing = 26.0% (of which 0.0% are in the winter months)
- Annual Probable Sunlight Hours as proposed = 26.0% (of which 0.0% are in the winter months)

**SUMMARY: NO REDUCTION IN SUNLIGHT**

Reference Point Four – 21 Whitehead’s Grove First Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 29.5%
- Vertical Sky Component with the extension in place = 29.0%

**SUMMARY: REDUCTION RATIO = 0.98 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**

Sunlighting Calculations

- Annual Probable Sunlight Hours as existing = 63.0% (of which 12.0% are in the winter months)
- Annual Probable Sunlight Hours as proposed = 61.0% (of which 10.0% are in the winter months)

**SUMMARY: REDUCTION RATIO = 0.97 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**
Reference Point Five – 6 Elystan Street Second Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 25.5%
- Vertical Sky Component with the extension in place = 22.5%

**SUMMARY: REDUCTION RATIO = 0.88 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**

Sunlighting Calculations

- Windows facing within 90° of due north need not be analysed

Reference Point Six – 25 Whitehead’s Grove Second Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 27.5%
- Vertical Sky Component with the extension in place = 24.5%

**SUMMARY: REDUCTION RATIO = 0.89 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**

Sunlighting Calculations

- Annual Probable Sunlight Hours as existing = 61.0% (of which 13.0% are in the winter months)
- Annual Probable Sunlight Hours as proposed = 56.0% (of which 8.0% are in the winter months)

**SUMMARY: REDUCTION RATIO = 0.92 OF FORMER VALUE AND THEREFORE NOT NOTICEABLE**
Reference Point Seven – 23 Whitehead’s Grove Second Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 26.0%
- Vertical Sky Component with the extension in place = 27.5%

**SUMMARY: INCREASED SKYLIGHT WITH EXTENSION IN PLACE**

Sunlighting Calculations

- Annual Probable Sunlight Hours as existing = 47.0% (of which 8.0% are in the winter months)
- Annual Probable Sunlight Hours as proposed = 52.0% (of which 10.0% are in the winter months)

**SUMMARY: INCREASED SUNLIGHT WITH EXTENSION IN PLACE**

Reference Point Eight – 21 Whitehead’s Grove Second Floor Window (Use Unknown)

Daylighting Calculations

- Vertical Sky Component as existing = 37.5%
- Vertical Sky Component with the extension in place = 36.0%

**SUMMARY: GREATER THAN 27% - ENOUGH SKYLIGHT REACHING THE WINDOW**

Sunlighting Calculations

- Annual Probable Sunlight Hours as existing = 75.0% (of which 24.0% are in the winter months)
- Annual Probable Sunlight Hours as proposed = 70.0% (of which 19.0% are in the winter months)

**SUMMARY: GREATER THAN 25% - ENOUGH SUNLIGHT REACHING THE WINDOW**
Conclusion

Daylighting and Sunlighting

The new extension will not have a significant effect on the diffuse skylight enjoyed by the existing dwellings. The existing ground floor level (assumed) habitable room windows at the rear of Elystan Street and Whitehead’s Grove are unaffected by the proposed development due to the angle of the proposed roof (set beyond the level of the existing parapet).

At the upper levels, with the exception of Reference Points 1, 2 and 3, the existing (assumed) habitable room windows currently benefit from reasonable Vertical Sky Component levels. In the few instances where there is a reduction in the amount of skylight reaching the existing habitable room windows, the reduction is very small, and well within BRE Guidelines minimum recommended levels. Accordingly, the occupants of the existing dwellings will not notice any reduction in the amount of skylight.

At the upper levels, with the exception of Reference Points 1 and 2, the existing (assumed) habitable room windows at the upper levels receive more than 25% of annual probable sunlight hours, including at least 5% of annual probable sunlight hours during the winter months between 21 September and 21 March. In the few instances where there is a reduction in the amount of sunlight reaching the existing habitable room windows, the reduction is very small, and well within BRE Guidelines minimum recommended levels. Accordingly, the occupants of the existing dwellings will not notice any reduction in the amount of sunlight.

There will be a slight increase in both skylight and sunlight reaching the second floor level habitable room windows of 23 Whitehead’s Grove due to the removal of the existing pitched roof and gable wall at the rear of 4A Elystan Street.

Summary of Results

The new extension will not have a significant effect on the diffuse skylight enjoyed by the existing dwellings.

The new extension will not have a significant effect on the sunlight enjoyed by the existing dwellings.