BOOM COLLECTIVE

2 DUMPTON PLACE
PRIMROSE HILL

DAYLIGHT ASSESSMENT

C0103.R02.02
August 2014

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INTRODUCTION, PLANNING REQUIREMENTS AND BUILDING REGULATIONS

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Introduction, Planning Requirements and Building Regulations

This report is prepared in support of the change of use application for the office building at 2 Dumpton Place

BOOM Collective have undertaken the following activities in completing the daylight analysis and the preparation of this report:

- Referenced the original mixed use development planning documentation that is available on the London Borough of Camden planning portal; specifically the Sustainability Statement and Energy Strategy reports, both dated March 2011 and both produced by AJ Energy Consultants Ltd.
- Met with Studio Stassano Architects to coordinate the proposed mechanical and electrical services strategy for the new residential units with the architecture and existing structure.
- Referenced the planning requirements documented on the London Borough of Camden website.
- Consulted with the London Borough of Camden planning department (Camden Planning call reference number #04052) with regards to specific information required for the change of use planning application.

It should be noted that for the commercial element of the original mixed use development, the BREEAM pre-assessment (completed in 2011) recorded a score of 66.66% (Very Good). However, under HEA 1 'Daylighting' the credit was not attained because adequate daylight requirements were not reached for 80% of the occupied space.

For the residential element of the original mixed use development the Code for Sustainable Homes (CSH) pre-assessment (completed in 2011) recorded a score of 58.6% (Level 3). However, under HEA1 'Daylighting' only 1 of the maximum 3 credits were targeted with the comment: '*Adequate daylighting assumed in living room, dining room and study*' accompanying the analysis. The guidance that CSH gives on daylight is broadly summarised as:

- Kitchens should achieve minimum average daylight factors of at least 2%
- Living rooms, dining rooms and studies to achieve a minimum average daylight factor of at least 1.5%
- Kitchens, living rooms, dining rooms and studies to be designed to have a view of the sky

To predict the quantity of daylight reaching the occupied areas of the basement for the proposed change of use development, an architectural 3D geometrical model was constructed in Dialux version 4.12 software package to calculate daylight factors. Dialux is a recognised industry standard product used for daylight factor calculations. A simple two dimensional string diagram of the cross section of the building and surrounding neighbourhood was used to assess the View of Sky for the proposed basement areas.

This report details the marked improvement in the quantity and quality of daylight in the basement associated with the proposed change of use to residential use of the commercial building. It also demonstrates that the proposed architectural changes are driven by the need to maximise the amount of daylight reaching the occupied spaces of the basement areas and in doing so it demonstrates compliance with the London Borough of Camden requirements.

DAYLIGHT ANALYSIS

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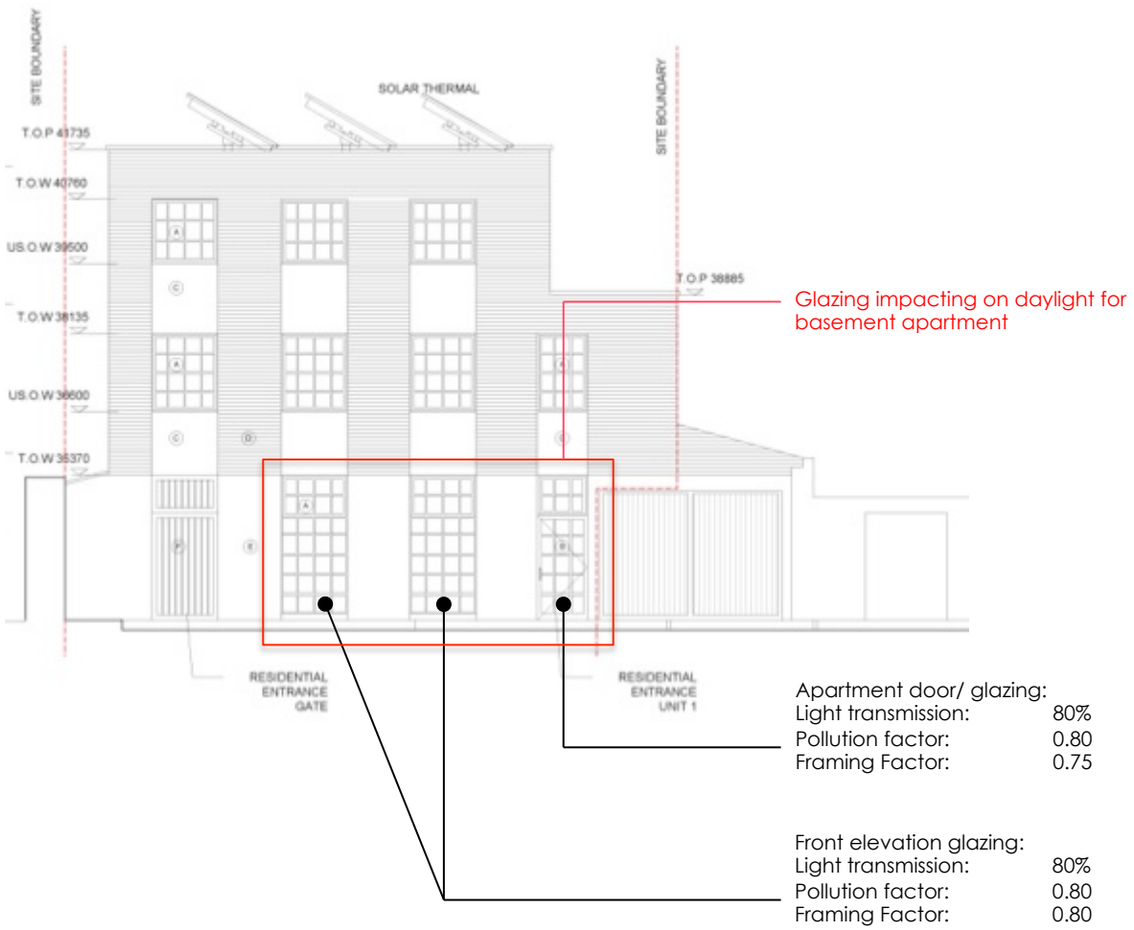
Daylight Analysis Criteria – Front Elevation

FRONT ELEVATION



To predict the quantity of daylight reaching the occupied areas of the basement for the proposed change of use development, an architectural 3D geometrical model was constructed in Dialux version 4.12 software package to calculate daylight factors. Dialux is a recognised industry standard product used for daylight factor calculations.

Standard values according to BS 8206 and Code for Lighting have been used. Glazing characteristics and surface reflectance factors are in accordance with CIBSE publication: LG10 Daylight and Window Design.

The following criteria have been applied for the calculation:

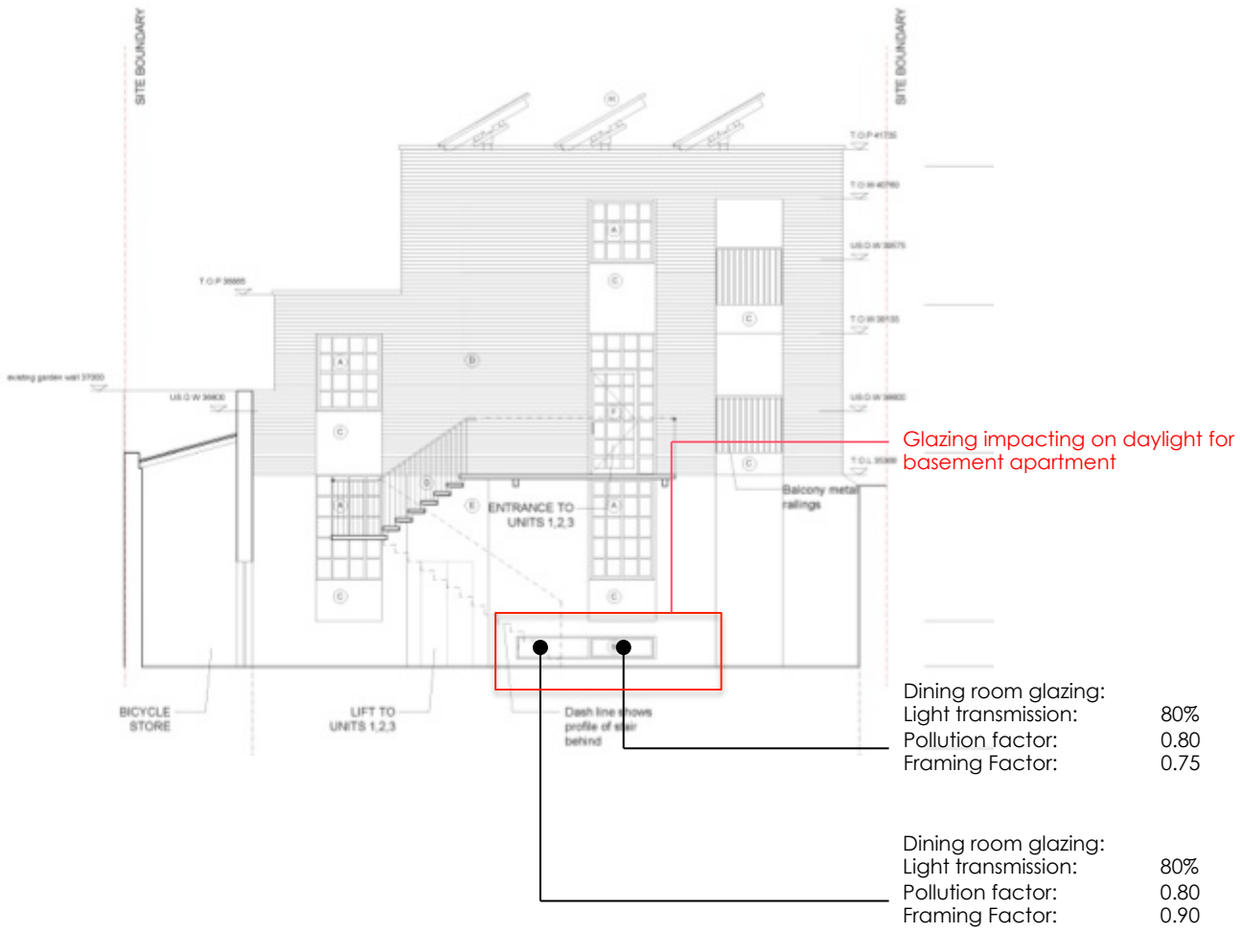
Internal surfaces:

Floor reflectances:	30%
Wall reflectances:	50%
Ceiling reflectances:	70%

Glazing criteria depend on type of glazing, framing and location and the assumed criteria for each window is described below.

Daylight Analysis Criteria – Rear Elevation

REAR ELEVATION



The following internal criteria have been applied for the calculation:

Internal surfaces:

Floor reflectances:	30%
Wall reflectances:	50%
Ceiling reflectances:	70%

Glazing criteria depend on type of glazing, framing and location and the assumed criteria for each window is described below.

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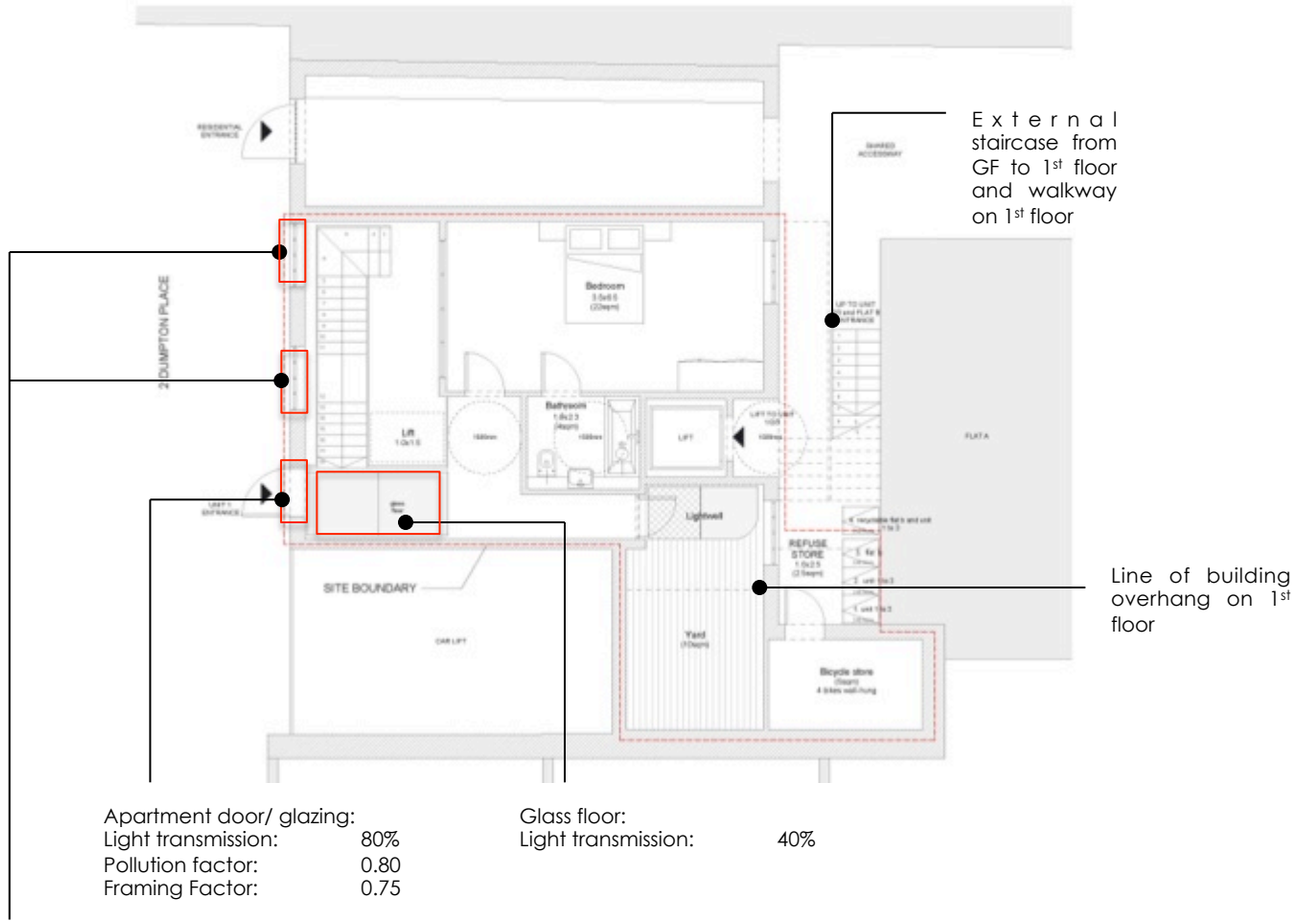
Daylight Analysis Criteria – Ground Floor Plan

GROUND FLOOR PLAN



Apartment door/ glazing:
Light transmission: 80%
Pollution factor: 0.80
Framing Factor: 0.75

Glass floor:
Light transmission: 40%

Front elevation glazing:
Light transmission: 80%
Pollution factor: 0.80
Framing Factor: 0.80

The following criteria have been applied for the calculation:

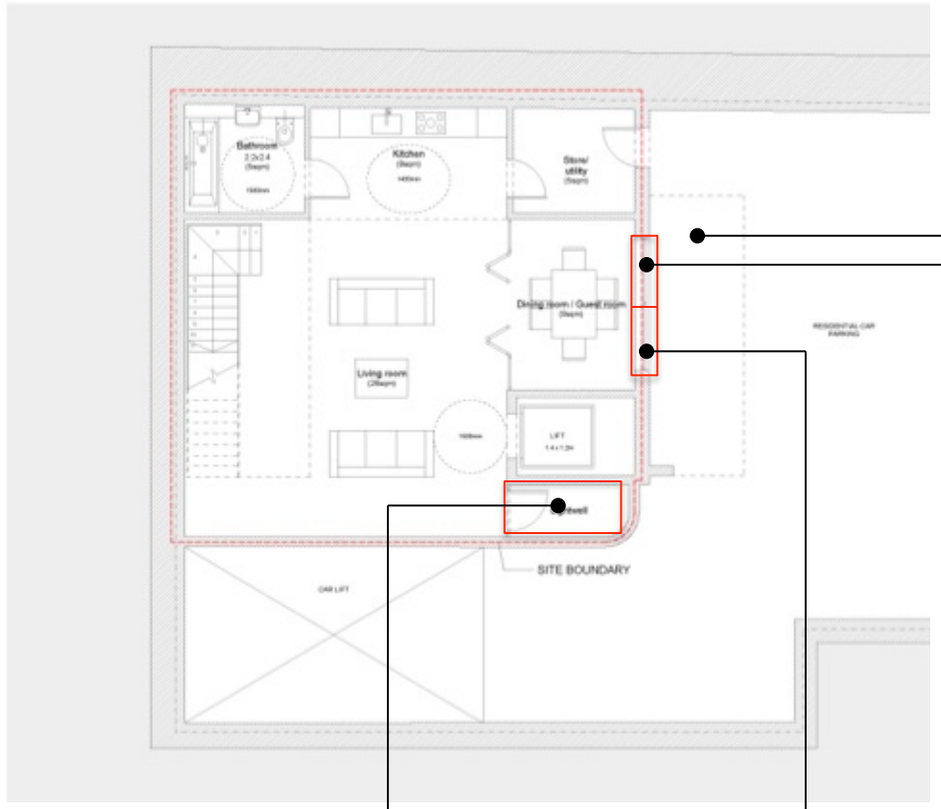
Internal surfaces:

Floor reflectances:	30%
Wall reflectances:	50%
Ceiling reflectances:	70%

Glazing criteria depend on type of glazing, framing and location and the assumed criteria for each window is described below.

Daylight Analysis Criteria – Basement Plan

BASEMENT FLOOR PLAN



Walkway on 1st floor

Dining room glazing:
Light transmission: 80%
Pollution factor: 0.80
Framing Factor: 0.75

Glass floor/ light well:
Light transmission: 50%

Dining room glazing:
Light transmission: 80%
Pollution factor: 0.80
Framing Factor: 0.90

The following criteria have been applied for the calculation:

Internal surfaces:

Floor reflectances:	30%
Wall reflectances:	50%
Ceiling reflectances:	70%

Glazing criteria depend on type of glazing, framing and location and the assumed criteria for each window is described below.

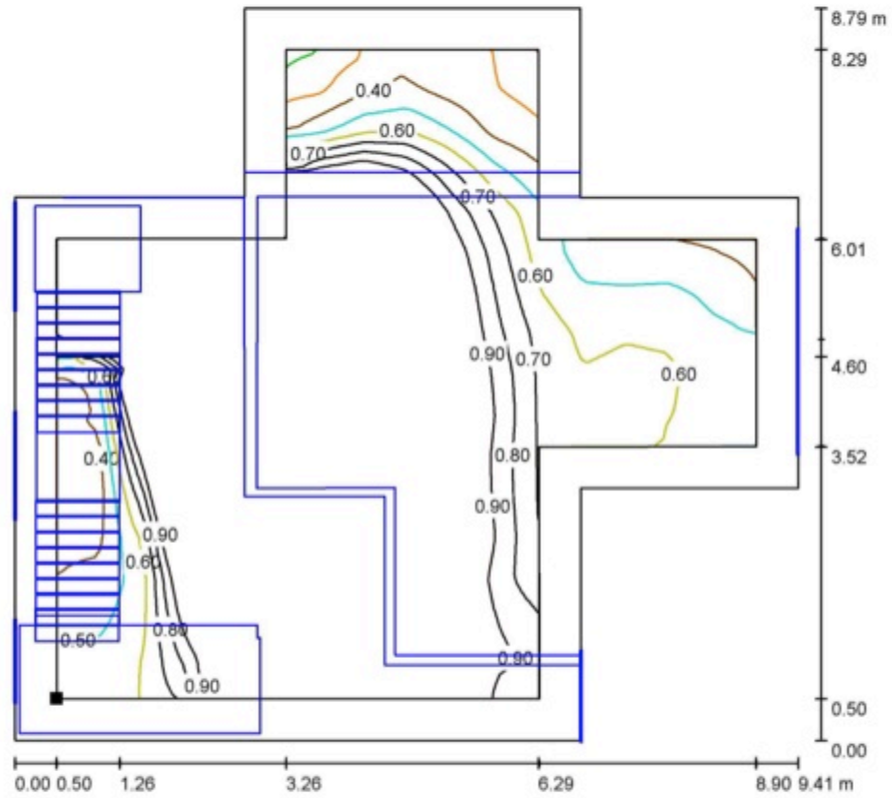
Daylight Analysis - Results

Project 1

DIALux
29.07.2014

Operator
Telephone
Fax
e-Mail

basement flat / Light scene 1 / Workplane / Isolines (D)



Scale 1 : 69

Position of surface in room:
Working plane with 0.500 m
Boundary Zone
Marked point:
(263.097 m, 24.624 m, 0.750 m)

Grid: 128 x 128 Points

D_{av} [%]	D_{min} [%]	D_{max} [%]	D_{min} / D_{av}	D_{min} / D_{max}
1.13	0.18	2.53	0.157	0.070

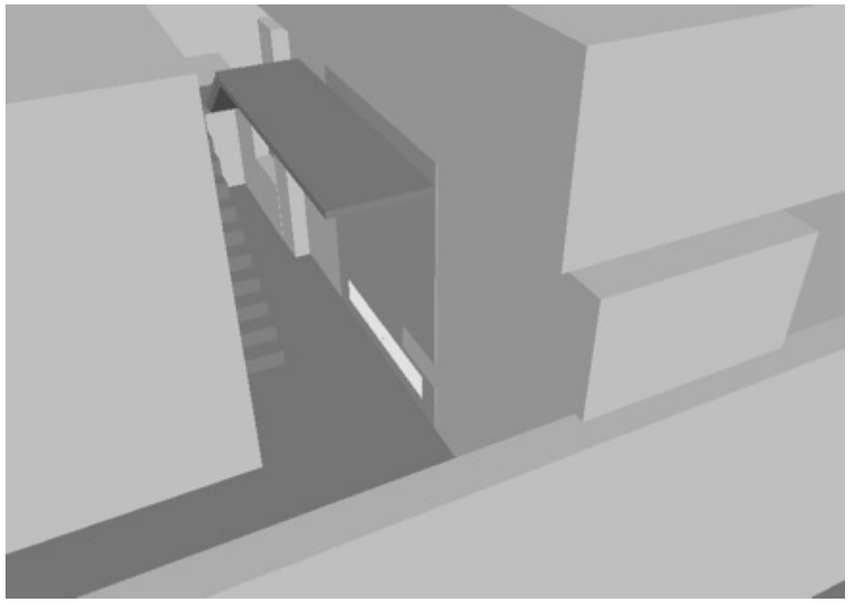
Horizontal illuminance outdoors E_o: 15226 lx

The architectural modifications proposed in the change of use application have resulted in an average daylight factor of 1.13% for the basement living room, kitchen and dining room areas.

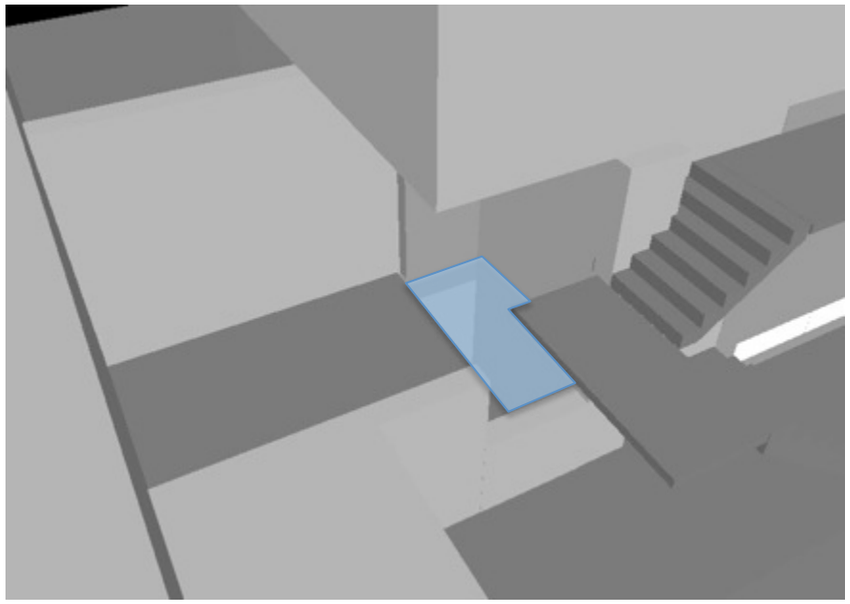
We note that the dining room/guest room glazing and the light well are obstructed by overhanging building elements form above and are therefore not significantly contributing to the overall results but do however reduce the 'contrast' effect across the floor plate.

Daylight ingress to the basement is predominantly from the large glazed elements on the front façade of the building; the glazed elements in the ground floor slab and the open access stair facilitates the daylight reaching the basement areas.

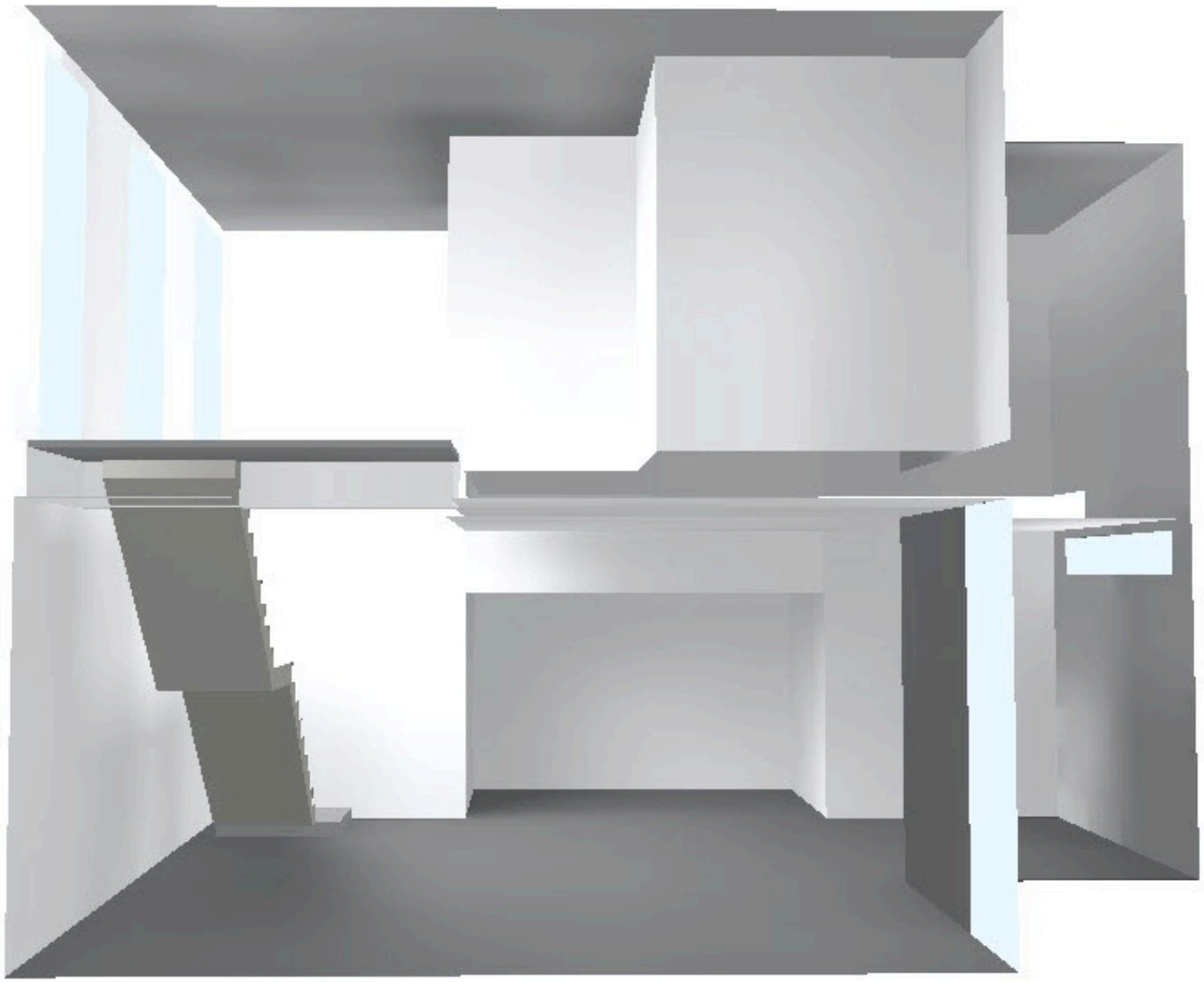
Daylight Analysis - Results and Obstructions



EXTERNAL VIEW ON TO HIGH LEVEL WINDOW OF THE DINING AREA



EXTERNAL VIEW OF SKYLIGHT



INTERNAL VIEW OF MAIN LIVING SPACE AND ENTRANCE LEVEL WINDOWS

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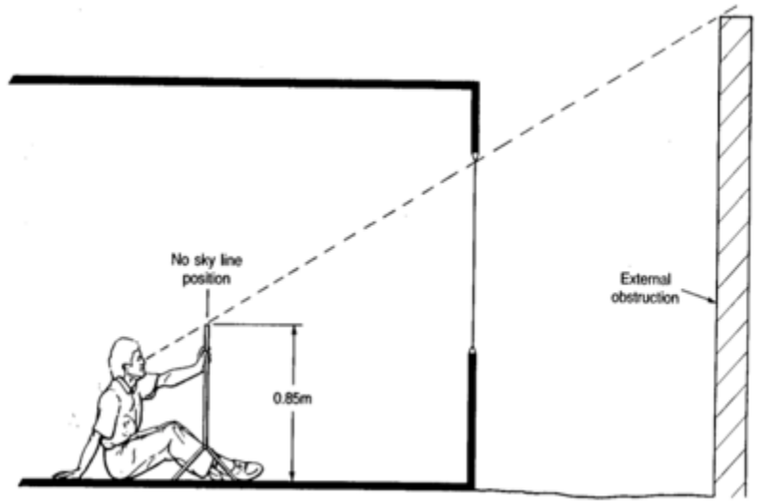
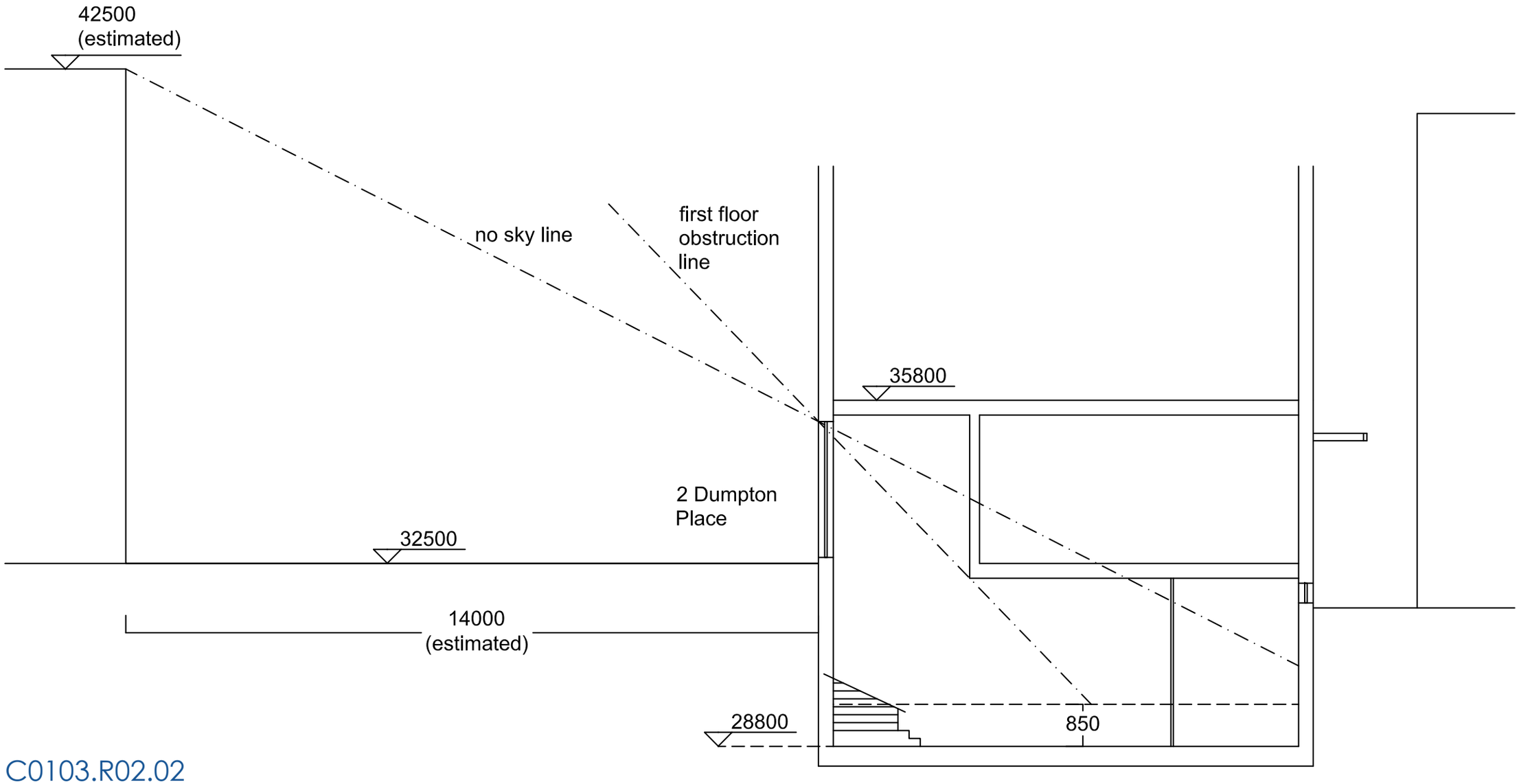
Daylight Analysis - View of Sky Results



The no-sky line divides those areas of the working plane, which can receive direct skylight from those which cannot. It is important as indicates how good the distribution of daylight is in a room.

The string diagram below shows the no-sky line is extended beyond the depth of the room, however the view of sky will be obstructed by the ground floor slab 'overhang'.

Approximately two thirds of the basement living space has a view of sky. The dining room windows at the rear of the property do not afford a view of sky due to the obstruction of the adjacent development and external first floor walkway/staircase landing.



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SUMMARY

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Summary

The basement of the commercial unit, which is the area in question for this change of use study, was originally indicated as B1 Use in the approved planning drawings and built as such following planning approval.

This area currently has a nominal amount of daylight achieved via glass block pavement lights and as a result is a very poorly daylit space, even in a commercial application. The architectural changes have 'targeted daylight' because, in terms of the environmental quality of an occupied space, daylight makes a room more attractive and interesting; as well as providing light to work or read by, it is also beneficial to health. Access to sunlight and daylight also helps to make a building energy efficient, reducing the dependency on electric lighting and providing passive heat in the winter.

This report details the marked improvement in the quantity and quality of daylight in the basement associated with the proposed change of use to residential use of the commercial building. It also demonstrates that the changes are driven by the need to maximise the amount of daylight reaching the occupied spaces of the basement areas and in doing so demonstrates compliance with the London Borough of Camden requirements.

Analysis has shown that the basement area does not reach the levels of daylight that Code for Sustainable homes guidelines recommends, however it does demonstrate that the architectural proposals have maximised the daylight factors and view of sky within the context of the existing site and building construction.

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