
Cassel and Fletcher Property Management

Daylight Assessment Of Living Room And Bedroom 117 Yorkshire
Street, Rochdale OL6 1LA

29 November 2023

Daniel Watt

CIBSE Accreditation Nos:

LCCSIM084077

LCCD084077

LCEA084077

Watt Energy & Consulting Engineers Ltd
40 King Street, Manchester, M2 6BA

t. 0161 43 43 103

w. www.wece.co.uk



Index

1. Introduction
2. Methodology & Terminology
3. Summary
4. Calculations

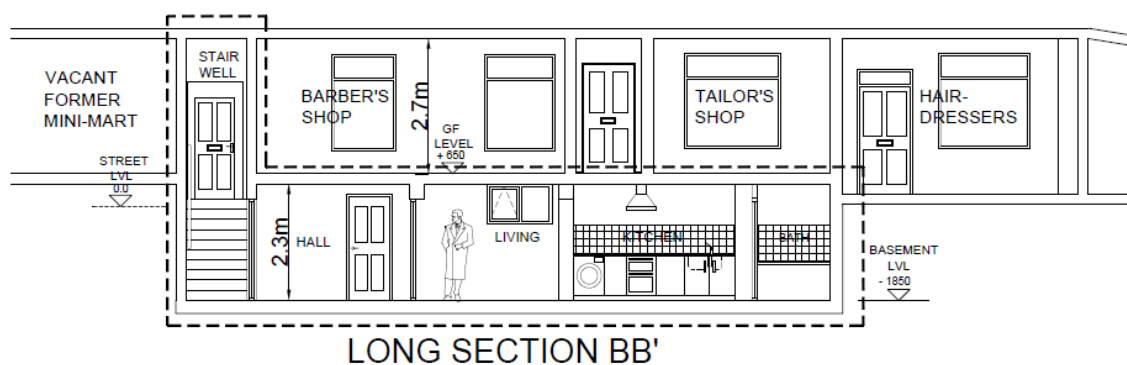
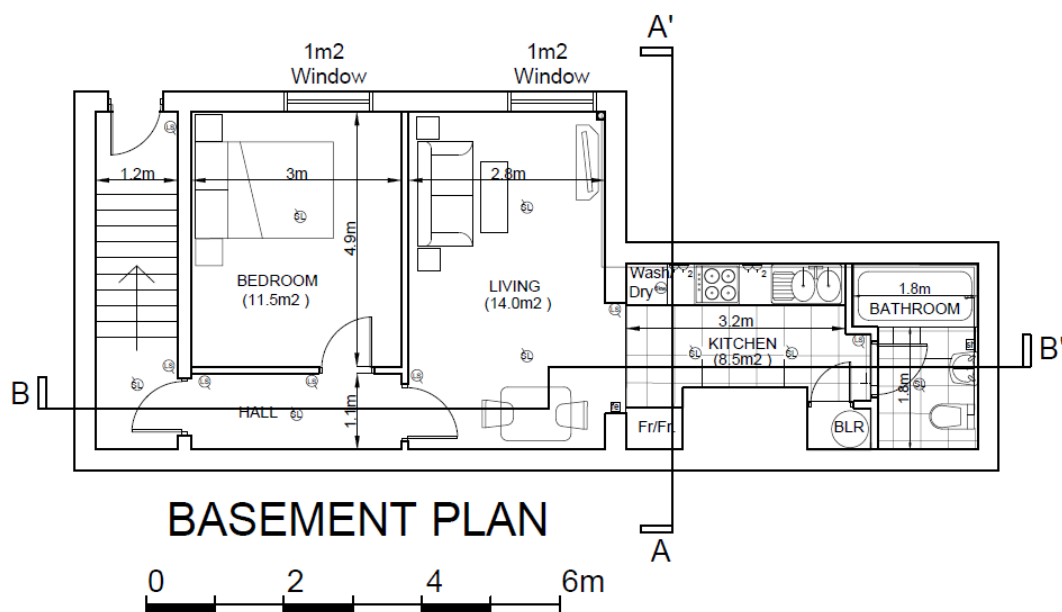


Introduction

The aim of measuring the daylighting of rooms is to improve the quality of life in homes through good natural daylighting and to reduce the need for artificial lighting and energy to light the home.

WE&CE Ltd have been appointed by the applicant to submit and provide a daylight assessment as part of the planning application relating to the redesign of basement of 117 Yorkshire Street, Rochdale, O16 1LA.

This report will demonstrate how the Angle of Visible Sky and View of Sky in the Living Room and Bedroom of the proposed development achieve the requirements of The British Standard Daylight in buildings, BS EN 17037.



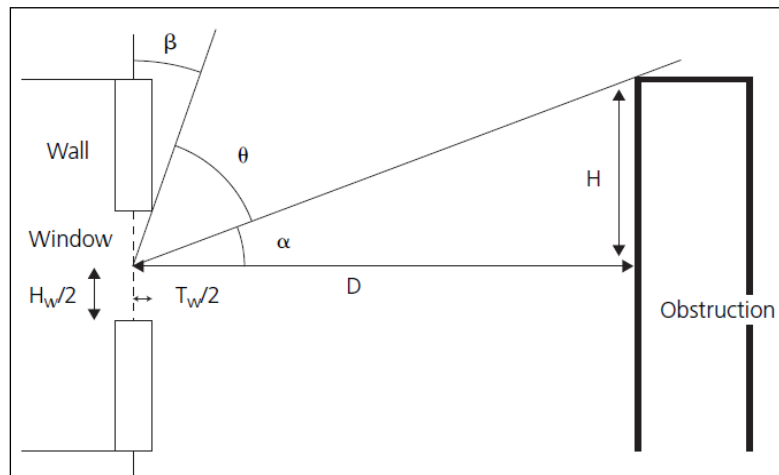
Proposed development



Methodology & Terminology

Angle of Visible Sky

The angle of visible sky is the angle subtended, in the vertical plane normal to the window, by the visible sky from the centre of the window.

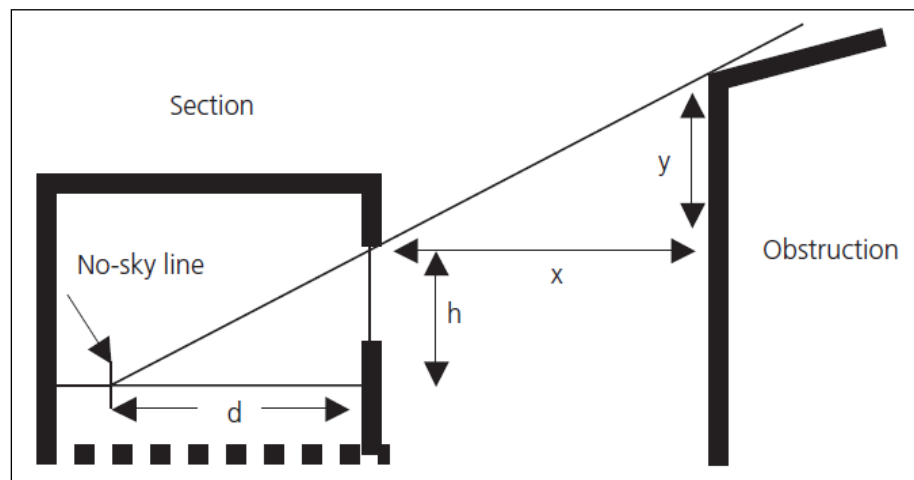


If following the construction of the new development the no skyline is reduced to less than 0.8 times its former value this will be noticeable to occupants.

View of Sky

The no-sky line divides those areas of the working plane which can receive direct light from the sky, from those which cannot. It is important as it indicates how good the distribution of daylight is in a room. Areas beyond the no-sky line will generally look gloomy.

As an approximation, obstructions that are parallel to the window can be considered infinite.



The working plane is a notional surface, typically at about desk or table height, at which daylight factor or the 'no-skyline' is calculated / plotted. For the calculations required here, it is assumed at 0.7m above the finished floor level.

For the purposes of these calculations, guide values for a typical dwelling with light-coloured walls are used as follows:

- R: (Area-weighted average reflectance of room surfaces) = 0.5
- M: (Correction factor for dirt) = 1 (vertical glazing that can be cleaned easily)
- T: (Glass Transmission factor) = 0.72 (double glazing windows)

Where an assessed dwelling contained a complicated/ a number of complicated shaped rooms, such as L-shaped rooms, it is acceptable to divide the room into two section and calculate the ADF for each section based only on the windows present in that section. The ADF of both sections can then be average to give a final result. If following the construction of the new development the no sky line is reduced to less than 0.8 times its former value this will be noticeable to occupants.

Summary

A summary of the results is as follows:

Angle of Visible Sky

Room	Angle of Visible Sky	Acceptable
Bedroom	36.8°	Y
Living Room	36.8°	Y

View of Sky

Room	View of Sky %	Acceptable
Bedroom	35.9%	Y
Living Room	27%	Y



Conclusion

In conclusion, we believe the proposed development to be acceptable with internal daylighting requirements as advised under The British Standard Daylight in buildings, BS EN 17037.



1) Bedroom

Room	Bedroom		
Windows	Height	0.8	m
	Width	1.29	m
	Height 2	0	m
	Width 2	0	m
	Height 3	0	m
	Width 3	0	m
Room Dimensions	Depth	3.69	m
	Width	3	m
	Wall3	3.69	m
	Wall4	3	m
	Ceiling height	2.3	m
	Floor	11.07	sqm
	Ceiling	11.07	sqm
Glass transmission factor		0.720	0.72 - double glazing
			0.6 - double glazing with low emissivity coating
			0.6 - triple glazing
Average daylight factor			
Total glazed area of windows	1.032	sqm	
Total area of all room surfaces	52.914	sqm	
Area weighted average reflectance of room surfaces	0.500	Default figure	
Correction factor for dirt	1.000	1.0 - vertical glazing that can be cleaned easily	
		0.8 - sloping glazing	
		0.7 - horizontal glazing	
Angle of visible sky	36.8	See Calculation Below	
Average daylight factor			
	0.69		
View of sky from desk height - if d is greater than depth of room then no part lies beyond 'no sky line'			
Distance from window to obstruction - x (m)	10.600	m	
Height of the window head above the working plane - h (m)	0.800	BREEAM uses 0.7m , Code & EcoHomes 0.85m	
Height of obstruction above window head - y (m)	6.400	m	
No Sky Line Distance - d (m)	1.325	m	
Depth of room	3.690	m	
View of Sky Criteria	35.9%		
Angle of visible sky			
Height of obstruction above mid height of window - H (m)	6.8	m	
Distance from window to obstruction - D (m)	10.600	m	
Thickness of the wall (m)	0.3	m	
Height of the window HW (m)	0.8	m	
Alpha	32.681		
Beta	20.556		
Angle of visible sky	36.8		

Section

No-sky line

Obstruction

$d = \frac{xh}{y}$

Where:
h = height of the window head above the working plane
y = height of the obstruction above the window head
x = distance from the window to the obstruction

Wall

Window

Obstruction

$H_w/2$

$T_w/2$

D

H

α

β

θ

2) Living Room

Room	Living Room		
Windows	Height	0.8	m
	Width	1.29	m
	Height 2	0	m
	Width 2	0	m
	Height 3	0	m
	Width 3	0	m
Room Dimensions	Depth	4.9	m
	Width	2.8	m
	Wall3	4.9	m
	Wall4	2.8	m
	Ceiling height	2.3	m
	Floor	13.72	sqm
	Ceiling	13.72	sqm
Glass transmission factor		0.720	0.72 - double glazing
			0.6 - double glazing with low emissivity coating
			0.6 - triple glazing
Average daylight factor			
Total glazed area of windows	1.032	sqm	
Total area of all room surfaces	62.860	sqm	
Area weighted average reflectance of room surfaces	0.500	Default figure	
Correction factor for dirt	1.000	1.0 - vertical glazing that can be cleaned easily	
		0.8 - sloping glazing	
		0.7 - horizontal glazing	
Angle of visible sky	36.8	See Calculation Below	
Average daylight factor			
	0.58		
View of sky from desk height - if d is greater than depth of room then no part lies beyond 'no sky line'			
Distance from window to obstruction - x (m)	10.600	m	
Height of the window head above the working plane - h (m)	0.800	BREEAM uses 0.7m, Code & EcoHomes 0.85m	
Height of obstruction above window head - y (m)	6.400	m	
No Sky Line Distance - d (m)	1.325	m	
Depth of room	4.900	m	
View of Sky Criteria			
	27.0%		
Angle of visible sky			
Height of obstruction above mid height of window - H (m)	6.8	m	
Distance from window to obstruction - D (m)	10.600	m	
Thickness of the wall (m)	0.3	m	
Height of the window HW (m)	0.8	m	
Alpha	32.681		
Beta	20.556		
Angle of visible sky			
	36.8		

