5 & 5A PARKHILL ROAD

Daylight Analysis Report

March 2021

Issue and Revision Record

Rev	Date	Description	Checked	Approved
00	25.03.21	Daylight Analysis – For Comment	PB	DM
01	27.03.21	Daylight Analysis – For Comment	PB	DM

Contents

1 Introduction

This report has been produced by Wave Consulting Digital Engineers to support the updated planning application for the proposed development at 5A Parkhill Road, Belsize Park, London.

The purpose of this report is to detail the key input parameters of each scenario (previously approved planning application and the updated proposed design) and present the findings related to the daylight ingress for the two specific windows at no. 5/5a Parkhill Road.

2 Modelling Methodology & Inputs

2.1 Modelling Inputs

- The building geometry is based on architectural drawings and .rvt files received (24/03/21), this consisted of;
    1. Previously approved drawings (Application Ref: 2017/3466/P) – ACA Architecture
    2. Revised design for planning – Vita Architecture
- Internal room geometries were approximated/simplified to enable an appropriate comparison.
- Calculations were performed using a standard CIE overcast sky – as required by the Daylight Factor calculation methodology – with results presented upon a ground-level working plane height (100mm)
- Maximised internal bounces (6 total) were adopted to ensure accurate results.
- A fine 150mm x 150mm analysis grid was utilised, to ensure accurate results.
- Standardised internal surface reflectance values were applied for the following surfaces:
    - Internal wall = 0.50
    - Internal floors = 0.20
    - Internal ceilings = 0.80
    - External glazing and framing have been modelled separately with a glazing light transmission value of 70% assigned (clean windows)

2.2 Simulation Software

The daylight modelling calculations were performed using IESVE (www.iesve.com version 2021.0.2.0) and specifically the Radiance calculation module. The IESVE software toolset is regarded as the industry benchmark for advanced building modelling calculations.

2.3 Approved Scheme and Revised Design Scenarios

The two windows of concern (A and B) have been highlighted (**Blue** and **Green**) in the figures below, note assumptions regarding the internal geometry of these two spaces have been made, however, this is not prevalent detail as the analysis focuses on the differences between the two scenarios, therefore keeping the rooms consistent in both scenarios will provide valid results for review and comparison.

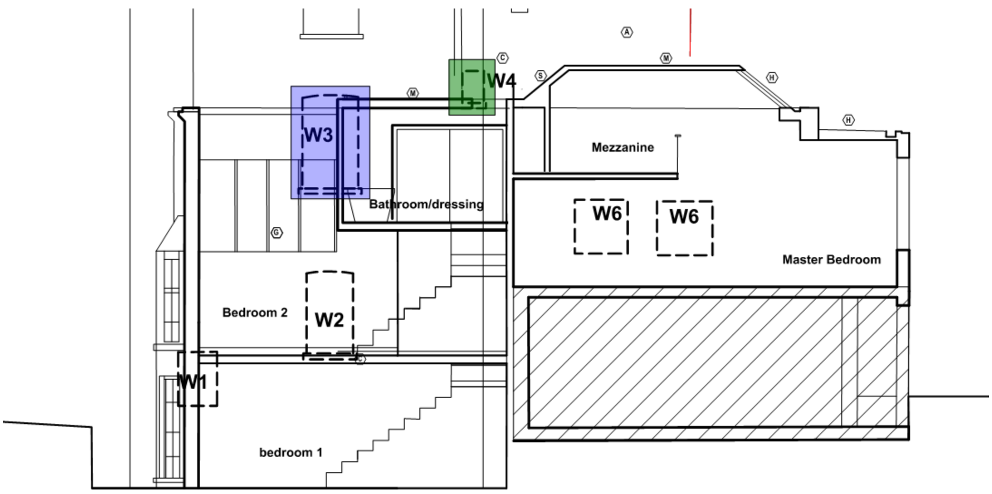


Figure 1 – Approved Scheme – Section B-B

Figure 2 – Proposed Section A-A

Figure 3 – Proposed Section B-B

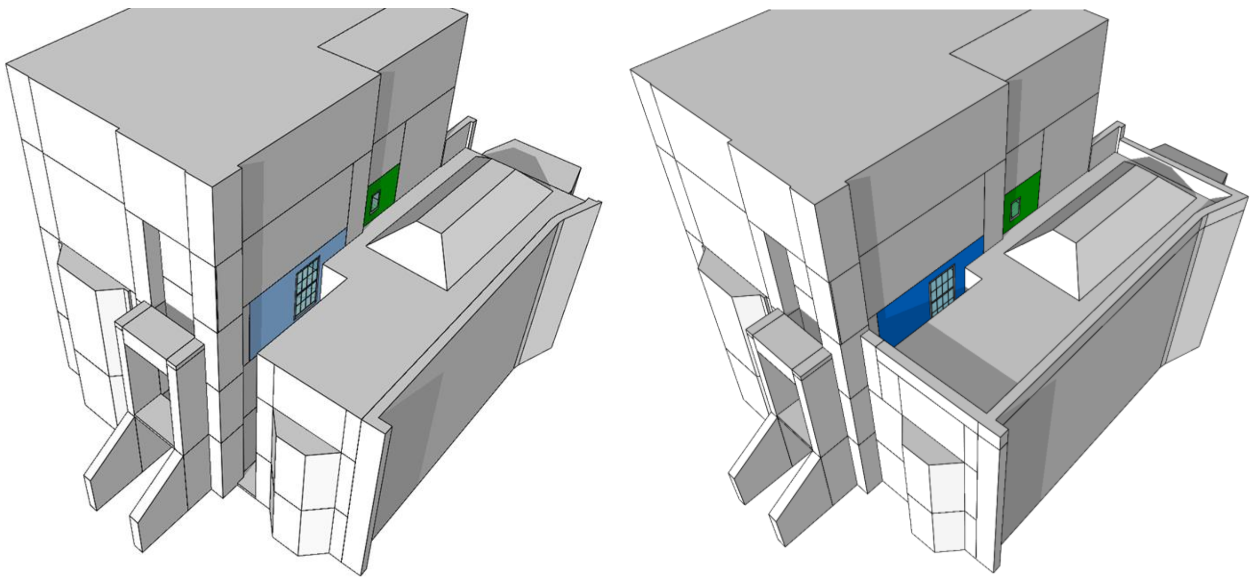


Figure 4: Approved and Revised Geometry for Analysis **Blue Volume = Room A (larger Window)** and **Green Volume = Room B (Smaller Window)**

3 Daylight Results

See below for the results below for both windows in each scenario

3.1 Room A

- **Planning Approved Scheme Room A** (larger window)
  - Min./Max./Avg. Lux Levels = 0.10 / 416.60 / 5.95
  - Min./Max./Avg. Daylight Factor Levels/% > 2DF = 0.00 / 3.51 / 0.05 / 0.49%

- **Revised Scheme Room A** (larger window)
  - Min./Max./Avg. Lux Levels = 0.10 / 284.50 / 4.42
  - Min./Max./Avg. Daylight Factor Levels/% > 2DF = 0.00 / 2.40 / 0.04 / 0.49%

From the results above it can be concluded that for 'Room A' (served by the larger window) there is very limited impact on internal daylight levels, that would not be noticeable, when comparing the approved vs. revised design.

Whilst maximum point Lux/Daylight Factor levels immediately adjacent to the window are shown to slightly reduce in the revised scheme scenario, **the overall plane averaged values remain very similar with very negligible change in a real-world observation**. Both scenarios represent a poorly daylit internal environment due to the north-facing glazing orientation and the resultant non-uniform nature of daylight ingress that is concentrated on the floor adjacent to the window, rather than due to implications of external obstructions blocking daylight ingress.

3.2 Room B

- **Planning Approved Scheme Room B** (smaller window)
  - Min./Max./Avg. Lux Levels = 15 / 101.50 / 68.97
  - Min./Max./Avg. Daylight Factor Levels/% > 2DF = 0.13 / 0.86 / 0.58 / 0.00%

- **Revised Scheme Room B** (smaller window)
  - Min./Max./Avg. Lux Levels = 13.40 / 104.10 / 67.6
  - Min./Max./Avg. Daylight Factor Levels/% > 2DF = 0.11 / 0.88 / 0.57 / 0.00%

From the results above it can be concluded that for 'Room B' (served by the smaller window) there is a negligible/no impact on internal daylight levels when comparing the approved vs. revised design.

The revised scheme shows a very slight improvement in the maximum lux level achieved but the average daylight factors are virtually identical for both scenarios, **resulting in no change in a real-world observation**. Both scenarios represent a poorly daylit internal environment due to the north-facing glazing orientation/size rather than due to implications of external obstructions blocking daylight ingress.

The following images provide a graphical illustration of working plane Lux and DF values both pre and post proposed construction works:

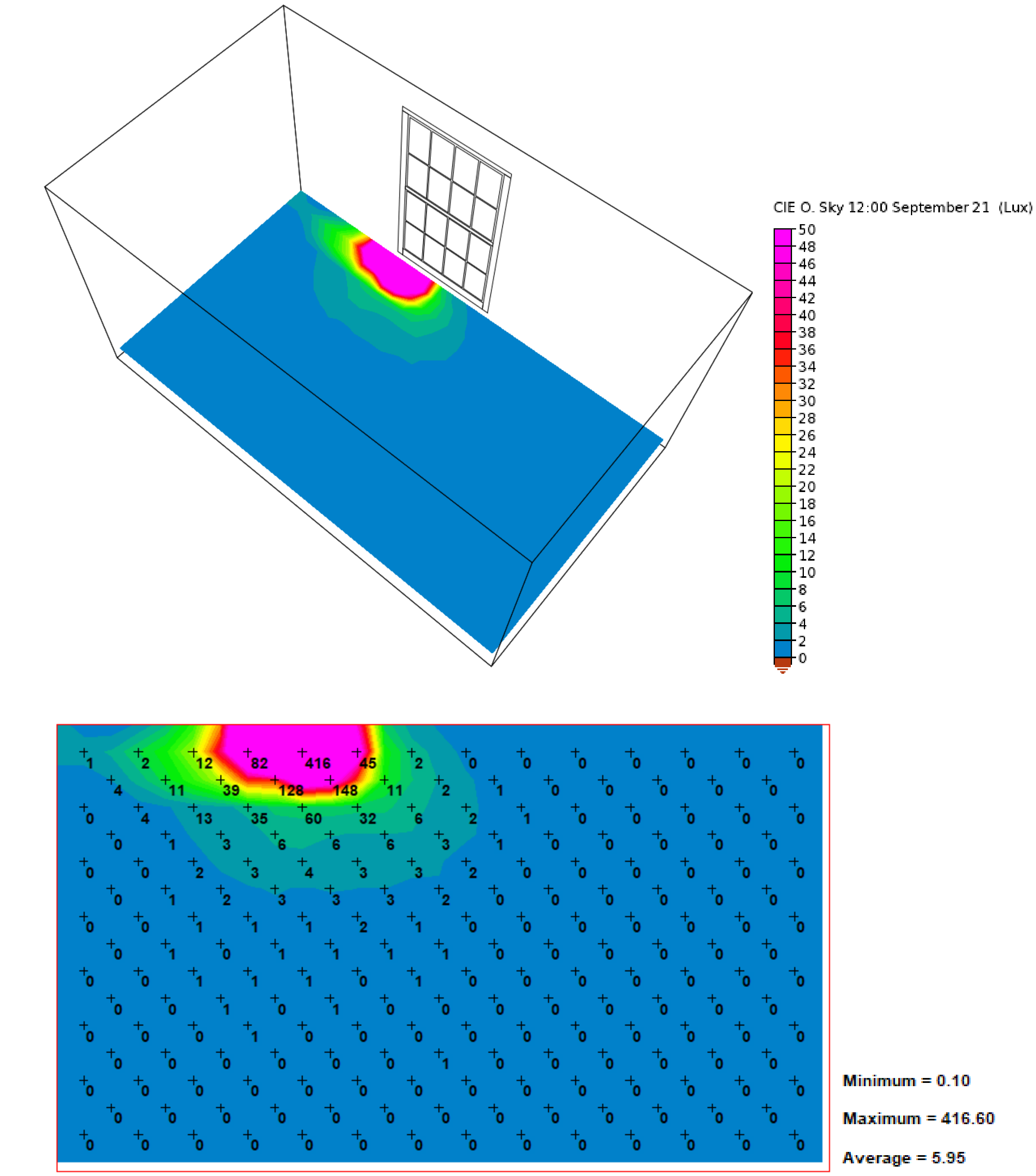


Figure 5: Room A Planning Approved – Predicted Lux Levels (On Working Plane)

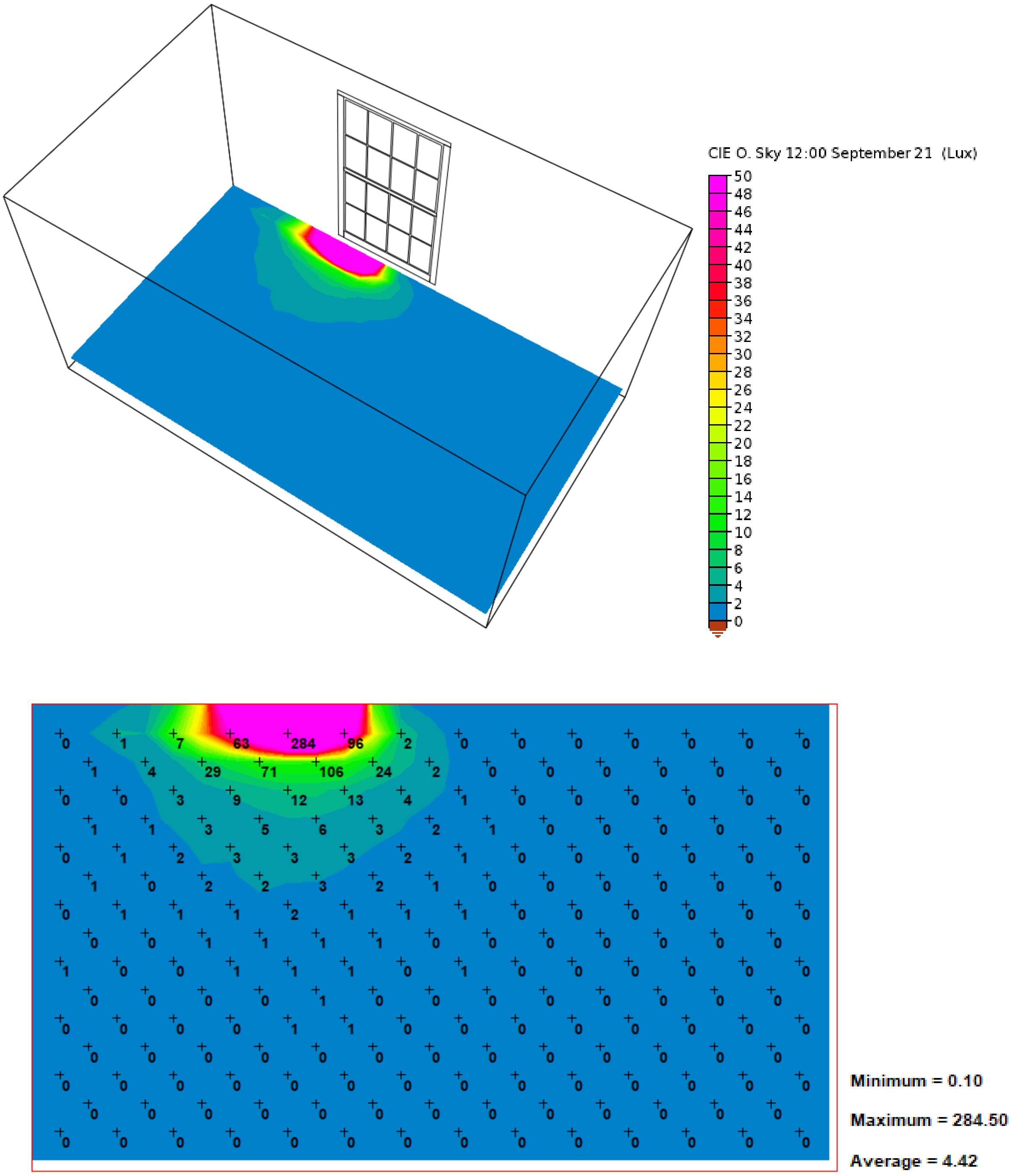
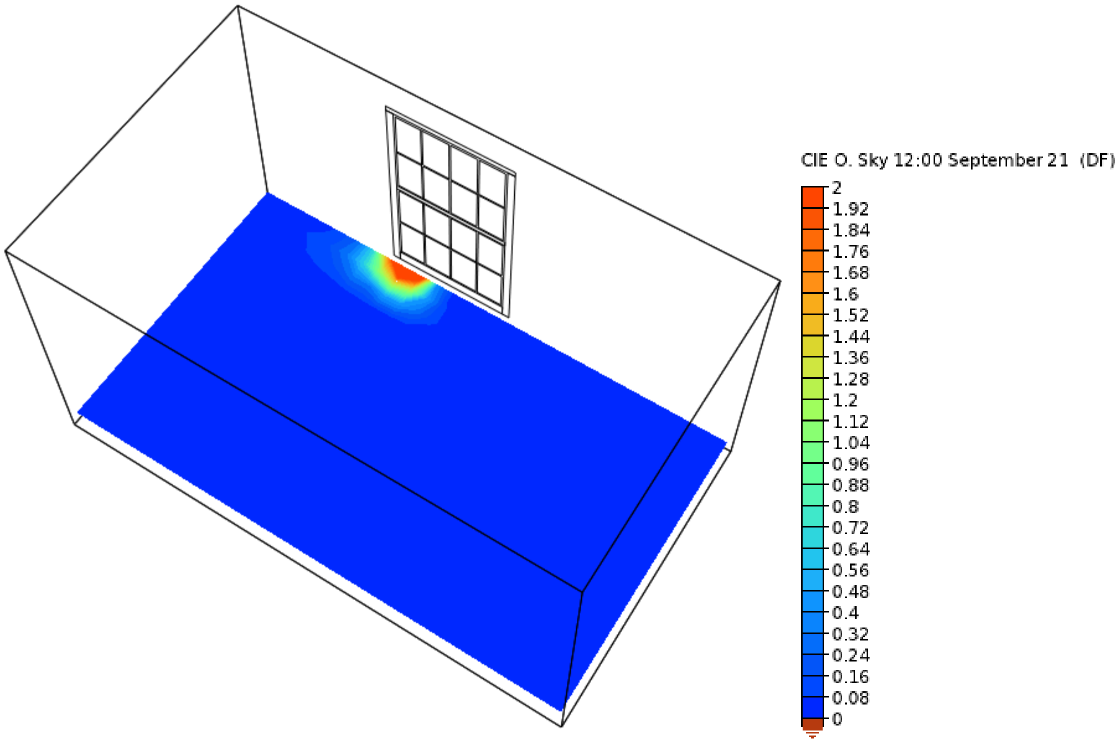
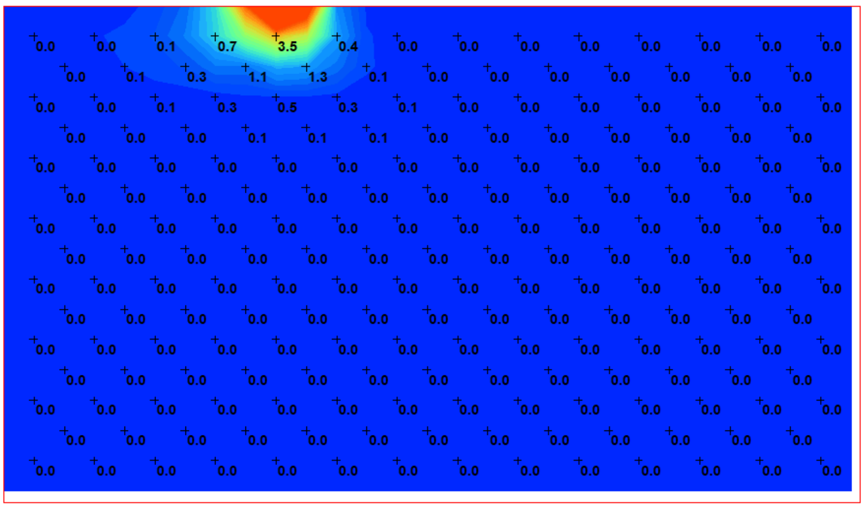


Figure 6: **Room A** Revised Scenario – Predicted Lux Levels (On Working Plane)





Minimum = 0.00

Maximum = 3.51

Average = 0.05

DF > 2.00 = 0.49 %

Figure 7: **Room A** Planning Approved Scenario – Predicted Daylight Factor Levels (On Working Plane)

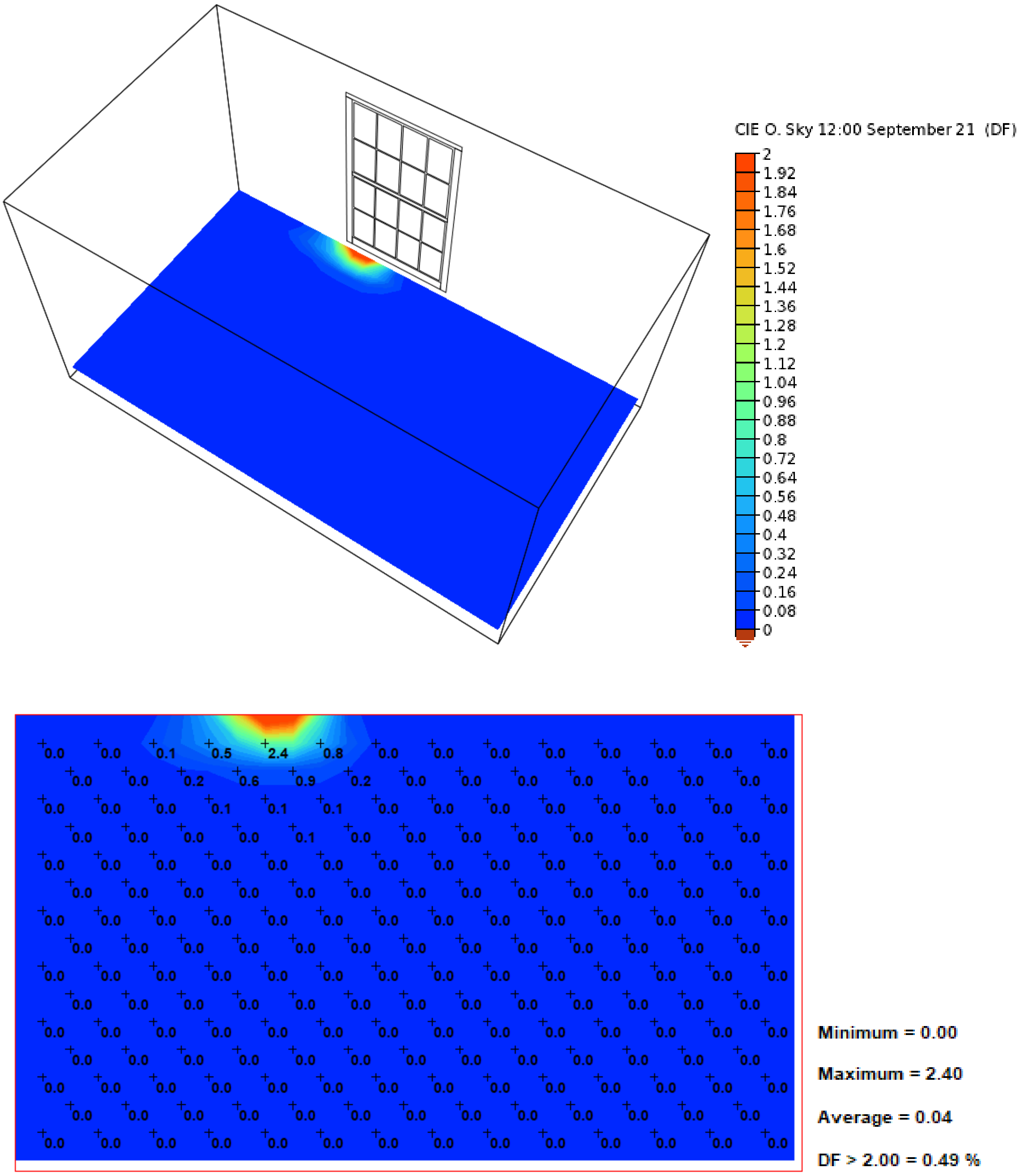


Figure 8: **Room A** Revised Scenario – Predicted Daylight Factor Levels (On Working Plane)

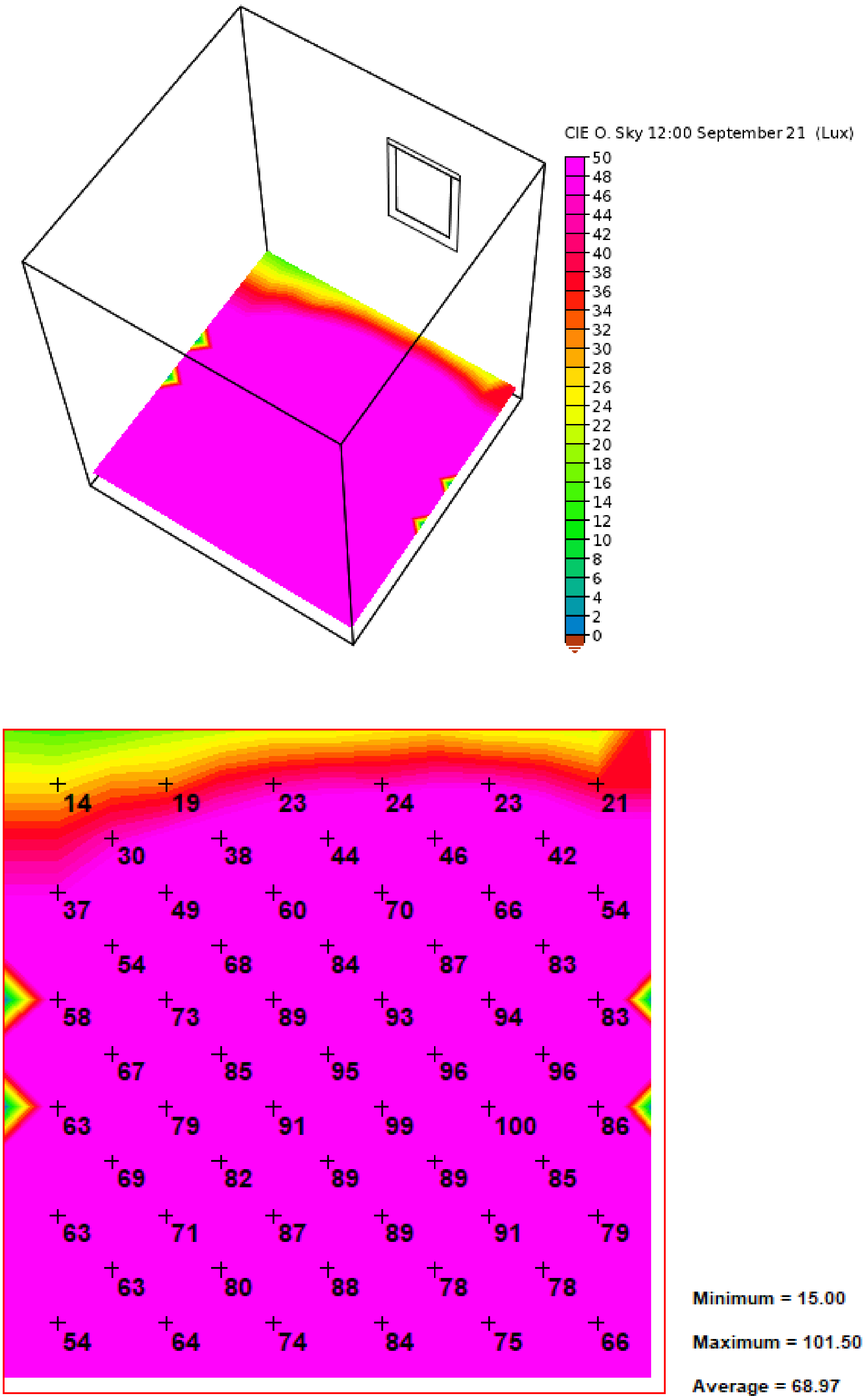


Figure 9: **Room B** Planning Approved Scenario – Predicted Lux Levels (On Working Plane)

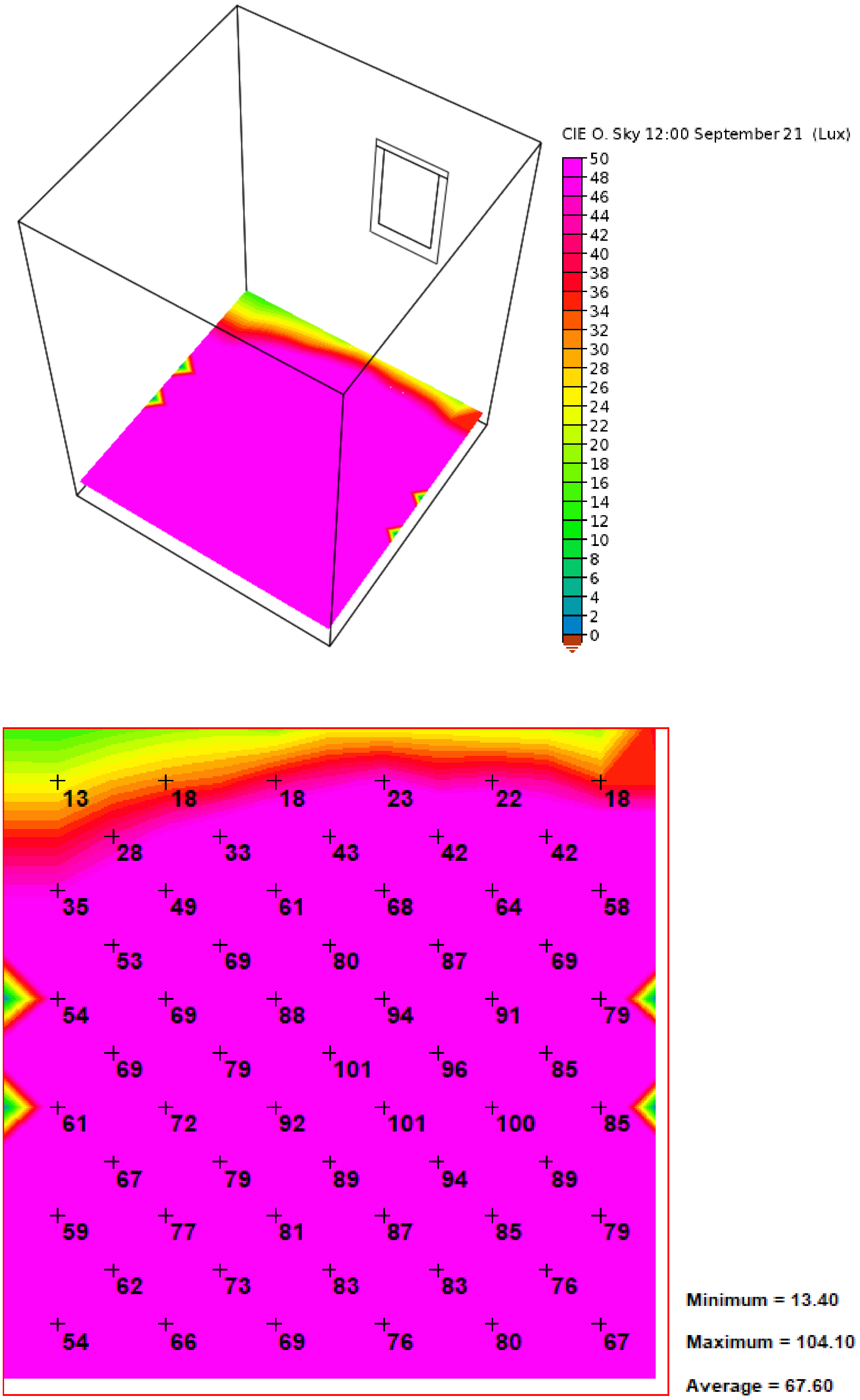


Figure 10: Room B Revised Scenario – Predicted Lux Levels (On Working Plane)

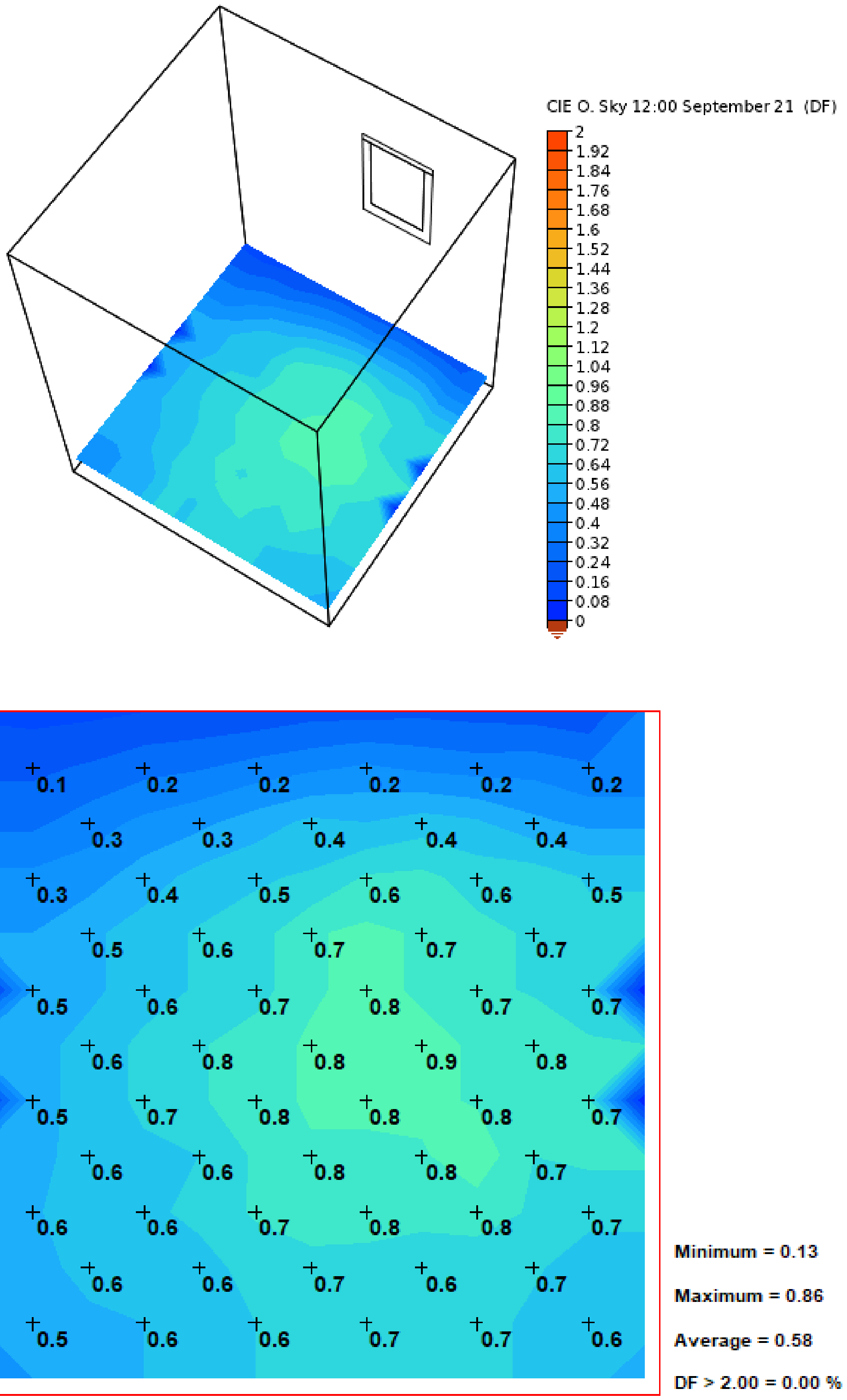


Figure 11: **Room B** Planning Approved Scenario – Predicted Daylight Factor Levels (On Working Plane)

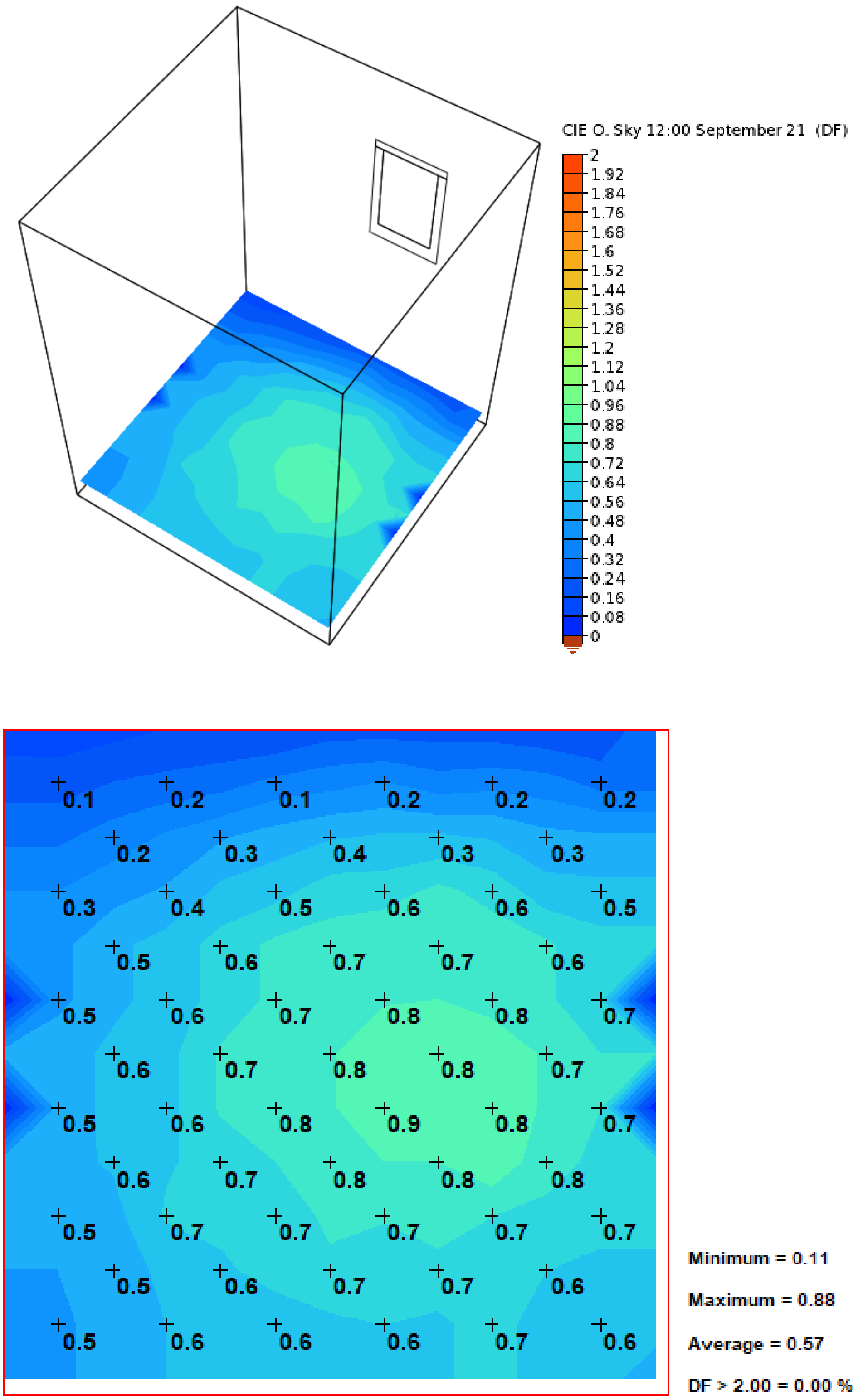


Figure 12: Room B Revised Scenario – Predicted Daylight Factor Levels (On Working Plane)