

# Dell DESIGNS LTD

## 193 High Street Blackwood, Caerphilly NP12 7AA.

for Mr Stephen Bourne-Smith



### Lux Light Level Report for Caerphilly Planning

*Proposal:* The proposed lighting levels at the rear of the property are being considered in light of the planned ingress and egress stairwell. It's important to note that the rear portion of the property will not be significantly affected by the presence of the stairwell due to its transparent mesh-type construction. This report aims to provide an assessment of the lux light levels in the specified area and to ensure compliance with relevant standards and regulations.

*Background:* Lux levels, measured in lumens per square meter ( $lm/m^2$ ), are a crucial metric for evaluating the adequacy of lighting in indoor and outdoor spaces. These levels are instrumental in ensuring safety, security, and comfort for occupants and users of the property.

*Assessment Methodology:* To conduct a comprehensive assessment of lux light levels at the rear of the property, the following methodology was employed:

1. **Site Inspection:** A thorough on-site evaluation was carried out to understand the layout, orientation, and potential obstructions affecting light distribution.



2. **Lighting Fixture Analysis:** Analysis of the proposed lighting fixtures, including their type, intensity, and placement, was conducted to gauge their impact on light distribution.
3. **Regulatory Compliance Check:** The calculated lux levels were compared against relevant standards and guidelines, to ensure compliance.

*Findings:* Based on the assessment conducted, the following findings were observed:

1. **Consistent Illumination:** The transparent mesh-type construction of the proposed ingress and egress stairwell allows for the passage of natural light, resulting in consistent illumination of the rear area of the property.
2. **Sufficient Lux Levels:** Lux levels in the designated area meet or exceed the minimum requirements stipulated by BS regulations. The transparent nature of the stairwell ensures that adequate light penetrates through to the rear, maintaining comfortable and safe conditions.
3. **Uniform Distribution:** The distribution of light is uniform across the specified area, minimizing the presence of dark spots or areas with insufficient illumination.
4. **Compliance with Standards:** The calculated lux levels are in accordance with the standards outlined by Caerphilly Planning, ensuring that the proposed lighting design meets regulatory requirements.

*Recommendations:* Based on the findings of the lux light level assessment, the following recommendations are proposed:

1. **Optimization of Fixture Placement:** Fine-tuning the placement of lighting fixtures can further enhance the uniformity and efficiency of light distribution.
2. **Regular Maintenance:** Implementing a regular maintenance schedule for lighting fixtures will ensure sustained performance and longevity, thereby preserving optimal lux levels over time.
3. **Environmental Considerations:** Consideration of environmental factors, such as seasonal variations in natural light, can inform adjustments to the lighting design to maintain desired lux levels consistently.

*Conclusion:* In conclusion, the lux light level assessment demonstrates that the proposed lighting levels at the rear of the property, unaffected by the transparent mesh-type ingress and egress stairwell, are adequate and compliant with BS regulations. By adhering to the recommendations outlined herein, optimal lighting conditions can be maintained to promote safety, security, and comfort for occupants and users of the property.

The loss of light level due to the steel stair installation cannot be precisely calculated, however it is most reasonable and very straight forwards to take a stepped review of High Medium and Low impact; using “Light Loss Calculations”, based on actual site Lux level readings.

Luminance tests conducted 2.45pm 7<sup>th</sup> February 2024, overcast, dry day, a new calibrated instrument being used. Photographs of readings attached; numbers below are “Lux”

- Internal Reading, three metres back from the side window:1.4
- Internal Reading window panel & door panel exchanged for translucent, three metres back from the side window:4.4

Observations from reading and calculations:

1. The room presently has relatively poor light
2. There is a very significant improvement in removing the plastic non glazed panels.
3. Light reduction at 68%, is the point the residence would be affected.

Positive enhancing strategies that will mitigate light loss:

Design & manufacture:

- The stair will not directly “fly-over” the flat, it will turn into the courtyard and snake around the right-hand wall, with a platform circa 4.5 metres above the head of the door & Window, forming an open lightwell>800mm x 920mm
- The stair will be open back and the tread will be “open box” style circa 25mmSq (as photo attached). This will allow significant light penetration.
- The stair will be galvanised, i.e. silver looking, reducing light absorption, with some reflection of light.

Glazing improvement:

- Replacing plastic panels in the door and side window and the heavy obscure glazing, to be replaced with lightly frosted, translucent glazing: significantly improving light, while maintaining a degree of privacy.
- Additional Light Source, we will install an additional clear glazed window in the porch 700mm x 700mm, allowing light from the front door to stream directly in to the apartment living area

Enhancement of reflective surfaces:

- Light-coloured walls, ceilings, and floors will bounce and distribute available light. We will redecorate the basement flat front room to be brilliant vinyl white. We will paint the walls in the courtyard area white; to maximise reflected illumination.
- Install a full height mirror on the left hand reveal of the internal wall. Such will reflectively bounce light into the room

We trust this information and the calculations provide the planning team with the comfort they require that the residential flat will not suffer detrimentally from a reduction of amenity light.

Additionally we would be happy, if deemed necessary, to give an undertaking, controlled by condition, that we would demolish the internal lobby/porch if lux 68% figure is not achieved.

An additional AI google search “mitigating loss of light caused by a steel stair installed across a window”, returned the following:

When dealing with the loss of natural light due to a **steel stair** installed across a window, consider the following strategies to mitigate the impact:

1. **Opt for Translucent Materials:**
  - **Glass or polycarbonate panels:** Replace solid steel panels with translucent materials. These allow light to pass through while maintaining safety.
  - **Frosted or textured glass:** If privacy is a concern, choose frosted or textured glass for the stair enclosure.
2. **Positioning and Design:**
  - **Stair orientation:** Align the stair in a way that minimizes obstruction of the window. Consider placing the stair parallel to the window rather than perpendicular.
  - **Open risers:** If feasible, design the stair with open risers (no solid vertical panels). This allows light to flow through the steps.
3. **Additional Light Sources:**
  - **Skylights or roof windows:** Install skylights or roof windows above the stairwell to compensate for lost natural light.
  - **LED strip lighting:** Add discreet LED strips along the stair edges or handrails to provide supplementary illumination.
4. **Paint and Reflective Surfaces:**
  - **Light-colored paint:** Paint the stair and adjacent walls in light colors to enhance light reflection.
  - **Mirrors:** Strategically place mirrors near the window or on the stairwell wall to bounce light into the space.

We are happy and able to fulfill sections 1,2 &4 of the AI suggestions and would take further steps if light levels are lower than predicted.

## Recommended Lux Levels for Interior Lighting:

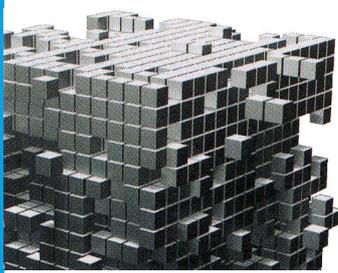
Kitchen			Bathroom			Corridors and stairs		
General	200 lux	Floor	General	100 lux	Floor	Dwellings	100 lux	1 m
Countertop / Island	500 lux	Work area	Mirror	300 lux	Face height	Common areas	150-200 lux	1 m

Bedroom			Children's bedroom			Living / Dining room		
General	50 – 100 lux	Floor	General	200 lux	Floor	General	100 lux	Floor
Headboard	150 – 300 lux	Reading light	Desk	500 lux	Table	TV	50 lux	Ambient light
						Reading	150 – 300 lux	Reading plane
						Dining room	150 lux	Table

The following Lux Light Levels Chart shows examples of Lux in various familiar conditions.

Light Condition	Typical Lux
British summer sunshine	50,000
Ambient Daylight	10,000 to 25,000
Overcast Daylight	1,000 to 5,000
Well-lit office	500
Sunset & Sunrise	400
Family Living Room	120
Lifts	100
Street Lighting	15
Moonlight (Full moon)	1
Night (No moon)	<0.01





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