



## EXTERNAL LIGHTING CALCULATIONS

**Project:** CAULDON CEMENT  
**Client:** NATIONAL GRID  
**BCL Contract Ref:** 17636-1  
**BCL Document Ref:** 17636-1-24-2  
**BCL Revision:** A  
**Project Document Ref:** N/A

**Notes:**

- Lighting design covers Normal lighting and Emergency Mode (Battery Backup 3Hour)
- Luminaire output in Emergency mode is 398 Lumens per fitting.
- Reference plane for Normal lighting = Floor level
- Reference plane for Emergency lighting = Floor Level

| REVISION | DESCRIPTION    | DATE     | COMPILED   | CHECKED | APPROVED |
|----------|----------------|----------|------------|---------|----------|
| A        | First Revision | 12-08-25 | O Mahamoud | C Jones | D Hogg   |
|          |                |          |            |         |          |
|          |                |          |            |         |          |
|          |                |          |            |         |          |

# EXTERNAL LIGHTING MANUFACTURER DATA

## 1. Luminaire data

### 1.1. ANSELL, BULKHEADS - Wolf Black... (AWOLF/BLK (CW 30W))

#### 1.1.1. Data sheet

Manufacturer: ANSELL



**AWOLF/BLK (CW 30W)**    **Ceiling mounted luminaire**    **BULKHEADS - Wolf Black 4000K**  
 AWOLF/BLK  
 FLOODLIGHTING  
 Wolf CCT Wallpack

- Modern, robust die-cast aluminium low glare wall pack suitable for commercial and industrial applications
- Advanced lens technology offers wide distribution for optimum spacing and uniformity; whilst ensuring minimal uplight and light pollution
- Reduced light pollution with less than 2% upward light distribution
- Helps with compliance with Dark Skies recommendations
- Power selectable; offering a choice of 3 outputs, in one luminaire
- High efficiency up to 140 Lm/W
- Electrostatic paint finish for enhanced corrosion resistance
- Multiple conduit entry and BESA fixing points
- 20mm East and West side entry for surface conduit and through-wire
- Dimmable and Smart options available

Operating Temp -20°C to 40°C

- Suitable for external use
- 5 Year Product Warranty
- IP65

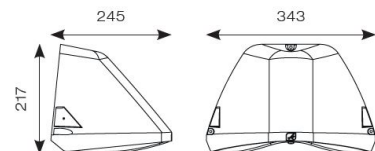
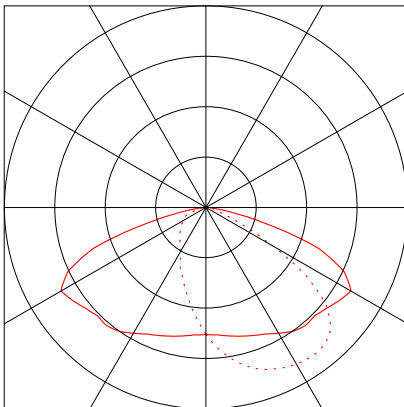
#### Luminaire data

Absolute Photometry  
 Luminaire efficacy : 115.21 lm/W  
 Classification : A30 ↓100.0% ↑0.0%  
 CIE Flux Codes : 40 76 97 100 100  
 Glare : G\*5 / D6  
 Control gear : Electronic ballast  
 Power : 31.43 W  
 Luminous flux : 3621 lm

#### Equipped with

Quantity : 1  
 Designation : LED single 840  
 Colour : 4000K  
 Socket : --  
 Colour reproduction : --

Dimensions : 240 mm x 340 mm x 200 mm

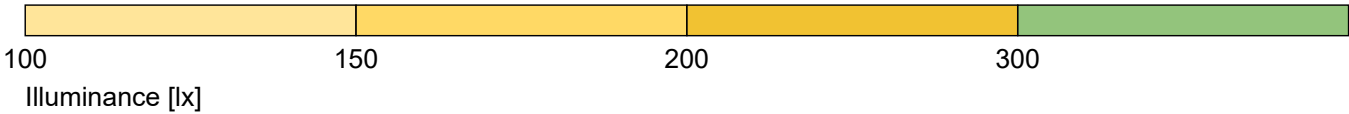
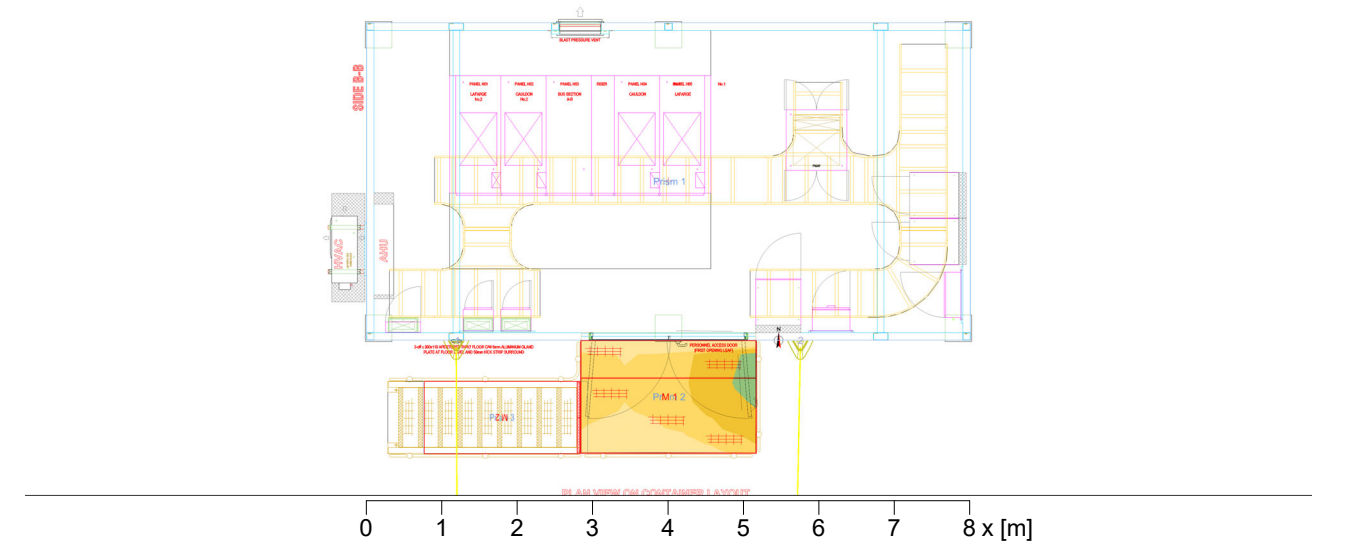


## **NORMAL LIGHTING MODE (PLATFORM LEVEL AREA)**

2. Exterior 1

2.2. Summary, Exterior 1

2.2.1. Result overview, Measuring area 1



General

|                                |                           |
|--------------------------------|---------------------------|
| Calculation algorithm used     | Average indirect fraction |
| Height of evaluation surface   | 1.96 m                    |
| Height (phot centre) [m]:      | 3.45 m                    |
| Maintenance factor             | 0.80                      |
| Total luminous flux            | 7242 lm                   |
| Total power                    | 62.9 W                    |
| Total power per area (3.45 m²) | 18.21 W/m²                |

Illuminance

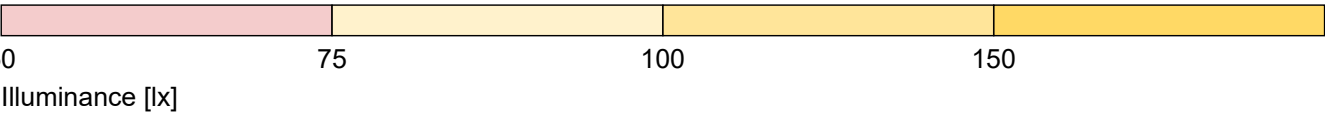
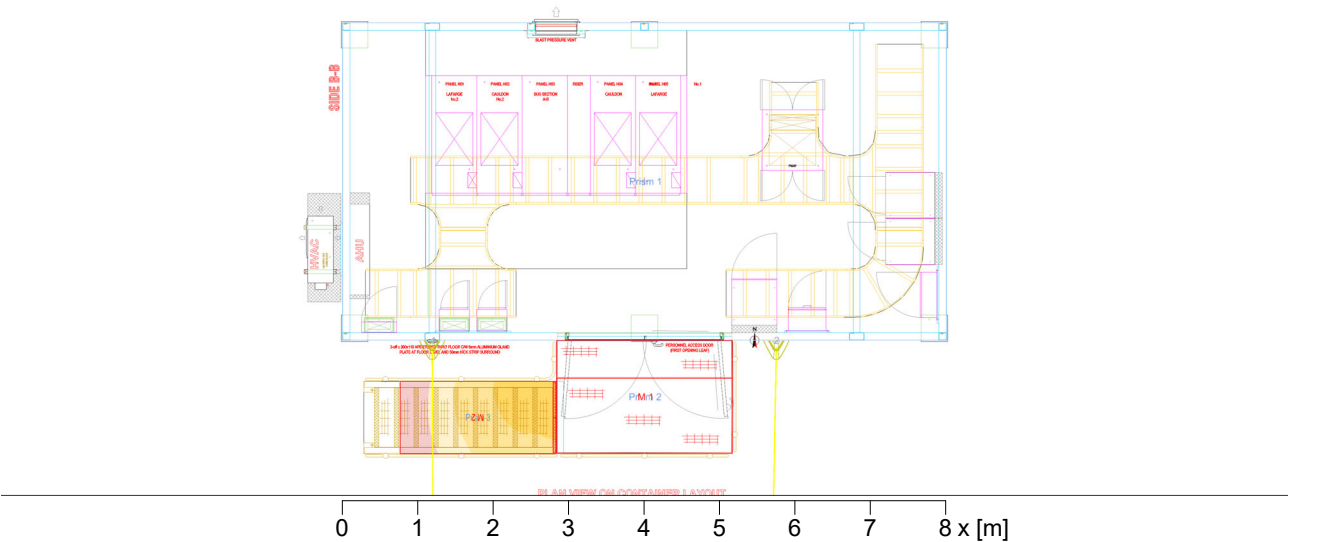
|                     |                     |              |
|---------------------|---------------------|--------------|
| Average illuminance | $\bar{E}_m$         | 185 lx       |
| Minimum illuminance | $E_{min}$           | 130 lx       |
| Maximum illuminance | $E_{max}$           | 326 lx       |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:1.42 (0.7) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:2.51 (0.4) |

Type No. Make

|   |     |                |                                        |
|---|-----|----------------|----------------------------------------|
| 1 | 2 x | <b>ANSELL</b>  |                                        |
|   |     | Order No.      | : AWOLF/BLK (CW 30W)                   |
|   |     | Luminaire name | : BULKHEADS - Wolf Black 4000K         |
|   |     | Equipment      | : 1 x LED single 840 31.43 W / 3621 lm |

3. Summary, Exterior 1

3.3. Result overview, Measuring area 2



General

|                                |                           |
|--------------------------------|---------------------------|
| Calculation algorithm used     | Average indirect fraction |
| Height (phot centre) [m]:      | 3.45 m                    |
| Maintenance factor             | 0.80                      |
| Total luminous flux            | 7242 lm                   |
| Total power                    | 62.9 W                    |
| Total power per area (3.45 m²) | 18.21 W/m²                |

Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 119 lx        |
| Minimum illuminance | $E_{min}$           | 55 lx         |
| Maximum illuminance | $E_{max}$           | 193 lx        |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:2.17 (0.46) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:3.51 (0.29) |

Type No. Make

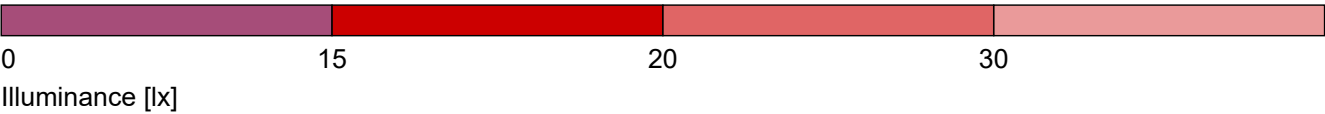
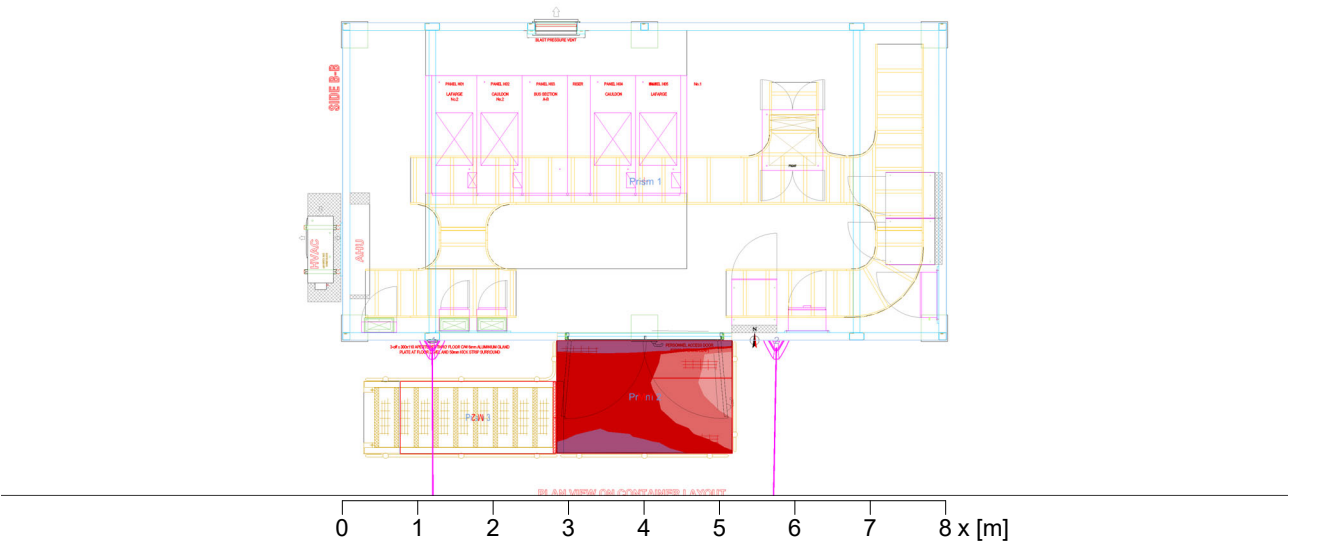
|                                                                                     |  |                |  |                                        |  |
|-------------------------------------------------------------------------------------|--|----------------|--|----------------------------------------|--|
| 1                                                                                   |  | 2 x            |  | ANSELL                                 |  |
|  |  | Order No.      |  | : AWOLF/BLK (CW 30W)                   |  |
|                                                                                     |  | Luminaire name |  | : BULKHEADS - Wolf Black 4000K         |  |
|                                                                                     |  | Equipment      |  | : 1 x LED single 840 31.43 W / 3621 lm |  |

## **EMERGENCY LIGHTING MODE (PLATFORM LEVEL AREA)**

4. Exterior 1

4.4. Summary, Exterior 1

4.4.1. Result overview, Measuring area 1



General

|                                |                           |
|--------------------------------|---------------------------|
| Calculation algorithm used     | Average indirect fraction |
| Height of evaluation surface   | 1.96 m                    |
| Height (phot centre) [m]:      | 3.45 m                    |
| Maintenance factor             | 0.80                      |
| Total luminous flux            | 796 lm                    |
| Total power                    | 62.9 W                    |
| Total power per area (3.45 m²) | 18.21 W/m²                |

Illuminance

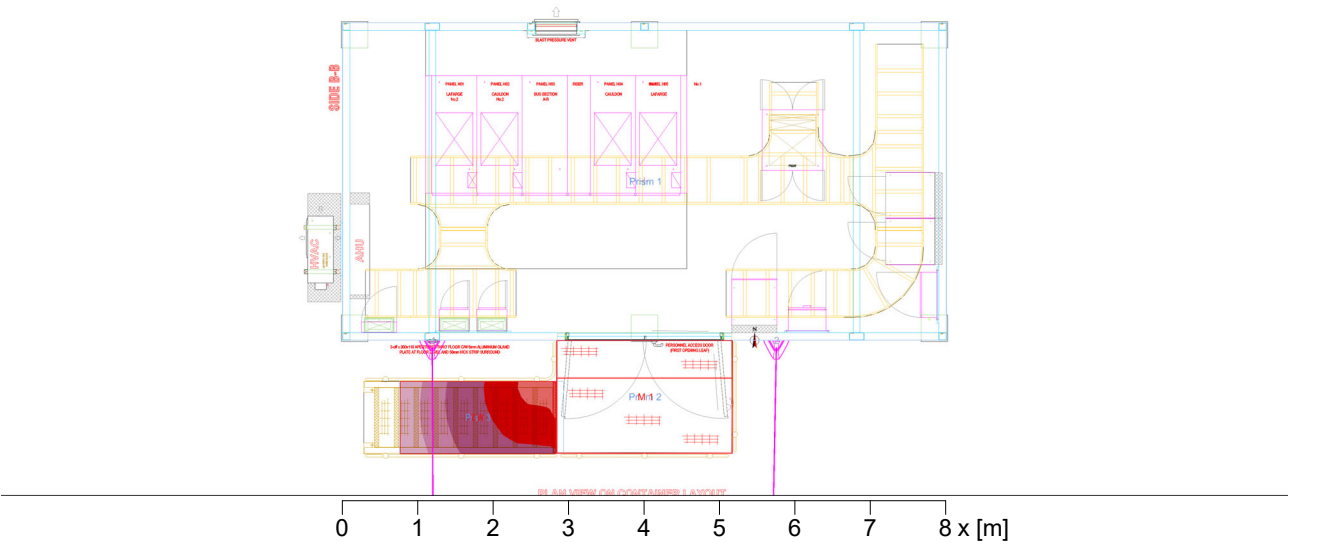
|                     |                     |              |
|---------------------|---------------------|--------------|
| Average illuminance | $\bar{E}_m$         | 20.3 lx      |
| Minimum illuminance | $E_{min}$           | 14.3 lx      |
| Maximum illuminance | $E_{max}$           | 35.8 lx      |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:1.42 (0.7) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:2.51 (0.4) |

Type No. Make

|                                                                                     |     |                |                                        |
|-------------------------------------------------------------------------------------|-----|----------------|----------------------------------------|
| 2                                                                                   | 2 x | <b>ANSELL</b>  |                                        |
|  |     | Order No.      | : !AWOLF/BLK (CW 30W)                  |
|                                                                                     |     | Luminaire name | : BULKHEADS - Wolf Black 4000K EM MODE |
|                                                                                     |     | Equipment      | : 1 x LED single 840 31.43 W / 398 lm  |

5. Summary, Exterior 1

5.5. Result overview, Measuring area 2



Illuminance [lx]

General

|                                |                           |
|--------------------------------|---------------------------|
| Calculation algorithm used     | Average indirect fraction |
| Height (phot centre) [m]:      | 3.45 m                    |
| Maintenance factor             | 0.80                      |
| Total luminous flux            | 796 lm                    |
| Total power                    | 62.9 W                    |
| Total power per area (3.45 m²) | 18.21 W/m²                |

Illuminance

|                     |                     |               |
|---------------------|---------------------|---------------|
| Average illuminance | $\bar{E}_m$         | 13.1 lx       |
| Minimum illuminance | $E_{min}$           | 6 lx          |
| Maximum illuminance | $E_{max}$           | 21.1 lx       |
| Uniformity $U_o$    | $E_{min}/\bar{E}_m$ | 1:2.17 (0.46) |
| Diversity $U_d$     | $E_{min}/E_{max}$   | 1:3.51 (0.29) |

Type No. Make

|                                                                                     |  |                |  |                                        |  |
|-------------------------------------------------------------------------------------|--|----------------|--|----------------------------------------|--|
| 2                                                                                   |  | 2 x            |  | <b>ANSELL</b>                          |  |
|  |  | Order No.      |  | : !AWOLF/BLK (CW 30W)                  |  |
|                                                                                     |  | Luminaire name |  | : BULKHEADS - Wolf Black 4000K EM MODE |  |
|                                                                                     |  | Equipment      |  | : 1 x LED single 840 31.43 W / 398 lm  |  |