

PLON01

Prologis Park West,
Units DC5 and DC6
Iron Bridge Road North
West Drayton
Uxbridge UB11 1BT

External Lighting Assessment

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Executive Summary

RED have been appointed to carry out the design and assessment report of the external lighting scheme to establish a design solution that could minimise any potential effects to the surrounding environment and neighbouring areas. RED understand the site to be considered as Environmental Zone E4, which is comparable to Urban, High district brightness, accordingly to the *ILP Guidance Note for the reduction of Obtrusive Light* and *CIE 150:2017*. This is primarily due to its setting in a well-established industrial area characterised by elevated ambient brightness and extensive commercial infrastructure. While the site borders existing and proposed boundary landscaping to the east, some of which has already undergone development, the preliminary ecological appraisal [PLON01-FCP-XX-XX-RP-N-00003] mentions only a limited presence of sensitive ecological features.

The lighting design will, as a minimum, comply with the local planning policies and UK regulations as well as the following design guidance documentation:

- CIBSE / SLL Code for Lighting
- CIBSE Lighting Guide LG6/16 – The Exterior Environment
- CIE 150:2017 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations
- Guidance Note GN01:2021 The reduction of Obstructive Light – The Institute of Lighting Professionals (ILP)
- Environmental considerations for exterior lighting – Chartered Institute of Building Services Engineers (CIBSE)

This document provides a brief description of the site location and known constraints, establishes the objectives and defines the specific requirements that shall be met.

Design criteria for the exercise and description of the different environmental zones will set the scene for the design solution and the external lighting assessment. The key features of the proposed lighting scheme to minimise obtrusive light to the surrounding environment will also be defined throughout this report.

The luminaire selection proposed for the scheme and the lighting calculation results are discussed in Sections 1.6 to 1.9. Supplementary figures are provided in the Appendix 1: Supplementary Figures.

Key Conclusions

The final assessment and key conclusions are:

- Vertical illuminance at sensitive external boundaries has been assessed to remain within acceptable levels under standard operational conditions, helping to minimise environmental impact and maintain compliance with ecological guidance.
- The lighting layout has been designed to orient luminaires inward wherever feasible, reducing visibility and light spill toward neighbouring areas and sensitive ecological zones.
- The scheme provides adequate lighting for operational and safety needs while actively limiting impact on adjacent sensitive boundaries, including the Grand Union Canal and the eastern boundary. Lighting calculations are in line with relevant guidance. Where exceedances occur, they are addressed.

- At the Grand Union Canal, identified as a bat commuting corridor, lighting levels under standard conditions are expected to remain below the recommended 3.7 lux threshold. Slight exceedances seen in modelling are attributed to conservative assumptions and are not reflective of actual site operation.
- Overall, the proposed lighting design maintains compliance with relevant planning and ecological standards under standard operational conditions.

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1.0 Lighting Assessment

1.1 Introduction

RED Engineering Design Ltd has been appointed to review and refine the external lighting scheme for the Proposed Development at Prologis Park West, Units DC5 and DC6, Iron Bridge Road North, West Drayton, Uxbridge, UB11 1BT. The proposed development supports the Partial demolition and adaptation of existing buildings; installation of new gantry decks housing MEP, a sub-station and fire suppression infrastructure; and associated physical works including alterations to the layout of the site.

This External Lighting Assessment has been prepared to evaluate the potential impact of the proposed lighting adjustments on the surrounding environment, particularly in relation to planning and ecological considerations.

The report describes the existing luminaires and current lighting conditions, along with the proposed modifications required to accommodate the revised site layout. These modifications include the removal of selected existing luminaires and the provision of new lighting to serve the newly introduced gantries, ensuring both operational efficiency and compliance with safety requirements. A detailed design will be submitted in accordance with the relevant planning conditions.

1.2 Site Location and Information

The proposed development site is located at National Grid Reference TQ0756680132. It lies within the administrative boundary of the London Borough of Hillingdon.



Figure 1: Aerial Satellite of the Existing Site View

The Site is bounded to the east by Stockley Road (A408) and beyond that; Stockley Park which accommodates a series of large office buildings rising two to three storeys high. To the north is Horton Road and beyond that significant mature landscaping, including Stockley Country Park and Stockley Park Golf Course. To the south, between the Grand Union Canal and a mainline railway, lies a cluster of industrial yards that include carparking and storage facilities. Beyond that is the closest area of residential land use. To the west is Iron Bridge Road North, the remainder of the Prologis Park West Estate and further commercial uses.

The site covers approximately 6.3 hectares and is currently occupied by two large warehouse buildings, which are to be converted into data centres under this planning application. These buildings, designated Unit 1 and Unit 2, have gross floor areas of approximately 18,063 sq m (194,428 sq ft) and 13,290sq m (143,052 sq ft) respectively. These buildings are of steel portal frame construction with metal cladding and include internal storage and office spaces.

1.3 Proposed Development

As part of the redevelopment, a portion of DC02 (Unit 2) will be removed, and new gantries will be constructed adjacent to both DC01 (Unit 1) and DC02. These gantries will require dedicated lighting to support operational and safety requirements.

An external lighting assessment model has been generated for the Proposed Development and is presented in Figures 2, 3 and 4 below. Figure 2 provides an aerial view of the Proposed Development, with supplementary visualisations shown in Figure 3—looking northeast from the southwestern boundary of the site—and in Figure 4, which shows a view looking northwest from the southeastern boundary.

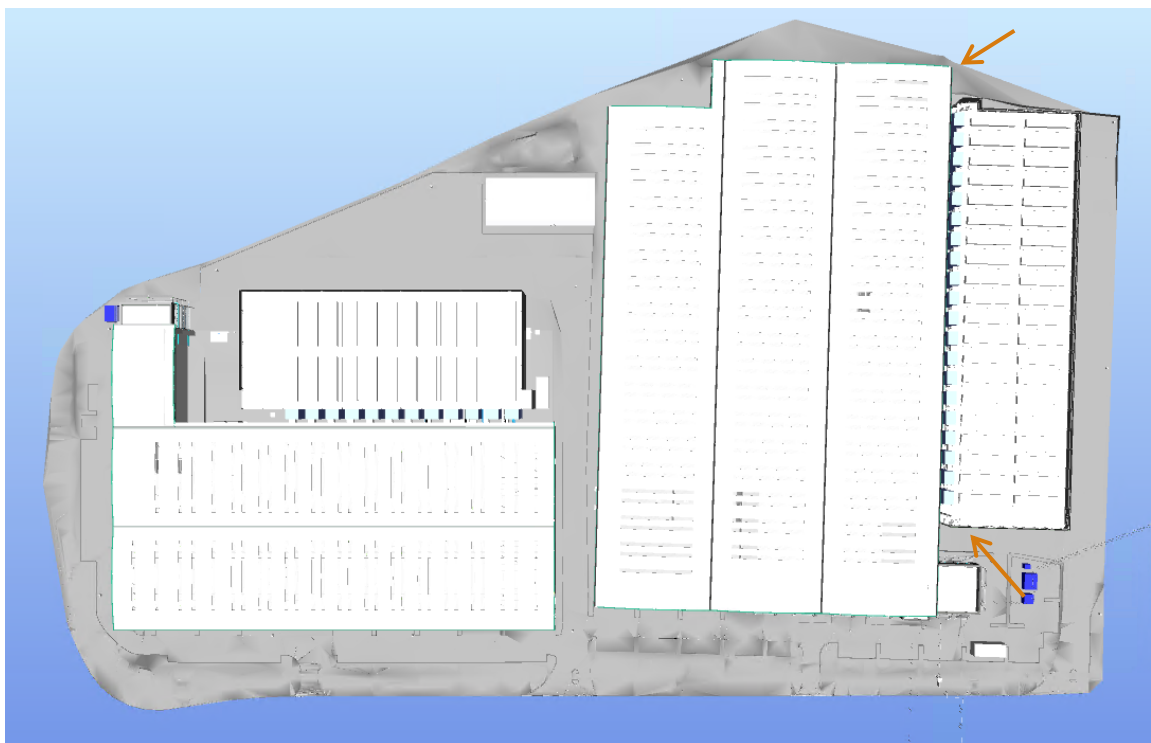


Figure 2 - Aerial Updated Site View. To the left DC02 (Unit 2) and to the right DC01 (Unit 1)

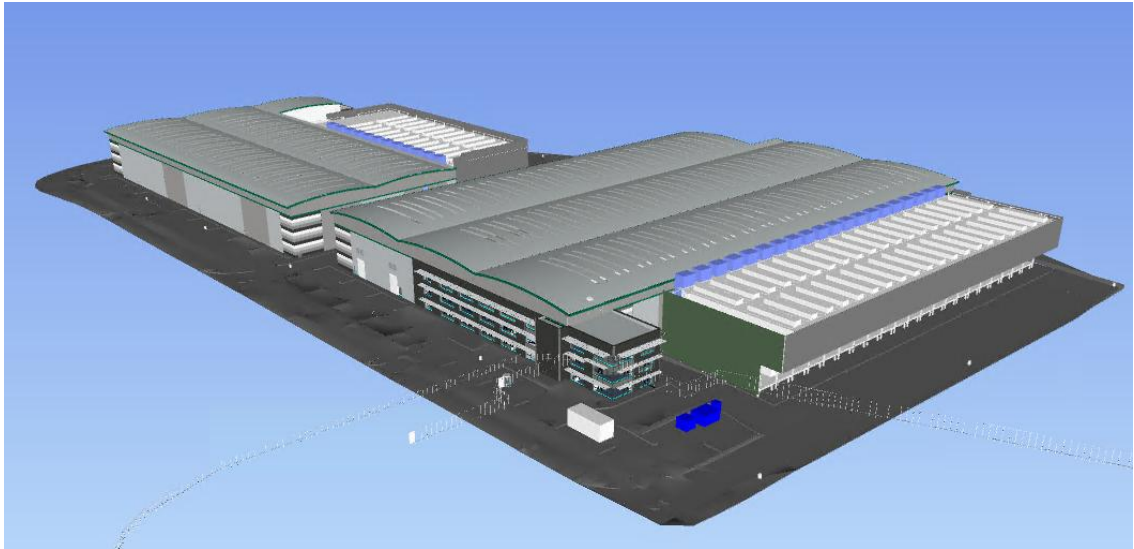


Figure 3 - Site View from Southwestern Angle

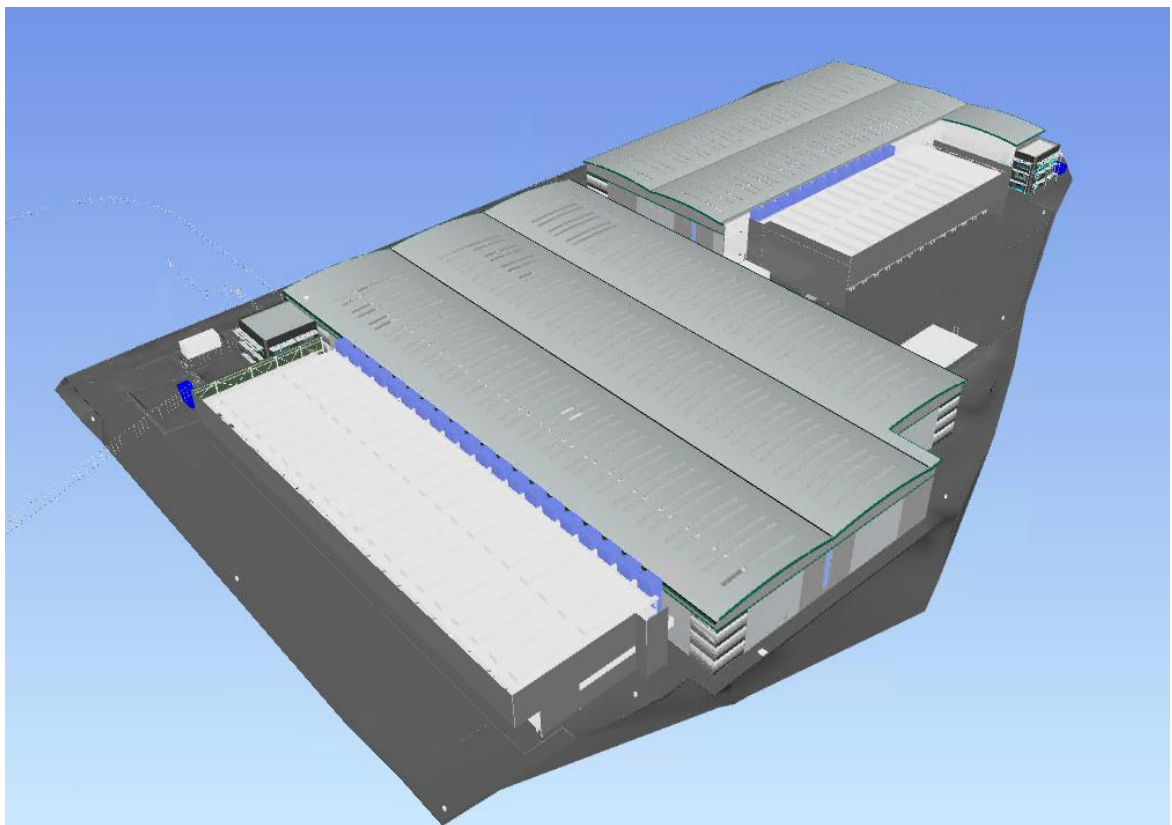


Figure 4 - Site View from Southeastern Angle

1.4 Objectives

The external lighting scheme has been assessed to support safe and functional use of the site after dark, including illumination of key external areas such as access routes, parking zones, and service areas.

The general objective of this report is to assess the impact of a suitable lighting scheme for the Data Centre facilities, including the newly proposed gantry structures, on the surrounding area and environment. The objectives include:

- A safe and adequate level of illuminance for the proposed exterior areas including access routes, pedestrian paths, loading bays, car parks, and external plant spaces (such as electrical transformers backup generation, and cooling units).
- An adequate level of illuminance for the movement of lorries, goods, and persons, particularly around the gantry structures.
- An external lighting strategy and level of illuminance aligned with site security and emergency access requirements.
- Limited light pollution, obtrusive light, spill light, and glare to neighbouring land and properties.
- Minimal light spill toward the Grand Union Canal, particularly to protect bat foraging and commuting routes identified during ecological surveys.
- Consideration of sensitive landscaping along the eastern boundary and minimising light spill toward this area.

1.5 Design Criteria and Environmental Zones

Proposed external lighting will, as a minimum, achieve the recommended design criteria guidance of:

- CIBSE / SLL Code for Lighting
- CIBSE Lighting Guide LG6/16 – The Exterior Environment
- CIE 150:2017 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations
- Guidance Note GN01:2021 The reduction of Obstructive Light – The Institute of Lighting Professionals (ILP)
- Environmental considerations for exterior lighting – Chartered Institute of Building Services Engineers (CIBSE)

1.5.1 Illuminance Metrics

In evaluating the external lighting scheme, three key metrics are referenced throughout this report:

- Horizontal illuminance refers to the level of light distributed across horizontal ground-level surfaces such as access roads, pedestrian paths, and operational zones. It is used both to verify adequate lighting for safe site operation and to assess light spill toward sensitive boundaries, including ecological corridors and adjacent land.
- Vertical illuminance refers to the amount of light falling on a vertical surface, such as building façades or site boundary. This metric is particularly relevant when evaluating potential obtrusive light toward receptors like residential windows or ecologically sensitive areas.

- Upward Light Ratio (ULR) represents the proportion of light emitted by a luminaire that escapes above the horizontal plane. It is a key indicator of sky glow and light pollution, particularly in urban environments. ULR is assessed to ensure compliance with environmental zone thresholds and to minimise unnecessary upward light spill.

All metrics are measured in lux (for illuminance) or percentage (for ULR), and are used in accordance with guidance from CIBSE, ILP, and CIE to ensure the lighting design supports operational needs while minimising environmental and visual impact.

1.5.2 Types of obtrusive light

Obtrusive light: Also referred to as light pollution

Sky glow: The brightening of the night sky

Glare: The uncomfortable brightness of a light source when viewed against a darker background

Light spill: the spilling of light beyond the boundary of the area being lit

Light intrusion: All forms of obtrusive light which may cause nuisance to others, or adversely affect fauna & flora as well as waste money and energy

Guidelines and threshold values for the environmental zones published by the Institution of Lighting Professionals, provides Guidance Notes for the Reduction of Obtrusive Light (GN01) on technical limits. Relevant tables have been used on this report. Figure 5 below has been provided to illustrate the ILP GN01:21 Types of obtrusive light so support this document.

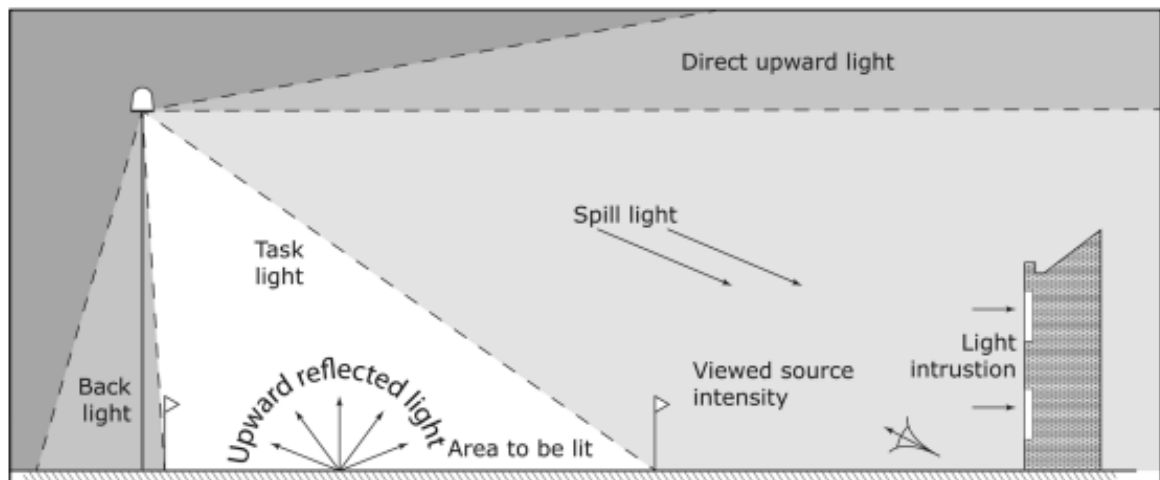


Figure 5 - ILP GN01:21 Types of obtrusive light

Environmental Zones Table 2 Table 1 below specifies the following environmental zones for exterior lighting control. Based on this table, the site has been assessed to be environmental zone E4: High district brightness due to its location within the Prologis Park, a well-established industrial estate in West Drayton, surrounded by commercial buildings (operating on a 24hr basis), major roads, and infrastructure contributing to high district brightness.

Table 1- ILP GN01:21 - Environmental Zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

Although the site borders existing landscaping along the eastern boundary, both the Preliminary Ecological Appraisal and the Landscape and Visual Impact Appraisal confirm these areas are already developed or partially developed and do not meet the criteria for lower brightness zones (E0/E1). The site itself has negligible ecological sensitivity, with no roosting bats or nesting birds, and minimal semi-natural habitat.

Table 2 - ILP GN01:21 - Environmental Zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

Note from ILP GN01:21: *SQM (Sky Quality Meter) is referenced by the International Dark Skies Association (IDA). SQM is an instrument used to measure the luminance of the night sky.*

1.5.3 Limitation of illumination on surrounding premises

As described on GN01:21, the limits listed below (per environmental zone) apply to nearby dwellings / premises or potential dwellings / premises and specifically windows. The values are the summation of all lighting installations.

Based on the previous assessment where the environmental zone as been defined as E4, the max illuminance in the vertical plane (post-curfew: the time after which stricter requirements apply) is 5 lux.

Table 3 - ILP GN01:21 Maximum values of vertical illuminance on premises

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E_v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

1.5.4 Limitation for the luminous intensity of luminaires

Table 4 below provides the limits for the luminous intensity of bright luminaires.

Table 4 - ILP GN01:21 - Limits for the luminous intensity of bright luminaires

Light technical parameter	Application conditions	Luminaire group (projected area A_p in m^2)					
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 < A_p \leq 0.50$	$A_p > 0.5$
Maximum luminous intensity emitted by luminaire (I in cd) ⁵	E0						
	Pre-curfew	0	0	0	0	0	0
	Post-curfew	0	0	0	0	0	0
	E1						
	Pre-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500
	Post-curfew	0	0	0	0	0	0
	E2						
	Pre-curfew	0.57 d	1.3 d	2.5 d	5.0 d	10 d	7,500
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	500
	E3						
	Pre-curfew	0.86 d	1.9 d	3.8 d	7.5 d	15 d	10,000
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	1,000
	E4						
	Pre-curfew	1.4 d	3.1 d	6.3 d	13 d	26 d	25,000
	Post-curfew	0.29 d	0.63 d	1.3 d	2.5 d	5.1 d	2,500

Notes to table:

d is the distance between the observer and the glare source in meters

A luminous intensity of 0 cd will only be achieved by a luminaire with a complete cut-off in the designated directions

A_p is the appearance surface of the light source seen from the observer position

The assessment of A_p for observers can prove difficult and will vary with positions and distances

1.5.5 Limitation of illumination on surrounding premises

Table 5 - GN01:21 - Maximum values of ULR of luminaires

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR) / %	0	0	2.5	5	15

1.5.6 Artificial Lighting Impact on Bats and the Eastern Boundary

In April 2025, FPCR Environment and Design Ltd. was commissioned by Prologis UK CCCXXXVIII S.à r.l. to undertake a Preliminary Ecological Appraisal [PLON01-FCP-XX-XX-RP-N-00003] of the Site. This assessment was carried out to inform the planning application for the proposed development.

The appraisal confirmed that the buildings themselves have negligible potential for roosting bats, and no evidence of bat activity was recorded. However, the Grand Union Canal, which borders the southern boundary of the site, was identified as a potential commuting corridor for bats and other wildlife. The report notes that while the canal is unlikely to constrain internal works, external lighting associated with the development should be carefully considered to avoid adverse impacts on commuting bats.

Similarly, the Ecological Assessment prepared by Ecology Solutions in June 2020, submitted to inform the grant of Planning Permission: APP/2020/2188 for the existing buildings at the Site, identified the canal and adjacent woodland as features of ecological interest, particularly for foraging and commuting bats. The assessment recommended that lighting along the canal corridor be designed to avoid upward light spill, with light levels not exceeding 3.7 lux at the canal edge.

In addition, the eastern and southern boundaries of the site include established woodland and scrub forming part of the site's boundary landscaping. These areas include established woodland and scrub that provide a visual and ecological buffer between the development and the surrounding landscape. The eastern boundary landscaping is considered a valuable receptor, and while some vegetation removal is required for site regrading, the retained and enhanced planting will help mitigate visual and ecological impacts.

In accordance with best practice guidance, including the ILP/BCT Guidance Note 08/18 and ILP GN01/21, the following lighting design principles are recommended to minimise ecological and landscape impacts:

- Avoid lighting near sensitive ecological features such as the canal, woodland edges, and hedgerows.
- Ideally use warm-white LED luminaires (<3000K) with no UV output.
- Employ full cut-off optics to eliminate Upward Light Spill (ULR = 0%).
- Ensure no upward tilt of luminaires.
- Use motion sensors and timers to limit lighting to when it is needed.
- Where bollard lighting is used, ensure it is low-glare and shielded.
- Select non-reflective surface materials to reduce indirect illumination where possible.
- Consider baffles, hoods, or louvres to further control spill where necessary.

These measures will help preserve the ecological function of the canal corridor and the character of the eastern site boundary, ensuring compliance with local and national biodiversity and landscape policies.

1.6 Assessment Methodology

The external lighting scheme for the site has been assessed using industry-standard software (DIALux Evo) to evaluate its performance under a range of operational scenarios. The modelling process began by replicating the existing lighting layout to validate the inherited design and establish a baseline. This was followed by a redesign to incorporate the proposed gantry structures and meet the updated site requirements.

To ensure a robust evaluation, the lighting calculations were carried out under existing and updated conditions:

- **Existing design:** The inherited external lighting layout was first replicated using industry-standard software to establish a baseline for comparison. This included the original luminaires and their positions prior to any site modifications. Appendices 2 and 3 display the existing lighting configurations and the associated illuminance levels. No other elements, such as vegetation or existing trees, have been considered in the model design.
- **Standard Operational Scenario:** The gantries were then introduced to the model, and the appropriate lighting design changes were made. Firstly, gantry lighting was modelled at 10% output, reflecting typical site conditions where only essential lighting for security and emergency access is active. This scenario represents the expected day-to-day operation of the site. Lighting within the gantry is expected to be controlled by presence detectors; however, for the purposes of this assessment, such controls have not been factored in.

This assessment aims to compare the proposed lighting scheme with the current lighting conditions on site, demonstrating that the new design seeks to maintain or reduce existing light levels. Lighting calculations of both horizontal and vertical illuminance across the site and its boundaries have been carried out and are presented in the appendix. The ULR has also been calculated for the proposed lighting arrangement to ensure compliance with relevant guidance and criteria.

Glare has been assessed during modelling and found to be within acceptable limits for the site's operational context. As the site is classified as Environmental Zone E4 and does not interface directly with sensitive receptors, glare is not expected to pose a nuisance, particularly where vertical illuminance, light spill, and ULR guidelines are met.

It should be noted that road lighting along the northern and eastern boundaries of the site has not been included in the current modelling scope. Similarly, potential light spill from adjacent areas within Prologis Park to the west of the site has not been assessed. These exclusions may result in a conservative estimate of cumulative lighting impact and should be considered in future design stages.

1.7 Luminaire Selection

The documentation produced as part of the current appointment, including drawings, lighting calculation reports, and specifications, has been developed based on the luminaire selection listed below. These luminaires were selected to match the pre-existing infrastructure. Where changes to the lighting design were required, luminaires were selected from the existing range already present on site.

Their characteristics, including high efficiency, and reduced light pollution and glare, have informed the design approach and modelling assumptions. All luminaires are IP65 or IP66 rated, meeting the performance and durability requirements of the project brief.

Table 6 - Luminaire Inventory and Specifications

REF	IMAGE	TYPE	DETAILS
AW		Wall Mounted Floodlight	ZACTIS LED High-performance flat-to-ground luminaire for area, sports, and high mast lighting. With forward throw optics and marine-grade finish. 250W, 34250 lm, 137 lm/W, IP65, IK08, DALI, RAL7016
B, BW		Column/Wall Mounted Floodlight	ZACTIS LED High-performance flat-to-ground luminaire for area, sports, and high mast lighting. With forward throw optics and marine-grade finish. 160w, 21920 lm, 137 lm/W, IP66, IK08, DALI, RAL7016
C, CW		Column/Wall Mounted Streetlight	Viva City Pro LED Slimline luminaire for street, area, and perimeter lighting with advanced optics to reduce light pollution, with marine-grade finish and FW70. 40W, 5532 lm, 138 lm/W, IP66, IK08, DALI, RAL7016
EW		Wall Mounted Bulkhead	Semita Urban LED Slimline wallpack luminaire for street, path, and flood lighting with comfort optic options, with marine-grade finish and Flood Optic. 24W, ~2999 lm, 125 lm/W, IP66, IK10, DALI, RAL7016
FW		Wall Mounted Bulkhead	Semita Urban LED Slimline wallpack luminaire for street, path, and flood lighting with comfort optic options, with marine-grade finish and cycle optic. 6W, ~819 lm, 137 lm/W, IP66, IK10, DALI, RAL7016

REF	IMAGE	TYPE	DETAILS
G (For modelling purposes)		Roof Mounted Linear Bulkhead	Thorn ForceLED Pro Robust luminaire with corridor function, Safe-T Locking System, polycarbonate diffuser 26W, 3030 lm, 117 lm/W, IP66, IK10

Note: If annotated W, it is wall mounted. If not, it is column mounted

1.8 Existing lighting design

Lighting levels have been designed in accordance with CIBSE Lighting Guides, SLL Code for Lighting, Guidance Notes on Reduction of Light Pollution, and BS 5489.

Table 7 - Average Lighting Levels – Design Target

Location Type	Average Lux Level (Target)
Roadways and Car Parks	10 lux
Vehicle Drop-off and Refuse	20 lux
Pedestrian Routes and Building Perimeters	30 lux
Vehicle Turning, Plant and Loading	50 lux
Vehicle Lock	100 lux

The first step in the assessment involved replicating the existing external lighting layout within the modelling software. This was done to validate the inherited design and establish a baseline for comparison. The model reflects the pre-existing infrastructure without any modifications, allowing the design team to assess its performance against current standards and identify areas requiring adjustment as part of the redevelopment. The initial step in the assessment involved replicating the existing external lighting layout within DIALux modelling software. Validation of the baseline model was carried out by comparing the simulation outputs against the original lighting calculations and layout drawings provided.

Appendix 2 and Appendix 3 illustrate the lighting arrangement and illuminance levels across the site and at its boundaries. These figures were provided by the client as part of the as-built documentation. The model was recreated using this data and confirmed that the inherited design offers adequate coverage and aligns with the relevant environmental zone criteria. These outputs form a reliable foundation for further design development and scenario testing.

Table 8 below summarises horizontal and vertical illuminance levels at key external boundaries under standard operational conditions, where Figure 11 in Appendix 1: Supplementary Figures illustrates the light spill around these boundaries. Based on modelling using as-built data, these values reflect expected lighting performance near site boundaries, where vertical illuminance is only measured near sensitive areas.

Table 8 - Illuminance Levels at Key External Boundaries (Existing Site Conditions)

Zone	Avg Horizontal Illuminance (lux)	Max Horizontal Illuminance (lux)	Avg Vertical Illuminance (lux)	Max Vertical Illuminance (lux)
Canal	0.89	2.9	3.42	6.73
Eastern Boundary	2.56	10.7	0.074	3.13
Stockley Road	0.16	2.85	0	0.007
Horton Rd	0.12	1.65	Not Measured	Not Measured
Iron Bridge Road	3	19.9	Not Measured	Not Measured

Illuminance levels at sensitive boundaries such as the Eastern Boundary and Grand Union Canal have been assessed against ILP GN01:2021 guidance for Environmental Zone E4.

At the Grand Union Canal, horizontal illuminance remains below the recommended 3.7 lux threshold. While the modelled maximum vertical illuminance is recorded at 6.73 lux, which exceeds the ecological threshold for bat-sensitive areas, this assessment does not account for extensive existing mitigating features as noted before. These elements, detailed later in the report, are known to significantly reduce actual light spill toward the canal. When these features are considered, the existing site configuration is expected to meet the required ecological thresholds, and therefore this exceedance is not considered a compliance concern under standard operational conditions. These values, however, serve as a useful reference point to evaluate whether proposed changes may result in any detrimental impact.

While the Eastern Boundary shows a relatively high maximum horizontal illuminance of 10.7 lux, this occurs directly beneath an existing luminaire and does not represent typical conditions across the boundary. Importantly, both the average horizontal and maximum vertical illuminance across the Eastern Boundary was measured to be below the 5 lux light limits.

In contrast, the Iron Bridge Road boundary exhibits higher horizontal illuminance levels, reaching up to 19.9lux at the entrance to the site; however, this area lies entirely within the Prologis Park industrial estate and is not considered sensitive under ILP guidance.

1.9 Proposed External Lighting Design

Following the validation of the existing lighting layout, the model was updated to reflect the proposed site changes, including the removal of a section of DC02 and the installation of new gantry structures adjacent to DC01 and DC02. These structural additions introduced new operational zones that require dedicated lighting to ensure safe access and movement, particularly during low-light conditions.

To assess the impact of the proposed gantry structures on site lighting, the model was updated to include internal lighting within the gantries themselves. These structures feature partial transparency, with approximately 70% open floor space and 20% open wall area, allowing some light to spill outward from the gantry area. The interior gantry fittings were spaced 5 to 6 metres apart, and in rows that run in between each row of equipment (ie chillers on the top floor, generators on the bottom), using luminaire ref G, meeting operational requirements.

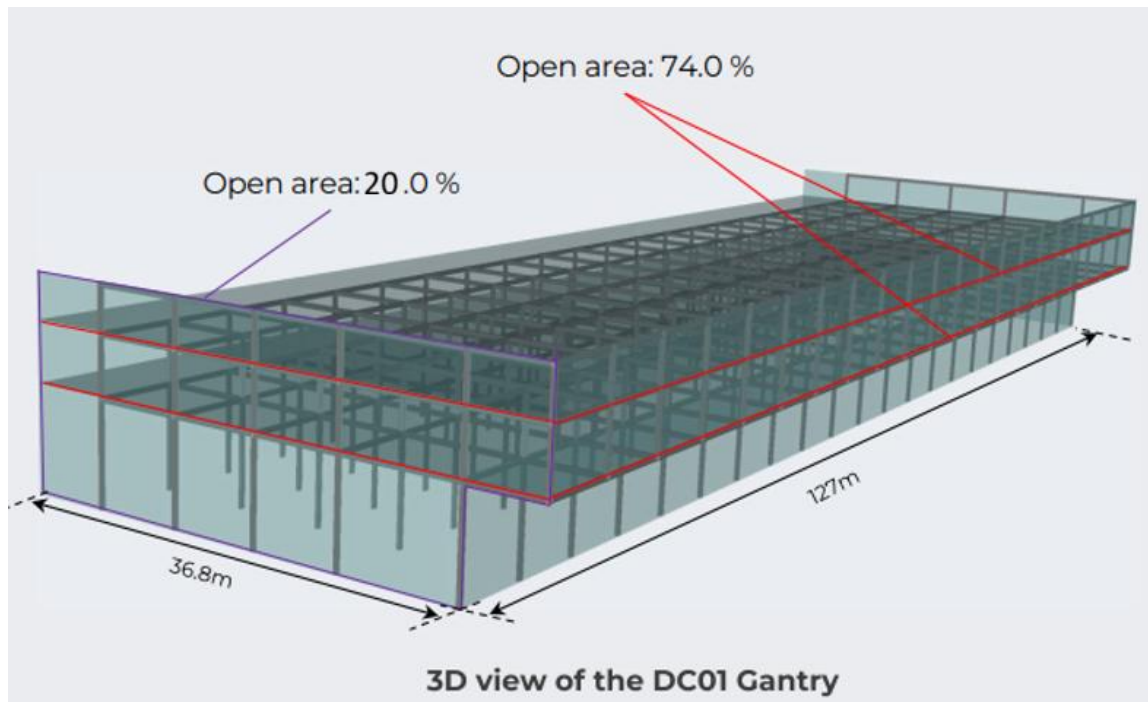


Figure 6 - 3D view of DC1 Gantry

This configuration was necessary to conservatively evaluate how light from within the gantries contributes to overall site illumination and potential spill toward sensitive boundaries and therefore is not a final lighting design. The model was then analysed, and the design reconfigured to ensure operational guidelines were met.

Additional luminaires were introduced along the underside of the gantry edge. These fittings, BW for the underside of the gantry outside DC02 and EW for DC01, are spaced at regular 20m intervals and sized to provide adequate lighting coverage without oversizing. The updated external lighting diagram, including the gantries, is displayed in Appendix 4.

Without these luminaires, lighting levels fall below acceptable thresholds, dropping below 1 lux in some areas, rendering the space unsuitable for safe night-time operation. The inclusion of the internal and external gantry lighting ensures adequate coverage in the updated design and forms the basis for further scenario testing.

In addition, with the inclusion of the substation in DC01, lighting is required along the walkways around this section. Additional bulkheads (EW) were fitted along these walkways to meet guidelines, spaced approximately 10m apart, at height of 2.4m, where Figure 9 illustrates this design.

It is important to note that the proposed lighting design and gantry installations remain entirely within the existing site boundary and do not extend to any adjoining land. The lighting strategy has been carefully developed to respect the sensitivity of the surrounding area.

1.10 Analysis of Proposed Lighting Design

The analysis of the proposed lighting design considers key performance factors including horizontal illuminance, glare, light spill, and upward light ratio.

The assessment has been carried out under a single operational condition, representing typical site operation, with gantry lighting dimmed to 10 percent.

This reflects the realistic day-to-day behaviour of the development and provides an appropriate benchmark for evaluating obtrusive light, particularly toward sensitive receptors such as the Grand Union Canal.

Table 9 - Upward Light Ratio for Luminaire Selection

Luminaires Ref	Quantity	Luminaire Lumens	UWLR	
AW	0	34250	0.0	0 %
B, BW	28	21920	0.0	0 %
C, CW	28	5532	0.0	0 %
EW	12	2999	0.00	0 %
FW	11	513	0.00	0 %
G	594	9243	0.05	5 %

Note: Ref G was selected to model the internal lighting of the gantry, purely for this exercise. UWLR would be mitigated for if practically implemented.

1.10.1 Standard Operational Conditions (Gantry lighting at 10% output, exterior lights on)

Under normal site operation, gantry lighting operates at 10 percent output, providing sufficient illumination for security and emergency access. This condition represents the routine behaviour of the site and ensures that light spill and overall environmental impact remain low.

In this scenario, the ULR was calculated to be 0.2%, which is significantly below the target threshold of 15% for the designated environmental zone. Therefore, ULR is not a concern under these conditions.

Table 10 shows the maximum and average light spill onto the surrounding areas. The figures present average horizontal and vertical illuminance values across key site boundaries offering a comparative overview of light distribution around the site boundary.

An illustration of the illuminance on site boundaries is included in Figure 12 and Figure 13 in Appendix 1: Supplementary Figures.

Table 10 - Illuminance Levels at Key External Boundaries (New layout, Standard Operational Conditions)

Zone	Avg Horizontal Illuminance (lux)	Max Horizontal Illuminance (lux)	Avg Vertical Illuminance (lux)	Max Vertical Illuminance (lux)
Aim	5	5	5	5
Stockley Road	0.18	2.23	0	0.008
Horton Road	0.13	1.74	Not measured	Not measured
Iron Bridge Road	3.06	19.8	Not measured	Not measured
Eastern Boundary	1.9	10.9	0.096	2.78
Grand Union Canal	0.86	3.49	3.57	8

Lighting levels along the site boundary remain broadly compliant with relevant standards and ecological guidance. At the Grand Union Canal, identified as a sensitive ecological corridor, the modelled illuminance shows a maximum horizontal value of 3.49 lux and vertical illuminance ranging from an average of 3.57 lux up to 8 lux.

Although the maximum vertical level is slightly higher than the existing baseline (6.73 lux, as noted in Table 8 - Illuminance Levels at Key External Boundaries (Existing Site Conditions)), this increase is modest, and the average vertical illuminance rises only marginally from 3.42 lux to 3.57 lux, crucially remaining below the 3.7 lux limit. These variations occur under conservative modelling assumptions that exclude real-world mitigating features such as topography, boundary structures, and vegetation. When these factors are considered, actual light spill is expected to remain within ecological lighting guidelines, further supporting the conclusion that the proposed design does not materially worsen conditions at the canal.

Importantly, the proposed lighting design, including the gantry modifications, does not worsen existing conditions. It is expected to further reduce environmental impact once the updated gantry structure and other refinements outlined in Section 1.13 are implemented in a future development stage.

At the Eastern Boundary, lighting levels under the proposed design show an improvement in average light spill compared to existing conditions. The average horizontal illuminance decreases from 2.56 lux to 1.9 lux, indicating reduced overall light exposure across this sensitive boundary. Although the maximum horizontal illuminance increases slightly from 10.7 lux to 10.9 lux, this change is minor and only on a specific point adjacent to an existing luminaire. Vertical illuminance values also remain low and stable. On balance, the proposed lighting design improves containment and reduces average spill at the Eastern Boundary under standard operational conditions.

A comparison between Figure 11 and Figure 12, which illustrate lighting distribution around the eastern site edge by DC02, shows that the proposed design has improved light containment in this area, reinforcing compliance.

1.11 Maintenance Case

Maintenance activities will be carried out using localised lighting controls, ensuring that only luminaires directly needed for the task are switched on. As a result, the site will never operate with full illumination, and lighting during maintenance will behave in line with the Standard Operational Scenario.

Because illumination is restricted to small, task-specific areas, no increase in light spill beyond Scenario 1 levels is expected, including toward sensitive boundaries such as the Grand Union Canal.

1.12 Mitigating Factors

Several existing physical and environmental features on site will naturally reduce the impact of external lighting. These are as follows:

- Boundary walls and fencing: These act as physical barriers, blocking horizontal light spill and shielding sensitive areas such as the Grand Union Canal and the eastern boundary landscaping.
- Luminaire columns: Luminaire columns help reduce backlight, particularly along the site boundary adjacent to the Grand Union Canal, where shielding of horizontal spill is critical.
- Structural columns and building massing: Elements of the built environment, wiring and pipework in the gantry, and other vertical structures, will further obstruct light.
- Topographical drop-off toward the canal: The natural slope land toward from the canal helps limit vertical light spread, lowering lux levels at the southern boundary.
- Vegetation, trees and hedgerows: Existing and proposed planting around the boundary absorbs and diffuses light, reducing glare and light trespass into ecologically sensitive zones (further details below).

Figure 7 and *Figure 8* below illustrate how the surrounding vegetation helps block light spill from the site luminaires. The tree cover along the Grand Union Canal boundary appears to reach heights exceeding 5 metres,

providing effective screening, particularly against backspill from luminaires positioned around the site perimeter. These will act to directly block light on the vertical plane, ensuring minimal light spill beyond the site boundaries, and crucially onto the Grand Union Canal. In addition, the canal itself sits at a lower elevation than the main site platform, creating a natural topographical buffer. This elevation difference further reduces the likelihood of direct light spill reaching the canal, especially in terms of vertical illuminance. Together, these features support the assessment's conclusion that lighting levels will remain within ecological thresholds under standard operational conditions. Figure 8 also illustrates the lighting columns positioned behind the luminaires, which were not included in the modelling.



Figure 7 - View of the Grand Union Canal from an Overpass



Figure 8 - Site luminaires with Tree Cover Behind

1.13 Future Adjustments

In addition to existing site features, further measures are being considered to reduce environmental impact and improve compliance:

- Dimming strategies: Lighting controls will allow luminaires around the site to operate at reduced output during periods of low activity, minimising unnecessary illumination.
- Where feasible, luminaires will be installed at reduced mounting heights to help contain light within the site and lower the upward light ratio. Applying this approach along the canal-side boundary will also enable existing vegetation to screen light spill more effectively.
- Gantry transparency: The opacity of the gantry walls and floors may be reduced further, which helps limit internal light transmission and reduces the amount of light escaping into the surrounding environment.
- Directional shielding and optical control: Accessories such as hoods, baffles, and louvres may be used to further restrict light spill and focus illumination where necessary. Reduce the luminaire colour temperature from 4000 K to 3000 K to provide a warmer and more environmentally friendly lighting temperature. Where feasible, select luminaires from DarkSky Certified product ranges.

2.0 Summary Statement

This External Lighting Assessment presents a detailed evaluation of the proposed external lighting scheme for the development at Prologis Park West, Iron Bridge Road North, confirming its alignment with relevant planning, ecological, and lighting guidance.

The site, classified as Environmental Zone E4, has been assessed using industry-standard modelling tools under standard operational conditions, with gantry lighting operating at a reduced output to reflect typical on-site use. Key performance indicators, such as vertical and horizontal illuminance, ULR, and light spill toward sensitive boundaries including the Grand Union Canal and the eastern site landscaping, have been thoroughly analysed.

The modelling demonstrates that the proposed lighting modifications do not worsen existing conditions. In several areas, improvements are evident due to design refinements such as increased gantry wall opacity, inward-facing luminaires, and targeted luminaire placement. Lighting levels at sensitive boundaries remain broadly consistent with the existing baseline, with reductions noted in some locations due to improved light containment.

Where minor exceedances occur within the model, these arise from conservative assumptions that do not reflect actual operational behaviour. In practice, lighting will be controlled to ensure compliance with ecological and planning requirements. Existing site features, such as structural elements, boundary treatment, and established vegetation, already contribute to reducing light spill beyond the site boundary.

Overall, the proposed lighting strategy supports safe and functional site operation while minimising environmental impact, reinforcing its suitability for planning submission and long-term ecological compatibility.

3.0 References

1. CIBSE / SLL Code for Lighting Chartered Institution of Building Services Engineers (CIBSE), Society of Light and Lighting (SLL).
2. CIBSE Lighting Guide LG6/16 – The Exterior Environment Chartered Institution of Building Services Engineers, 2016.
3. CIE 150:2017 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations, International Commission on Illumination (CIE), 2017.
4. ILP GN01:2021 Guidance Notes for the Reduction of Obtrusive Light, Institution of Lighting Professionals, 2021.
5. ILP/BCT Guidance Note 08/18 Bats and Artificial Lighting in the UK, Institution of Lighting Professionals and Bat Conservation Trust, 2018.
6. Environmental Considerations for Exterior Lighting Chartered Institution of Building Services Engineers (CIBSE).
7. BS 5489 Code of Practice for the Design of Road Lighting, British Standards Institution.
8. FPCR Environment and Design Ltd. (2025) Preliminary Ecological Appraisal [PLON01-FCP-XX-XX-RP-N-00003] – 1 Ironbridge Road North, West Drayton, commissioned by Prologis.
9. Ecology Solutions (2020) Ecological Assessment – Grand Union Canal Corridor and Adjacent Woodland, commissioned by Prologis.
10. Barry Chinn Associates (2020) Landscape and Visual Impact Appraisal – Prologis Park, West Drayton.
11. Dialux Rev0 DIAL GmbH – used to replicate and validate the existing lighting layout

Appendix 1: Supplementary Figures

Substation Walkway (All Lights)

Summary

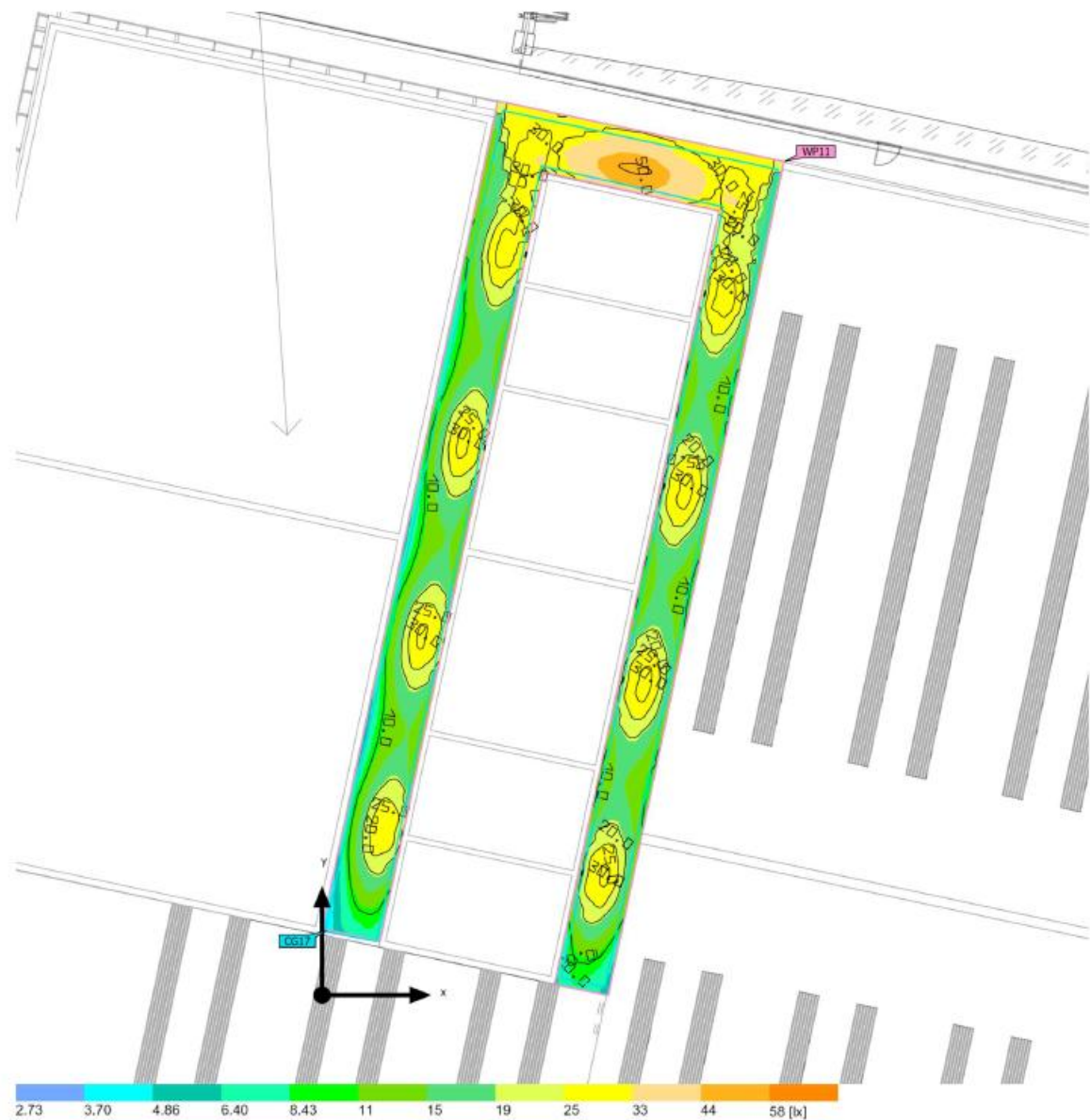


Figure 9 - Substation Walkway and Lighting

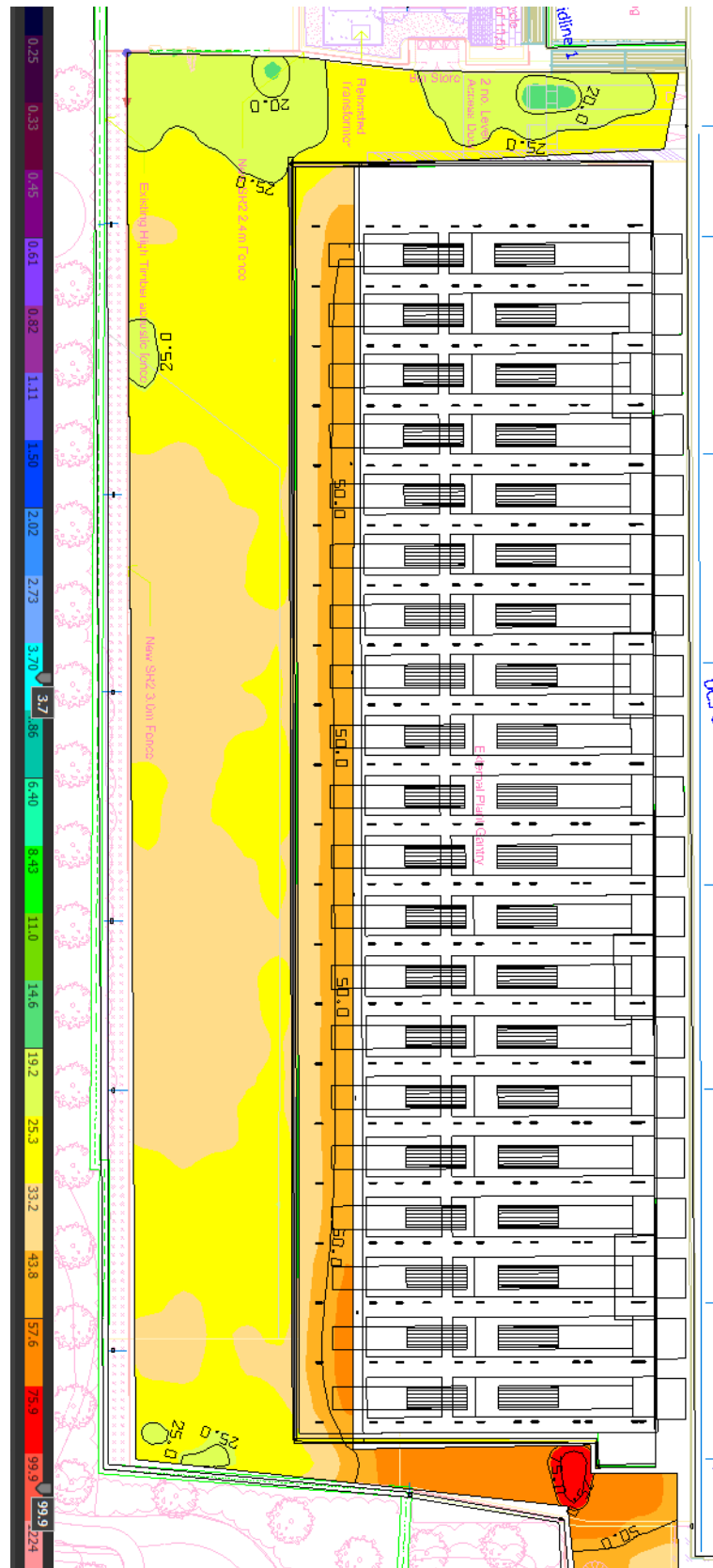


Figure 10 - DC1 Gantry Standard Operation Illumination Diagram

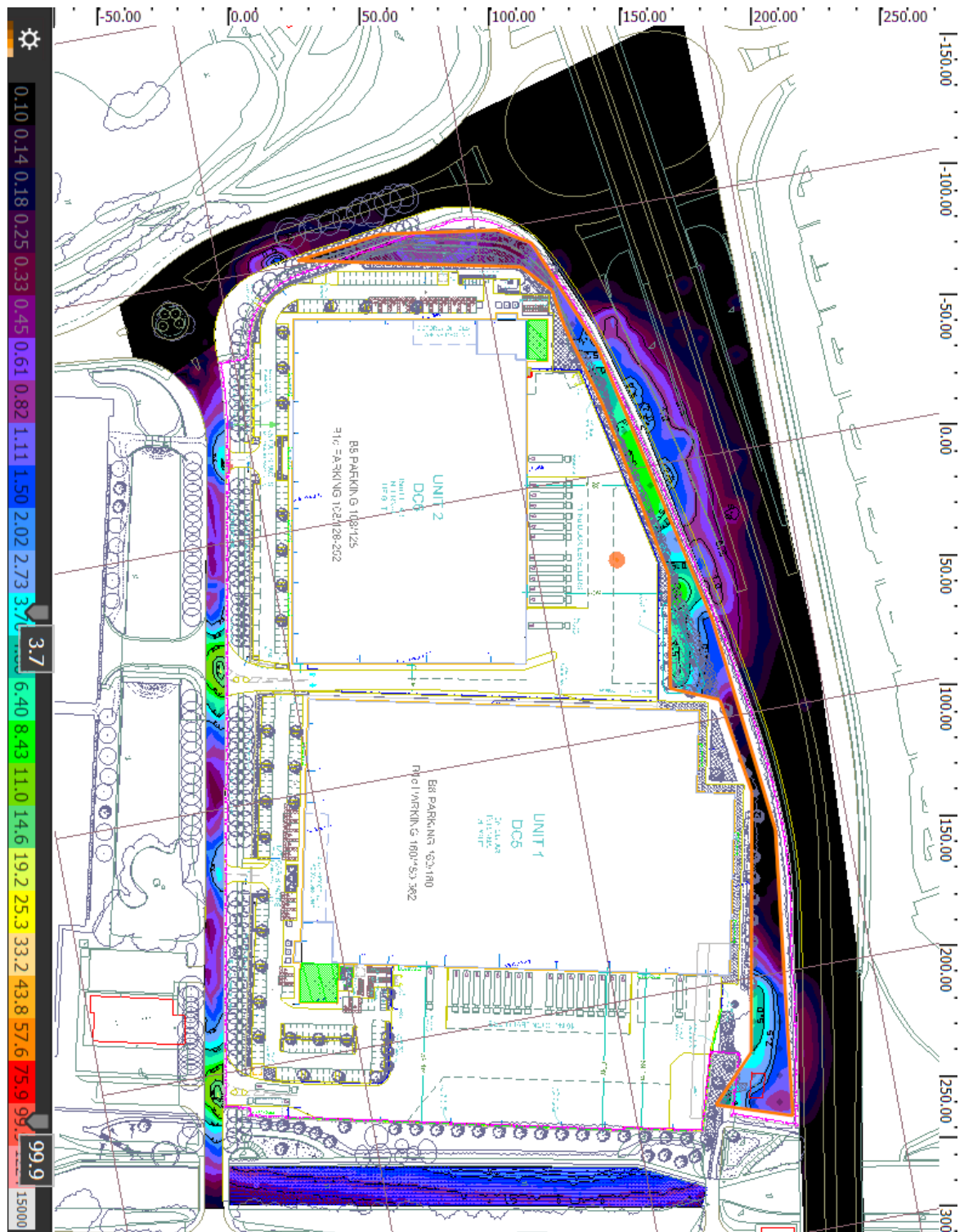


Figure 11 - Existing Site Boundary Horizontal Illuminance



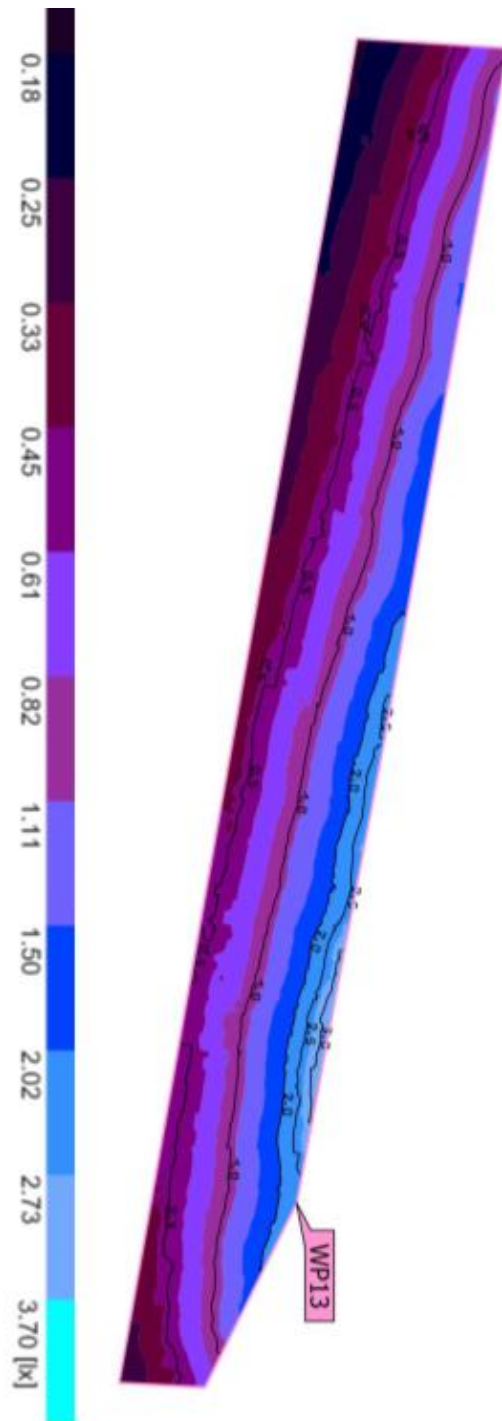
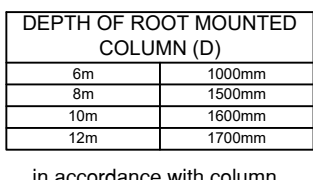


Figure 13 - Standard Operation Grand Union Canal Light Distribution

Appendix 2: Existing DC5 Lighting Conditions as-built by Client



- | LEGEND OF SMALL POWER & DATA SYMBOLS | |
|---|----------------------------|
| SYMBOL | DESCRIPTION |
| | NEW TPN DISTRIBUTION BOARD |



EXTERNAL LIGHTING SUPPLIES

CONTACTOR

EXTERNAL LIGHTING CIRCUIT

ASTRONOMICAL TIMECLOCK

MANUAL OVERRIDE LOCATED NEXT TO DB

6A FUSE

15A FUSE

EXTERNAL LIGHTING TIMECLOCK SCHEMATIC

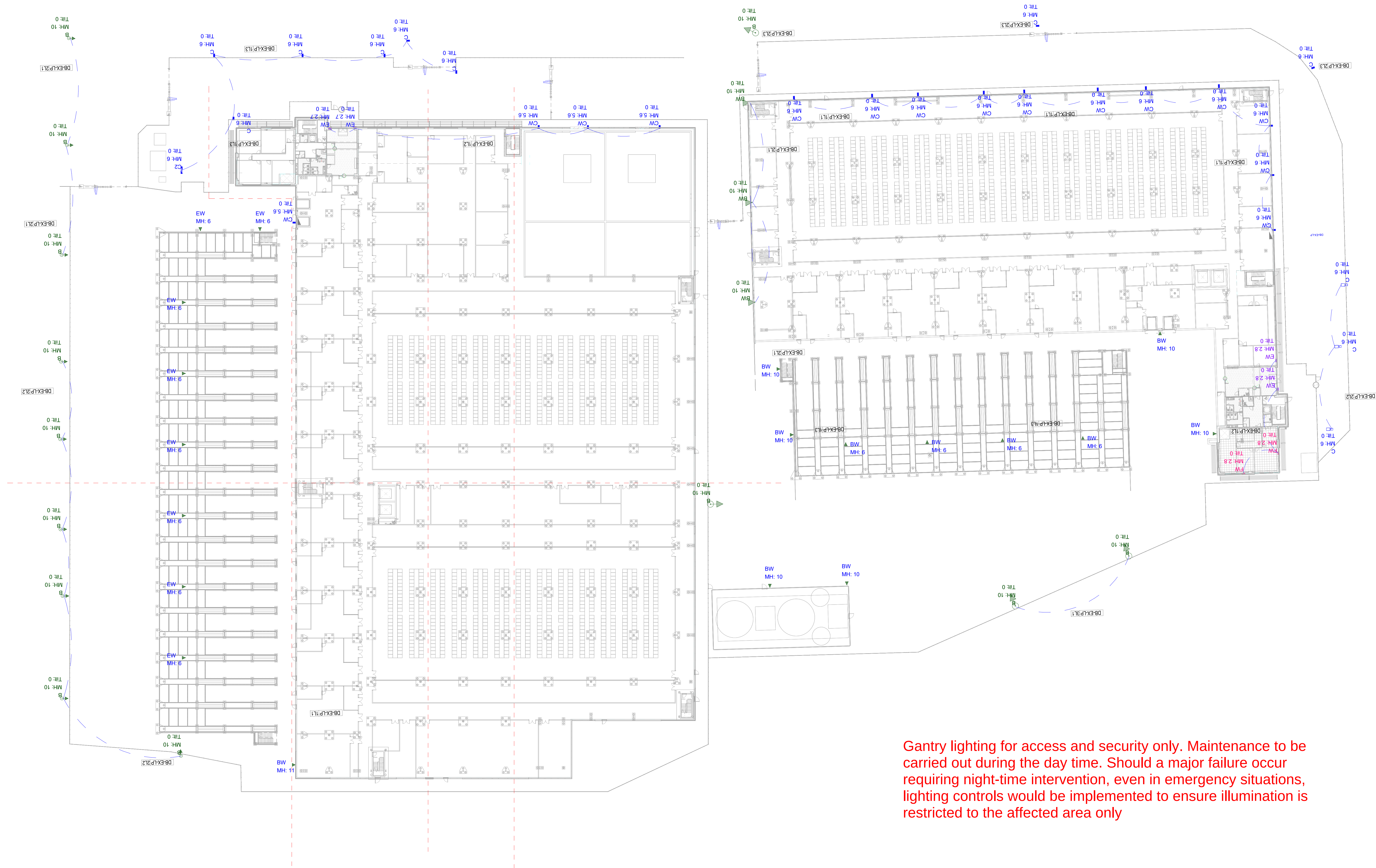
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Appendix 3: Existing DC6 Lighting Conditions as-built by Client

Appendix 4: Updated External Lighting Design Schematic

General Notes:

- Design developed in compliance with the Health and Safety at Work Act and all relevant statutory requirements, as applicable at concept design stage.
- All dimensions are indicative and shown in millimetres unless noted otherwise.
- This drawing is to be read in conjunction with all relevant concept-level architectural, structural, mechanical, public health and electrical design information.
- Service routes, plant locations, and spatial allowances for access and maintenance are indicative and subject to coordination during later design stages.
- All dimensions and spatial arrangements are to be verified and developed further during RIBA Stage 3 and beyond.
- The design intent reflects current best practice and relevant standards; detailed compliance will be addressed in subsequent stages.
- Coordination drawings and builderswork requirements are not finalised at this stage and will be developed by the design team and contractor in later stages.
- Do not scale from this drawing. All dimensions are subject to refinement and coordination.
- This drawing is to be read in conjunction with the RIBA Stage 2 Basis of Design document.

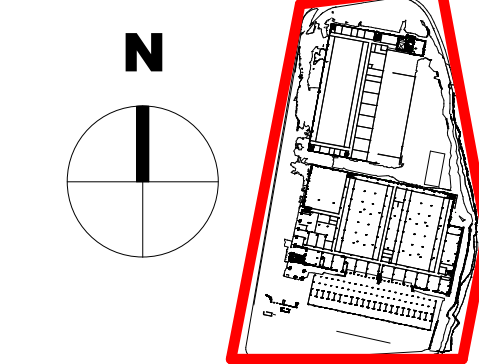


Gantry lighting for access and security only. Maintenance to be carried out during the day time. Should a major failure occur requiring night-time intervention, even in emergency situations, lighting controls would be implemented to ensure illumination is restricted to the affected area only

P01	06.08.2025	Stage 2 Issue	DW
Rev	Date	Description	Issued By

Project Stage

Stage 2



Client:



Project:
PLON01
Iron Bridge Road North UB11 1BT

Drawing Title:
Sitewide
External Lighting Layout

Drawn	Checked	Page Size	Scale	Date
DM	DW	A0	As indicated	17/10/25
Project No.	Drawing No.	Revision		
PLON01	02000	P01		

File Name:
PLON01- RED-SW-ZZ-DR-J- 02000

Purpose Code:
S4 - Issue for Stage Approval
Acceptance Code



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