

Applicant: Athora UK RE Log Property 24 Limited
Site address: Former Lamberts Brothers Haulage
site, on land at Woodside Avenue and Woodside
Road

210368

External Lighting Strategy

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P2	Charlie Pimm	Alex Cox	28/05/21	Updated title block information
P3	Charlie Pimm	Alex Cox	20/07/21	Updated Site Plan
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External Lighting Report

1.0 Introduction

Couch Perry & Wilkes LLP have produced this report to summarise the external lighting design and calculations for the proposed Logistics Development at the Former Lamberts Brothers Haulage site, on land at Woodside Avenue and Woodside Road.

The new luminaires will utilise various forms to provide functional, amenity and security lighting to lorry yards, lorry parking, car parks and all other associated areas as detailed later in this report.

In general, only high colour rendering lamps are proposed to aid the visual tasks required such as parking. Lamps which exhibit 4000K colour temperature will be used, luminaires will have tight optical control and emit light in the downwards direction, wherever possible. Upward light is therefore limited to reflected light only.

The lighting design will be sensitive and coherent with the principles set out within the ILP (Institute of Lighting Professionals) guidance notes for the reduction of obtrusive light (2021), BS EN 12464-2 and other institutional guides for exterior lighting.

This report should be read in conjunction with the CPW external lighting drawings: 210368-CPW-ZZ-XX-DR-E-EXT01 Proposed External Lighting Layout For Planning, which form part of the planning application drawings. For ease of reference, these drawings also form Appendix A of this report.

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2.0 Lighting Design Brief

The external lighting concept design has been developed in accordance with the Ecologist's requirements to assess the impacts of lighting on habitat concerning bats. The design also makes reference to:

- CIBSE Lighting Guide LG6;
- BS 5489-1:2013 Code of practice for the design of road lighting Part 1: Lighting of roads and public amenity areas
- BS EN 12464-2:2014 Light and lighting—Lighting of work places Part 2: Outdoor work places
- CEN/TR 13201 (all parts) Road Lighting
- Institute of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light GN01:2021.
- Lighting Guide 6 - The Outdoor Environment
- Guidance Note 08/18 Bats and artificial lighting in the UK
- Bats and Lighting Overview of current evidence and mitigation, Emma L Stone
- Landscape and Urban Design for Bats and Biodiversity, Bat Conservation Trust

Calculations have been made to assess the horizontal & vertical illuminance produced by the lighting design, as well as light pollution intensities on various grid planes around the site in order to apprise the light trespass toward nearby receptors.

The following pages detail the external lighting proposal and calculations against the required performance criteria. The required lighting levels are baseline targets which can be increased upon in areas as dictated by the landscaping and client's requirements.

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3.0 Product Types

Type A-D

The D-Series luminaire is part of the Holophane Range. It is ideal for open spaced areas with its Asymmetric, Symmetric and Forward Throw light distribution options. Precisely controlled light distribution offers maximum efficiency keeping light pollution along with spill and glare to a minimum.

Reference A - Single head 36,000lm forward throw LED modules are to be housed within an IP65 enclosure. Refer to the submitted drawings for mounting heights and tilt angles.



Reference B - Single head 30,000lm asymmetric distribution, LED modules are to be housed within an IP65 enclosure. Refer to the submitted drawings for mounting heights and tilt angles. 'B FW' denotes a single head 30,000lm with the forward throw optic. 'BLS' denotes fitted with a back light shield, to reduce backwards light spill.

Reference C - Single head 22,000lm asymmetric distribution, LED modules are to be housed within an IP65 enclosure. Refer to the submitted drawings for mounting heights and tilt angles. 'BLS' denotes fitted with a back light shield, to reduce backwards light spill.

Reference D - Single head 6,000lm asymmetric distribution, LED modules are to be housed within an IP65 enclosure. Refer to the submitted drawings for mounting heights and tilt angles.

Type E

The Denver Elite Bollard is part of the Holophane range. The Denver Elite bollard combines a palette of design variables, which include aesthetic appeal, quality, durability and performance. The fitting provides multiple light distribution options with a louvered prismatic lens to provide additional up light cut-off. 845lm lumen package LED.



Type F

The Wallpack is part of the Holophane range. It is a modern aesthetic design that incorporates LEDs in addition to standard white light sources. Its stylish design and clear glass optic for LED, proves a high-performance long & narrow distribution, with wide spacing for high efficiency. 3,000 lumen package LED, refer to the submitted drawings for mounting heights and tilt angles.



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4.0 Illumination Levels

In accordance with the Chartered Institute of Building Services Engineers (CIBSE) Lighting Guide 6 (LG6), BS EN 12464-2:2014, BS 5489-1:2013 and BS EN 13201-2:2015, the following illumination levels are to be achieved:

Area	Maintained Illuminance (Lux)	Uniformity
Access Road	15	0.20
Car Parking	20	0.25
Dock Doors	50	0.40
Service Yard	30	0.40
Perimeter Walkway	5	0.25

Average illumination levels achieved on CPW drawings 210368-CPW-ZZ-XX-DR-E-EXT01 are as follows:

Area	Average Level Achieved (Lux)	Uniformity
Unit 1 Car Parking	29	0.67
Unit 1 Cycle Shelter	23	0.98
Unit 1 Level Access	96	0.92
Unit 1 Office Entrance	62	0.37
Unit 1 Service Yard	42	0.45
Unit 2 Car Parking	34	0.52
Unit 2 Cycle Shelter	54	0.81
Unit 2 Level Access	96	0.96
Unit 2 Office Entrance	69	0.46
Unit 2 Service Yard	52	0.75
Unit 3 Car Parking	31	0.57
Unit 3 Cycle Shelter	74	0.62
Unit 3 Level Access	91	0.86
Unit 3 Office Entrance	68	0.48
Unit 3 Service Yard	48	0.49
Unit 1,2 & 3 Shared Fire Escape Path	22	0.31
Unit 5 Car Parking	32	0.37
Unit 5 Cycle Shelter	25	0.52
Unit 5 Fire Escape Path	15	0.41
Unit 5 Level Access	113	0.74

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Area	Average Level Achieved (Lux)	Uniformity
Unit 5 Entrance	110	0.68
Unit 5 Service Yard	50	0.50

It should be noted that the lighting calculations carried out for the dock door areas are based on 'worst case' scenarios with no vehicles included in the calculated lux levels. These lighting levels typically improve to in excess of the standard requirements when the building is in use with trailers parked in the loading bays.

Lighting columns are to be installed in the service yards and car parks at a height of 8m in order to reach the required illumination levels. They need to be installed at these different heights in order to keep glare to a minimum for drivers as well as being compliant with limiting glare and illuminance to nearby areas.

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5.0 ILP Guidance Notes for the Reduction of Obtrusive Light, 2021

In accordance with the Institute of Lighting Professionals (ILP) 'Guidance Notes for the Reduction of Obtrusive Light, 2021'.

A preliminary assessment of the development has identified it as environmental zone of E3.

Category	Examples	
E1:	Intrinsically dark landscapes	National Parks, Areas of Outstanding Natural Beauty, etc.
E2:	Low district brightness areas	Rural, small village, or relatively dark urban locations.
E3:	Medium district brightness areas	Small town centres or urban locations
E4:	High district brightness areas	Town/city centres with high levels of night-time activity

Having an environmental zone of E3 indicates that the design shall need to comply with the table below:

Environmental Zone	Sky Glow ULR (Max %)	Light Trespass (into windows) Ev (Lux)		Source Intensity I (kcd)		Building Luminance Pre-curfew
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L
E1	0	2	1*	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5	10	2	10	1	10
E4	15	25	5	25	2.5	25

- ULR** Upward light ratio of the installation is the maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky.
- EV** Vertical illuminance in lux and is measured flat on the glazing at the centre of the window.
- I** Light intensity in Cd.
- L** Luminance in Cd/m².
- Curfew** Time after which stricter requirements (for the control of obtrusive light) will apply; often a condition of lighting applied by the local authority. If not stated—23:00h is suggested.

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6.0 Key Receptors

	E3 Maximum	Observer Reference 1 (Residential Property)
<u>Light intrusion (into windows) Ev Lux</u>		
Pre-curfew	10	1
Post-curfew	2	1
<u>Luminaire Intensity (candelas)</u>		
Pre-curfew	10,000	386
Post-curfew	1000	386

7.0 Glare Evaluation

Observer point calculations have been undertaken to demonstrate that the CPW External Lighting drawings are compliant to BS EN 12464-2:2014 permissible Glare Ratings for the following areas. Glare calculations have been undertaken at each receptor point at 1.5m high (eye level).

	Maximum Glare Rating (R _{gl})	CIE -112-1994 Table 3.1 – Assessment Scale
Observer Reference 1 (Residential Property)	10	Unnoticeable

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8.0 Site Location Plan



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9.0 Lighting Levels

The minimum recommended levels are 30 lux average for the lorry yard and 20 lux average for car parking. Increased illuminance levels of 50 lux average to the loading canopies where more arduous activities will be performed.

These lighting levels are baseline targets which meet the minimum levels within current British Standards (BS EN 12464-2:2014) and Lighting Guide LG6.

The lighting scheme produced indicate that the proposed development is within the parameters specified within the ILP guidance notes for the reduction of obtrusive light, GN01:2021. The luminaires have been carefully selected to minimise upward light spill, glare and backwards light spill.

The achieved average levels all equal or exceed the targeted illumination levels which can be found earlier on in the report.

All external lighting is to be controlled with a photocell and time clock such that the lighting will be energised at low ambient lighting and will switch off during daylight hours. (Final settings to be determined by Client).

The design has achieved a maximum glare rating of 10 R_{gl} from the Observer points. As per CIE 112-1994 Table 3.1 this indicates that the installation luminaries will be 'unnoticeable'.

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10.0 Summary

The scheme has been developed to reduce the impact that the external lighting would have on the surrounding areas. The scheme produced shows that the illuminance spill and glare towards the observer reference points indicated are within the parameters of environmental zone E3.

The lighting scheme is based around a low pollution, low energy and low maintenance strategy. Considerations were also given to low energy products which have excellent light control optics such that their efficiencies are maximised and carbon footprint minimised. The management and maintenance of the external lighting would be determined at detailed design stage and will need to meet the needs of the tenant.

Alternative luminaires may develop and be introduced into the market during the detailed design stage, however the philosophy of downward light only should always be retained and implemented into the finalised design.

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11.0 Appendix A – CPW External Lighting drawings

210368-CPW-ZZ-XX-DR-E-EXT01 - Proposed External Lighting Layout For Planning

LEGEND:



REFERENCE 'A-D'
LUMINAIRE AS OF HOLOPHANE
'D-SERIES' RANGE TO BE BUILDING
AND COLUMN MOUNTED.



REFERENCE 'E'
LUMINAIRE AS OF HOLOPHANE
'DENVER ELITE BOLLARD' RANGE TO
BE FLOOR MOUNTED



REFERENCE 'F'
LUMINAIRE AS OF HOLOPHANE
'WALLPACK' RANGE TO BE WALL
MOUNTED

NOTES:

1. ELECTRICAL CONTRACTOR TO VERIFY LIGHTING DESIGN PRIOR TO INSTALLATION. THIS IS ONLY A CONCEPTUAL DESIGN.
2. ELECTRICAL CONTRACTOR TO READ THIS DRAWING IN CONJUNCTION WITH THE PROJECT SPECIFICATIONS.
3. ELECTRICAL CONTRACTOR TO ENSURE THE CAR PARK LUMINAIRES ARE INSTALLED TO COORDINATE WITH THE PARKING LOCATIONS.
4. ELECTRICAL CONTRACTOR TO ENSURE CABLES AND LIGHTING COLUMNS ARE LOCATED SUCH THAT THEY WILL NOT BE AFFECTED BY THE FUTURE GROWTH OF THE TREE ROOT, ETC. IN THE AREA OF THE CAR PARK.
5. FOR PLANNING PURPOSES ASSUME ALL EXTERNAL LIGHTING WILL COME ON AT DUSK AND REMAIN ON UNTIL DAWN. EXACT HOURS TO BE CONFIRMED BY THE OCCUPYER.
6. THE LIGHTING DESIGN TO COMPLY WITH THE CIBSE GUIDE L008 THE OUTDOOR ENVIRONMENT, AND THE LP GUIDANCE NOTES FOR REDUCTION OF OBTRUSIVE LIGHT, AND ALL LATEST ADDITIONS.
7. ROAD LIGHTING DESIGNED TO COMPLY WITH BS5489-1-2013 CODE OF PRACTICE FOR DESIGN OF ROAD LIGHTING.
8. LUMINAIRE COLOURS TO MATCH CLADDING / BUILDING COLOURS AND COLUMN COLOURS, UNLESS STATED OTHERWISE ASSUME CAR PARK LIGHT COLUMNS WITH STANDARD SILVER FINISH NEEDS TO MATCH.

LEGEND:

A WALL / COLUMN MOUNTED D-SERIES,
FORWARD THRU OPTIC 400K,
30000 INITIAL LUMENS PER LAMP
MAINTENANCE FACTOR = 1
WATTS PER LUMINAIRE = 328
TILT ANGLE=0
MOUNTING HEIGHT= AS DETALLED

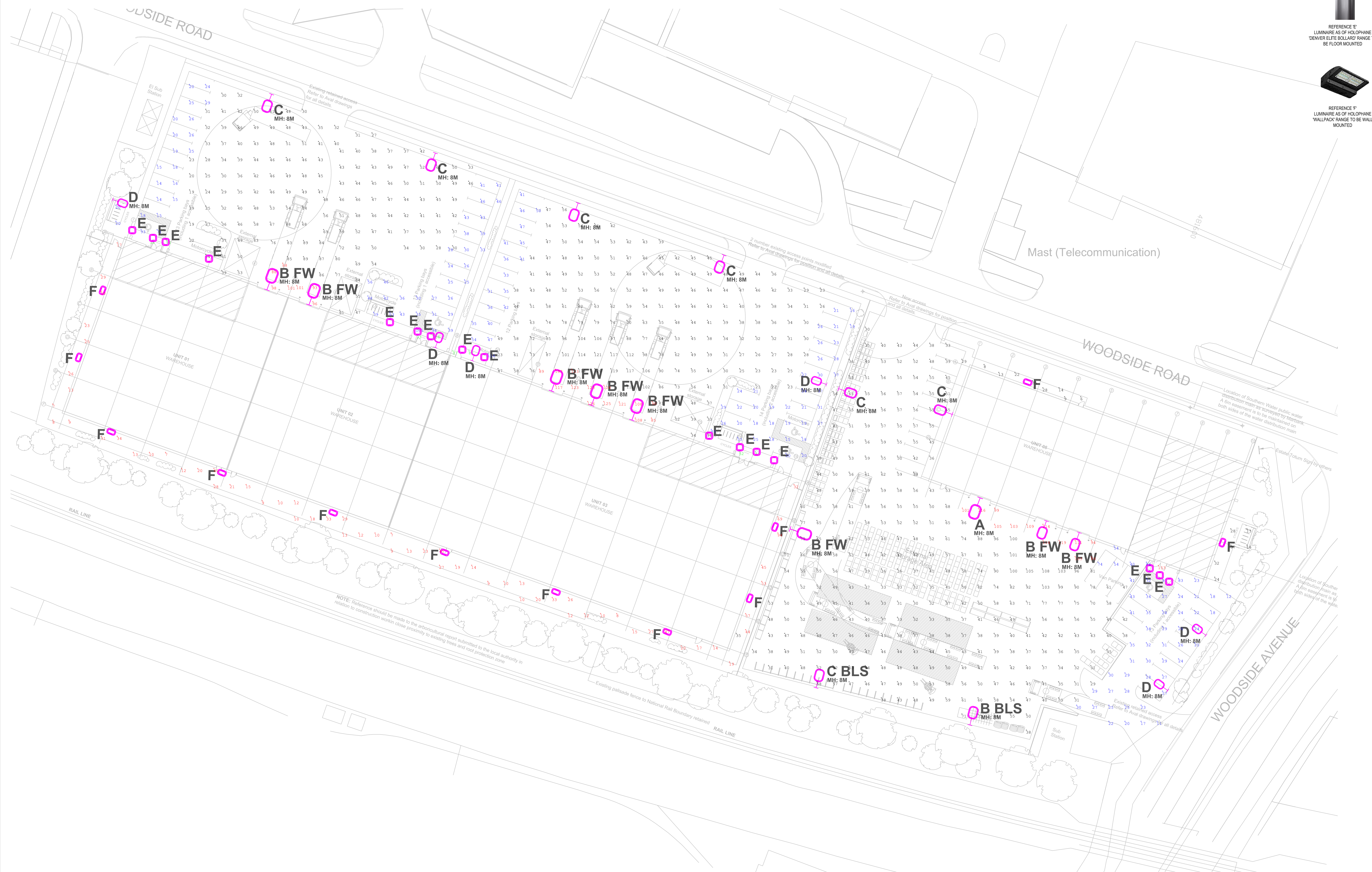
B BUILDING/COLUMN MOUNTED D-SERIES,
ASYMMETRIC OPTIC, F/W DENOTES FORWARD THRU
OPTIC, 400K,
30000 INITIAL LUMENS PER LAMP
MAINTENANCE FACTOR = 1
WATTS PER LUMINAIRE = 262
TILT ANGLE=0
MOUNTING HEIGHT= AS DETALLED
'BS' DENOTES FITTED WITH BACK LIGHT SHIELD

C BUILDING/COLUMN MOUNTED D-SERIES,
ASYMMETRIC OPTIC, F/W DENOTES FORWARD THRU
OPTIC, 400K,
22000 INITIAL LUMENS PER LAMP
MAINTENANCE FACTOR = 1
WATTS PER LUMINAIRE = 208
TILT ANGLE=0
MOUNTING HEIGHT= AS DETALLED
'BS' DENOTES FITTED WITH BACK LIGHT SHIELD

D BUILDING/COLUMN MOUNTED D-SERIES,
ASYMMETRIC OPTIC, 400K
60000 INITIAL LUMENS PER LAMP
MAINTENANCE FACTOR = 1
WATTS PER LUMINAIRE = 52
TILT ANGLE=0
MOUNTING HEIGHT= AS DETALLED

E DENVER ELITE BOLLARD,
845 INITIAL LUMENS PER LAMP, 400K,
MAINTENANCE FACTOR = 1
WATTS PER LUMINAIRE = 12
TILT ANGLE=0
MOUNTING HEIGHT= 0.9M

F BUILDING MOUNTED WALLPACK,
LONG & NARROW OPTIC
30000 INITIAL LUMENS PER LAMP, 400K,
MAINTENANCE FACTOR = 1
WATTS PER LUMINAIRE = 23
TILT ANGLE=0
MOUNTING HEIGHT= 4M



THIS DRAWING IS AN INDICATIVE LAYOUT ONLY,
DEMONSTRATING THE CONCEPTUAL
REQUIREMENTS CORRELATING WITH THE
AGREED SCHEMATIC SOLUTIONS. THE PURPOSE
OF THIS DRAWING IS TO DEMONSTRATE DESIGN
INTENT, FOR FURTHER DEVELOPMENT BY THE
RELEVANT SERVICES DESIGNER ONLY.

STAGE 3

PLANNING

Client
OXENWOOD REAL ESTATE

Project
PROPOSED LOGISTICS/INDUSTRIAL DEVELOPMENT
WOODSIDE ROAD
EASTLEIGH SOUTH

Drawing Title
ELECTRICAL SERVICES INSTALLATION
PROPOSED EXTERNAL LIGHTING LAYOUT
ISSUED FOR PLANNING

Scale (A0)	Date	By	Ve
1:250	28/05/21	CP	AC

210368-CPW-ZZ-XX-DR-E-EXT01 S2 F

CPW Project No. 210068