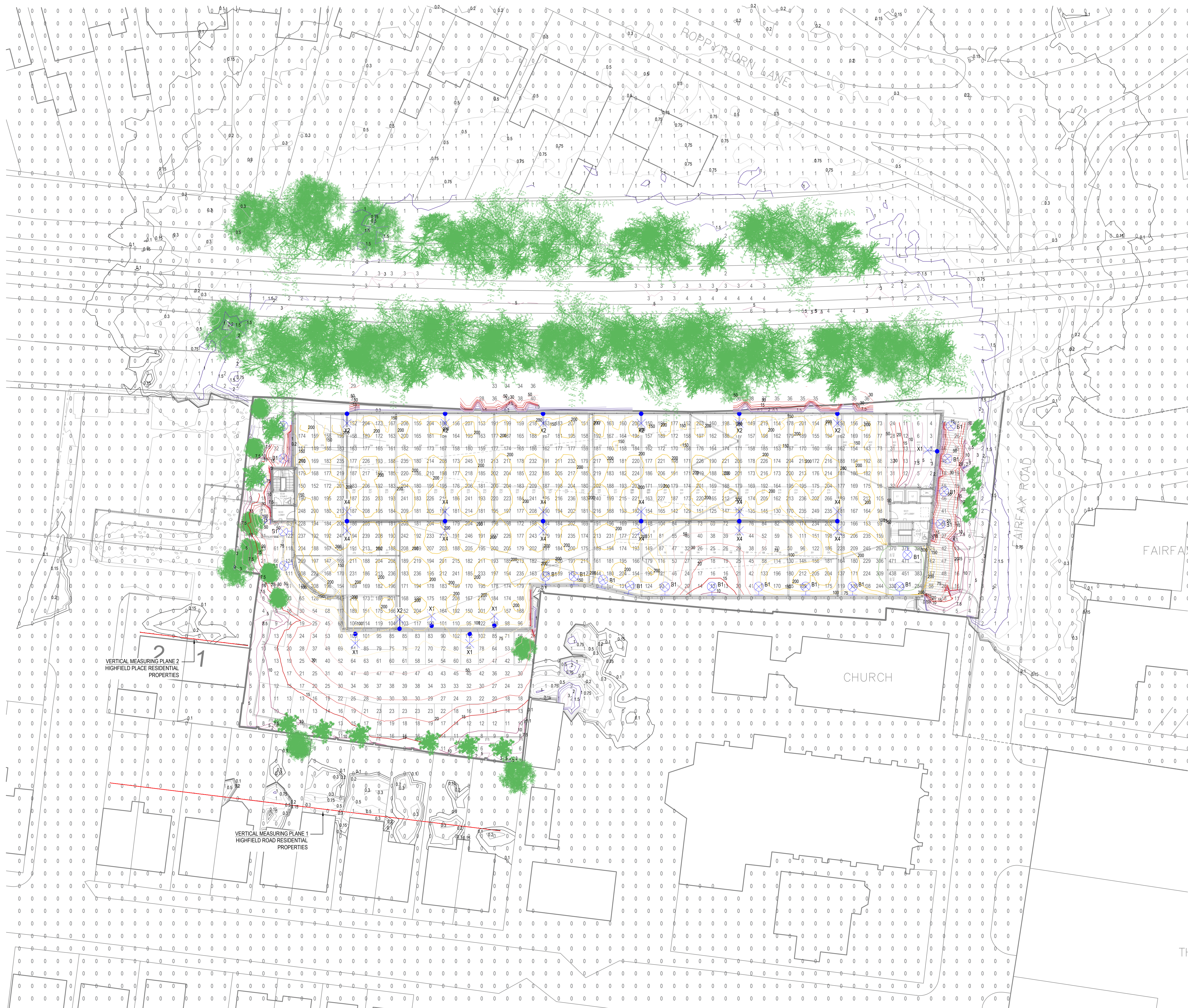


EXTERNAL SITE & SURROUNDING AREA - DESIGN LUX LEVELS
SCALE: 1:500@A0

General		
Calculation algorithm used		Average indirect fraction
Maintenance factor		0.80
Total luminous flux		1712.5 klm
Total power		11.4 kW
Total power per area (38669.66 m²)		0.30 W/m²
Illuminance		
Average illuminance	E_m	0.99 lx
Minimum illuminance	E_{min}	0.07 lx
Maximum illuminance	E_{max}	5.89 lx
Uniformity U_0	E_{min}/E_m	1:14.8 (0.07)
Diversity U_2	E_{min}/E_{max}	1:88.1 (0.01)

VERTICAL MEASURING PLANE 1 CALCULATION RESULTS
HIGHFIELD ROAD RESIDENTIAL PROPERTIES

General		Average indirect fraction
Calculation algorithm used		
Maintenance factor		0.80
Total luminous flux		1712.5 klm
Total power		11.4 kW
Total power per area (38669.66 m²)		0.30 W/m²
Illuminance		
Average illuminance	E_m	1.45 lx
Minimum illuminance	E_{min}	0.11 lx
Maximum illuminance	E_{max}	4.07 lx
Uniformity U_0	E_{min}/E_m	1:13 (0.08)
Diversity U_d	E_{min}/E_{max}	1:36.6 (0.03)

VERTICAL MEASURING PLANE 2 CALCULATION RESULTS
HIGHFIELD PLACE RESIDENTIAL PROPERTIES

EXTERNAL LIGHTING SUMMARY

THIS SCHEME CONSISTS OF A THREE LEVEL MULTI-STORY CARPARK THAT FORMS PHASE 1 (PLOT G) OF THE PRESTWICH TRAVEL HUB DEVELOPMENT.

THE PRESTWICH TRAVEL HUB EXTERNAL LIGHTING SCHEME WAS INITIALLY DEVELOPED BY HANNAN ASSOCIATES CONSULTING ENGINEERS, TO A TECHNICAL LEVEL OF DETAIL WHICH WAS DEEMED SUITABLE FOR BOTH PLANNING AND TENDERING PURPOSES.

THE EXTERNAL LIGHTING SCHEME HAS SINCE BEEN ASSESSED AND VERIFIED BY 24-7 GROUP WITH THE ASSISTANCE OF WHITECROFT LIGHTING (PREFERRED LIGHTING MANUFACTURER).

IT SHOULD BE BORNE IN MIND THAT THE EXTERNAL LIGHTING SCHEME FOLLOWS THE PRINCIPLES WHICH WERE SET OUT ON THE ORIGINAL HANNAN ASSOCIATES CONSULTING ENGINEERS NOTIONAL LIGHTING LAYOUT DRAWINGS (17300-HAN-P1-00-D-E-006305, 17300-HAN-P1-01-D-E-006306 & 17300-HAN-P1-02-D-E-006307). 24-7 GROUP UNDERSTANDS THAT PLANNING APPROVAL FOR EXTERNAL LIGHTING WAS BASED ON THE HANNAN ASSOCIATES DRAWINGS AND PRINCIPLES.

THESE PRINCIPLES BEING THE COLUMN LOCATIONS, THE WALL MOUNTED LUMINAIRE POSITIONS AND ACHIEVING THE DESIRED LUX LEVELS. WHILST ALSO IMPLEMENTING CONTROL MEASURES WHICH WILL HELP TO MINIMISE UNWANTED LIGHT SPILL ALONG THE PERIMETER BOUNDARY LINES OF THE SITE.

ENVIRONMENTAL CLASSIFICATION

IN THE ABSENCE OF STATUTORY GUIDANCE, THE INSTITUTE OF LIGHTING PROFESSIONALS 'GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT' HAVE BEEN USED AS CRITERIA AGAINST WHICH TO ASSESS THE HUMAN EFFECTS OF ARTIFICIAL LIGHTING. THIS IS CONSIDERED BEST PRACTICE.

THE ILP HAS DEVELOPED AN ENVIRONMENTAL ZONE CLASSIFICATION SYSTEM FOR THE CATEGORISATION OF AREAS WITH REGARD TO SUITABLE OBTRUSIVE LIGHTING LIMITS. THE ENVIRONMENTAL ZONE CLASSIFICATIONS ARE REPRODUCED IN (TABLE 2).

Table 2: Environmental zones

Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQE 20.5+)	Astronomical (observable dark skies, UNESCO World Heritage Sites, Dark Sky Reserves etc.)
E1	Natural	Dark (SQE 20 to 20.5)	Relatively unobstructed rural areas, National Parks, Areas of Outstanding Natural Beauty, ICA buffer zones etc.
E2	Rural	Low district brightness (SQE +15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well shaded 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

THIS DEVELOPMENT SITE SURROUNDINGS ARE CONSIDERED TO BE SUBURBAN IN NATURE AS IT IS A SMALL TOWN CENTRE. THEREFORE, THE ILP ENVIRONMENTAL ZONE E3 HAS BEEN CONSIDERED TO BE THE MOST APPROPRIATE CLASSIFICATION.

OBTRUSIVE LIGHT LEVELS

IN ACCORDANCE WITH THE ILE/ILP GUIDANCE NOTES, THE ENVIRONMENTAL ZONE CLASSIFICATION E3 HAS BEEN SELECTED, I.E., MEDIUM DISTRICT BRIGHTNESS, WITH A LIGHT TECHNICAL PARAMETER ILLUMINANCE IN THE VERTICAL PLANE BETWEEN 2 TO 10 LX (PRE AND POST CURFEW), AS PER TABLE 3 FROM THE ILP.

Table 3 (CIE 150 table 2): Maximum values of vertical illuminance on premises

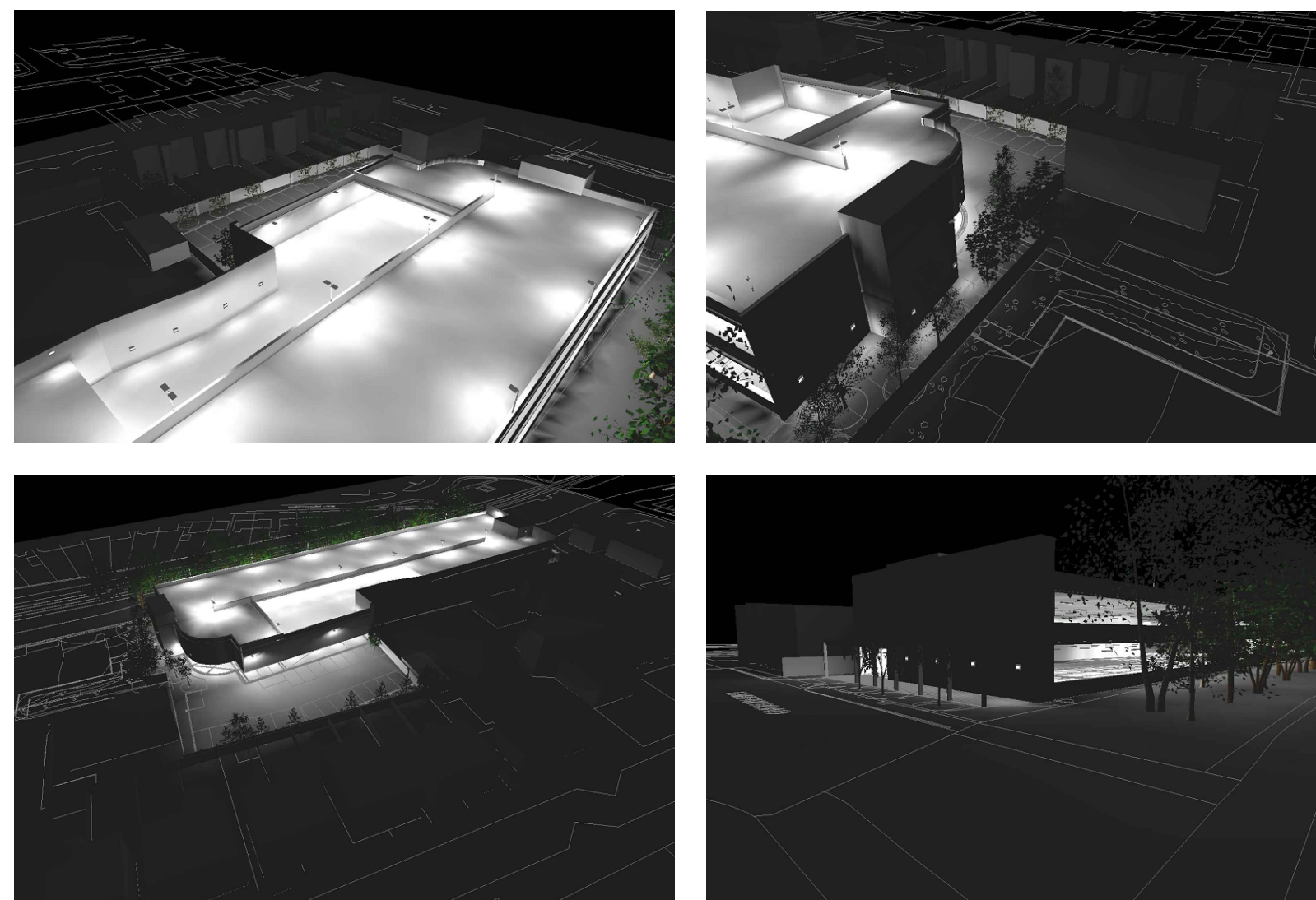
Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
		Pre-curfew	2 lx	5 lx	10 lx	25 lx
Illuminance in the vertical plane (lx)	Pre-curfew	N/A	2 lx	5 lx	10 lx	25 lx
	Post-curfew	N/A	<0.3 lx*	1 lx	2 lx	5 lx

POTENTIAL PROBLEMS FROM GLARE AND OVER-ILLUMINATION HAVE BEEN EVALUATED AND ADDRESSED TO ENSURE THAT THE EXTERNAL LIGHTING INSTALLATION INCLUDES FOR HIGH QUALITY OPTICS COUPLED WITH AIMING AND COMMISSIONING TO MITIGATE AGAINST POTENTIAL LIGHT SPILL AND SKY GLOW ISSUES, AS PART OF THE DESIGN & INSTALLATION PROCESS.

LIGHTING MODELLING

LIGHT MODELLING HAS BEEN UNDERTAKEN USING RELUX SOFTWARE, AN INDEPENDENT LIGHTING MODELLING SOFTWARE TOOL WHICH IS CAPABLE OF CALCULATING ARTIFICIAL LIGHTING SCENES IN EXTERIOR SCENARIOS. THE SOFTWARE INCORPORATES RECOGNISED CALCULATION METHODOLOGIES AND IS COMMONLY USED FOR LIGHTING ASSESSMENT THROUGHOUT THE UK & EUROPE.

THE ISOLUX CALCULATION RESULTS CAN BE SEEN ON THIS DRAWING. ALSO INCLUDED ARE THE CALCULATION RESULTS OF THE VERTICAL MEASURING PLANE ON HIGHFIELD ROAD AND HIGHFIELD PLACE RESIDENTIAL PROPERTIES. AS CAN BE SEEN BY THE RESULTS, THE ILLUMINANCE ON THE VERTICAL PLANE IS LESS THAN THE 2 LX REQUIREMENTS POST-CURFEW.



EXTERNAL LUMINAIRE TYPES

THE LUMINAIRES SELECTED ARE A COMBINATION OF COLUMN AND WALL MOUNTED LED FITTINGS. THE ROOF LEVEL WILL BE EQUIPPED WITH POST TOP LUMINAIRES FIXED TO COLUMNS AT A MAXIMUM HEIGHT OF 3.4M FROM ROOF FINISHED FLOOR LEVEL. REFER TO THE 24-7 GROUP LIGHTING LAYOUT DRAWINGS FOR ALL LUMINAIRE MOUNTING HEIGHTS.

LUMINAIRE SCHEDULE

Symbol	Manufacturer	Article name	Article number	Colour Temp	Lumen Output	Wattage
B1	WHITECROFT	KOLO IP68 HOOD - CIRCULAR LED	KBH44KH8	4000 K	1008 lumens	14W
X1	WHITECROFT	MISTRAL MDI - POST TOP LED - AREA OPTIC BUILDING MOUNTED WITH WALL BRACKET	MMH44KA + MWBRKT	4000 K	14298 lumens	96.5W
X2	WHITECROFT	MISTRAL MDI - POST TOP LED - AREA OPTIC COLUMN MOUNTED	MMH44KA + COLRED75-60A	4000 K	14298 lumens	96.5W
X4	WHITECROFT	MISTRAL MDI - POST TOP LED - AREA OPTIC COLUMN MOUNTED WITH TWIN OUTREACH ARM	MMH44KA X2 + CBK50-482	4000 K	14298 lumens	96.5W

EXTERNAL LIGHTING CONTROL PHILOSOPHY

A COMBINATION OF PHOTOCELLS & TIMECLOCKS SHALL BE INSTALLED TO CONTROL ALL EXTERNAL LIGHTING. THE TIME CLOCKS WILL FUNCTION AS A MASTER CONTROL AND BE SET TO SWITCH OFF AT TIMES WHEN THE CAR PARK IS NOT IN OPERATION.

OUTSIDE OF THESE HOURS, PHOTOCELLS WILL CONTROL THE SITE EXTERNAL LIGHTING ACCORDING TO DAY LIGHT LEVELS. THIS WILL PREVENT NIGHT-TIME LIGHTING POLLUTION.

NOTES

- THIS DRAWING SHALL BE READ IN CONJUNCTION WITH ALL OTHER 24-7 GROUP DRAWINGS AND DOCUMENTATION.

CD1	FOR INFORMATION	JM	DR	11/03/2026
rev	description	dwn	chkd	date

Status	CONSTRUCTION
Client	VINCI BUILDING

Architect	JMA / VINCI
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Project	PRESTWICH TRAVEL HUB
Title	EXTERNAL SITE & SURROUNDING AREA - DESIGN LUX PLOTS

project no	drawn by	date	checked	scale
PN01735	JM	MAR 2026	DR	1:250@A0
drawing no.	revision			
17300-247-P1-00-D-E-960001				C01