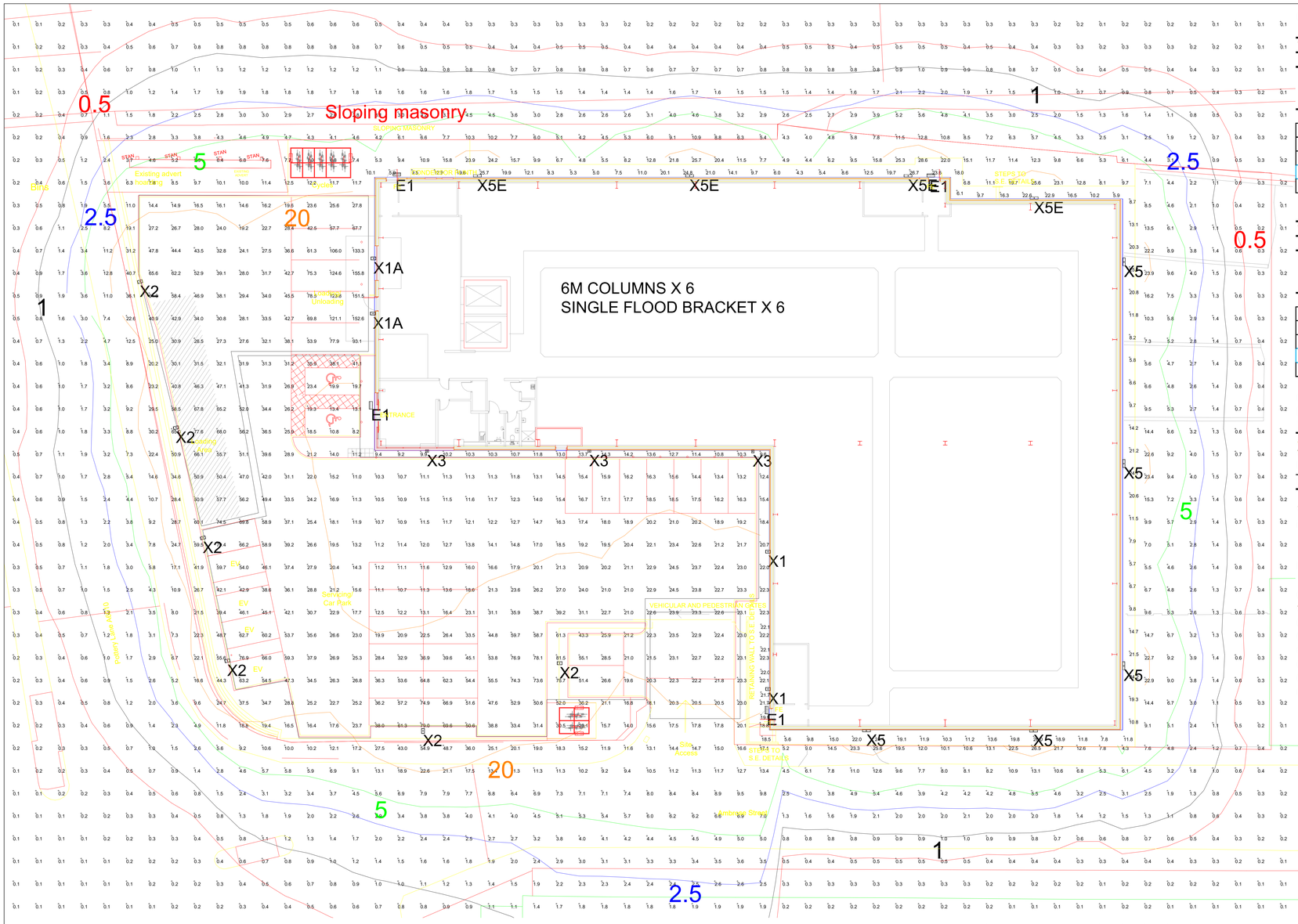


Taken from AGI32 calculation: ZG-AGI-0002432656-EXT-R01-151225

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Blg Perimeter	Illuminance	Lux	14.63	26.7	4.3	0.29	0.16
Car Park	Illuminance	Lux	28.96	81.5	8.2	0.28	0.1
Entry Exit	Illuminance	Lux	22.3	23.5	20.3	0.91	0.86
Loading	Illuminance	Lux	50.85	155.8	14.4	0.28	0.09

Taken from AGI32 calculation: ZG-AGI-0002432656-EXT-R01-151225

Label	Qty	SAP Code	Arrangement	Description	LLF	Luminaire Lumens	Arrangement Luminaire Lumens	Total Lumens	UWLR %	Total Upward Lumens	Luminaire Watts	Total Watts	Lm/W	Luminaire Efficiency %	Mounting Height (m)	Tilt
X5E	4	wall mtnd 3.5m affl	SINGLE	PIAZZA 3 9-16-27 827-830-840 HF ANT P - HI4K E3	0.79	2640	2640	10560	0	0	20.3	81.2	130	100	3.5	NONE
X1	2	wall mtnd 12.8m affl	SINGLE	LEDFIT M 90W A/S CL1 L840	0.79	8997	8997	17994	0	0	90	180	100	100	12.8	5.0°
X1A	2	wall mtnd 4.2m affl	SINGLE	LEDFIT M 90W A/S CL1 L840	0.79	8997	8997	17994	0	0	90	180	100	100	4.2	5.0°
E1	4	wall mtnd 2.5m affl	SINGLE	ESCORT I-SLCT 800/1K-840 HF E3	0.79	350	350	1400	0.08	112	0	0	0	100	2.5	NONE
X5	5	wall mtnd 3.5m affl	SINGLE	PIAZZA 3 9-16-27 827-830-840 HF ANT P - HI4K	0.79	2640	2640	13200	0	0	20.3	101.5	130	100	3.5	NONE
X3	3	wall mtnd 12.8m affl	SINGLE	LEDFIT S 45W A/S CL1 L840	0.79	4499	4499	13497	0	0	45	135	100	100	12.8	5.0°
X2	6	column mtnd	SINGLE	LEDFIT M 90W A/S CL1 L840	0.79	8997	8997	53982	0	0	90	540	100	100	6	5.0°

Total Lumens	Total Upward Lumens	Total Wattage
128627	112	1217.7

Target ULR % (Max.) E0/E1=0% E2=2.5% E3=5.0% E4=15%. Environmental Zone for project = E3		BREEAM 2018 Project Target (Min.) 70 Luminaire Lumens per Circuit Watt	
Calculated Values For Project		Calculated Values For Project	
Total Upward Lumens	112	Total Lumens	128627
Total Lumens	128627	Total Wattage	1217.7
Project ULR	0.1%	Average LL/CW	105.63
Pass / Fail	Pass	Pass / Fail	Pass

Demonstrate compliance with IPL Guidance Notes for Reduction of Obtrusive Light (2021) ©2021 ILP

Table 1 - Enviromental Zones

Environmental Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Places
E1	Natural	Dark	National Parks - Areas of outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres of suburban locations
E4	Urban	High district brightness	Town / city centres with high levels of night time activity

Table 2 - Obtrusive Light Limitations for Exterior Lighting Installations - General Observers

Environmental Zone	Sky Glow ULR (Max %)	Light intrusion into windows Ev (lux) Max.*		Luminaire Intensity I (candelas) Max.*		Bulding Luminance Average L (cd/m²) Max.*
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Pre-curfew
E0	0	0	0	0	0	0
E1	0	2	0	2500	0	0
E2	2.5	5	1	7500	500	5
E3	5	10	2	10000	1000	10
E4	15	25	5	25000	2500	25

Project Details (Taken from AGI32 calculation: ZG-AGI-0002432656-EXT-R00-040925)

NB: ANY OBTRUSIVE LIGHT VALUES (*) ARE ALWAYS CALCULATED WITH LLF = 1.0

Environmental Zone for project = E3

Calculated Values For Project (Max.)	0.1%	NOT CALCULATED	NOT CALCULATED	NOT CALCULATED	NOT CALCULATED	NOT CALCULATED
Pass / Fail	Pass					

Values for light trespass can only be completed with full detailed drawings showing any adjacent properties, issues relating to transport and ecology. This includes all criteria shown as "not calculated".

Notes

(1) A Structural Engineer should always advise on columns due to local wind and soil condition, weights, windages and overturning moments.
(2) For retrofit on existing columns, suitability for LED luminaires proposed to be checked by the installer.
(3) Spill light calculations are based on luminaire positions, heights, and aiming data as per the accompanying lighting design. These must be observed to realise the calculated values.
(4) The calculations for spill light are based on full switch and initial lumen value unless otherwise stated.
(5) Where external visors and/or louvres are used for the control of spill light, these must be fitted as per the recommended photometric file.

ZUMTOBEL Group

This design drawing is for a lighting scheme which has been prepared for the client in collaboration with the client and other stakeholders, and is based upon the pre-construction information provided. The design should be used only for the purpose for which it was intended by persons and in accordance with the design drawings, applicable installation instructions and all applicable laws. No changes should be made to the design without the consent of the designer. Any such changes or failure to adhere to the design may invalidate the guarantee and may give rise to health, safety and property risks. Unauthorised changes can be identified and properly assessed.

No.	Date	Revision
R01	15.12.25	UPDATED PLANS
R00	04.09.25	INITIAL WORK

ILP HEA

Project Title: STORAGE WORLD

Area: EXTERNAL LIGHTING

Client:

Scale: 1:150

Project Number: 0002432656

Date: 15.12.25

Rev Number: R01

Drawn By: MJE

Checked By:

Drawing Number: ZG-DWG-0002432656-EXT-R01-151225

Drawing Status: For Approval

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