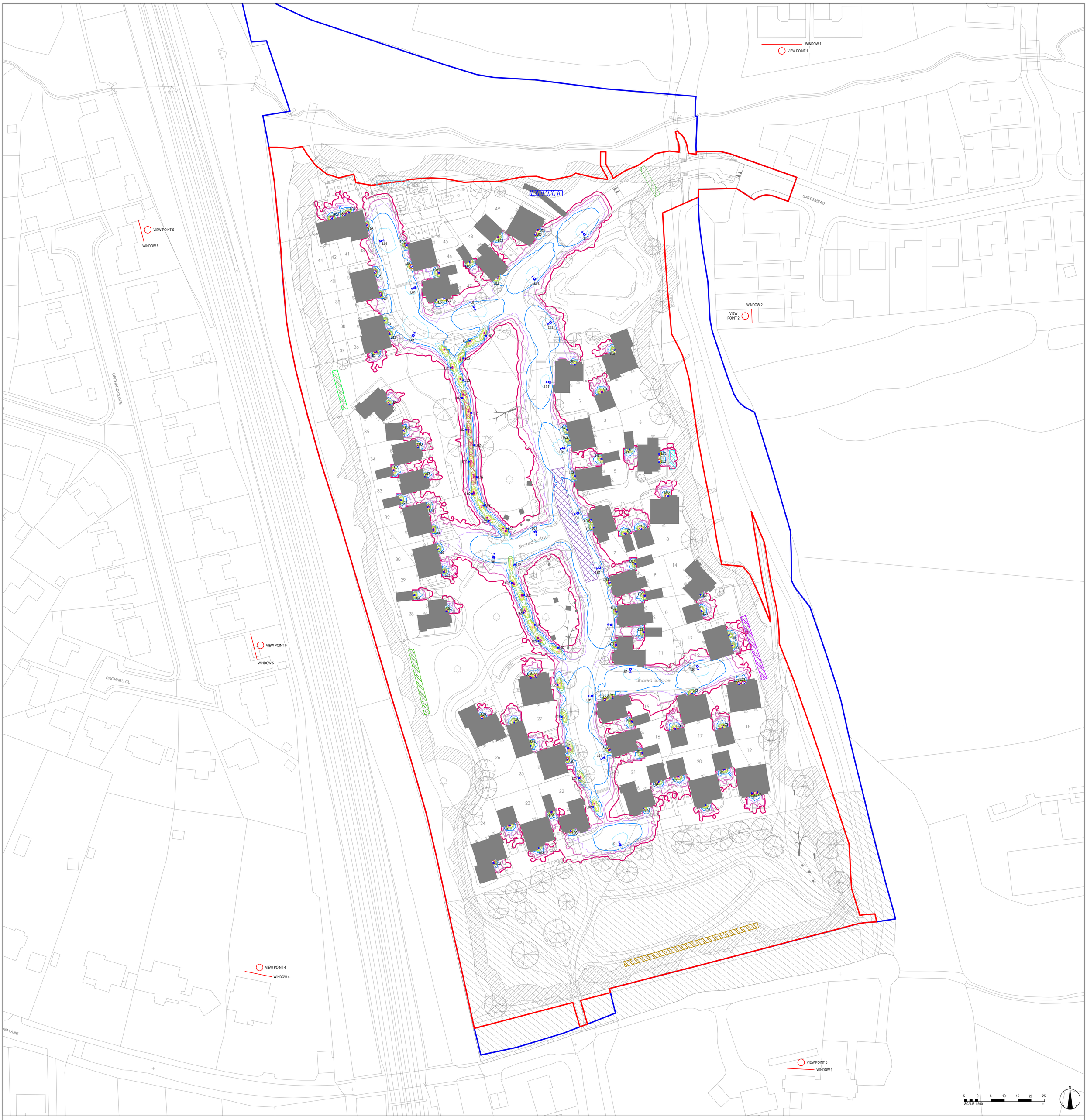


LUX LEVEL ISOLINE PLOT

INTRODUCTION

THE LIGHTING CALCULATION HAS BEEN BASED ON THE FOLLOWING DRAWINGS AS ISSUED BY pad DESIGN:

25714/5000E_Land West of Gatesmead_Planning Layout

LIGHTING DESIGN NOTES

THE LIGHTING INSTALLATION HAS BEEN CAREFULLY CONSIDERED TO ENSURE PROVISION OF APPROPRIATE PHYSICAL AND SPECTRAL PROPERTIES AS FOLLOWS:

- COLOUR TEMPERATURE <2700K
- MINIMISE THE SPREAD OF LIGHT ABOVE THE HORIZONTAL.
- WALL LIGHTING MOUNTING HEIGHTS ARE 1.5M AFFL TO MINIMISE OBTRUSIVE LIGHT SPILL.

LIGHTING STANDARDS

THE EXTERNAL LIGHTING DESIGN HAS BEEN DEVELOPED IN LINE WITH THE FOLLOWING STANDARDS:

- BS EN 12464-2:2024 - LIGHT AND LIGHTING OUTDOOR WORKPLACES
- BS5489-1:2020 - DESIGN OF ROAD LIGHTING - LIGHTING OF ROADS AND PUBLIC AMENITY AREAS
- BS EN 13201-2:2015 - ROAD LIGHTING - PERFORMANCE CRITERIA
- THE INSTITUTION OF LIGHTING PROFESSIONALS (ILP) GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT GN01:2021
- ILP: BATS AND ARTIFICIAL LIGHTING IN THE UK GN08:2023
- CHARTERED INSTITUTE OF BUILDING SERVICES ENGINEERS (CIBSE) SOCIETY OF LIGHT AND LIGHTING (SLL) LIGHTING GUIDE FOR PROTECTING THE NIGHT-TIME ENVIRONMENT LG21
- SUSSEX BAT SAC PROTOCOLS 2015
- HIGH WEALD NATIONAL LANDSCAPE AN AREA OF OUTSTANDING NATURAL BEAUTY (AONB) - PLANNING TECHNICAL ADVICE NOTE: DARK SKIES IN THE HIGH WEALD 2024
- WEST SUSSEX COUNTY COUNCIL HIGHWAYS AND TRANSPORT - STREET LIGHTING SPECIFICATION v8 2024

CRITERIA

- DUE TO THE SITES LOCATION ON THE OUTSKIRT OF HAYWARDS HEATH AND BORDERING HIGH WEALD NATIONAL LANDSCAPE AONB OF THE SITE HAS BEEN CLASSED BY RIDGE AS AN E2 ENVIRONMENTAL ZONE, AS DESCRIBED WITHIN THE ILP GUIDANCE NOTES OF THE REDUCTION OF OBTRUSIVE LIGHT — SPARSELY INHABITED RURAL AREAS, VILLAGE OR RELATIVLEY DARK OUTER SUBURBAN LOCATIONS. THE RELEVANT ILP CRITERIA IS SHOWN IN THE TABLE TO THE RIGHT AND MUST BE ACHIEVED OR BETTERED.
- VERTICAL ILLUMINATION CALCULATION PLANES HAVE BEEN PLACED TO THE NORTH, EAST, SOUTH AND WEST WHERE RESIDENTIAL BUILDINGS ARE LOCATED. LIGHT INTENSITY POINTS ARE ALSO PLACED AT THESE LOCATIONS.
- THE PROPOSED DEVELOPMENT SITE IS SURROUNDED ON ALL SIDES BY BAT CORRIDORS AS SUCH HORIZONTAL AND 2m VERTICAL CALCULATION PLANES HAVE BEEN PLACED AT MULTIPLE LOCATIONS TO THE NORTH, EAST, SOUTH AND WEST ON THE BOARDER OF THE INDICATED BAT CORRIDORS.
- ROAD LIGHTING HAS BEEN DESIGNED IN LINE WITH BS 5489 AND BS EN 13201-2 TO A STANDARD OF P4. THIS LIGHTING HAS ALSO BEEN DESIGNED INLINE WITH THE WEST SUSSEX COUNTY COUNCIL HIGHWAYS AND TRANSPORT - STREET LIGHTING SPECIFICATION v8 2024
- THE LIGHTING TO THE PUBLIC RIGHT OF WAY THAT RUNS NORTH-SOUTH THROUGH THE PROPOSED DEVELOPMENT HAS BEEN LIT IN LINE WITH BS EN 12464-2 TABLE 7 - WALKWAYS EXCLUSIVELY FOR PEDESTRIANS

EMERGENCY LUMINARIES ARE NOT INCLUDED IN THE LIGHT POLLUTION ASSESSMENT CALCULATION.

THE MAINTENANCE FACTOR OF THE ISOLINES LUX PLOT HAS BEEN SET TO 1.0 AS PER THE DAY ONE INSTALLATION.

LIGHTING CONTROLS STRATEGY

ALL L01 LUMINAIRES ARE TO BE CONTROLLED VIA MAYFLOWER CMS NODES, FITTED VIA 7-PIN NEMA SOCKETS WITHIN THE STREET LIGHTS. THESE CMS NODES WILL THEN COMMUNICATE WITH A LOCALLY INSTALLED, STANDALONE MAYFLOWER COMPLETE LIGHTING CONTROL DALI SUB-MASTER UNIT AND LINK TO THE WEST SUSSEX BACK OFFICE CENTRAL MANAGEMENT SYSTEM. THIS WILL ALLOW FOR THE STREET LIGHTING TO BE CONTROLLED IN LINE WITHTHE WEST SUSSEX DIMMED AND PART NIGHT LIGHTING STRATEGY, WHEREBY LANTERNS ARE DIMMED TO 40% OF THERE OUTPUT FOR THE FOLLOWING TIMES:

- 24:00 - 05:30 (GMT)
- 01:00 - 06:30 (BST)

TO MEET THE P4 STANDARDS, AS DEFINED IN BS EN 13201-2 ALL L01 FITTINGS ARE TO BE DIMMED TO 75% OF THEIR FULL OUTPUT VIA THE MAYFLOWER LIGHTING CONTROL SYSTEM.

ALL L02 LUMINAIRES ARE TO BE CONTROLLED VIA A STANDALONE, PROGRAMMABLE COMBINED PIR AND PHOTOCELL AND A SEPARATE, STANDALONE, TIMECLOCK. THE PHOTOCELL SENSOR WILL ALLOW FOR THE LIGHTING TO BE SET SUCH THAT THESE FITTINGS ACTIVATE ONLY DURING THE HOURS OF DARKNESS. WHILST THE TIMECLOCK WILL TURN THE FITTINGS OFF AUTOMATICALLY AT 21:00. BETWEEN 21:00 & DAWN THESE FITTINGS WILL ONLY ACTIVATE WHEN PEDESTRIAN MOVEMENT IS DETECTED THE PIR WILL ALSO BE SET TO TURN THE LIGHTING OFF AUTOMATICALLY AFTER 5 MINUTES OF NO MOVEMENT DETECTED.

THESE TIMES HAVE BEEN SELECTED TO REDUCE THE IMPACT OF THE PROPOSED LIGHTING ON THE ADJACENT PROPOSED RESIDENTIAL PROPERTIES.

ALL L03 WALL MOUNTED DOWNLIGHTS ARE TO BE SWITCHED ON/OFF WITH AN INTEGRATED PROGRAMMABLE COMBINED PIR AND PHOTOCELL SENSOR. THIS SENSOR WILL ALLOW FOR THE LIGHTING TO BE SET SUCH THAT THESE FITTINGS ONLY COME ON WHEN VEHICULAR OR PEDESTRIAN MOVEMENT IS DETECTED WITHIN THE IMMEDIATE LOCALE OF THE PROPERTY DURING THE HOURS OF DARKNESS. THE PIR WILL ALSO BE SET TO TURN THE LIGHTING OFF AUTOMATICALLY AFTER 5 MINUTES OF NO MOVEMENT DETECTED.

THIS TIME HAS BEEN SELECTED TO REDUCE THE IMPACT OF THE PROPOSED LIGHTING ON THE ADJACENT BAT CORRIDORS.

ISOLINES

0.2 lx · 0.5 lx · 1.0 lx · 2.0 lx · 5.0 lx · 10.0 lx · 15.0 lx · 20.0 lx · 30.0 lx · 40.0 lx · 50.0 lx

CONCLUSION

1. ILP GN01:21 GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT
 1.1. THE MODELING SHOWS THAT THE ABOVE DESIGN MEETS THE CRITERIA FOR GN01:21 FOR AN ENVIRONMENTAL ZONE E2. THIS INCLUDES SKYGLOW AND OBTRUSIVE LIGHT INTO NEIGHBOURING RESIDENTIAL PROPERTIES.

2. ILP GN08:23 BATS AND ARTIFICIAL LIGHTING IN THE UK
 2.1. THE MODELING SHOWS THAT THE EXTERNAL LIGHTING SATISFIES THE CRITERIA AS SET OUT IN GN08:23 THIS INCLUDES LESS THAN 0.4LX ON THE VERTICAL PLANE AND 0.2LX ON THE HORIZONTAL PLANE. THEREFORE THIS CAN BE CONSIDERED COMPLETE DARKNESS. NOTE: THIS IS ONLY ACHIEVED IF THE LIGHTING IS CONTROLLED AS PER THE ABOVE LIGHTING CONTROL STRATEGY. i.e. THE WALL MOUNTED LIGHTING TO THE RESIDENTIAL PROPERTY ENTRANCES AND GARAGES IS THEN ONLY TRIGGERED BY PIR'S DURING THE HOURS OF DARKNESS FOR 5 MINUTES PER TRIGGER.

3. SUSSEX BAT SAC PROTOCOLS 2015
 3.1. THE MODELING SHOWS THAT THE EXTERNAL LIGHTING SATISFIES THE CRITERIA AS SET OUT IN THE SUSSEX BAT SAC PROTOCOLS THAT THE DESIGNED LIGHT LEVELS ON COMMUTING AND FEEDING HABITATS DO NOT INCREASE ABOVE PRE DEVELOPMENT LEVELS. NOTE: THIS IS ONLY ACHIEVED IF THE LIGHTING IS CONTROLLED AS PER THE ABOVE LIGHTING CONTROL STRATEGY .i.e. THE WALL MOUNTED LIGHTING TO THE RESIDENTIAL PROPERTY ENTRANCES AND GARAGES IS THEN ONLY TRIGGERED BY PIR'S DURING THE HOURS OF DARKNESS FOR 5 MINUTES PER TRIGGER.

4. HIGH WEALD NATIONAL LANDSCAPE AONB - PLANNING TECHNICAL ADVICE NOTE: DARK SKIES IN THE HIGH WEALD 2024
 4.1. THE MODELING SHOWS THAT THE EXTERNAL LIGHTING SATISFIES THE CRITERIA AS SET OUT IN THE HIGH WEALD NATIONAL LANDSCAPE AONB PLANNING TECHNICAL NOTE.

DESIGN OF ROAD LIGHTING BS5489-1:2020 AND BS EN 13201-2:2015

BASED ON MAINTENANCE FACTOR OF 0.94		$\bar{E}$ [minimum maintained] (lx)		E_{min} [maintained] (lx)		TARGET
AREA	AREA HATCH	REQUIREMENT	RESULT	REQUIREMENT	RESULT	
P4 SAMPLE AREA		5.00	5.84	1.00	1.59	PASS

LIGHT AND LIGHTING TO OUTDOOR WORKPLACES BS EN 12464-2:2024 - TABLE 7

BASED ON MAINTENANCE FACTOR OF 0.94		$\bar{E}_m$ [required maintained] (lx)		U_0 [uniformity]		TARGET
AREA	AREA HATCH	REQUIREMENT	RESULT	REQUIREMENT	RESULT	
SAMPLE PEDESTRIAN WALKWAY		5.00	22.00	0.20	0.30	PASS

ILP GUIDANCE NOTES ON THE REDUCTION OF OBTRUSIVE LIGHT 2021

BASED ON MAINTENANCE FACTOR OF 1.0	UPWARDS LIGHT RATIO - ULR [MAX %]	ILLUMINACE IN THE VERTICAL PLAN [LUX] (E_v)		MAXIMUM LUMINOUS INTENSITY EMITTED BY LUMINAIRES (cdm^2)		BUILDING LUMINANCE PRE CURFEW	PASS OR FAIL
		PRE CURFEW	POST CURFEW	PRE CURFEW	POST CURFEW	AVERAGE L [cdm^{-2}]	
ENVIRONMENTAL ZONE E2	2.5	5	1	7,500	500	5	TARGET
ULR	0.3						PASS
WINDOW 1		0.002	0.002				PASS
WINDOW 2		0.005	0.005				PASS
WINDOW 3		0.005	0.005				PASS
WINDOW 4		0.004	0.004				PASS
WINDOW 5		0.005	0.005				PASS
WINDOW 6		0.002	0.002				PASS
VIEW POINT 1				12.10	12.10		PASS
VIEW POINT 2				8.01	8.01		PASS
VIEW POINT 3				10.60	10.60		PASS
VIEW POINT 4				12.40	12.40		PASS
VIEW POINT 5				2.50	2.50		PASS
VIEW POINT 6				0.00	0.00		PASS
BUILDING LUMINANCE						N/A	N/A

LUMINAIRE KEY - ARCHITECTURAL

LUM. REF.	LUM. SYMBOL	LUMINAIRE DESCRIPTION
L01		6m COLUMN MOUNTED 2700K STREET LIGHT WITH EXTRA WIDE ROAD DISTRIBUTION OPTIC (5266). MOUNTED FACING DIRECTLY DOWNWARDS AT 0° INCLINATION ABOVE THE HORIZONTAL URBIS AXIA 3.1 - 5266 REAR LOUVRES. 200mA WW 727 230V (Ref: 457662) (6m ELECTRIFIED COLUMN TO BE SUPPLIED BY OTHERS)
L02		1m FREESTANDING BOLLARD WITH SINGLE LIGHTING MODULE, 2700K URBIS BORA EXPLORER GEN 2 727 02-217-218 (Ref: 484312)
L03		WALL MOUNTED DOWNLIGHT WITH MEDIUM BEAM OPTIC, 2700K LIGMAN - REF: MV-30001-M-8027 (FITTINGS TO BE BE MOUNTED AT 1500mm AFFL)

ILP GUIDANCE NOTES BATS AND ARTIFICIAL LIGHTING IN THE UK (2023)

BASED ON MAINTENANCE FACTOR OF 1.0		ILLUMINACE IN THE VERTICAL PLANE [E_{max}] (lx)		ILLUMINACE IN THE HORIZONTAL PLANE [E_{max}] (lx)		TARGET (lx)	PASS OR FAIL
	AREA HATCH	PRE CURFEW	POST CURFEW	PRE CURFEW	POST CURFEW		
NORTHERN BAT CORRIDOR 1 VERTICAL ILLUMINANCE		0.1	0.1			0.4	PASS
NORTHERN BAT CORRIDOR 1 HORIZONTAL ILLUMINANCE				0.0	0.0	0.2	PASS
NORTHERN BAT CORRIDOR 2 VERTICAL ILLUMINANCE		1.0	0.1			0.4	PASS*
NORTHERN BAT CORRIDOR 2 HORIZONTAL ILLUMINANCE				0.0	0.0	0.2	PASS*
EASTERN BAT CORRIDOR 1 VERTICAL ILLUMINANCE		0.2	0.0			0.4	PASS
EASTERN BAT CORRIDOR 1 HORIZONTAL ILLUMINANCE				0.0	0.0	0.2	PASS
EASTERN BAT CORRIDOR 2 VERTICAL ILLUMINANCE		4.6	0.0			0.4	PASS*
EASTERN BAT CORRIDOR 2 HORIZONTAL ILLUMINANCE				1.0	0.0	0.2	PASS*
EASTERN BAT CORRIDOR 3 VERTICAL ILLUMINANCE		2.4	0.0			0.4	PASS*
EASTERN BAT CORRIDOR 3 HORIZONTAL ILLUMINANCE				0.4	0.1	0.2	PASS*
SOUTHERN BAT CORRIDOR 1 VERTICAL ILLUMINANCE		0.0	0.1			0.4	PASS*
SOUTHERN BAT CORRIDOR 1 HORIZONTAL ILLUMINANCE				0.0	0.0	0.2	PASS*
WESTERN BAT CORRIDOR 1 VERTICAL ILLUMINANCE		0.0	0.0			0.4	PASS
WESTERN BAT CORRIDOR 1 HORIZONTAL ILLUMINANCE				0.0	0.0	0.2	PASS
WESTERN BAT CORRIDOR 2 VERTICAL ILLUMINANCE		0.0	0.0			0.4	PASS
WESTERN BAT CORRIDOR 2 HORIZONTAL ILLUMINANCE				0.0	0.0	0.2	PASS

*Possible mitigation factors to be applied are listed in the Conclusions adjacent.

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REV	DESCRIPTION	DATE	BY	CHKD
P05	ISSUED FOR PLANNING	18/05/2026	TG	LSH
P04	ISSUED FOR PLANNING - UPDATED TO REFLECT REVISED RED LINE BOUNDARY	14/05/2026	TG	APB
P03	ISSUED FOR PLANNING - UPDATED TO REFLECT CHANGES TO PLOTS 29, 30 & 40	28/04/2026	TG	APB
P02	ISSUED FOR PLANNING	14/04/2026	TG	APB
P01	FIRST ISSUE	10/04/2026	TG	APB

CLIENT: CREST NICHOLSON

IN ASSOCIATION WITH:

PROJECT: LAND WEST OF GATESMEAD

TITLE: LIGHTING IMPACT ASSESSMENT

DRAWN BY: TG CHECKED BY: APB APPROVED BY: APB

SCALE: 1:500 @ A0 DATE: 10/04/2026

ORIGINATOR: www.ridge.co.uk

RIDGE

PROJECT NUMBER: 5029426

STATUS: S4 DESCRIPTION: FOR APPOINTED PARTY REVIEW & AUTHORISATION

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PROJECT:	ORG:	FUNCTION:	SPATIAL:	FORM:	DISCIPLINE:	NUMBER:	REV:
5029426	RDG	XX	ST	D	SP	630001	P05