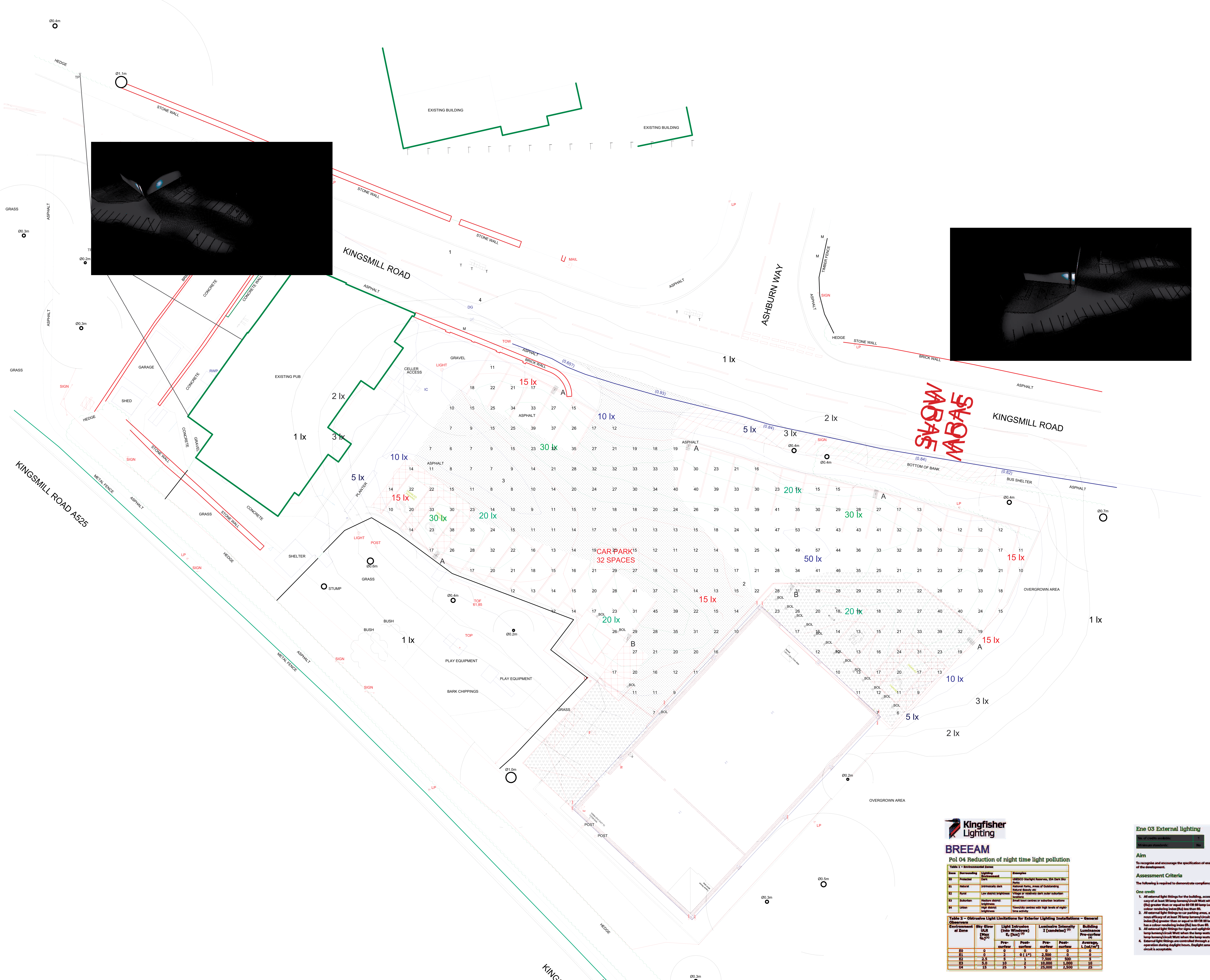
Dimensions are not to be scaled from this drawing.

90°

Revision	Date	Description	Initials



Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Car Park	Illuminance	Lux	21.84	57	6	0.27	0.11
Kingsmill Road Houses Verticals_	Obtrusive Light - Cd	N.A.	35.52	115	0	N.A.	N.A.
Kingsmill Road Houses Verticals_	Obtrusive Light - Ill	Lux	0.00	0	0	N.A.	N.A.

Luminaire Schedule

Symbol	Qty	Label	Arrangement	Description
	5	A	SINGLE	100w CDO-TT Kaos 1 Road lantern with Spill Shield (P0 lamp position) column moun
	2	B	SINGLE	100w CDO-TT Kaos 1 Road lantern (P3 lamp position) column mounted at 6m.

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Pol 04 Reduction of night time light pollution

Table 1 – Environmental Zones

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically 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 or 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 %][1]	Light Intrusion (into Windows) E_v [lux][2]		Luminaire Intensity I [candelas][3]		Building Luminance Pre-curfew[4]
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m^2]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

Ene 03 External lighting

No. of credits available:	1
Minimum standards:	No

Aim

To recognise and encourage the specification of energy-efficient light fittings for external areas of the development.

Assessment Criteria

The following is required to demonstrate compliance for:

One credit

1. All external light fittings for the building, access ways and pathways have a luminous efficacy of at least 50 lamp lumens/circuit Watt when the lamp has a colour rendering index (Ra) greater than or equal to 60 OR 60 lamp Lumens / circuit Watt when the lamp has a colour rendering index (Ra) less than 60.
2. All external light fittings to car parking areas, associated roads and floodlighting has a luminous efficacy of at least 70 lamp lumens/circuit Watt when the lamp has a colour rendering index (Ra) greater than or equal to 60 OR 80 lamp Lumens / circuit Watts when the lamp has a colour rendering index (Ra) less than 60.
3. All external light fittings for signs and uplighting have a luminous efficacy of at least 60 lamp lumens/circuit Watt when the lamp wattage is greater than or equal to 25W OR 50 lamp lumens/circuit Watt when the lamp wattage is less than 25W.
4. External light fittings are controlled through a time switch, or daylight sensor, to prevent operation during daylight hours. Daylight sensor override on a manually switched lighting circuit is acceptable.

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P25125 - Marstons, Kingsmill, Wrexham

Qty	Range	Lamp type	LAMP Lumens	Circuit Watts	Lm/W	LOR	Total Lumens	ULR	Upward Lmns	RA	ART Hour Per Day	CO² Calculation for year CO² (Tonnes)	CO² Calculation for year Kw/hour	Compliance with ENE 03
7	Kaos 1	100w CDO-TT	9500	113.7	[illegible]	79.2%	52668	0.0%	0	85	12	1.90	3486.04	Pass

Total Installation Lumens 52668 0

Total ULR 0.00%

Total CO² per year (Tonnes) 1.90

Total Electrical consumption (Kw) 0.80

Total Electrical consumption per year (Kwh) 3,486.04

Table 1 compliance — Environmental zone E3

	Target	Achieved	Status
Sky Glow	5.00%	0.00%	Pass
Source Intensity (candelas)			
Pre curfew	10,000	115	Pass
Post curfew	1,000	0	Pass
Light Trespass into windows (Lux)			
Pre curfew	10	0	Pass
Post curfew	2	0	Pass
Building Luminance (cd/m²)	10		

Note - we have assumed no fittings will be left on Post curfew

Note - we have assumed no fittings will be left on Post curfew

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Members Of

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ILP INSTITUTION OF LIGHTING PROFESSIONALS

LIGHTING INDUSTRY ASSOCIATION

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Project Title

Marstons, Kingsmill, Wrexham

Scale	Project No
1:200 at A1	D25125
Date	**Drawing No**
21/10/2014	D25125/PY/A

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