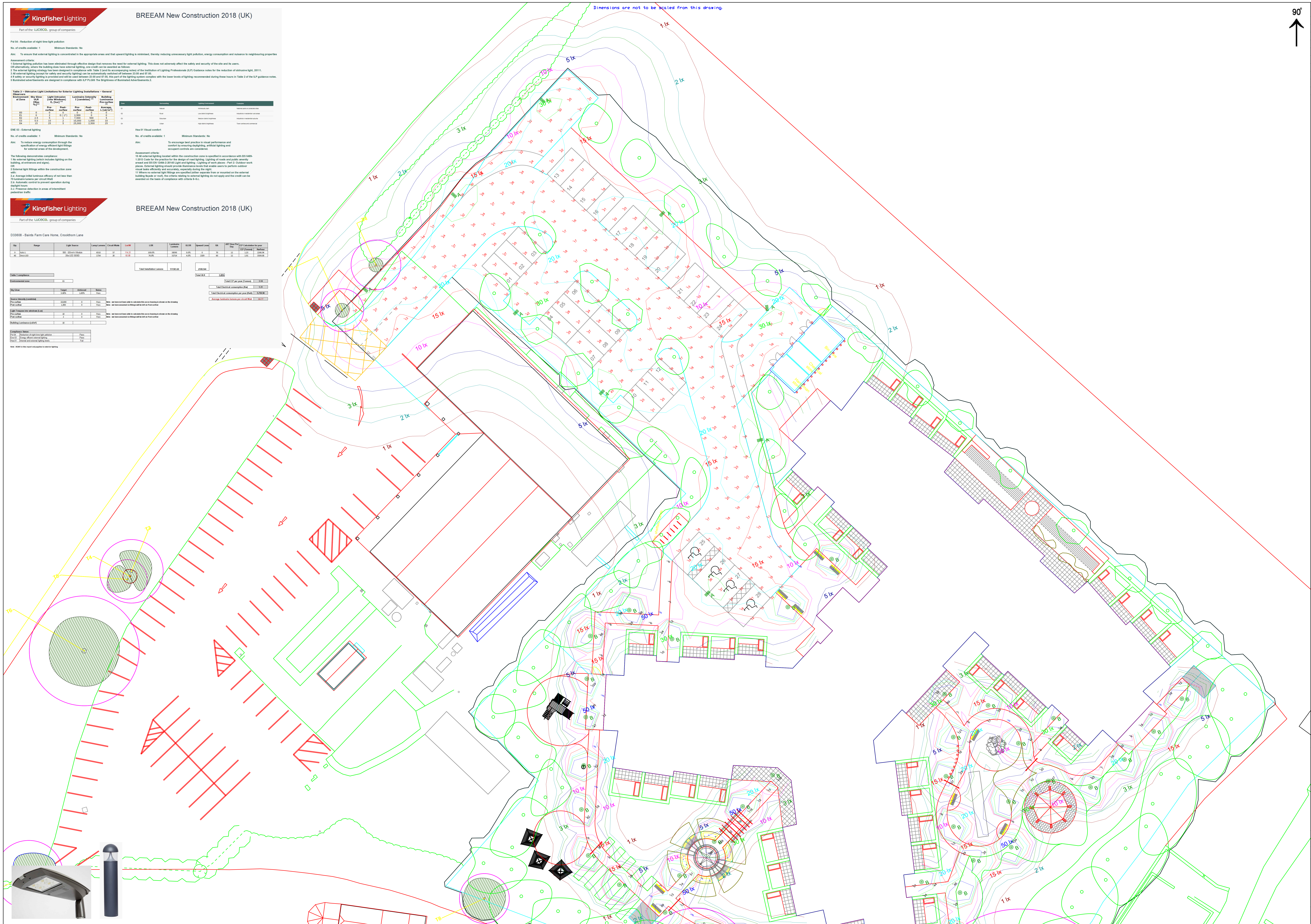

BREEAM New Construction 2018 (UK)

Kingfisher Lighting
Part of the LUCECO plc group of companies

Pol 04 - Reduction of night time light pollution

No. of credits available: 1 Minimum Standards: No

Aim: To ensure that external lighting is concentrated in the appropriate areas and that upward lighting is minimised, thereby reducing unnecessary light pollution, energy consumption and nuisance to neighbouring properties

Assessment criteria:
1 External lighting pollution has been eliminated through effective design that removes the need for external lighting. This does not adversely affect the safety and security of the site and its users.
OR alternatively, where the building does have external lighting, one credit can be awarded as follows:
2 The external lighting strategy has been designed in compliance with Table 2 (and its accompanying notes) of the Institution of Lighting Professionals (ILP) Guidance notes for the reduction of obtrusive light, 20111.
3 All external lighting (except for safety and security lighting) can be automatically switched off between 23:00 and 07:00.
4 If safety or security lighting is provided and will be used between 23:00 and 07:00, this part of the lighting system complies with the lower levels of lighting recommended during these hours in Table 2 of the ILP guidance notes.
5 Illuminated advertisements are designed in compliance with ILP PLG05 The Brightness of Illuminated Advertisements.2.

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/m²]
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

Zone	Surrounding	Lighting Environment	Examples
E1	Natural	Intrinsically dark	National parks or protected sites
E2	Rural	Low district brightness	Industrial or residential rural areas
E3	Suburban	Medium district brightness	Industrial or residential suburbs
E4	Urban	High district brightness	Town centres and commercial

ENE 03 - External lighting

No. of credits available: 1 Minimum Standards: No

Aim: To reduce energy consumption through the specification of energy efficient light fittings for external areas of the development.

The following demonstrates compliance:
1 No external lighting (which includes lighting on the building, at entrances and signs).
OR
2 External light fittings within the construction zone with:
2.a: Average initial luminous efficacy of not less than 70 luminaire lumens per circuit Watt
2.b: Automatic control to prevent operation during daylight hours
2.c: Presence detection in areas of intermittent pedestrian traffic

Hea 01 Visual comfort

No. of credits available: 1 Minimum Standards: No

Aim: To encourage best practice in visual performance and comfort by ensuring daylighting, artificial lighting and occupant controls are considered.

Assessment criteria:
10 All external lighting located within the construction zone is specified in accordance with BS 5489-1:2013 Code for the practice for the design of road lighting. Lighting of roads and public amenity areas4 and BS EN 12464-2:20145 Light and lighting - Lighting of work places - Part 2: Outdoor work places. External lighting should provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.
11 Where no external light fittings are specified (either separate from or mounted on the external building façade or roof), the criteria relating to external lighting do not apply and the credit can be awarded on the basis of compliance with criteria 8–9.c.

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D33608 - Bairds Farm Care Home, Crookthorn Lane

Qty	Range	Light Source	Lamp Lumens	Circuit Watts	Lm/W	LOR	Luminaire Lumens	ULOR	Upward Lmns	RA	ART Hour Per Day	CO² Calculation for year	
												CO² (Tonnes)	Kw/hour
9	Italo 1	S05 - 525mA 4 Module	6510	57	114.21	100.0%	58590	0.0%	0	70	12	1.23	2246.94
40	Deco LED	20w LED 3030D	1734	20	65.89	76.0%	52714	4.0%	2109	60	12	1.91	3504.00

Total Installation Lumens	111303.60
	2108.544
Total ULR	1.89%
Total CO² per year (Tonnes)	3.14
Total Electrical consumption (Kw)	1.31
Total Electrical consumption per year (Kwh)	5,750.94
Average luminaire lumens per circuit Watt	84.77

Table 1 compliance	
Environmental zone	E3

Sky Glow	Target	Achieved	Status	
	5.00%	1.89%	Pass	
Source Intensity (candelas)				
Pre curfew	10,000	0	Pass	Note - we have not been able to calculate this as no housing is shown on the drawing
Post curfew	1,000	0	Pass	Note - we have assumed no fittings will be left on Post curfew
Light Trespass into windows (Lux)				
Pre curfew	10	0	Pass	Note - we have not been able to calculate this as no housing is shown on the drawing
Post curfew	2	0	Pass	Note - we have assumed no fittings will be left on Post curfew
Building Luminance (cd/m²)	10			

Compliance Status:		
Pol 04	Reduction of night time light pollution	Pass
Ene 03	Energy efficent external lighting	Pass
Hea 01	Internal and external lighting levels	Fail

Note - HEA01 in this report only applies to exterior lighting

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Car Park	Illuminance	Lux	20.80	43	8	0.38	0.19
Paths	Illuminance	Lux	31.55	159	5	0.16	0.03

Luminaire Schedule					
Symbol	Qty	Label	Arrangement	LLF	Description
▤	9	A	SINGLE	0.900	57w (4 module) 525mA Italo 1 with S05 Optic column mounted at 6m.
○	40	B	SINGLE	0.900	20w LED Deco Bollard

90°

Revision	Date	Description	Initials

Kingfisher Lighting

For our LED lighting designs a 0.9mf has been used. If this differs from the maintenance period for this project then you must advise us accordingly

Members Of

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Project Title

Bairds Farm Care Home, Crookthorn Lane

Scale	Project No
1:250 at A1	D33608
Date	**Drawing No**
24/4/2018	D33608/PY/A

A lighting applications design service is provided by us in good faith and without charge, relating to Kingfisher products only. As such, whilst every endeavor is made for accuracy from information provided by yourselves, the final responsibility for the suitability of the design lies with the client. The company cannot, therefore, accept any liability or consequential loss incurred.

Lighting Designer : Paul Yates MSLL

ARUN DISTRICT COUNCIL CM/16/18/PL