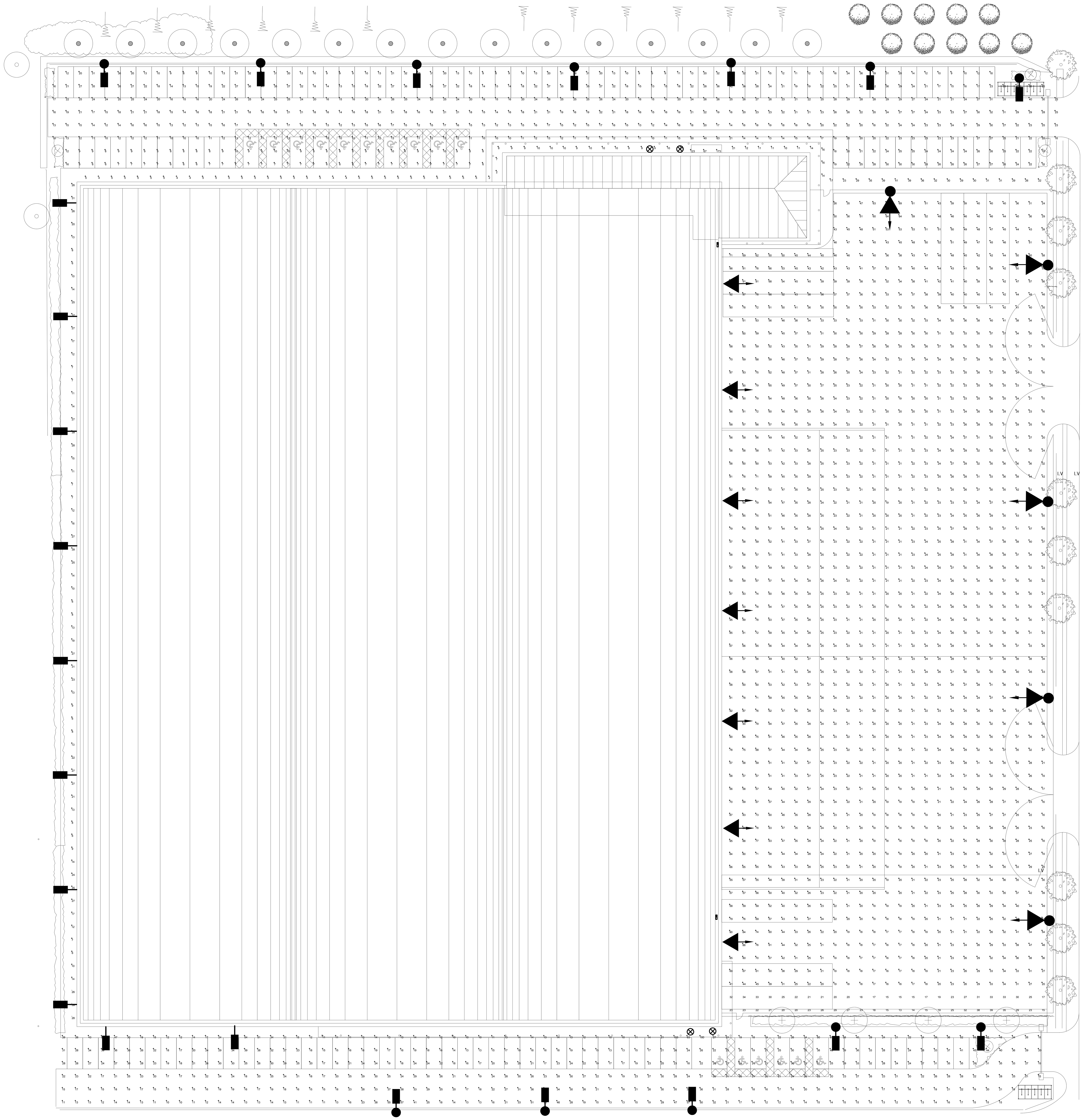

BREEAM

Kingfisher Lighting

Pol 04 Reduction of night time light pollution

No. of credits available: 1 **Minimum Standards: No**

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

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 demonstrates compliance:

- The building has been designed to operate without the need for external lighting (which includes on the building, signs and at entrances). OR alternatively, where the building does have external lighting, one credit can be awarded as follows:
- The average initial luminous efficacy of the external light fittings within the construction zone is not less than 60 luminaire lumens per circuit Watt
- All external light fittings are automatically controlled for prevention of operation during daylight hours and presence detection in areas of intermittent pedestrian

Hea 01 Visual comfort

No. of credits available: 1 **Minimum Standards: No**

Aim
To ensure lighting has been designed in line with best practice for visual performance and comfort.

Assessment Criteria
The following demonstrates compliance:

- All external lighting located within the construction zone is designed to provide illuminance levels that enable users to perform outdoor visual tasks efficiently and accurately, especially during the night.
- To demonstrate this, external lighting provided is specified in accordance with:
  - BS 5489-1:2013 Lighting of roads and public amenity areas
  - BS EN 12464-2:2014 Light and lighting - Lighting of work places - Part 2: Outdoor work places.

BREEAM®

The criteria for a design to achieve the ENE 03 credit have now changed. Designs are now required to achieve an average of 60 luminaire lumens per circuit watt. average of 60 luminaire lumens per circuit watt. This affects the type of fitting and light source that can be used, Please ensure that this is considered when comparing this drawing to previous designs or designs by others. For more information contact our lighting design department or go to : http://goo.gl/VGQJNy (BREEAM's official website)

BREEAM

Kingfisher Lighting

D32158b - Prologis Ph 3 Stockley Park Units 3A, 3B

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	
14	Italo 1	S05 - 850mA 4 Module	10380	93	111.61	100.0%	145320	0.0%	0	70	12	3.11	5702.76	Italo1
4	Deco LED	20w LED 3030D	1734	20	65.89	76.0%	5271	4.0%	211	60	12	0.19	350.40	DecoLED
7	Italo 3	ASC - 700mA 5 Module	27149	253	107.31	100.0%	190043	0.0%	0	70	12	4.23	7756.98	Italo3
5	Italo 3	S05 - 700mA 15 Module	31000	286	108.39	100.0%	155000	0.0%	0	70	12	3.41	6263.40	Italo3
8	Quarto LED	20w TAB LED Module	1740	20	87.00	100.0%	13920	0.0%	0	70	12	0.38	700.80	QuartoLED

Total Installation Lumens	509554.36
	210.8544
Total ULR	0.04%

Table 1 compliance	
Environmental zone	E3

Sky Glow	Target	Achieved	Status
	5.00%	0.04%	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		

Total CO² per year (Tonnes)	11.33
Total Electrical consumption (Kw)	4.74
Total Electrical consumption per year (Kwh)	20,774.34
Average luminaire lumens per circuit Watt	107.43

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	Pass

Note - HEA01 in this report only applies to exterior lighting

BREEAM®

The criteria for a design to achieve the ENE 03 credit have now changed. Designs are now required to achieve an average of 60 luminaire lumens per circuit watt. average of 60 luminaire lumens per circuit watt. This affects the type of fitting and light source that can be used, Please ensure that this is considered when comparing this drawing to previous designs or designs by others. For more information contact our lighting design department or go to : http://goo.gl/VGQJNy (BREEAM's official website)

Calculation Summary

Label	CalcType	Units	Avg	Max	Min	Min/Avg	Min/Max
Cycle Bays	Illuminance	Lux	11.80	16	8	0.68	0.50
Left Access Path	Illuminance	Lux	17.91	39	6	0.34	0.15
Lower Staff Entrance	Illuminance	Lux	102.50	146	58	0.57	0.40
Unit 3A & 3B Loading Bays	Illuminance	Lux	75.51	97	56	0.74	0.58
Unit 3A & 3B Service Yard	Illuminance	Lux	33.01	96	13	0.39	0.14
Unit 3A Car Park	Illuminance	Lux	18.91	63	6	0.32	0.10
Unit 3B Car Park	Illuminance	Lux	23.98	180	10	0.42	0.06
Upper Paths	Illuminance	Lux	12.75	41	2	0.16	0.05
Upper Staff Entrance	Illuminance	Lux	121.00	173	67	0.55	0.39

REV	DATE	DESCRIPTION	BY
C0	09.07.18	ISSUED FOR CONSTRUCTION	HVS
P1	21.05.18	XREF AMENDED, LIGHTING AMENDED TO UNIT 3B	HVS
P0	20.04.18	PRELIMINARY ISSUE	HVS

WM BUILDING SERVICES
657 Melton Road
Thurmaston
Leicester
LE4 8EB
Tel: (0116) 311 2477
Fax: (0116) 260 9537
Email: office@wmbuildingservices.com
Web: www.wmbuildingservices.com

Project:
Prologis Park
West London
Units 3a & 3b

Client: readie

Title:
External Lighting Lux Plot Layout

Scale at A0:	Date:	Designed:	Drawn:	Design Check:
1:250	03/18	HVS	HVS	RWF

Drawing No: 2088-E-501 Rev: C0

CONSTRUCTION