Lands to the Ardshanavooly, Killarney, Co. Kerry

Proposed Residential Development

EXTERNAL (PUBLIC) LIGHTING REPORT

External Lighting Installation Assessment

Lands at Ardshanavooly,
Killarney,
Co. Kerry

Wrightwood Developments Ltd

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Contents

1 Introduction

1.1 Report purpose

This report gives information on the external (public) lighting installation in connection with the new prosed project covering the site main entrance, internal circulation roads, public parking spaces, cycle & footpath.

1.2 Instruction

DKPartnership (DKP) have been commissioned by Wrightwood Development Ltd to carry out the analysis and report for the proposed residential development at Ardshanavooly, Killarney, Co. Kerry.

1.3 Development detail

Wrightwood Development Ltd, intend to apply for planning permission for a Large Scale Residential Development (LRD) for development at a 2.23 hectare site at lands at Ardshanavooly, Killarney, Co. Kerry. The proposed development comprises of:

1. Construction of a 124 no. dwellings in a mix of duplex, maisonette and apartment typologies comprising 16 no. 1 bed apartments, 6 no. 2 bed apartments, 16 no. 1 bed duplex apartments, 16 no. 2 bed duplex maisonettes, 33 no. 2 bed duplex apartments, 33 no. 3 bed maisonettes and 4 no. 3 bed terrace houses, all in building heights ranging from 2 to 4 storeys.
2. A total of 143 no. surface car parking spaces, including 4 no. car-share parking spaces, 6 no. visitor spaces, and 5 no. assigned Part M/accessible spaces.
3. Bicycle parking comprising of 272 no spaces in total, comprising 118 no. spaces within the private open space of ground floor residential units and 102 no. spaces within secure sheltered structures and designated secure bicycle parking areas, and 52 no. short stay/visitor spaces.
4. 3,636 sq.m of public open space, including arrival pocket park, central pocket park and amenity landscape areas (including 117 sq.m of play), grass lawns, kickabout areas, picnic areas and seating areas;
5. 956 sq.m of communal external open space, including seating areas, nature trails, and amenity grass lawns.
6. Additional environmental open space of 1,790 sq.m, including landscape buffers, protection and enhancement of existing hedgerows and trees.
7. A new vehicular, pedestrian and cyclist access from the existing estate road adjoining the site to the south.
8. Infrastructure works to serve the proposed development to include the internal road and footpath network, ESB cabinets/substations/switchrooms, site and external building lighting, site drainage works, hard and soft landscaping, boundary treatments, communal bin stores, and all ancillary site services and development works above and below ground.

1.4 Policy and building regulation requirements

The project is subject to the following statutory requirements of EN132201 External lighting calculation design.

1.5 **Project location.**

Image 1.1, the (google) site map below shows the approximate location of the site with proposed development approximately outlined in red.

Image 1.1: Proposed development site boundary. Imagery © Google 2025.

2 Executive summary

2.1 Analysis conducted

This report analyses the illumination calculation results of the proposed lighting design in respect of new project the site main entrance and the internal circulation roads, public parking spaces, cycle & footpath.

2.2 EN132201 External lighting calculation design targets

The table below details the main targets to be achieved for the different lighting classes.
The P class is generally for pedestrian traffic and cyclists for use on footways and cycleways, and drivers of motorised vehicles at low speed on residential roads, shoulder or parking lanes, and other road areas lying separately or along a carriageway of a traffic route or a residential road, etc.. The C lighting class is applied for use in conflict areas on traffic routes where the traffic composition is mainly motorised. Conflict areas occur wherever vehicle streams intersect each other or run into areas frequented by pedestrians, cyclists, or other road users. Areas showing a change in road geometry, such as a reduced number of lanes or a reduced lane or carriageway width, are also regarded as conflict areas. The M standard is mainly for highways and motorways.

The table below indicates the P and C/M class minimum EN13201 illumination targets.

Illumination class	E avg (lx)	E min (lx)	Uniformity
P1	15.0	3.00	0.2
P2	10.0	2.00	0.2
P3	7.50	1.50	0.2
P4	5.00	1.00	0.2

Illumination class	E avg (lx)	E min (lx)	luminance cd/m2	Uniformity
M1/C1	30.0	12.0	2.0	0.4
M2/C2	20.0	8.00	1.5	0.4
M3/C3	15.0	6.00	1.0	0.4
M4/C4	10.0	4.00	0.75	0.4
M5/C5	7.50	1.50	0.50	0.3

Cop of Table 3.1 EN132201 lighting class P, C and M standards.

2.3 Design considerations

The external lighting design has been executed using the European design standard EN 1332201 category P3 for the development inner circulations roads and adjacent public parking spaces & footpath. Consideration was also extended in the lighting design by keeping the light colour of the light fittings to 2700K in line with the bat mitigation recommendations of the National parks and Wildlife Service which is deemed to have less impact on fauna and in particular bats (see section 3.4) and by minimising the light spill outside the areas to be lit to a minimum.

2.4 Calculation data results

From the appendix A/B/C representing the illumination calculations reports and contours drawings and the 1:500 A1 overall site illumination contour layout we note that the internal development circulation roads, parking area's and adjacent footpath average illuminance, minimum illuminance and uniformity comply to the P3 lighting class.

Element	Standard	E avg min (lx)	E min (lx)	Uniformity
Internal circulation, public parking, adjacent footpath	P3	7.74 (7.50)	1.67 (1.50)	0.22 (0.20)

Copy of table 4.1 Achieved illumination levels and minimum requirements (x.xx).

2.5 Light fittings applied for the purpose of illumination calculation.

The table below represent a summary of the light fitting schedule applied for the illumination calculations. See appendix lighting illumination calculation reports for further details.

Fitting	Make	Model	Light colour (K)	Flux (L)	Wattage (W)	Pole height
Luminaire B	Cree	TRSA-02-200-8L27836W	2700K	4.85	36	6m pole

Copy of Table 4.2 Light fitting types applied..

2.6 Conclusion

The external (public) lighting design as per illumination reports meets the criteria set out in EN13201 for lighting class P3 covering the internal access road and adjacent public parking and footpath. Furthermore the lighting design also applied a light colour of 2700K in line with the National parks and Wildlife Service Bat mitigation recommendations and has low light spill outside the areas to be lit to minimise the impact on any bat community and we, DKP, therefore deem the external lighting design to be in compliance with the applied standards and recommendations.

2.7 Mitigation measures / actions

No mitigation measures required for compliance to lighting standards.

3 Approach and methodology

3.1 Analysis approach

For the design of the public lighting we applied the P3 standard for the estate circulation roads, public parking areas and adjacent foot path in line with the general requirement for as outlined in EN13201 .

3.2 The extend of the overall site

The following architects layout drawing covers the extend of the proposed development.

Image 3.1 Architects site layout.

3.3 EN132201 external lighting data and targets

The table below details the relevant P and C targeted as noted above. The P class is generally for pedestrian traffic and cyclists for use on footways and cycleways, and drivers of motorised vehicles at low speed on residential roads, shoulder or parking lanes, and other road areas lying separately or along a carriageway of a traffic route or a residential road, etc.. The C lighting class is applied for use in conflict areas on traffic routes where the traffic composition is mainly motorised. Conflict areas occur wherever vehicle streams intersect each other or run into areas frequented by pedestrians, cyclists, or other road users. Areas showing a change in road geometry, such as a reduced number of lanes or a reduced lane or carriageway width, are also regarded as conflict areas. The M standard is mainly for highways and motorways.

Illumination class	E avg (lx)	E min (lx)	Uniformity
P1	15.0	3.00	0.2
P2	10.0	2.00	0.2
P3	7.50	1.50	0.2
P4	5.00	1.00	0.2

Illumination class	E avg (lx)	E min (lx)	luminance cd/m2	Uniformity
M1/C1	30.0	12.0	2.0	0.4
M2/C2	20.0	8.00	1.5	0.4
M3/C3	15.0	6.00	1.0	0.4
M4/C4	10.0	4.00	0.75	0.4
M5/C5	7.50	1.50	0.50	0.3

Table 3.1 EN132201 lighting class P, C and M standards.

3.4 The design approach to cover any identified bat routs or roosting areas

Consideration to the fauna was applied in the lighting design by keeping the light colour of the light fittings @ 2700K in line with the bat mitigation recommendations of the National parks and Wildlife Service which is deemed to have less impact on fauna and in particular bats and by minimising the light spill outside the areas to be lit to an average minimum of +/- 1.5Lux.

NATIONAL PARKS AND WILDLIFE SERVICE IWM134
BAT MITIGATION GUIDELINES FOR IRELAND
8.2.3 Lighting
Lighting at or near roost entrances has been shown to disturb bats and should be avoided. A useful review of information on this issue has been published by Eurobats (Voigt et al., 2018). In general, artificial light creates a barrier to commuting bats so lighting should be minimised during the active bat season from March to the end of September as it deters some bat species. Where lighting is required, directional lighting (i.e. lighting which only shines on access roads and not nearby countryside) should be used to prevent overspill. This can be achieved by the design of the luminaire, the height of the lamp and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intendedarea only. Modern LED lighting has also been shown to deter bats but it is available in a range of colours other than white which may be used to avoid or lessen impacts. Warmer colour wavelengths between 2700 and 3000 Kelvin seem to have less impact on bats (Bat Conservation Trust & Institute of Lighting Professionals 2018). Further recent guidance on reducing obtrusive lighting, although not specific to bats, can be found in Institution of Lighting Professionals, 2021.

4 Calculation data and conclusion

4.1 Calculated achieved illumination results

From the appendix representing the illumination calculations report and DKP 1:500 A1 highlighted column location and illumination contours drawings we note that the internal development circulation roads, adjacent footpath and public parking areas average illuminance, minimum illuminance and uniformity comply to the P3 lighting class.

Element	Standard	E avg min (lx)	E min (lx)	Uniformity
Internal circulation, public parking, adjacent footpath	P3	7.74 (7.50)	1.67 (1.50)	0.22 (0.20)

Table 4.1 Achieved illumination levels and minimum requirements (x.xx).

4.2 Lighting column location layout (extract from 1:500 Public lighting drawing)

Below is a clip from the DKP 1:500 A1 Public lighting drawing showing the highlighted column locations. Refer to DKP drawing 2001 for more accurate details.

Illustration 4.1. Extract (clip) from 1:500 A1 Public lighting drawing Highlighted column locations.

4.3 Illumination contours (extract from 1:500 Public lighting drawing)

Below is a clip from the DKP 1:500 A1 Public lighting drawing showing the illumination contours. Refer to DKP drawing 2002 for more accurate details.

Illustration 4.2. Extract (clip) from 1:500 A1 Public lighting drawing Illumination contours.

4.4 EN132201 External lighting calculation data

The illuminance data was calculated using the following fittings/poles.

Fitting	Make	Model	Light colour (K)	Flux (L)	Wattage (W)	Pole height
Luminaire B	Cree	TRSA-02-200-8L27836W	2700K	4.85	36	6m pole

Table 4.2 Light fitting types applied.

4.5 Light fittings applied for the purpose of illumination calculation

The table below represent a summary of the light fitting schedule applied for the illumination calculations. See appendix A External (public) lighting illumination calculation report.

Luminaire B Data

Supplier	Cree Lighting
Type	TRSA-02-200-8L27836W
Lamp(s)	16lu8L36W27K
Lamp Flux (klm)	4.85
File Name	TRSA-02-200-8L-278 36W-1408-QL20-S05 .IES
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	462.5, 41.7, 0.0
No. in Project	23

Illustration 43. Light fitting A and B details.

4.6 Conclusion

The external (public) lighting design as per illumination reports meets the criteria set out in EN13201 for lighting class P3 covering the internal access road, adjacent footpath and public parking areas lighting class. Furthermore the lighting design also applied a light colour of 2700K in line with the National parks and Wildlife Service Bat mitigation recommendations and has low light spill outside the areas to be lit to minimise the impact on any bat community and we, DKP, therefore deem the external lighting design to be in compliance with the applied standards and recommendations.

4.7 Mitigation measures / actions

No mitigation measures required for compliance to lighting standards.

APPENDIX A

Site illuminance calculation report

DATE:	**11 December 2025**
DESIGNER:	**DKPartnership**
PROJECT No:	**P01**
PROJECT NAME:	**Ardshanavooley Housing Development**

Inner estate road and circulation has been designed to comply with cat P3 and shall have dimming function to U15.

Ardshanavooley

Layout Report

General Data

Dimensions in Metres Angles in Degrees
Grid Origin -1.2m x 39.9m
Area 206.9m x 180.6m
Sample Spacing 1.00m x 1.00m

Luminaires

Luminaire B Data

Supplier	Cree Lighting
Type	TRSA-02-200-8L27836W
Lamp(s)	16lu8L36W27K
Lamp Flux (klm)	4.85
File Name	TRSA-02-200-8L-278 36W-1408-QL20-S05 .IES
Maintenance Factor	0.80
Imax70,80,90(cd/klm)	462.5, 41.7, 0.0
No. in Project	23

Layout

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	B	94.76	121.05	6.00	181.00	0.00	0.00	1.00			
2	B	94.85	146.60	6.00	181.00	0.00	0.00	1.00			
3	B	82.23	172.17	6.00	0.00	0.00	0.00	1.00			
4	B	86.40	194.26	6.00	2.00	0.00	0.00	1.00			
5	B	110.89	166.85	6.00	90.00	0.00	0.00	1.00			
6	B	137.85	179.53	6.00	272.00	0.00	0.00	1.00			
7	B	158.64	179.68	6.00	276.00	0.00	0.00	1.00			
8	B	187.27	166.01	6.00	89.00	0.00	0.00	1.00			
9	B	133.94	139.63	6.00	182.00	0.00	0.00	1.00			
10	B	133.89	158.25	6.00	182.00	0.00	0.00	1.00			
11	B	158.80	157.99	6.00	0.00	0.00	0.00	1.00			
12	B	158.73	140.06	6.00	0.00	0.00	0.00	1.00			
13	B	167.51	114.26	6.00	91.00	0.00	0.00	1.00			
14	B	99.62	94.11	6.00	181.00	0.00	0.00	1.00			
15	B	82.50	70.49	6.00	1.00	0.00	0.00	1.00			
16	B	67.36	111.58	6.00	269.00	0.00	0.00	1.00			
17	B	61.70	89.01	6.00	1.00	0.00	0.00	1.00			
18	B	110.64	78.63	6.00	272.00	0.00	0.00	1.00			
19	B	122.94	58.36	6.00	181.00	0.00	0.00	1.00			
20	B	137.79	77.78	6.00	272.00	0.00	0.00	1.00			

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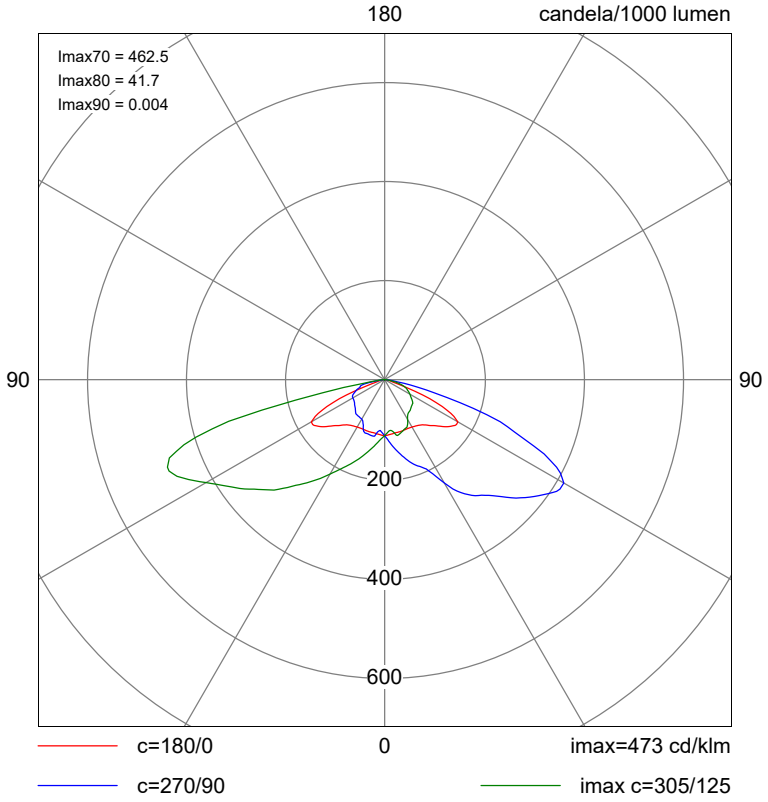
Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
21	B	168.81	69.55	6.00	115.00	0.00	0.00	1.00			
22	B	190.30	98.65	6.00	302.00	0.00	0.00	1.00			
23	B	170.05	96.41	6.00	355.00	0.00	0.00	1.00			

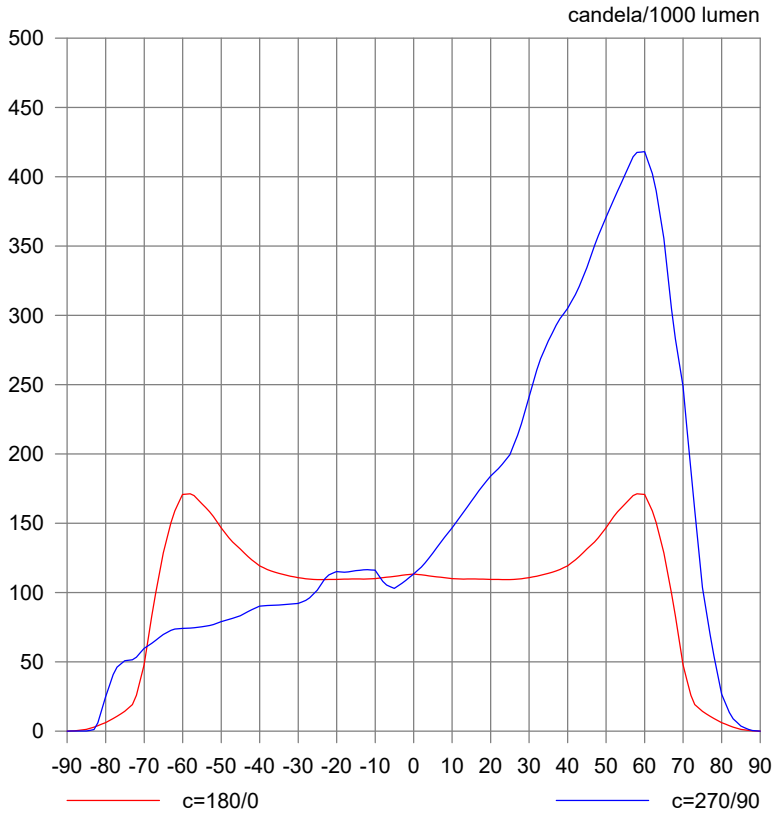
Polar Diagram

Luminaire B TRSA-02-200-8L27836W



Cartesian Diagram

Luminaire B TRSA-02-200-8L27836W



Horizontal Illuminance (lux)

Grid 1

Results

Eav	7.74
Emin	1.67
Emax	17.73
Emin/Emax	0.09
Emin/Eav	0.22