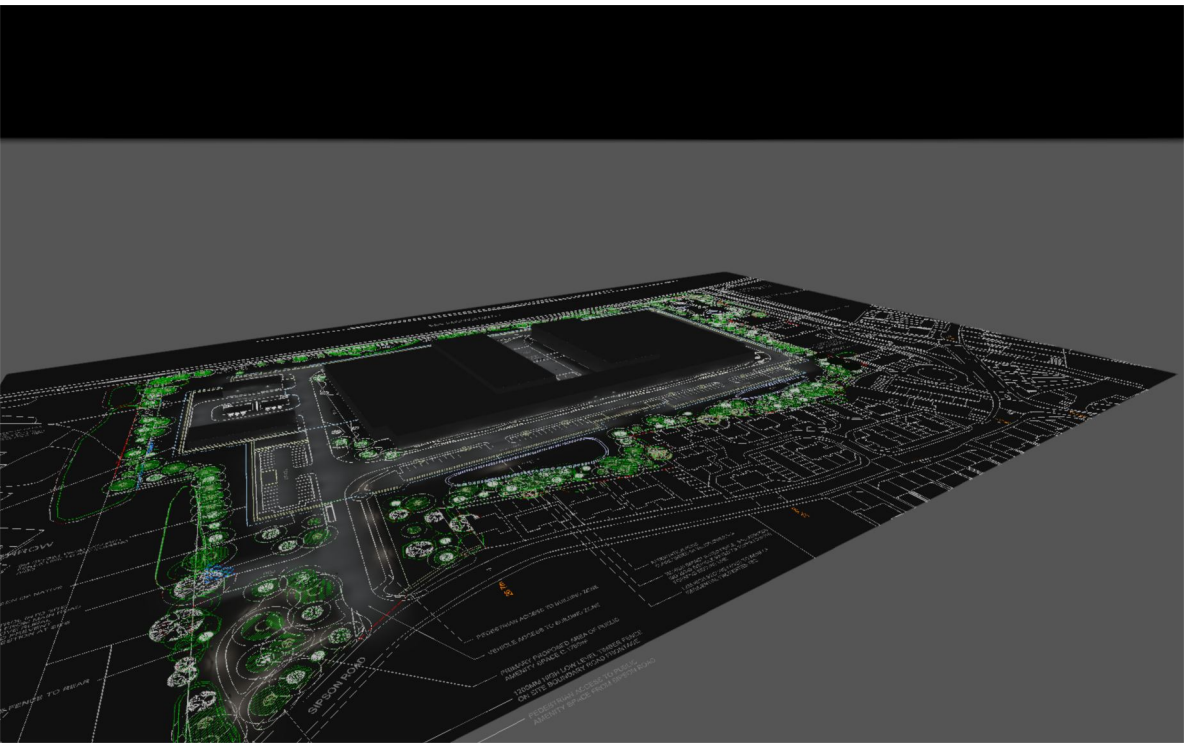
Date 09/10/2026



Virtus - Greenfingers

Lighting strategy and obtrusive lighting assessment

Created with DIALux

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Virtus - Greenfingers (Obtrusive light scene)

Summary



Virtus - Greenfingers (Obtrusive light scene)

Summary

General information on the obtrusive light calculation

Standard	CIE 150:2017
Zone	Environmental Zone E3
Period under review	Post-curfew
Apply limits for	Amenity lighting

General obtrusive light scene results

Symbol	Calculated	Threshold value	Check
R_{UF}	0.1 %	≤ 12.0 %	✓
R_{UL}	0.0 %	≤ 5.0 %	✓
R_{DLO}	57.8 %	–	
R_{ULO}	0.0 %	–	

Calculation surfaces

Symbol	Calculated	Threshold value	Check	Index
E_{vmax}	3.02 lx	≤ 2.00 lx	✗	OCG4

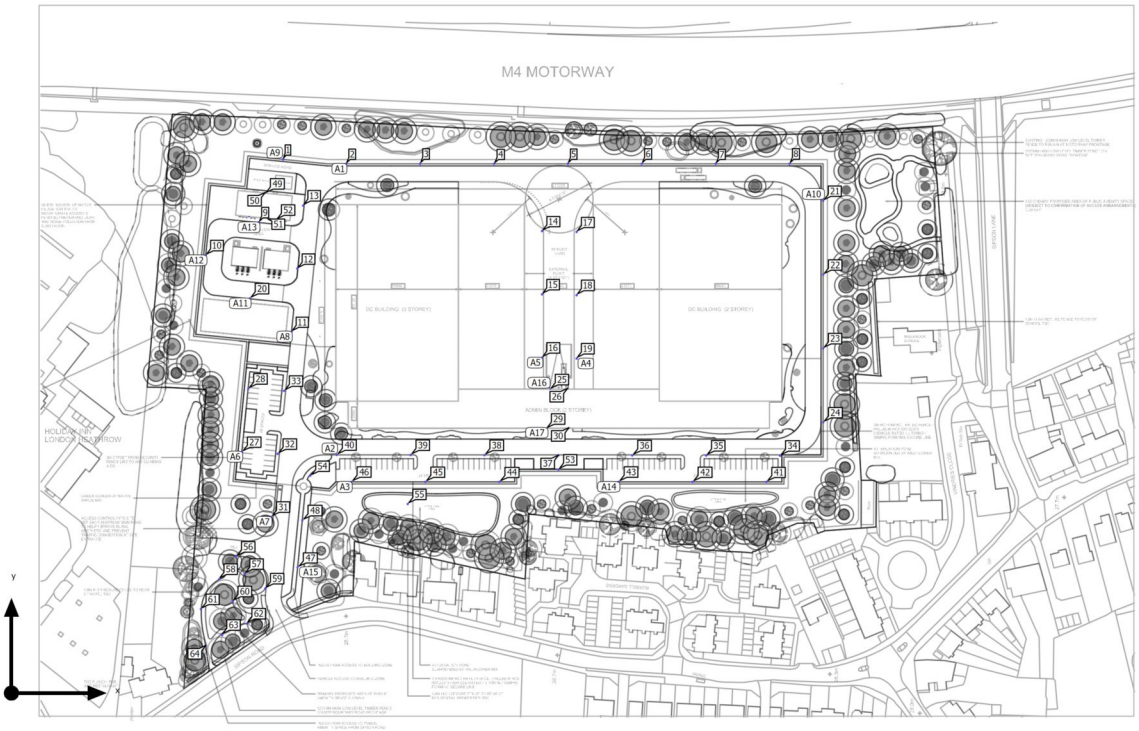
Calculation points

Symbol	Calculated	Threshold value	Check	Index
E_{vmax}	0.064 lx	≤ 2.00 lx	✓	OP2
I_{max}	50.7 cd	≤ 46.7 cd	✗	OP8

Flux ratios are also calculated using only luminaires in the obtrusive lighting scene.

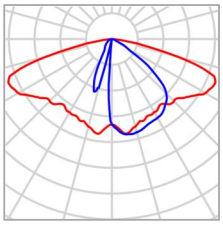
Virtus - Greenfingers

Luminaire layout plan



Virtus - Greenfingers

Luminaire layout plan



Manufacturer	AEC ILLUMINAZIONE	P	10.2 W
Article No.	25-062-27_03	$\Phi_{Luminaire}$	1280 lm
Article name	ECO RAYS TP 5P5 STU-M 7027.050-1M		
Fitting	1x L-ECRTP-5P5-2700-050-1M-70-25		

2 x AEC ILLUMINAZIONE ECO RAYS TP 5P5 STU-M 7027.050-1M

Type	Line arrangement
1st luminaire (X/Y/Z)	135.550 m / 59.624 m / 4.000 m
X-direction	2 pcs., Centre - centre, 22.344 m
Arrangement	A15

X	Y	Mounting height	Luminaire
135.550 m	59.624 m	4.000 m	47
137.769 m	81.857 m	4.000 m	48

Individual luminaires

X	Y	Mounting height	Luminaire
259.064 m	105.889 m	4.000 m	53
141.553 m	103.001 m	4.000 m	54
187.651 m	89.582 m	4.000 m	55
110.571 m	56.478 m	4.000 m	57
98.406 m	53.962 m	4.000 m	58
104.805 m	43.458 m	4.000 m	60

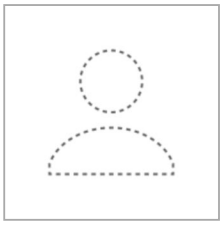
Virtus - Greenfingers

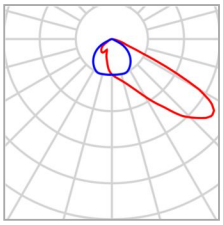
Luminaire layout plan

X	Y	Mounting height	Luminaire
89.695 m	39.778 m	4.000 m	61
111.425 m	32.907 m	4.000 m	62
99.674 m	27.503 m	4.000 m	63
91.928 m	22.473 m	4.000 m	64

Virtus - Greenfingers

Luminaire layout plan





Manufacturer	Not yet a DIALux member
Article No.	60W VASTA 1 FloodlightÂ·2700KÂ·700mAÂ·AL50 flood optic
Article name	VAS1-AL50-727-30D
Fitting	1x Lumiled 5050 Â· 2700K Â· CRI>70 Â· >100,000hrs Â· L90-B10 (TM65 = --kg COÂ²e, TM66 = --)

P	60.0 W
$\Phi_{Luminaire}$	10301 lm

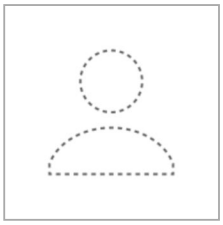
2 x Not yet a DIALux member VAS1-AL50-727-30D

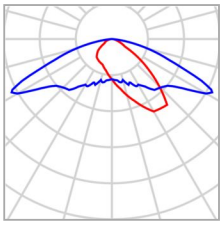
Type	Line arrangement
1st luminaire (X/Y/Z)	255.202 m / 144.110 m / 4.000 m
X-direction	2 pcs., Centre - centre, 7.981 m
Arrangement	A16

X	Y	Mounting height	Luminaire
255.202 m	144.110 m	4.000 m	25
263.183 m	144.091 m	4.000 m	26

Virtus - Greenfingers

Luminaire layout plan





Manufacturer	Not yet a DIALux member
Article No.	6w LED 4000k Semita Urban bulkhead with cycle optic + Comfort Glass
Article name	LED Semita Urban
Fitting	1x 6w LED

P	6.0 W
$\Phi_{Luminaire}$	738 lm

2 x Not yet a DIALux member LED Semita Urban

Type	Line arrangement
1st luminaire (X/Y/Z)	253.323 m / 125.463 m / 2.500 m
X-direction	2 pcs., Centre - centre, 10.550 m
Arrangement	A17

X	Y	Mounting height	Luminaire
253.323 m	125.463 m	2.500 m	29
263.873 m	125.463 m	2.500 m	30

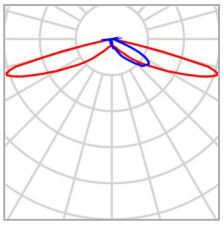
Individual luminaires

X	Y	Mounting height	Luminaire
120.067 m	236.911 m	2.500 m	49
120.067 m	236.911 m	2.500 m	50
112.466 m	225.764 m	2.500 m	51
125.521 m	224.478 m	2.500 m	52

Virtus - Greenfingers

Luminaire layout plan





Manufacturer	Signify	P	77.2 W
Article No.	BPP530I-4cf99276-708f-4dd4-9bff-84da4b4e6542	$\Phi_{Luminaire}$	6549 lm
Article name	BPP532 LED120-4S/730 PSD-SR II DW50 FG A		
Fitting	1x LED120-4S/730		

7 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	158.489 m / 250.789 m / 6.000 m
X-direction	7 pcs., Centre - centre, 35.000 m
Arrangement	A1

X	Y	Mounting height	Luminaire
158.489 m	250.789 m	6.000 m	2
193.489 m	250.791 m	6.000 m	3
228.489 m	250.793 m	6.000 m	4
263.489 m	250.795 m	6.000 m	5
298.489 m	250.797 m	6.000 m	6
333.489 m	250.799 m	6.000 m	7
368.489 m	250.801 m	6.000 m	8

7 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	364.032 m / 112.466 m / 6.000 m

X	Y	Mounting height	Luminaire
364.032 m	112.466 m	6.000 m	34
329.032 m	112.530 m	6.000 m	35

Virtus - Greenfingers

Luminaire layout plan

X-direction	7 pcs., Centre - centre, 35.000 m
Arrangement	A2

X	Y	Mounting height	Luminaire
294.032 m	112.595 m	6.000 m	36
259.032 m	112.660 m	6.000 m	37
224.032 m	112.724 m	6.000 m	38
189.032 m	112.789 m	6.000 m	39
154.032 m	112.854 m	6.000 m	40

3 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	230.985 m / 100.078 m / 6.000 m
X-direction	3 pcs., Centre - centre, 35.000 m
Arrangement	A3

X	Y	Mounting height	Luminaire
230.985 m	100.078 m	6.000 m	44
195.985 m	100.078 m	6.000 m	45
160.985 m	100.078 m	6.000 m	46

3 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	267.645 m / 218.516 m / 6.000 m
X-direction	3 pcs., Centre - centre, 30.000 m
Arrangement	A4

X	Y	Mounting height	Luminaire
267.645 m	218.516 m	6.000 m	17
267.645 m	188.516 m	6.000 m	18
267.645 m	158.516 m	6.000 m	19

3 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	251.285 m / 218.929 m / 6.000 m

X	Y	Mounting height	Luminaire
251.285 m	218.929 m	6.000 m	14
251.285 m	188.929 m	6.000 m	15

Virtus - Greenfingers

Luminaire layout plan

X-direction	3 pcs., Centre - centre, 30.000 m
Arrangement	A5

X	Y	Mounting height	Luminaire
251.285 m	158.929 m	6.000 m	16

2 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	109.190 m / 114.371 m / 6.000 m
X-direction	2 pcs., Centre - centre, 30.000 m
Arrangement	A6

X	Y	Mounting height	Luminaire
109.190 m	114.371 m	6.000 m	27
112.155 m	144.224 m	6.000 m	28

3 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	123.055 m / 83.509 m / 6.000 m
X-direction	3 pcs., Centre - centre, 30.000 m
Arrangement	A7

X	Y	Mounting height	Luminaire
123.055 m	83.509 m	6.000 m	31
126.063 m	113.358 m	6.000 m	32
129.071 m	143.206 m	6.000 m	33

3 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	132.644 m / 171.263 m / 6.000 m
X-direction	3 pcs., Centre - centre, 30.000 m
Arrangement	A8

X	Y	Mounting height	Luminaire
132.644 m	171.263 m	6.000 m	11
135.391 m	201.137 m	6.000 m	12
138.137 m	231.011 m	6.000 m	13

1 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Virtus - Greenfingers

Luminaire layout plan

Type	Line arrangement
1st luminaire (X/Y/Z)	128.647 m / 252.901 m / 6.000 m
X-direction	1 pcs., Centre - centre, 33.894 m
Arrangement	A9

X	Y	Mounting height	Luminaire
128.647 m	252.901 m	6.000 m	1

4 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	384.424 m / 233.301 m / 6.000 m
X-direction	4 pcs., Centre - centre, 35.000 m
Arrangement	A10

X	Y	Mounting height	Luminaire
384.424 m	233.301 m	6.000 m	21
384.424 m	198.301 m	6.000 m	22
384.424 m	163.301 m	6.000 m	23
384.424 m	128.301 m	6.000 m	24

1 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	112.900 m / 187.022 m / 6.000 m
X-direction	1 pcs., Centre - centre, 38.055 m
Arrangement	A11

X	Y	Mounting height	Luminaire
112.900 m	187.022 m	6.000 m	20

1 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	92.019 m / 207.432 m / 6.000 m
X-direction	1 pcs., Centre - centre, 32.000 m

X	Y	Mounting height	Luminaire
92.019 m	207.432 m	6.000 m	10

Virtus - Greenfingers

Luminaire layout plan

Arrangement	A12

1 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	117.090 m / 223.082 m / 6.000 m
X-direction	1 pcs., Centre - centre, 34.774 m
Arrangement	A13

X	Y	Mounting height	Luminaire
117.090 m	223.082 m	6.000 m	9

3 x Signify BPP532 LED120-4S/730 PSD-SR II DW50 FG A

Type	Line arrangement
1st luminaire (X/Y/Z)	357.529 m / 100.078 m / 6.000 m
X-direction	3 pcs., Centre - centre, 35.000 m
Arrangement	A14

X	Y	Mounting height	Luminaire
357.529 m	100.078 m	6.000 m	41
322.529 m	100.078 m	6.000 m	42
287.529 m	100.078 m	6.000 m	43

Individual luminaires

X	Y	Mounting height	Luminaire
106.400 m	64.644 m	6.000 m	56
120.193 m	49.526 m	6.000 m	59

Virtus - Greenfingers

Luminaire list

Φ_{total}	P_{total}	Luminous efficacy
328546 lm	3675.2 W	89.4 lm/W

pcs.	Manufacturer	Article No.	Article name	P	Φ	Luminous efficacy
12	AEC ILLUMINAZIONE	25-062-27_03	ECO RAYS TP 5P5 STU-M 7027.050-1M	10.2 W	1280 lm	125.5 lm/W
2	Not yet a DIALux member	60W VASTA 1 Floodlight Â·2700KÂ·700mAÂ·AL50 flood optic	VAS1-AL50-727-30D	60.0 W	10301 lm	171.7 lm/W
6	Not yet a DIALux member	6w LED 4000k Semita Urban bulkhead with cycle optic + Comfort Glass	LED Semita Urban	6.0 W	738 lm	123.0 lm/W
44	Signify	BPP530I-4cf99276-708f-4dd4-9bff-84da4b4e6542	BPP532 LED120-4S/730 PSD-SR II DW50 FG A	77.2 W	6549 lm	84.8 lm/W

Virtus - Greenfingers

Maintenance factors

Maintenance factor method	Inspection interval
CIE 97:2005	1.0 Years

Pollution category
Light traffic, dust exposure under 150 microgram/cubic metre

pcs.	12
Manufacturer	AEC ILLUMINAZIONE
Article No.	25-062-27_03
Article name	ECO RAYS TP 5P5 STU-M 7027.050-1M
Fitting	1x L-ECRTP-5P5-2700-050-1M-70-25 10.2 W

Cleaning interval	2.0 Years
Flux distribution	Direct
Luminaire type	Closed IP2X
Lamp type	LED
Annual operating hours	8760 h
Replacement interval of the lamps	1.0 Years
Immediately replace defective lamps	No
RMF	1.00
LMF	0.79
LLMF	1.00
LSF	1.00
MF = RMF x LMF x LLMF x LSF	0.79

Virtus - Greenfingers

Maintenance factors



pcs.	6
Manufacturer	Not yet a DIALux member
Article No.	6w LED 4000k Semita Urban bulkhead with cycle optic + Comfort Glass
Article name	LED Semita Urban
Fitting	1x 6w LED 6.0 W

Cleaning interval	2.0 Years
Flux distribution	Direct
Luminaire type	IP6X, Protected against powerful water jets
Lamp type	Sodium vapour low-pressure lamp
Annual operating hours	8760 h
Replacement interval of the lamps	1.0 Years
Immediately replace defective lamps	No
RMF	1.00
LMF	0.91
LLMF	0.92
LSF	0.78
MF = RMF x LMF x LLMF x LSF	0.65

Virtus - Greenfingers

Maintenance factors



pcs.	44
Manufacturer	Signify
Article No.	BPP530I-4cf99276-708f-4dd4-9bff-84da4b4e6542
Article name	BPP532 LED120-4S/730 PSD-SR II DW50 FG A
Fitting	1x LED120-4S/730 77.2 W

Cleaning interval	2.0 Years
Flux distribution	Direct
Luminaire type	IP6X, Protected against powerful water jets
Lamp type	LED
Annual operating hours	8760 h
Replacement interval of the lamps	1.0 Years
Immediately replace defective lamps	No
RMF	1.00
LMF	0.91
LLMF	1.00
LSF	1.00
MF = RMF x LMF x LLMF x LSF	0.91

Virtus - Greenfingers

Maintenance factors

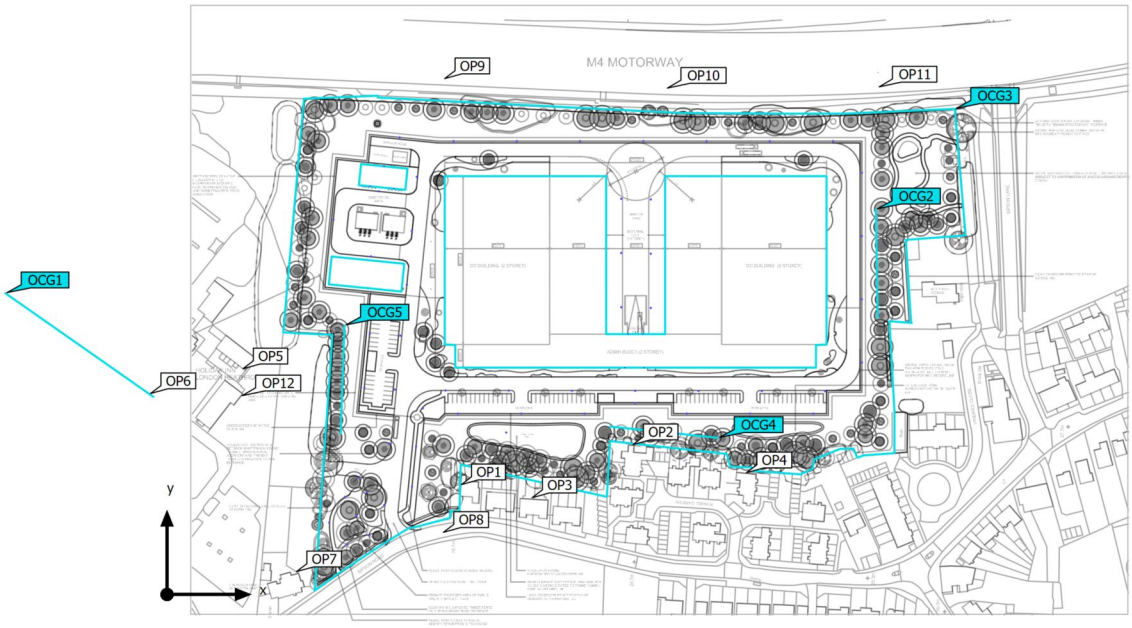


pcs.	2
Manufacturer	Not yet a DIALux member
Article No.	60W VASTA 1 FloodlightÂ·2700KÂ·700mAÂ·AL50 flood optic
Article name	VAS1-AL50-727-30D
Fitting	1x Lumiled 5050 Â· 2700K Â· CRI>70 Â· >100,000hrs Â· L90-B10 (TM65 = --kg COÂ²e, TM66 = --) 60.0 W

Cleaning interval	2.0 Years
Flux distribution	Direct
Luminaire type	IP6X, Protected against powerful water jets
Lamp type	Sodium vapour low-pressure lamp
Annual operating hours	8760 h
Replacement interval of the lamps	1.0 Years
Immediately replace defective lamps	No
RMF	1.00
LMF	0.91
LLMF	0.92
LSF	0.78
MF = RMF x LMF x LLMF x LSF	0.65

Virtus - Greenfingers (Obtrusive light scene)

Calculation objects



Virtus - Greenfingers (Obtrusive light scene)

Calculation objects

Surface result objects

Properties	Ø	min	max	U_o (g_1)	g_2	Index
Surface result object 1 Perpendicular illuminance (adaptive) Height: 0.000 m	2.08 lx	0.000 lx	273 lx	0.00	0.00	RS1
Surface result object 1 Luminance Height: 0.000 m	0.13 cd/m²	0.00 cd/m²	17.4 cd/m²	0.00	0.00	RS1

Calculation surfaces

Properties	Ē	E_{min}	E_{max} (Target)	U_o (g_1)	g_2	Index
Obtrusive light calculation surface - Hotel Vertical illuminance Rotation: 0.0°, Height: 0.000 m	0.005 lx	0.00 lx	0.14 lx (≤ 2.00 lx) ✓	-	0.00	OCG1
Obtrusive light calculation surface - North Vertical illuminance Rotation: 358.7°, Height: 0.000 m	0.16 lx	0.00 lx	0.51 lx (≤ 2.00 lx) ✓	0.00	0.00	OCG5
Obtrusive light calculation surface - South Vertical illuminance Rotation: 182.5°, Height: 0.000 m	0.31 lx	0.00 lx	0.95 lx (≤ 2.00 lx) ✓	0.00	0.00	OCG2
Obtrusive light calculation surface - West Vertical illuminance Rotation: 83.7°, Height: 0.000 m	0.21 lx	0.00 lx	3.02 lx (≤ 2.00 lx) ✗	0.00	0.00	OCG4

Calculation points

Properties	Calculated (Target)	Index
Obtrusive light calculation point R1 Luminous intensity Height: 0.000 m	0.80 cd (≤ 48.7 cd) ✓	OP6
Obtrusive light calculation point R1 Vertical illuminance Rotation: 0.0°, Height: 0.000 m	0.007 lx (≤ 2.00 lx) ✓	OP6

Virtus - Greenfingers (Obtrusive light scene)

Calculation objects

Properties	Calculated (Target)	Index
Obtrusive light calculation point R10 Luminous intensity Height: 1.200 m	17.0 cd (≤ 41.6 cd) ✓	OP10
Obtrusive light calculation point R11 Luminous intensity Height: 1.200 m	29.7 cd (≤ 35.5 cd) ✓	OP9
Obtrusive light calculation point R12 Luminous intensity Height: 1.200 m	50.7 cd (≤ 46.7 cd) ✗	OP8
Obtrusive light calculation point R2 Luminous intensity Height: 0.000 m	1.13 cd (≤ 35.9 cd) ✓	OP5
Obtrusive light calculation point R2 Vertical illuminance Rotation: 0.0°, Height: 0.000 m	0.017 lx (≤ 2.00 lx) ✓	OP5
Obtrusive light calculation point R3 Luminous intensity Height: 0.000 m	16.9 cd (≤ 50.3 cd) ✓	OP12
Obtrusive light calculation point R3 Vertical illuminance Rotation: 0.0°, Height: 0.000 m	0.014 lx (≤ 2.00 lx) ✓	OP12
Obtrusive light calculation point R4 Luminous intensity Height: 0.000 m	24.3 cd (≤ 42.4 cd) ✓	OP7
Obtrusive light calculation point R4 Vertical illuminance Rotation: 0.0°, Height: 0.000 m	0.041 lx (≤ 2.00 lx) ✓	OP7
Obtrusive light calculation point R5 Luminous intensity Height: 1.500 m	24.2 cd (≤ 35.4 cd) ✓	OP1
Obtrusive light calculation point R5 Vertical illuminance Rotation: 0.0°, Height: 1.500 m	0.028 lx (≤ 2.00 lx) ✓	OP1
Obtrusive light calculation point R6 Luminous intensity Height: 1.500 m	0.50 cd (≤ 24.5 cd) ✓	OP3

Virtus - Greenfingers (Obtrusive light scene)

Calculation objects

Properties	Calculated (Target)	Index
Obtrusive light calculation point R6 Vertical illuminance Rotation: 0.0°, Height: 1.500 m	0.021 lx (≤ 2.00 lx) ✓	OP3
Obtrusive light calculation point R7 Luminous intensity Height: 1.500 m	0.89 cd (≤ 12.5 cd) ✓	OP2
Obtrusive light calculation point R7 Vertical illuminance Rotation: 0.0°, Height: 1.500 m	0.064 lx (≤ 2.00 lx) ✓	OP2
Obtrusive light calculation point R8 Luminous intensity Height: 1.500 m	0.87 cd (≤ 23.5 cd) ✓	OP4
Obtrusive light calculation point R8 Vertical illuminance Rotation: 0.0°, Height: 1.500 m	0.016 lx (≤ 2.00 lx) ✓	OP4
Obtrusive light calculation point R9 Luminous intensity Height: 1.200 m	7.64 cd (≤ 42.1 cd) ✓	OP11

Utilisation profile: DIALux presetting (5.1.4 Standard (outdoor transportation area))

Notes on planning:
All values take the initial flux (MF = 1) into account. The k_S value was calculated by limiting the spatial angle to 10e-6.

Glossary

A

A	Formula symbol for a surface in the geometry

B

Background area	The background area borders the direct ambient area according to DIN EN 12464-1 and reaches up to the borders of the room. In larger rooms, the background area is at least 3 m wide. It is located horizontally at floor level.

C

CCT	(Engl. correlated color temperature) Body temperature of a thermal radiator which serves to describe its light color. Unit: Kelvin [K]. The lesser the numerical value the redder; the greater the numerical value the bluer the light color. The color temperature of gas-discharge lamps and semi-conductors are termed "correlated color temperature" in contrast to the color temperature of thermal radiators. Allocation of the light colors to the color temperature ranges acc. to EN 12464-1: Light color - color temperature [K] warm white (ww) < 3,300 K neutral white (nw) ≥ 3,300 – 5,300 K daylight white (dw) > 5,300 K
Clearance height	The designation for the distance between upper edge of the floor and bottom edge of the ceiling (in the completely furnished status of room).
Control group	A group of luminaires that are dimmed and controlled together. For each lighting scene, a control group provides its own dimming value. All luminaires within a control group share this dimming value. The control groups with their luminaires are automatically determined by DIALux on the basis of the created light scenes and their luminaire groups.
CRI	(Engl. color rendering index) Designation for the color rendering index of a luminaire or a lamp acc. to DIN 6169: 1976 or CIE 13.3: 1995. The general color rendering index Ra (or CRI) is a dimensionless figure that describes the quality of a white light source in regards to its similarity with the remission spectra of defined 8 test colors (see DIN 6169 or CIE 1974) to a reference light source.

Glossary

D

Daylight autonomy	Describes what percentage of the daily working time the required illuminance is met by daylight. The nominal illuminance is used from the room profile, unlike described in EN 17037. The calculation is not done in the centre of the room but at the placed sensor measuring point. A room is considered sufficiently supplied with daylight if it achieves at least 50% daylight autonomy.
Daylight factor	Ratio of the illuminance achieved solely by daylight incidence at a point in the inside to the horizontal illuminance in the outer area under an unobstructed sky. Formula symbol: D (Engl. daylight factor) Unit: %
Daylight quotient effective area	A calculation surface within which the daylight quotient is calculated.

E

Energy evaluation	Based on an hourly calculation procedure for daylight in indoor spaces, considering the project geometry and any existing daylight control systems. Orientation and location of the project are also considered. The calculation uses the specified system power of the luminaires to determine the energy demand. A linear relationship between power and luminous flux in the dimmed state is assumed for daylight-controlled luminaires. Times of use and nominal illuminance are determined from the usage profiles of the spaces. Switched-on luminaires that are explicitly excluded from control also consider the specified times-of-use. The daylight control systems use a simplified control logic that closes them at an outdoor horizontal illuminance of 27,500lx. The calendar year 2022 is used as a reference only. It is not a simulation of this year. The reference year is only used to assign the days of the week to the calculated results. The changeover to summer time is not considered. The reference sky type used is the average sky described in CIE 110 without direct sunlight. The method was developed together with the Fraunhofer Institute for Building Physics and is available for review by the Joint Working Group 1 ISO TC 274 as an extension of the previous annual regression-based method.
Environmental zones	The assessment of intrusive light and light immission depends on the environment of the lighting installation. Depending on the standard, 4-6 different zones are defined, ranging from highly protected areas in natural settings to urban areas, commercial zones, and industrial zones.
Eta (η)	(light output ratio) The light output ratio describes what percentage of the luminous flux of a free radiating lamp (or LED module) is emitted by the luminaire when installed. Unit: %

Glossary

G

g_1	Often also U_o (Engl. overall uniformity) Designates the overall uniformity of the illuminance on a surface. It is the quotient from E_{min} to $\bar{E}$ and is required, for instance, in standards for illumination of workstations.
g_2	Actually it designates the "non-uniformity" of the illuminance on a surface. It is the quotient of E_{min} to E_{max} and is generally only relevant for certifying the emergency lighting acc. to EN 1838.

I

Illuminance	Describes the ratio of the luminous flux that strikes a certain surface to the size of this surface (lm/m^2 = lx). The illuminance is not tied to an object surface. It can be determined anywhere in space (inside or outside). The illuminance is not a product feature because it is a recipient value. Luxometers are used for measuring. Unit: Lux Abbreviation: lx Formula symbol: E
Illuminance, adaptive	For the determining of the middle adaptive illuminance on a surface, this is rastered "adaptively". In the area of large illuminance differences within the surface, the raster is subdivided finer; within lesser differences, a rougher classification is made.
Illuminance, horizontal	Illuminance that is calculated or measured on a horizontal (level) surface (this can be for example a table top or the floor). The horizontal illuminance is usually identified by the formula letter E_h.
Illuminance, perpendicular	Illuminance that is calculated or measured plumb-vertical to a surface. This needs to be taken into account for tilted surfaces. If the surface is horizontal or vertical, then there is no difference between the perpendicular and the horizontal or vertical illuminance.
Illuminance, vertical	Illuminance that is calculated or measured on a vertical surface (this can be for example the front of some shelves). The vertical illuminance is usually identified by the formula letter E_v.

K

k_S	The glare effect of a light source can be described by the glare metric k_S. It relates the solid angle of the glaring light source as seen from the point of immission, the ambient luminance, and the maximum allowable luminance.

Glossary

L

LENI	(Engl. lighting energy numeric indicator) Lighting energy numeric indicator acc. to EN 15193 Unit: kWh/(m^2 * a)
LLMF	(Engl. lamp lumen maintenance factor)/acc. to CIE 97: 2005 Lamp flux maintenance factor that takes the luminous flux reduction into account of a luminaire or an LED module in the course of the operating time. The lamp flux maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no luminous flux reduction existing).
LMF	(Engl. luminaire maintenance factor)/acc. to CIE 97: 2005 Luminaire maintenance factor that takes the soiling into account of the luminaire in the course of the operating time. The luminaire maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
LSF	(Engl. lamp survival factor)/acc. to CIE 97: 2005 Lamp survival factor that takes the total failure into account of a luminaire in the course of the operating time. The lamp survival factor is specified as a decimal digit and can have a maximum value of 1 (no failures existing within the time concerned or prompt replacement after the failure).
Luminance	Dimension for the "brightness impression" that the human eye has of a surface. The surface itself can emit light thereby or light striking it can be reflected (emitter value). It is the only photometric value that the human eye can perceive. Unit: Candela per square metre Abbreviation: cd/m^2 Formula symbol: L
Luminous efficacy	Ratio of the emitted luminous flux Φ [lm] to the absorbed electrical power P [W] Unit: lm/W. This ratio can be formed for the lamp or LED module (lamp or module light output), the lamp or module with control gear (system light output) and the complete luminaire (luminaire light output).
Luminous flux	Dimension for the total light output that is emitted from one light source in all directions. It is thus an "emitter value" that specifies the entire emitting output. The luminous flux of a light source can only be determined in a laboratory. A difference is made between the lamp or LED module luminous flux and the luminaire luminous flux. Unit: Lumen Abbreviation: lm Formula symbol: Φ

Glossary

Luminous intensity	Describes the intensity of the light in a certain direction (emitter value). The luminous intensity is a matter of the luminous flux Φ that is emitted in a certain spherical angle Ω. The radiation characteristics of a light source are presented graphically in a light distribution curve (LDC). The luminous intensity is an SI base unit. Unit: Candela Abbreviation: cd Formula symbol: I

M

Maintenance factor	See MF
MF	(Engl. maintenance factor)/acc. to CIE 97: 2005 Maintenance factor as decimal number between 0 and 1 that describes the ratio of the new value of a photometric planning parameter (e.g. of the illuminance) to a maintenance value after a certain time. The maintenance factor takes into account the soiling of luminaires and rooms as well as the luminous flux reduction and the failure of light sources. The maintenance factor is taken into account either overall or determined in detail acc. to CIE 97: 2005 by the formula RMF x LMF x LLMF x LSF.

O

Obtrusive light/Light immission	To protect the nocturnal environment and minimize problems for humans, flora, and fauna, it is necessary to limit obtrusive light (also known as light pollution), which can cause serious physiological and ecological issues for individuals and the environment. Light immission refers to the disturbing influence of emitted light from artificial light sources.
Operating times	The assessment of obtrusive light and light immission depends on the operating times of the lighting installation. Depending on the standard, 1-3 different operating times are specified. In the absence of specific details, an operating time between 06:00 and 22:00 can be assumed.

P

P	(Engl. power) Electric power consumption Unit: watt Abbreviation: W

Glossary

R

$R_{(UG)}$ max	Measure of the psychological glare in indoor spaces. In addition to the luminance of luminaires, the level of the $R_{(UG)}$ value also depends on the observer position, the viewing direction and the ambient luminance. The calculation is made according to the table method, see CIE 117. Among other things, EN 12464-1:2021 specifies maximum permissible $R_{(UG)}$- values $R_{(UGL)}$ for various indoor workplaces.
R_{DLO}	The ratio of the luminous flux emitted below the horizontal plane to the total lamp luminous flux of a luminaire or lighting installation in its operational position.
R_G	The glare directly caused by luminaires of an outdoor lighting installation is determined using the CIE Glare Rating (RG) method. To calculate this, the equivalent veiling luminance of the surroundings is needed. There are four options for determining this: • An exact calculation according to CIE 112, based on the scene area. • A simplified method according to EN 12464-2, based on the scene area. • Using a custom calculation area to determine the equivalent veiling luminance. • Specifying a fixed value for easy comparability.
R_{UF}	upward flux ratio The ratio of the luminous flux emitted directly or reflected above the horizontal plane to the luminous flux that cannot be avoided under ideal conditions to achieve the illuminance level on a deliberately illuminated area.
R_{UL}	upward light ratio The ratio of the luminous flux emitted above the horizontal plane to the luminous flux of a luminaire or lighting installation in its operational position. The luminaire efficiency is considered in this calculation.
R_{ULO}	upward light output ratio The ratio of the luminous flux emitted above the horizontal plane to the total lamp luminous flux of a luminaire or lighting installation in its operational position.
Reflection factor	The reflection factor of a surface describes how much of the striking light is reflected back. The reflection factor is defined by the color of the surface.
RMF	(Engl. room maintenance factor)/acc. to CIE 97: 2005 Room maintenance factor that takes the soiling into account of the space encompassing surfaces in the course of the operating time. The room maintenance factor is specified as a decimal digit and can have a maximum value of 1 (no soiling existing).
RUG (max)	(unified glare rating) Measure for the psychological glare effect in interiors. In addition to luminaire luminance, the RUG value also depends on the position of the observer, the viewing direction and the ambient luminance. Among other things, EN 12464-1 specifies maximum permissible RUG values for various indoor workplaces.

Glossary

RUG observer	Calculation point in the room, for the DIALux the RUG value is determined. The location and height of the calculation point should correspond to the typical observer position (position and eye level of the user).

S

Surrounding area	The ambient area directly borders the area of the visual task and should be planned with a width of at least 0.5 m according to DIN EN 12464-1. It is at the same height as the area of the visual task.

V

Visual task area	The area that is needed for carrying out the visual task in accordance with DIN EN 12464-1. The height corresponds with the height at which the visual task is executed.

W

Wall zone	Circumferential area between working plane and walls which is not taken into account for the calculation.
Working plane	Virtual measuring or calculation surface at the height of the visual task that generally follows the room geometry. The working plane may also feature a wall zone.