

CHRISTIES TCP

Installation : LIGHTING CALCULATIONS

Project number : TCP-HES-XX-XX-CA-E-630001

Customer : HE SIMMS

Processed by : RB

Date : 21.06.2021

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The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

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1 Luminaire data

1.1 not a Relux Member, Product (*A0718*)

1.1.1 Data sheet

Manufacturer: not a Relux Member

***A0718* Product**
not licensed

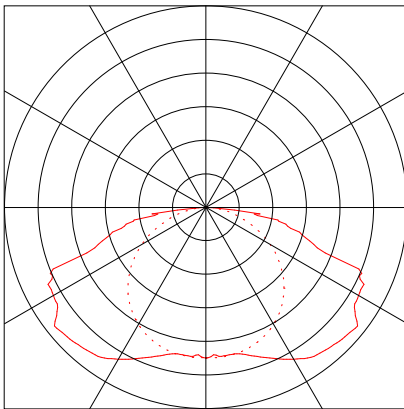
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 128.57 lm/W
Classification : A30 ↓99.7% ↑0.3%
CIE Flux Codes : 36 70 94 100 100
UGR 4H 8H : 28.5 / 23.5
Power : 7 W
Luminous flux : 900 lm

Equipped with

Quantity : 1
Designation : 19434e3h_RA06f
LED
Colour : 5000
Luminous flux : 900 lm
Colour reproduction : 80

Dimensions : 150 mm x 375 mm x 65 mm



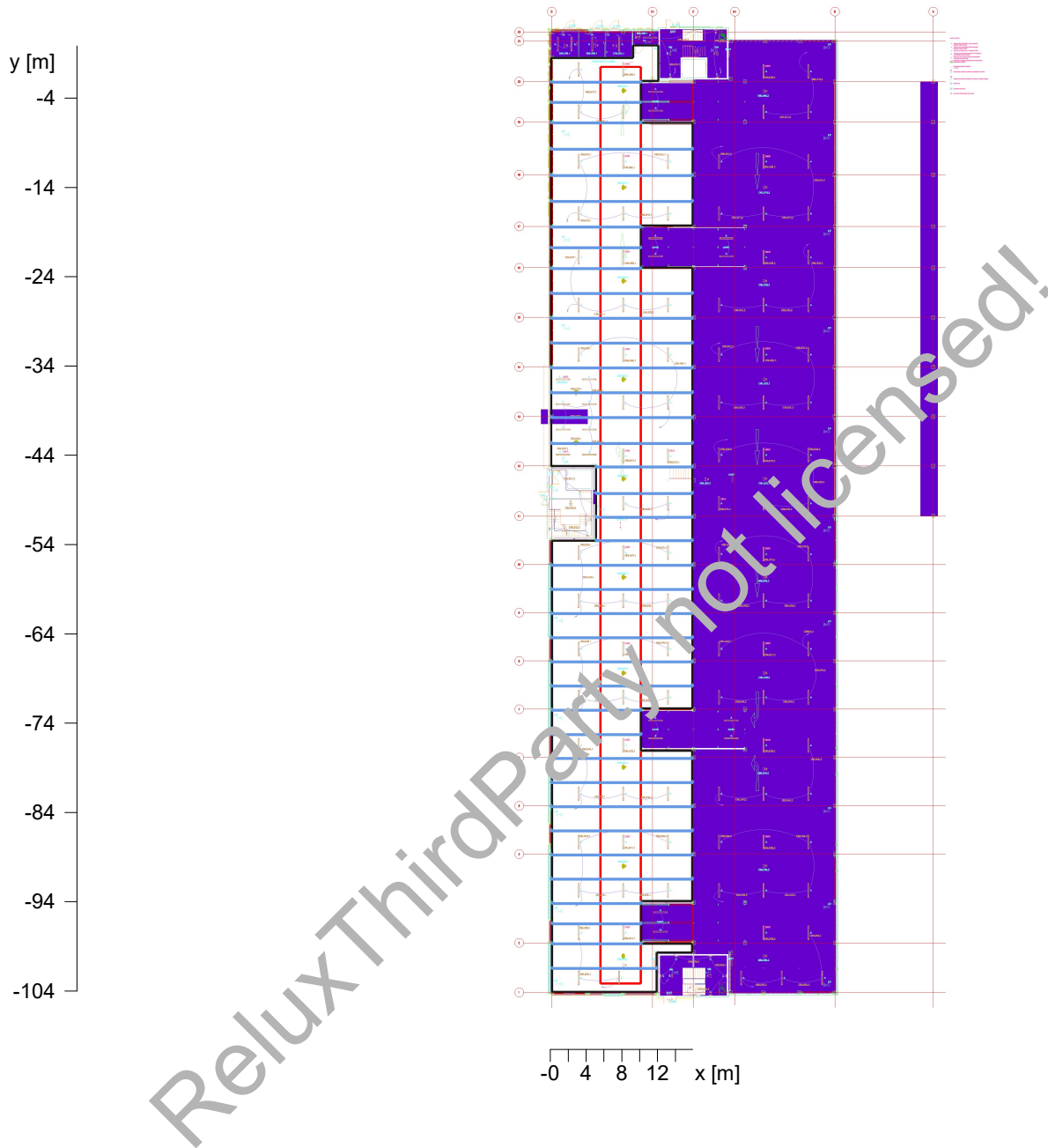
Emergency Lighting

Light source from normal operation with reduced flux
Luminous flux : 900 lm

2 Car Park

2.1 Description, Car Park

2.1.1 Floor plan



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2 Car Park

2.1 Description, Car Park

2.1.1 Floor plan

Wall	x	y	Length	Reflectance
1	4.08 m	60.58 m	45.64 m	50.0 %
2	9.10 m	60.58 m	5.01 m	50.0 %
3	9.10 m	52.23 m	8.35 m	50.0 %
4	4.18 m	52.23 m	4.92 m	50.0 %
5	4.18 m	1.78 m	50.45 m	50.0 %
6	15.88 m	1.78 m	11.70 m	50.0 %
7	15.88 m	6.18 m	4.40 m	50.0 %
8	19.85 m	6.18 m	3.97 m	50.0 %
9	19.85 m	7.16 m	0.98 m	50.0 %
10	14.16 m	7.16 m	5.69 m	50.0 %
11	14.16 m	11.93 m	4.78 m	50.0 %
12	19.86 m	11.93 m	5.71 m	50.0 %
13	19.86 m	28.74 m	16.81 m	50.0 %
14	14.14 m	28.74 m	5.73 m	50.0 %
15	14.14 m	33.48 m	4.74 m	50.0 %
16	19.88 m	33.48 m	5.74 m	50.0 %
17	19.88 m	82.78 m	49.29 m	50.0 %
18	14.13 m	82.78 m	5.75 m	50.0 %
19	14.13 m	87.48 m	4.71 m	50.0 %
20	19.90 m	87.48 m	5.78 m	50.0 %
21	19.90 m	98.97 m	11.48 m	50.0 %
22	14.14 m	98.97 m	5.77 m	50.0 %
23	14.14 m	103.65 m	4.69 m	50.0 %
24	16.07 m	103.65 m	1.94 m	50.0 %
25	16.07 m	107.62 m	3.97 m	50.0 %
26	13.25 m	107.62 m	2.82 m	50.0 %
27	13.25 m	106.22 m	1.40 m	50.0 %
28	4.08 m	106.22 m	9.17 m	50.0 %
Floor				20.0 %
Ceiling				70.0 %
Room height		2.70 m		
Height of ref. plane		----		

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2 Car Park

2.2 Summary, Car Park

2.2.1 Result overview (emergency lighting)

Type No.\Make

1 13 **not a Relux Member**
 Order No. : *A0718* -- Emergency Lighting --
 Luminaire name : Product
 Equipment : 1 x 19434e3h_RA06f LED 7 W / 900 lm

Result evaluation area

Calculation algorithm used: Direct component
 Maintenance factor: 0.8

Escape routes:

No.	Default[lx]	Emin[lx]	Central axis Emax[lx]	Diversity	Emin[lx]	Surface Emax[lx]	Diversity	Height
Escape route 1								
1	1.0	2.1	44.3	1: 20.76	1.4	44.6	1: 31.50	0.00

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MERCURY
CONSULTING ENGINEERS

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3 Staircase

3.2 Summary, Staircase

3.2.1 Result overview (emergency lighting)

Type No. Make

not a Relux Member
 1 3 Order No. : *A0718* -- Emergency Lighting --
 Luminaire name : Product
 Equipment : 1 x 19434e3h_RA06f LED 7 W / 900 lm

Result evaluation area

Calculation algorithm used: Direct component
 Maintenance factor: 0.8

Escape routes:

No.	Default[lx]	Emin[lx]	Central axis Emax[lx]	Diversity	Emin[lx]	Surface Emax[lx]	Diversity	Height
Escape route 1								
1	1.0	11.1	20.7	1: 1.87	9.7	22.6	1: 2.32	0.00
Escape route 2								
2	1.0	4.4	12.1	1: 2.74	4.2	13.4	1: 3.16	2.95
Escape route 4								
4	1.0	1.3	2.3	1: 1.69	1.1	5.2	1: 2.59	1.95
Escape route 5								
5	1.0	3.8	7.1	1: 1.85	3.1	7.0	1: 2.46	0.75
Escape route 6								
6	1.0	10.0	15.0	1: 1.50	9.2	16.3	1: 1.77	0.75
Escape route 7								
7	1.0	4.5	8.4	1: 1.86	3.7	8.8	1: 2.36	0.00

540853 - The Christie - Multi Story Car Park

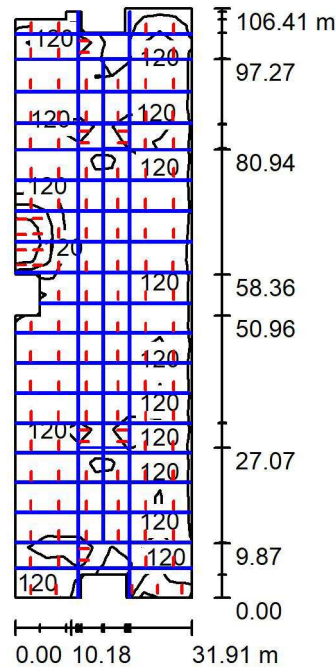
Partner for Contact:
Order No.:
Company:
Customer No.:

Date: 29.07.2021
Operator: Mike Jakeman

F.W. Thorpe
Thorlux Lighting
Merse Road, North Moons Moat
Redditch, B98 9HH

Operator Mike Jakeman
Telephone 01527 583200
Fax
e-Mail michael.jakeman@thorlux.co.uk

00-B1 / Summary



Height of Room: 2.400 m, Light loss factor: 0.80

Values in Lux, Scale 1:1367

Surface	ρ [%]	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0
Workplane	/	106	13	304	0.125
Floor	20	100	11	335	0.110
Ceiling	50	17	4.39	131	0.254
Walls (18)	30	43	5.60	321	/

Workplane:

Height: 0.000 m
Grid: 35 x 11 Points
Boundary Zone: 0.000 m

Illuminance Quotient (according to LG7): Walls / Working Plane: 0.410, Ceiling / Working Plane: 0.174.

Luminaire Parts List

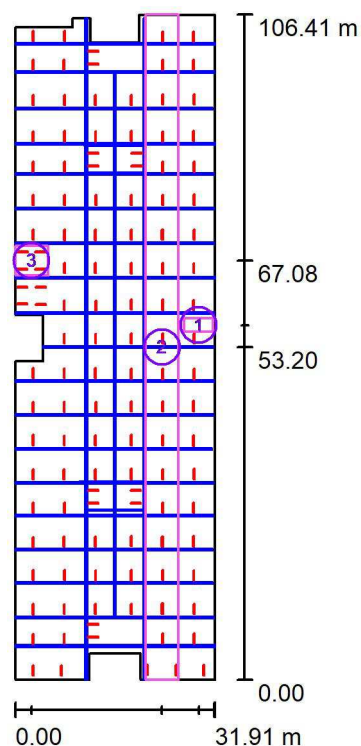
No.	Pieces	Designation (Correction Factor)	Φ (Luminaire) [lm]	Φ (Lamps) [lm]	P [W]
1	126	THORLUX TP19775 Thoroproof LED - 23W (1.000)	3700	3700	31.0
Total:			466200	466200	3906.0

Specific connected load: $1.19 \text{ W/m}^2 = 1.12 \text{ W/m}^2/100 \text{ lx}$ (Ground area: 3273.14 m^2)

F.W. Thorpe
 Thorlux Lighting
 Merse Road, North Moons Moat
 Redditch, B98 9HH

Operator Mike Jakeman
 Telephone 01527 583200
 Fax
 e-Mail michael.jakeman@thorlux.co.uk

00-B1 / Calculation surfaces (results overview)



Scale 1 : 1212

Calculation Surface List

No.	Designation	Type	Grid	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	u_0	E_{min} / E_{max}
1	Parking Bay	perpendicular	13 x 7	72	36	123	0.505	0.295
2	Traffic Lane	perpendicular	3 x 21	106	62	152	0.582	0.405
3	Entrance/Exit	perpendicular	7 x 11	279	206	344	0.736	0.598

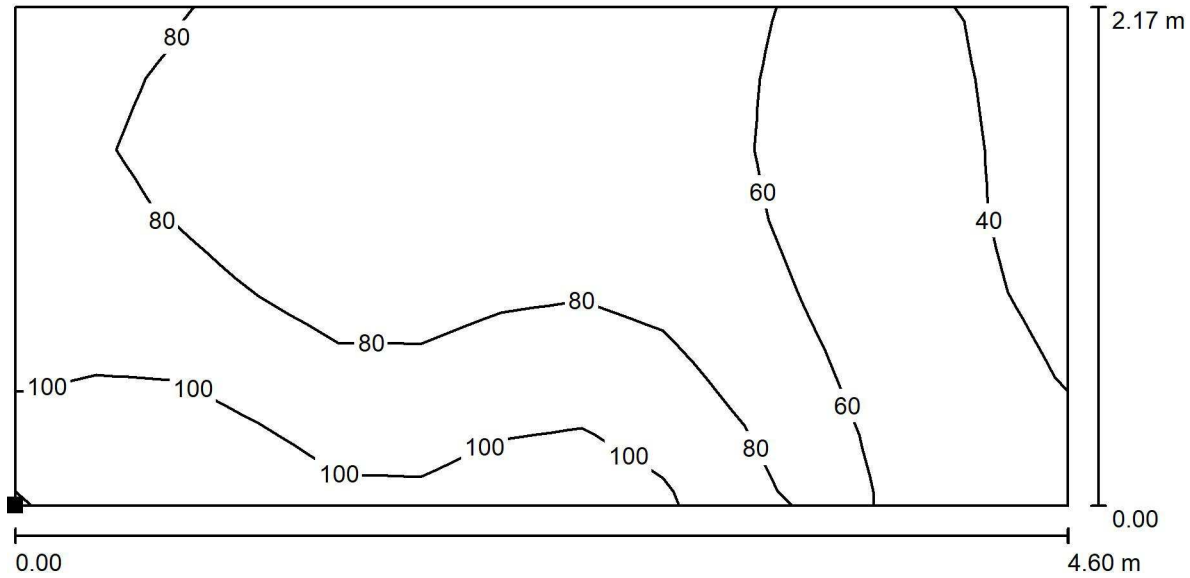
Summary of Results

Type	Quantity	Average [lx]	Min [lx]	Max [lx]	u_0	E_{min} / E_{max}
perpendicular	3	113	36	344	0.32	0.11

F.W. Thorpe
 Thorlux Lighting
 Merse Road, North Moons Moat
 Redditch, B98 9HH

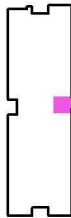
Operator Mike Jakeman
 Telephone 01527 583200
 Fax
 e-Mail michael.jakeman@thorlux.co.uk

00-B1 / Parking Bay / Isolines (E, Perpendicular)



Values in Lux, Scale 1 : 33

Position of surface in room:
 Marked point:
 (27.071 m, 55.649 m, 0.000 m)



Grid: 13 x 7 Points

E_{av} [lx]
 72

E_{min} [lx]
 36

E_{max} [lx]
 123

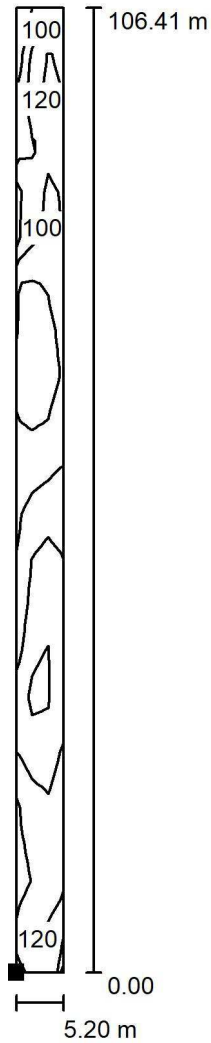
u_0
 0.505

E_{min} / E_{max}
 0.295

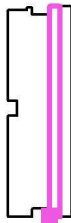
F.W. Thorpe
 Thorlux Lighting
 Merse Road, North Moons Moat
 Redditch, B98 9HH

Operator Mike Jakeman
 Telephone 01527 583200
 Fax
 e-Mail michael.jakeman@thorlux.co.uk

00-B1 / Traffic Lane / Isolines (E, Perpendicular)



Position of surface in room:
 Marked point:
 (20.873 m, 0.000 m, 0.000 m)



Values in Lux, Scale 1 : 834

Grid: 3 x 21 Points

E_{av} [lx]
 106

E_{min} [lx]
 62

E_{max} [lx]
 152

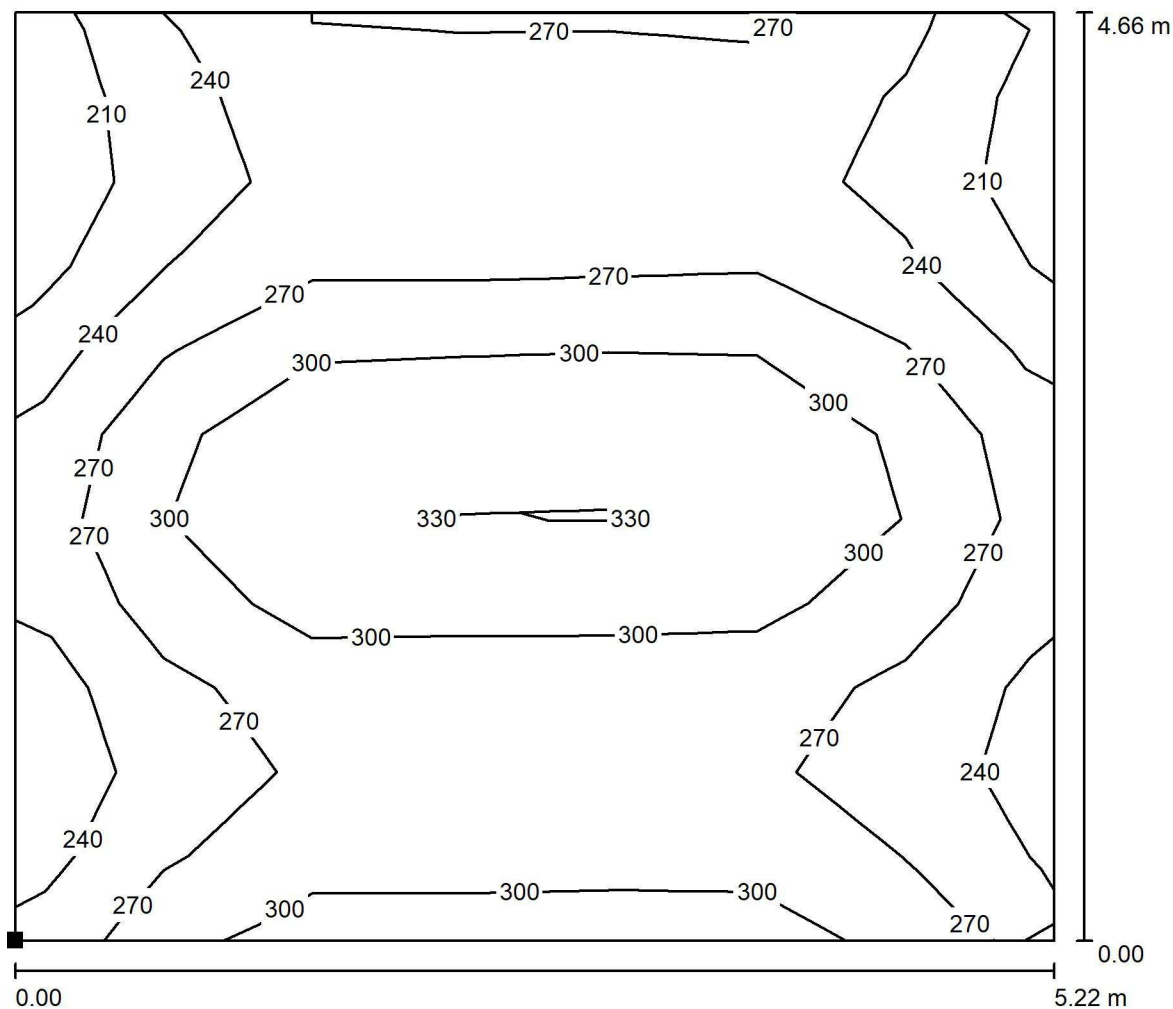
$u0$
 0.582

E_{min} / E_{max}
 0.405

F.W. Thorpe
 Thorlux Lighting
 Merse Road, North Moons Moat
 Redditch, B98 9HH

Operator Mike Jakeman
 Telephone 01527 583200
 Fax
 e-Mail michael.jakeman@thorlux.co.uk

00-B1 / Entrance/Exit / Isolines (E, Perpendicular)



Values in Lux, Scale 1 : 38

Position of surface in room:
 Marked point:
 (0.039 m, 64.751 m, 0.000 m)



Grid: 7 x 11 Points

E_{av} [lx]
 279

E_{min} [lx]
 206

E_{max} [lx]
 344

u_0
 0.736

E_{min} / E_{max}
 0.598

540853 - The Christie - Multi Story Car Park

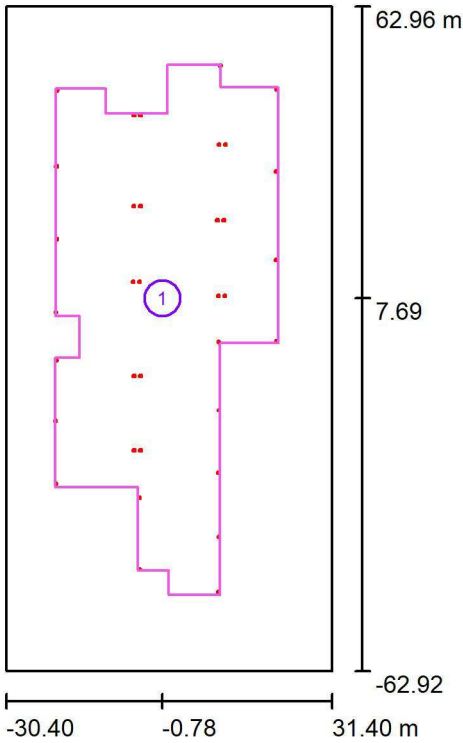
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Redditch, B98 9HH

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Fax
e-Mail michael.jakeman@thorlux.co.uk

05-06 Roof (external) / Calculation surfaces (results overview)



Scale 1 : 1433

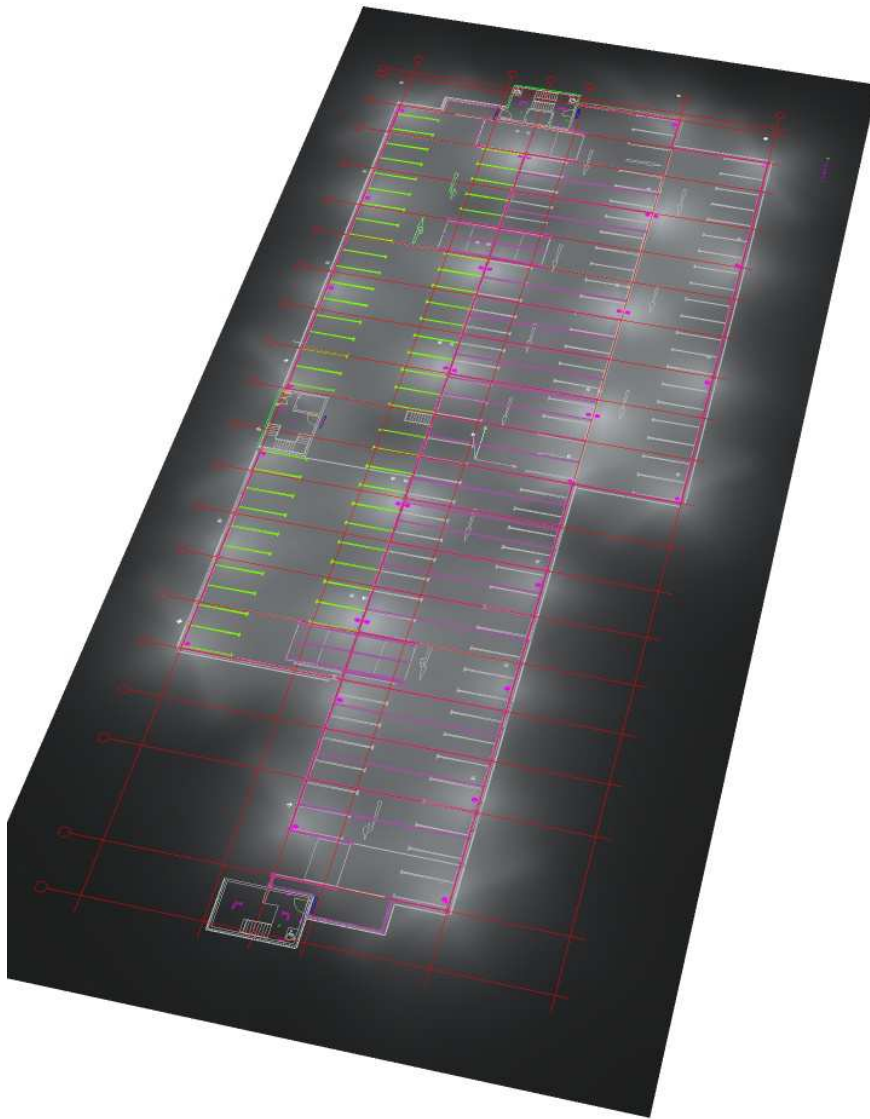
Calculation Surface List

No.	Designation	Type	Grid	E_{av} [lx]	E_{min} [lx]	E_{max} [lx]	$u0$	E_{min} / E_{max}
1	Calculation Surface 1	perpendicular	9 x 21	22	9.08	54	0.412	0.169

F.W. Thorpe
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Merse Road, North Moons Moat
Redditch, B98 9HH

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Fax
e-Mail michael.jakeman@thorlux.co.uk

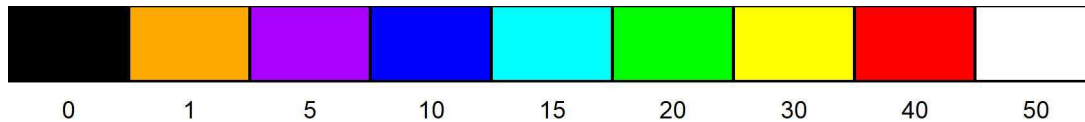
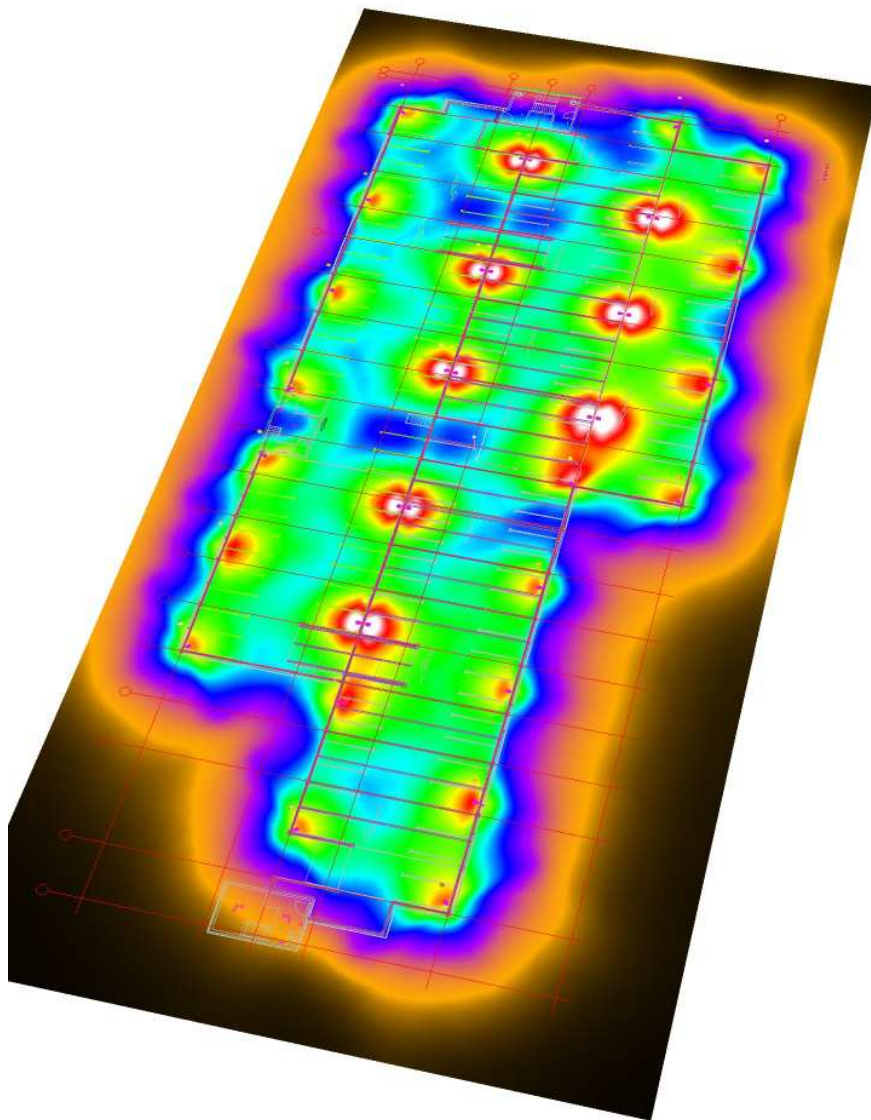
05-06 Roof (external) / 3D Rendering



F.W. Thorpe
Thorlux Lighting
Merse Road, North Moons Moat
Redditch, B98 9HH

Operator Mike Jakeman
Telephone 01527 583200
Fax
e-Mail michael.jakeman@thorlux.co.uk

05-06 Roof (external) / False Color Rendering

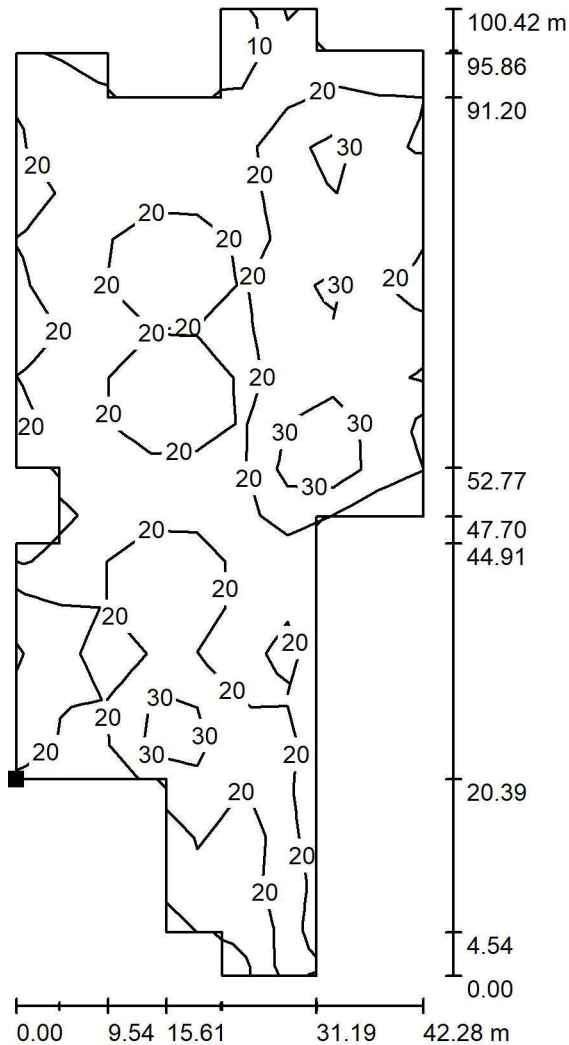


lx

F.W. Thorpe
 Thorlux Lighting
 Merse Road, North Moons Moat
 Redditch, B98 9HH

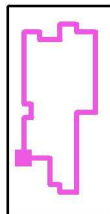
Operator Mike Jakeman
 Telephone 01527 583200
 Fax
 e-Mail michael.jakeman@thorlux.co.uk

05-06 Roof (external) / Calculation Surface 1 / Isolines (E, Perpendicular)



Values in Lux, Scale 1 : 786

Position of surface in external scene:
 Marked point:
 (-21.064 m, -28.074 m, 0.000 m)



Grid: 9 x 21 Points

E_{av} [lx]
 22

E_{min} [lx]
 9.08

E_{max} [lx]
 54

u_0
 0.412

E_{min} / E_{max}
 0.169