

Jubilee Park

Artificial Turf Pitch

Project code: CLS-LANO040
Date: 21-12-2023

Designer: ME

Description: Proposed Lighting

Match play:
Maintained average illuminance >200 lux
Uniformity Ratio (Ev.min/Ev.ave) >0.60

All luminaires have a zero upward light ratio without the use of additional accessories.

The nominal values shown in this report are the result of precision calculations, based upon precisely positioned luminaires in a fixed relationship to each other and to the area under examination. In practice the values may vary due to tolerances on luminaires, luminaire positioning, reflection properties and electrical supply.

Surfacing Standards LTD

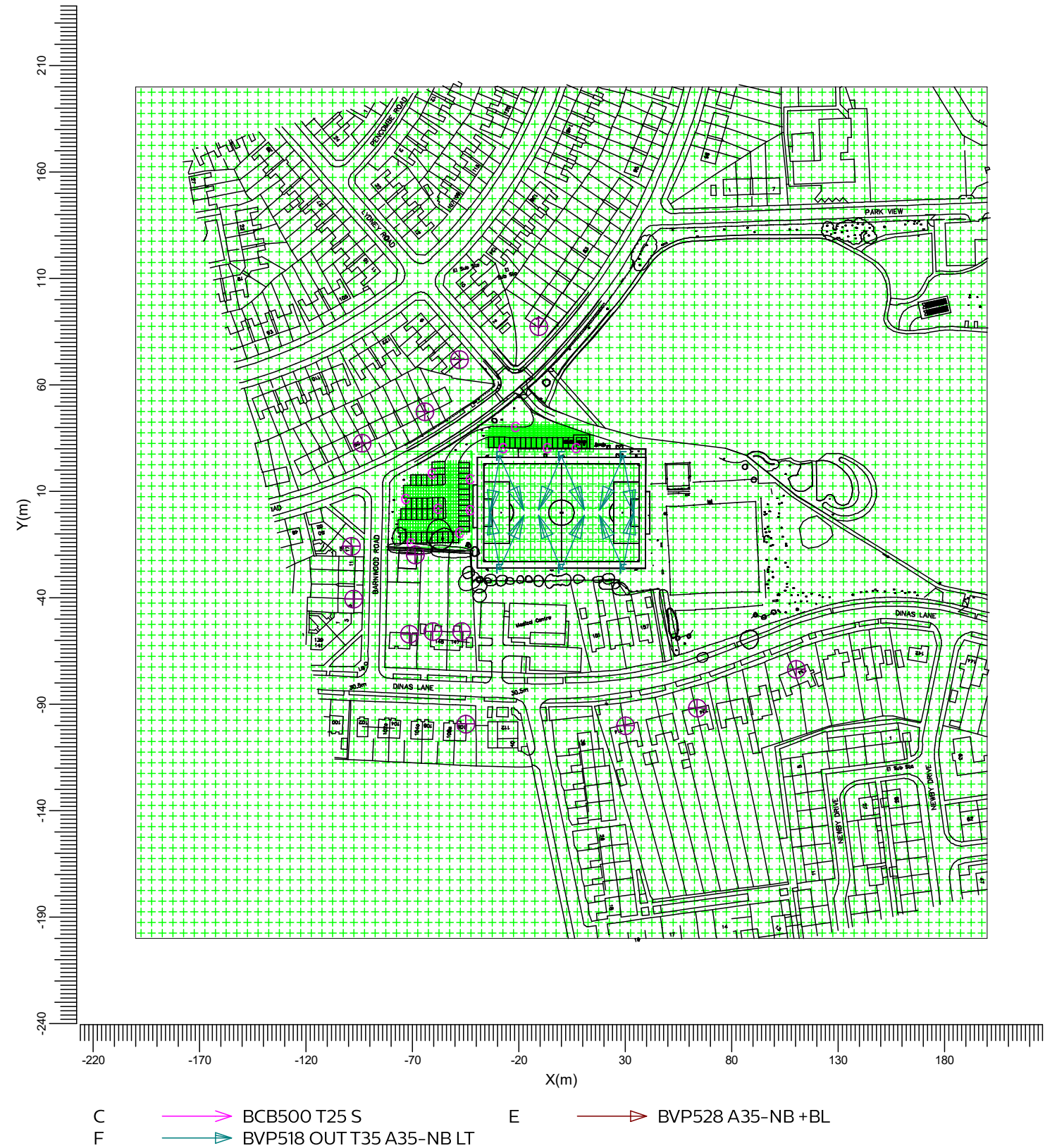
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1. Project Description

1.1 Top Project Overview



Scale
1:2500

2. Summary

2.1 Observer Information

Code	Observer	Position		
		X (m)	Y (m)	Z (m)
Aa	House 1 - 1.8m	-97.78	-40.45	-0.00
Bb	House 1 - 3.6m	-97.78	-40.45	-0.00
Cc	House 2 - 1.8m	-98.67	-15.82	-0.00
Dd	House 2 - 3.6m	-98.67	-15.82	-0.00
Ee	House 3 - 1.8m	-93.82	32.69	-0.00
Ff	House 3 - 3.6m	-93.82	32.69	-0.00
Gg	House 4 - 1.8m	-64.35	47.61	-0.00
Hh	House 4 - 3.6m	-64.35	47.61	-0.00
Ii	House 5 - 1.8m	-48.02	72.14	-0.00
Jj	House 5 - 3.6m	-48.02	72.14	-0.00
Kk	House 6 - 1.8m	-10.83	87.43	-0.00
Ll	House 6 - 3.6m	-10.83	87.43	-0.00
Mm	House 7 - 1.8m	110.09	-73.56	-0.00
Nn	House 7 - 3.6m	110.09	-73.56	-0.00
Oo	House 8 - 1.8m	63.81	-91.78	-0.00
Pp	House 8 - 3.6m	63.81	-91.78	-0.00
Qq	House 9 - 1.8m	30.07	-99.86	-0.00
Rr	House 9 - 3.6m	30.07	-99.86	-0.00
Ss	House 10 - 1.8m	-45.16	-99.32	-0.00
Tt	House 10 - 3.6m	-45.16	-99.32	-0.00
Uu	House 11 - 1.8m	-46.93	-55.79	-0.00
Vv	House 11 - 3.6m	-46.93	-55.79	-0.00
Ww	House 12 - 1.8m	-60.54	-55.79	-0.00
Xx	House 12 - 3.6m	-60.54	-55.79	-0.00
Yy	House 13 - 1.8m	-71.57	-56.88	-0.00
Zz	House 13 - 3.6m	-71.57	-56.88	-0.00
[{	House 14 - 1.8m	-68.78	-19.77	-0.00
\	House 14 - 3.6m	-68.78	-19.77	-0.00

2.2 Obstacle Information

Obstacle	Transparency (%)	Position		
		X (m)	Y (m)	Z (m)
Hedge	0	-82.00	-16.00	0.00
Hedge 2	0	-42.60	-19.10	0.00

2.3 Project Luminaires

Code	Qty	Luminaire Type	Lamp Type	Power (W)	Flux (lm)
C	12	BCB500 T25 S	1 * LED27/830	20.5	1 * 2700
F	12	BVP518 OUT T35 A35-NB LT	1 * LED1720-4S/740	1006.0	1 * 172000

The total installed power: 12.32 (kWatt)

Number of Luminaires Per Switching Mode:

Switching Mode	Luminaire Code		Power (kWatt)
	C	F	
200lux Switching	0	12	-
120 Lux Switching	0	12	-
Spillage Switching	12	12	12.32
North Car Park	5	0	0.10
West Car Park	7	0	0.14

Number of Luminaires Per Arrangement:

Arrangement	Luminaire Code		Power (kWatt)
	C	F	
Mast2	0	4	4.02
Mast5	0	8	8.05
Individuals	12	0	0.25

2.4 Calculation Results

Switching Modes:

Code	Switching Mode	Maintenance factor
1	200lux Switching	0.90
2	120 Lux Switching	0.50
3	Spillage Switching	1.00
4	North Car Park	0.90
5	West Car Park	0.90

(II)luminance Calculations:

Calculation	Switching Mode	Type	Unit	Ave Min/AveMin/Max		
Football 200 lux	1	Surface Illuminance	lux	234	0.60	0.47
Football 120 lux	2	Surface Illuminance	lux	130	0.60	0.47
North Car Park	4	Surface Illuminance	lux	6.55	0.13	0.01
West Car Park	5	Surface Illuminance	lux	5.29	0.22	0.04
Ground Spillage AGP	1	Surface Illuminance	lux	6.12	0.00	0.00
Ground Spillage AGP Zoom	1	Surface Illuminance	lux	6.12	0.00	0.00
Ground Spillage	3	Surface Illuminance	lux	9.83	0.00	0.00
Ground Spillage Zoom	3	Surface Illuminance	lux	9.83	0.00	0.00
Horizontal 3m	3	Horizontal Illuminance	lux			
Horizontal 3m Zoom	3	Horizontal Illuminance	lux			

Obtrusive Light Calculations:

Switching Mode	Observer Code	Luminaire Code	Position			Aiming Angles			Maximum Intensity (cd)
			X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	
3	Aa	F	0.00	26.50	10.00	-112.98	70.00	-0.00	2728
3	Bb	F	0.00	26.50	10.00	-112.98	70.00	-0.00	2728
3	Cc	F	0.00	26.50	10.00	-112.98	70.00	-0.00	2583
3	Dd	F	0.00	26.50	10.00	-112.98	70.00	-0.00	2583
3	Ee	F	-29.00	-26.50	10.00	100.20	70.00	0.00	2653

Switching Mode	Observer Code	Luminaire Code	Position			Aiming Angles			Maximum Intensity (cd)
			X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	
3	Ff	F	-29.00	-26.50	10.00	100.20	70.00	0.00	2653
3	Gg	F	-29.00	-26.50	10.00	100.20	70.00	0.00	4372
3	Hh	F	-29.00	-26.50	10.00	100.20	70.00	0.00	4372
3	Ii	F	29.00	-26.50	10.00	113.79	70.00	-0.00	4844
3	Jj	F	29.00	-26.50	10.00	113.79	70.00	-0.00	4844
3	Kk	F	-29.00	-26.50	10.00	66.21	70.00	0.00	4856
3	Ll	F	-29.00	-26.50	10.00	66.21	70.00	0.00	4856
3	Mm	F	0.00	26.50	10.00	-67.02	70.00	0.00	3255
3	Nn	F	0.00	26.50	10.00	-67.02	70.00	0.00	3255
3	Oo	F	-29.00	26.50	10.00	-66.21	70.00	-0.00	4720
3	Pp	F	-29.00	26.50	10.00	-66.21	70.00	-0.00	4720
3	Qq	F	29.00	26.50	10.00	-79.80	70.00	0.00	4883
3	Rr	F	29.00	26.50	10.00	-79.80	70.00	0.00	4883
3	Ss	F	29.00	26.50	10.00	-113.79	70.00	0.00	4502
3	Tt	F	29.00	26.50	10.00	-113.79	70.00	0.00	4502
3	Uu	F	0.00	26.50	10.00	-112.98	70.00	-0.00	5099
3	Vv	F	0.00	26.50	10.00	-112.98	70.00	-0.00	5099
3	Ww	F	-29.00	26.50	10.00	-100.20	70.00	-0.00	5114
3	Xx	F	-29.00	26.50	10.00	-100.20	70.00	-0.00	5114
3	Yy	F	-29.00	26.50	10.00	-100.20	70.00	-0.00	4366
3	Zz	F	-29.00	26.50	10.00	-100.20	70.00	-0.00	4366
1	[	F	-29.00	26.50	10.00	-100.20	70.00	-0.00	4543
1	\	F	-29.00	26.50	10.00	-100.20	70.00	-0.00	4543

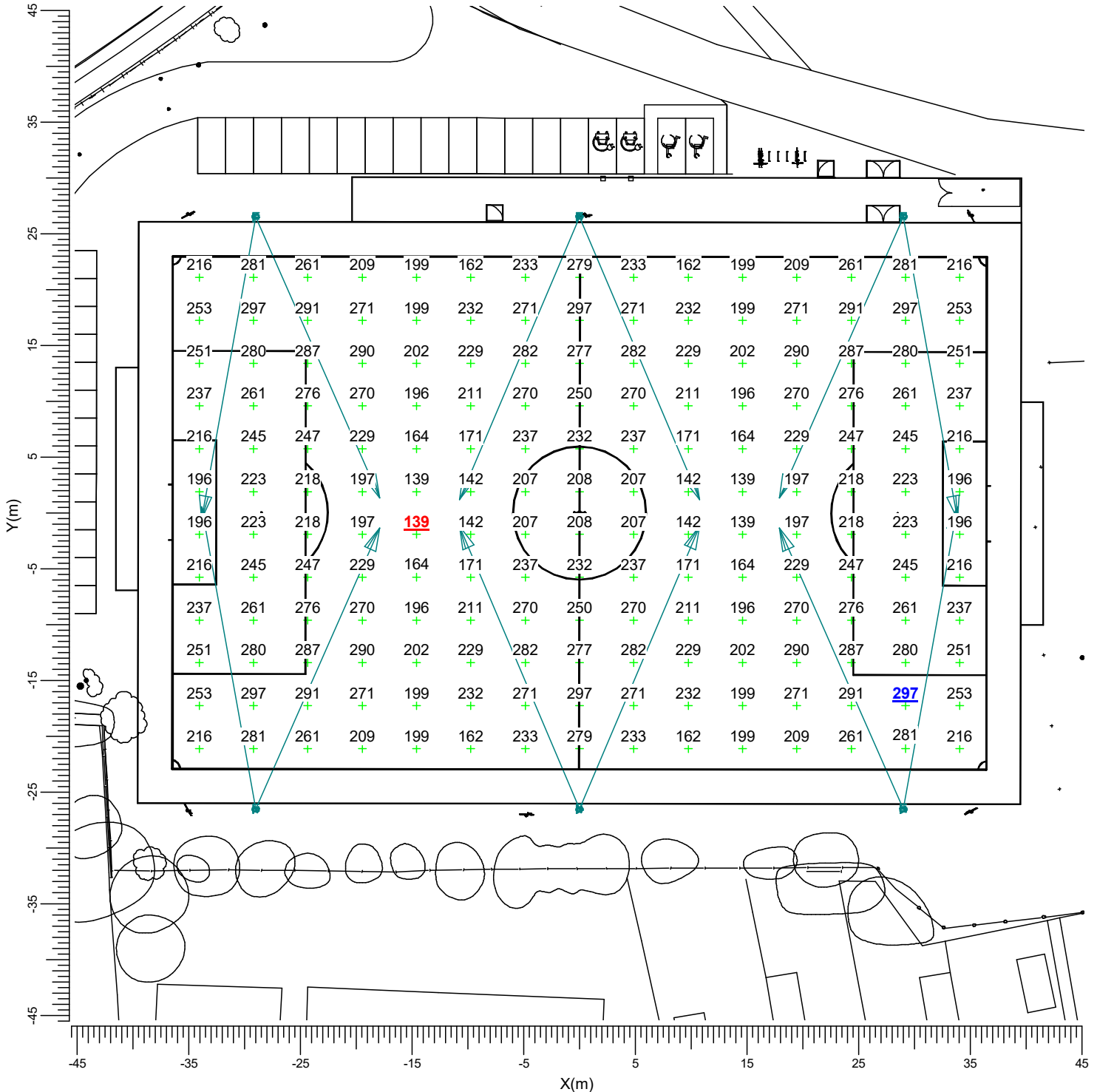
Switching Mode	ULR
1	0.01
2	0.01
3	0.01
4	0.09
5	0.09

3. Calculation Results

3.1 Football 200 lux: Graphical Table

200lux Switching

Grid : Football at Z = -0.00 m
Calculation : Surface Illuminance (lux)



E BVP528 A35-NB +BL

F BVP518 OUT T35 A35-NB LT

Average
234

Min/Ave
0.60

Min/Max
0.47

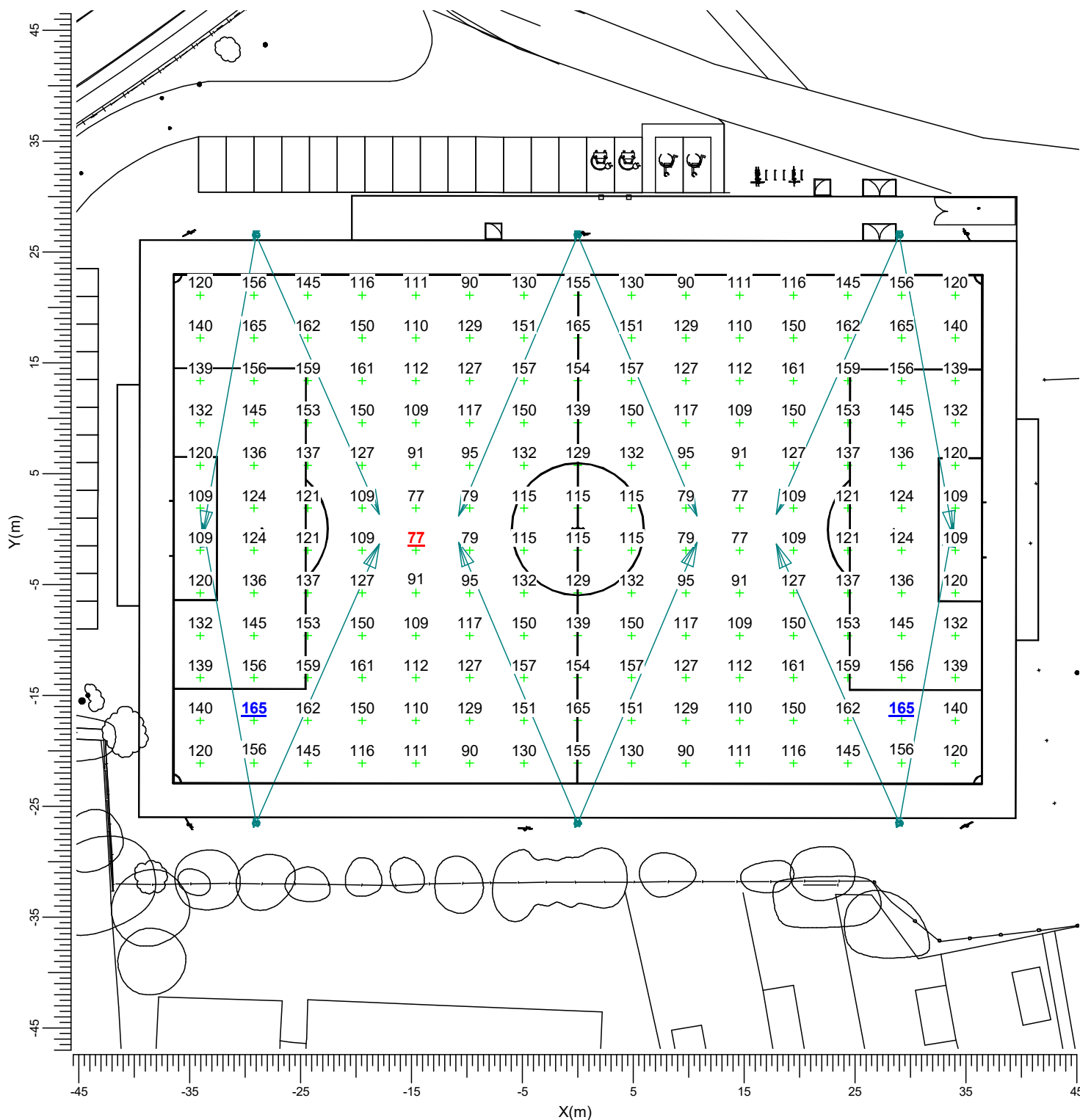
Project maintenance factor
0.90

Scale
1:500

3.2 Football 120 lux: Graphical Table

120 Lux Switching

Grid : Football at Z = -0.00 m
Calculation : Surface Illuminance (lux)



F BVP518 OUT T35 A35-NB LT

Average
130

Min/Ave
0.60

Min/Max
0.47

Project maintenance factor
0.50

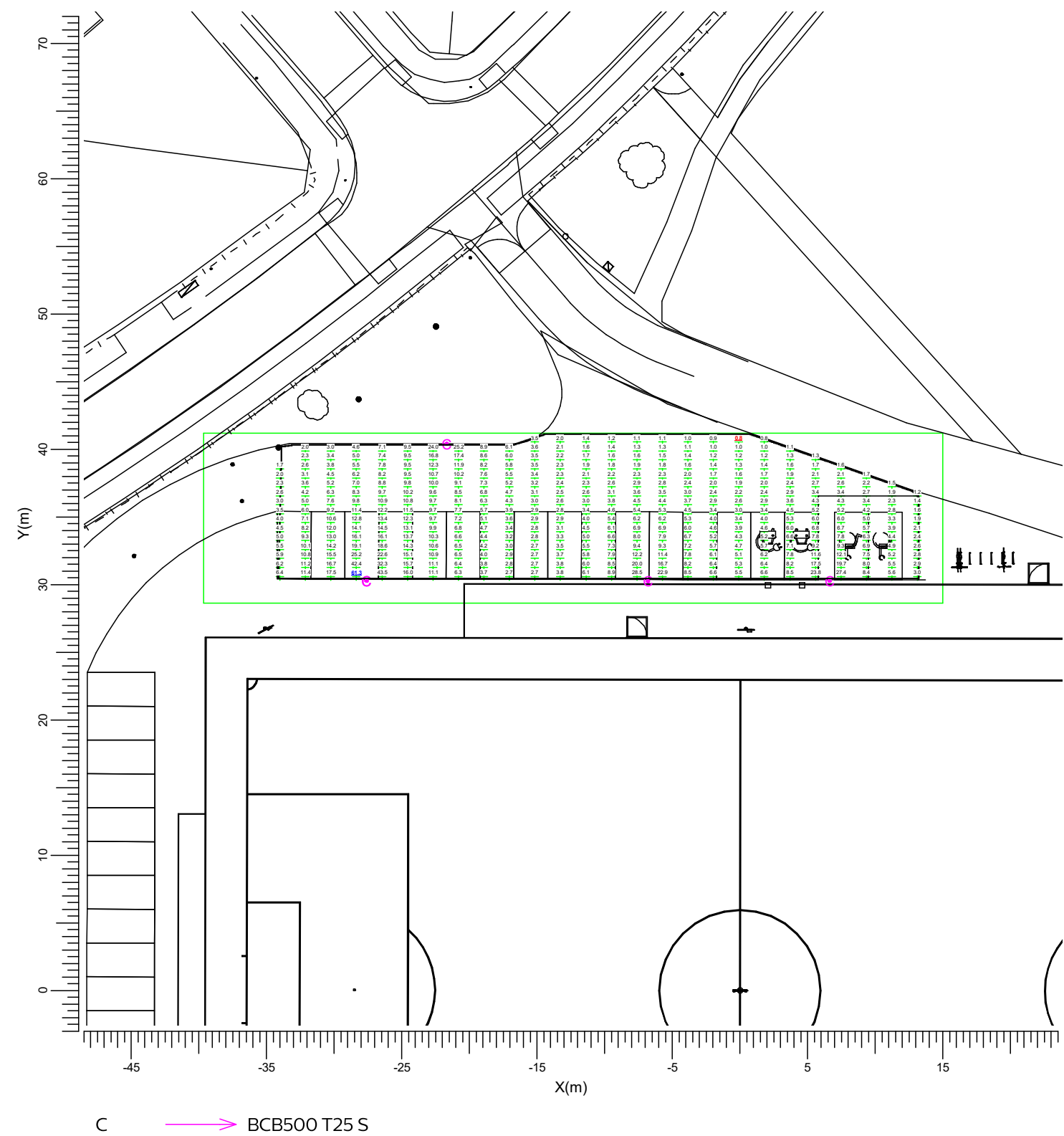
Scale
1:500

3.3 North Car Park: Graphical Table

North Car Park

Grid : North Car Park at Z = -0.00 m

Calculation : Surface Illuminance (lux)



Average 6.55

Min/Ave 0.13

Min/Max 0.01

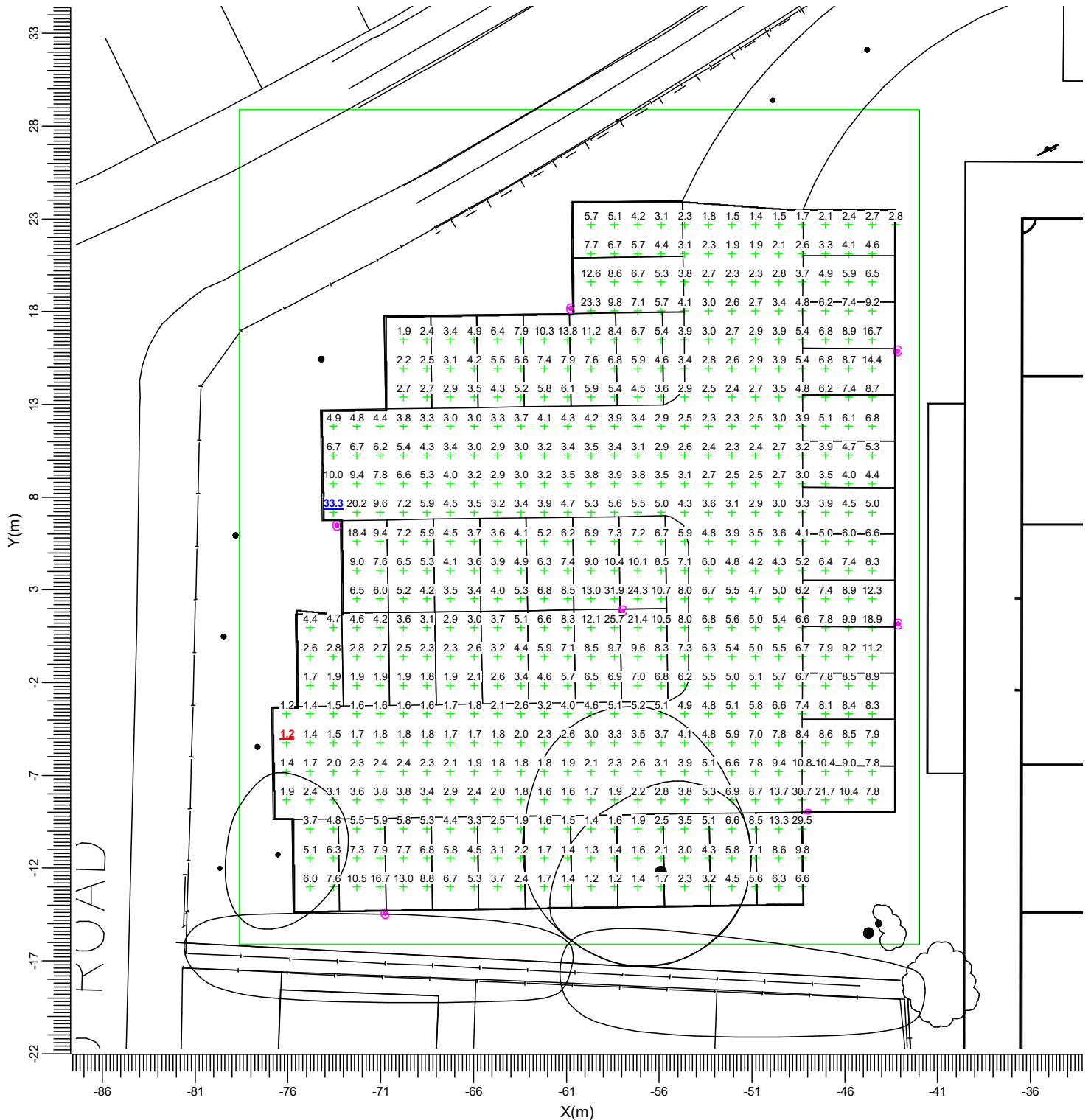
Project maintenance factor 0.90

Scale 1:400

3.4 West Car Park: Graphical Table

West Car Park

Grid : West Car Park at Z = -0.00 m
Calculation : Surface Illuminance (lux)



C → BCB500 T25 S

Average
5.29

Min/Ave
0.22

Min/Max
0.04

Project maintenance factor
0.90

Scale
1:300

3.5 Ground Spillage AGP: Filled Iso Contour

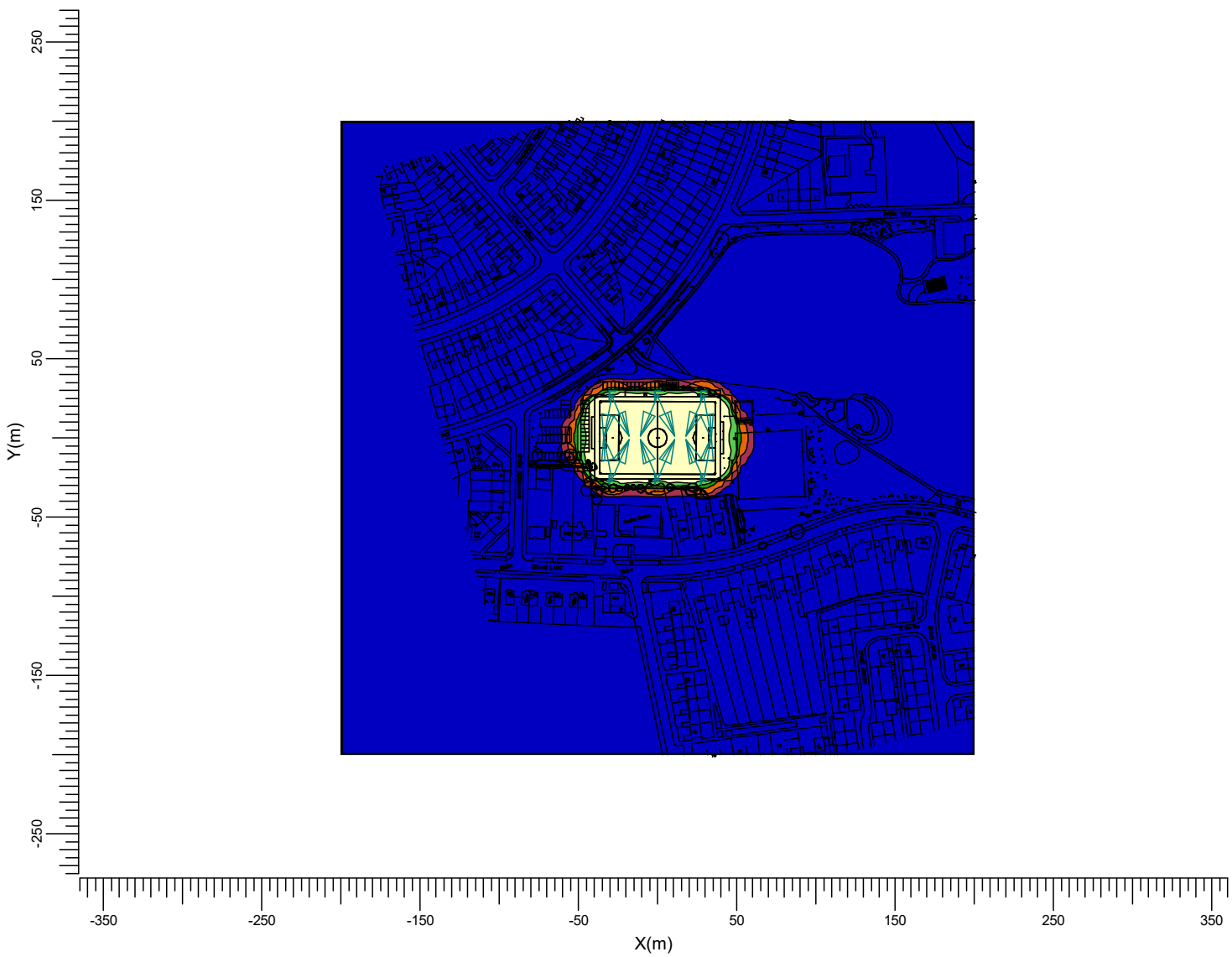
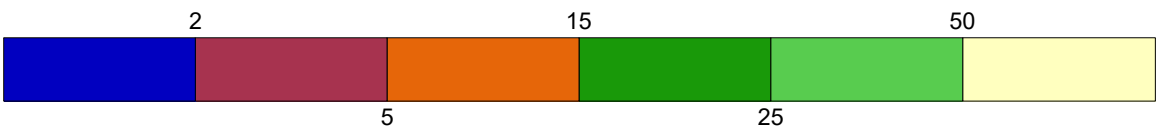
200lux Switching

Grid

Calculation

: Spillage Grid at Z = -0.00 m

: Surface Illuminance (lux)



E

—▶ BVP528 A35-NB +BL

F

—▶ BVP518 OUT T35 A35-NB LT

Average
6.12

Min/Ave
0.00

Min/Max
0.00

Project maintenance factor
0.90

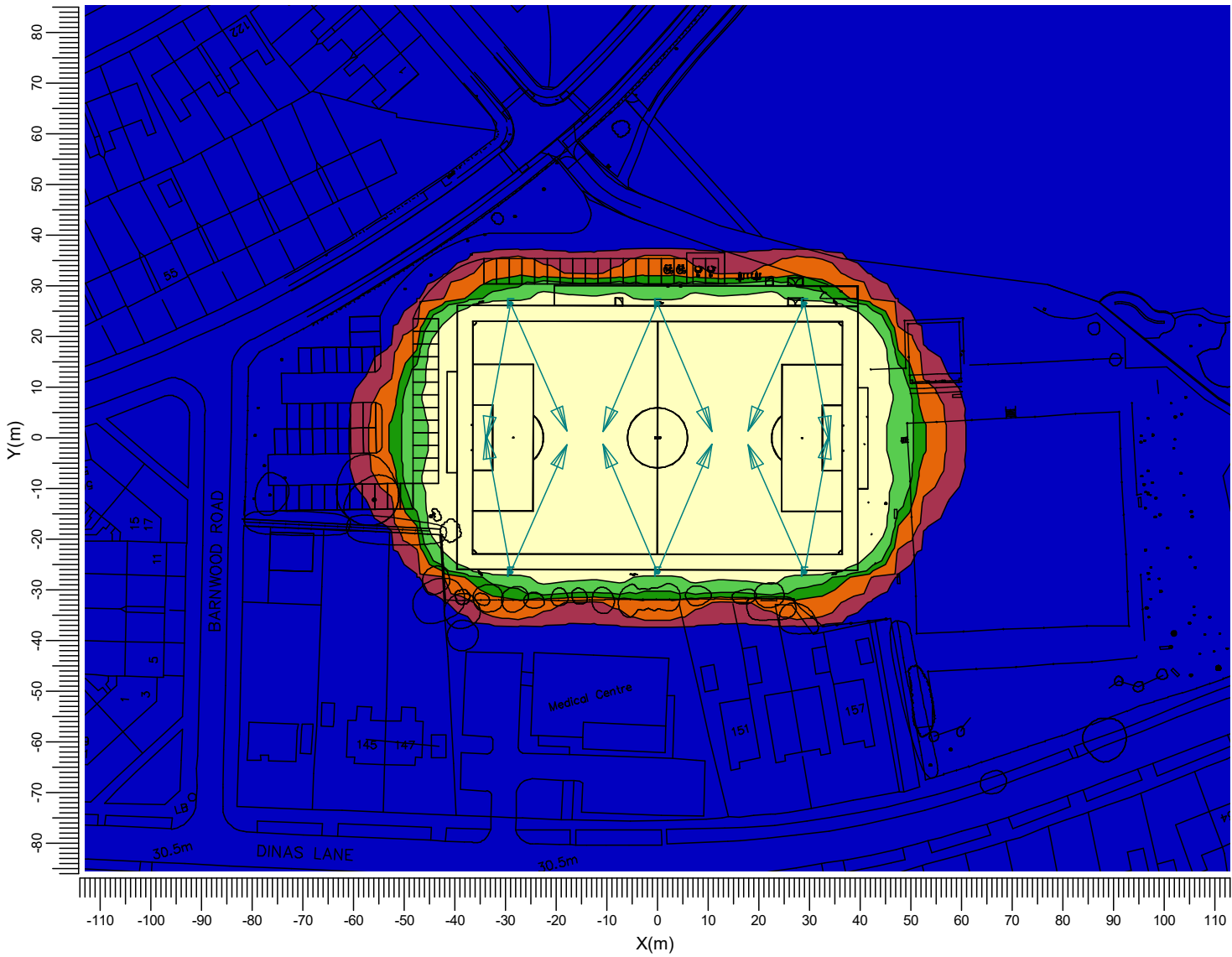
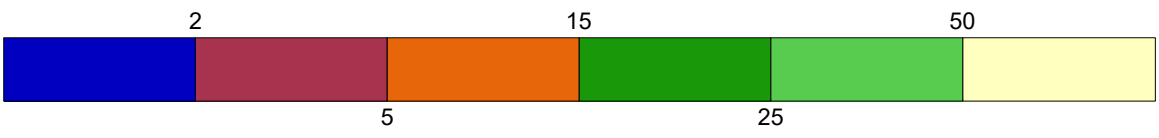
Scale
1:4000

3.6 Ground Spillage AGP Zoom: Filled Iso Contour

200lux Switching

Grid : Spillage Grid at Z = -0.00 m

Calculation : Surface Illuminance (lux)



E BVP528 A35-NB +BL

F BVP518 OUT T35 A35-NB LT

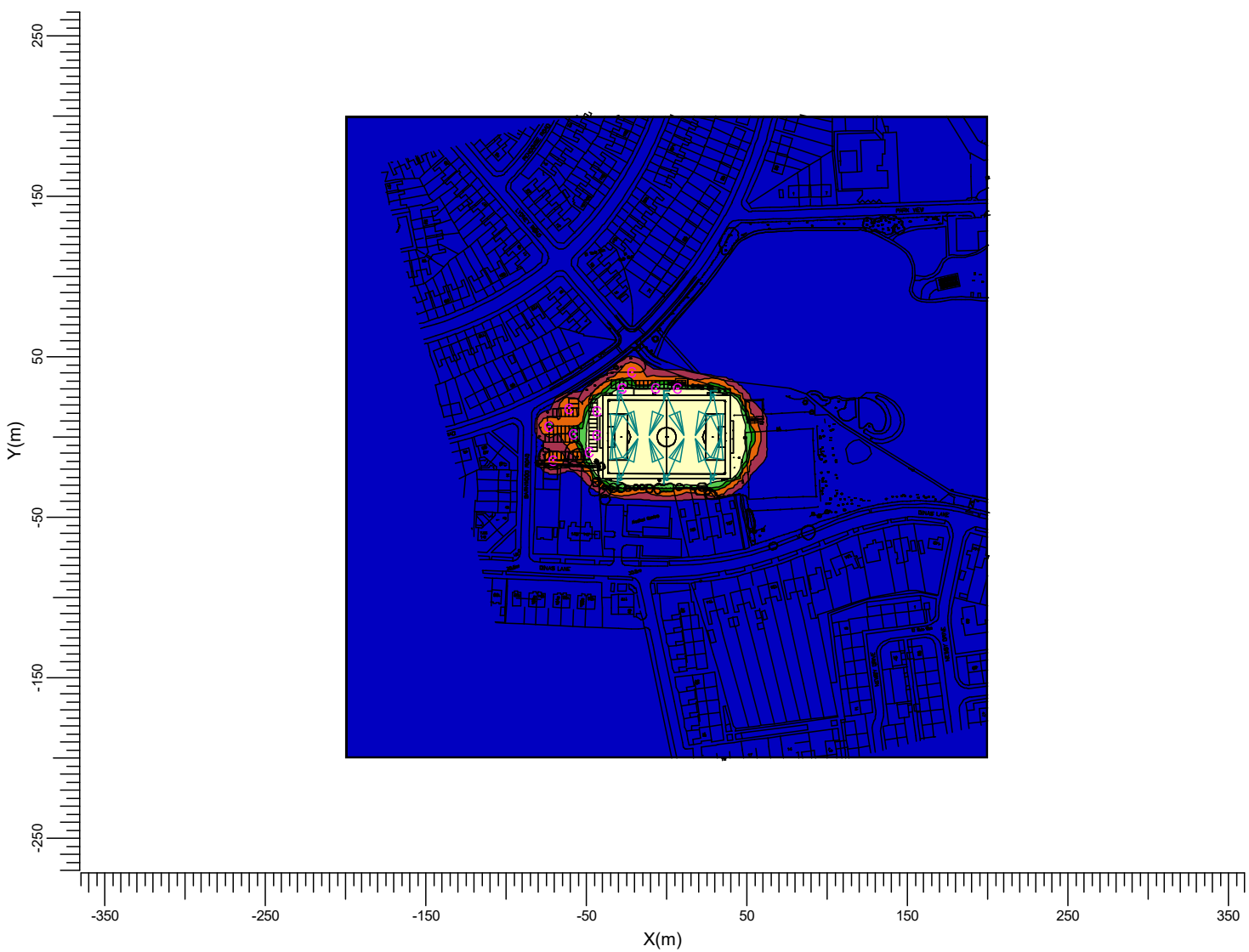
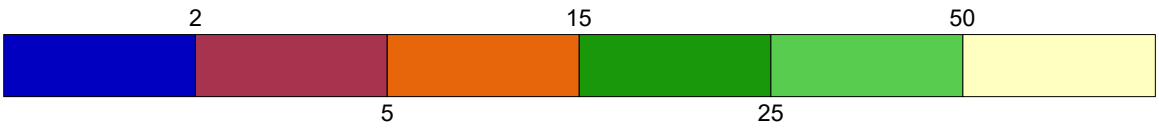
Average	Min/Ave	Min/Max	Project maintenance factor	Scale
6.12	0.00	0.00	0.90	1:1250

3.7 Ground Spillage: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m

Calculation : Surface Illuminance (lux)



- C

F





BCB500 T25 S

BVP518 OUT T35 A35-NB LT
- E



BVP528 A35-NB +BL

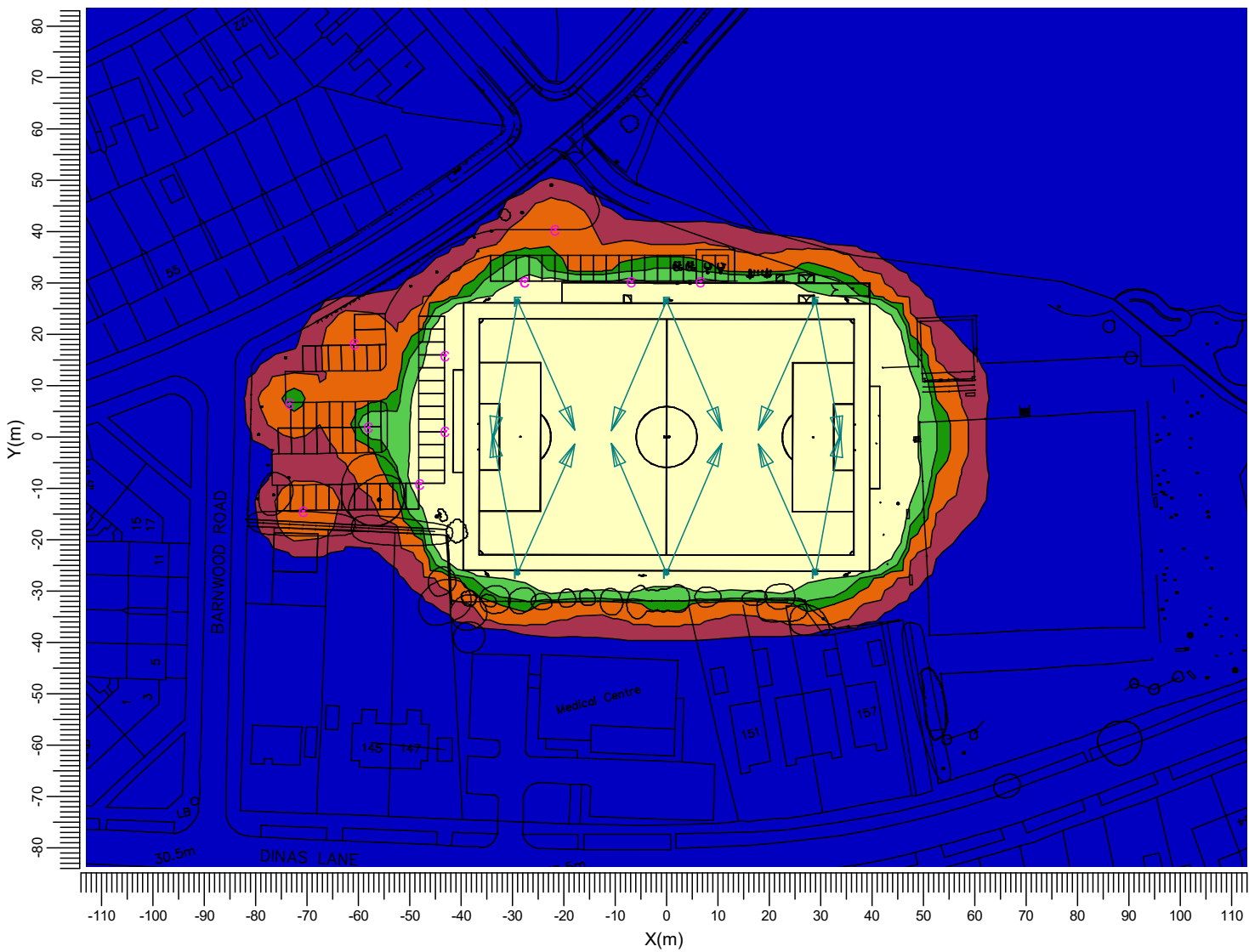
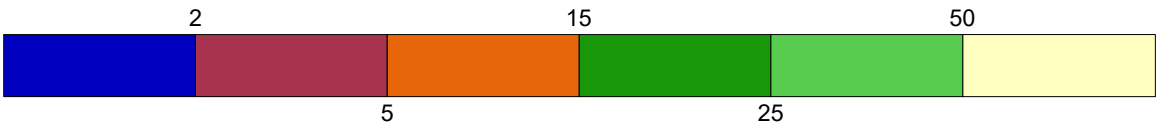
Average	Min/Ave	Min/Max	Project maintenance factor	Scale
9.83	0.00	0.00	1.00	1:4000

3.8 Ground Spillage Zoom: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m

Calculation : Surface Illuminance (lux)



- C

F





BCB500 T25 S

BVP518 OUT T35 A35-NB LT
- E



BVP528 A35-NB +BL

Average
9.83

Min/Ave
0.00

Min/Max
0.00

Project maintenance factor
1.00

Scale
1:1250

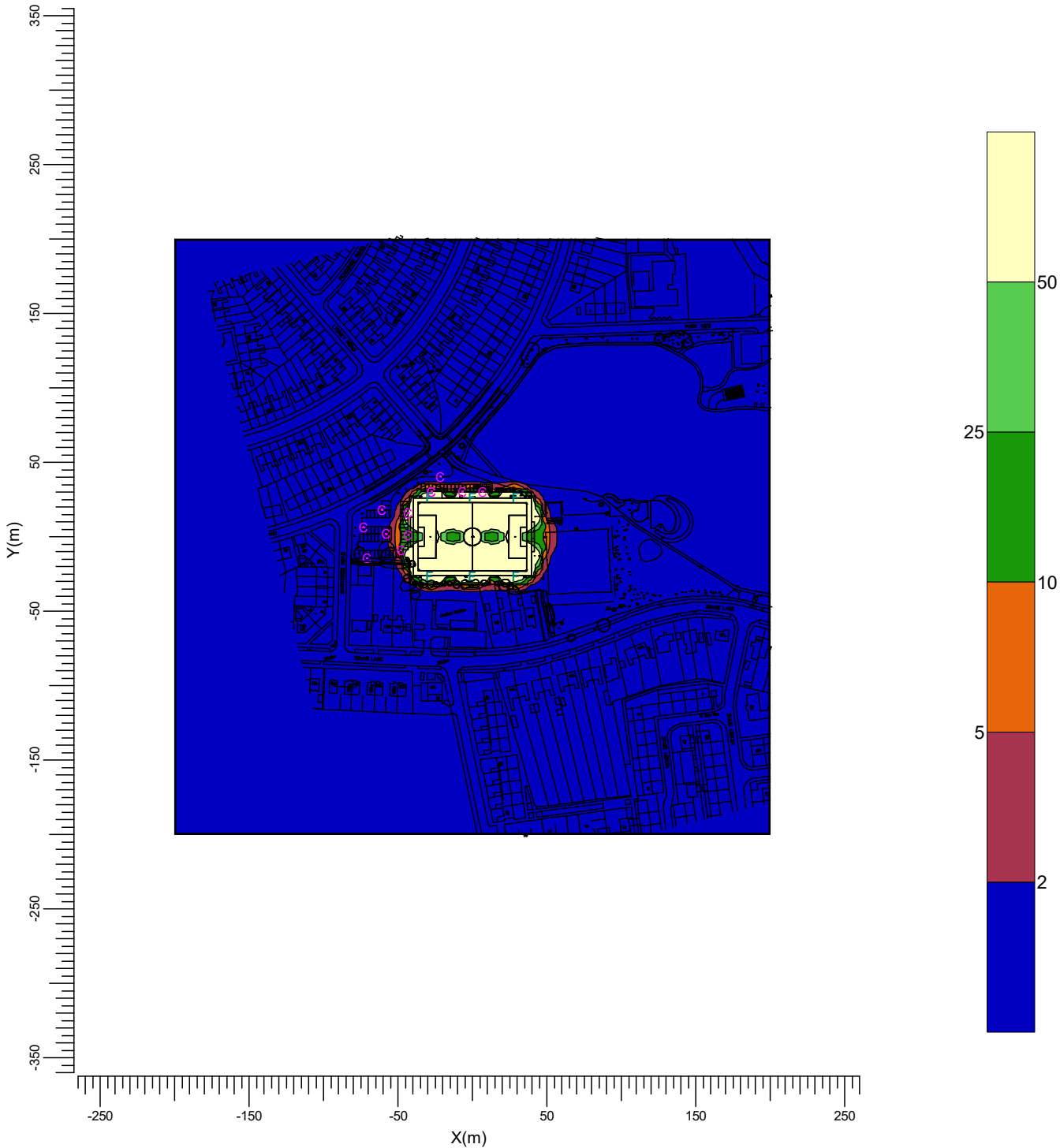
3.9 Horizontal 3m: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m

Calculation : Horizontal Illuminance (lux)

Height above grid : 3.00 m



C : BCB500 T25 S

F : BVP518 OUT T35 A35-NB LT

E : BVP528 A35-NB +BL

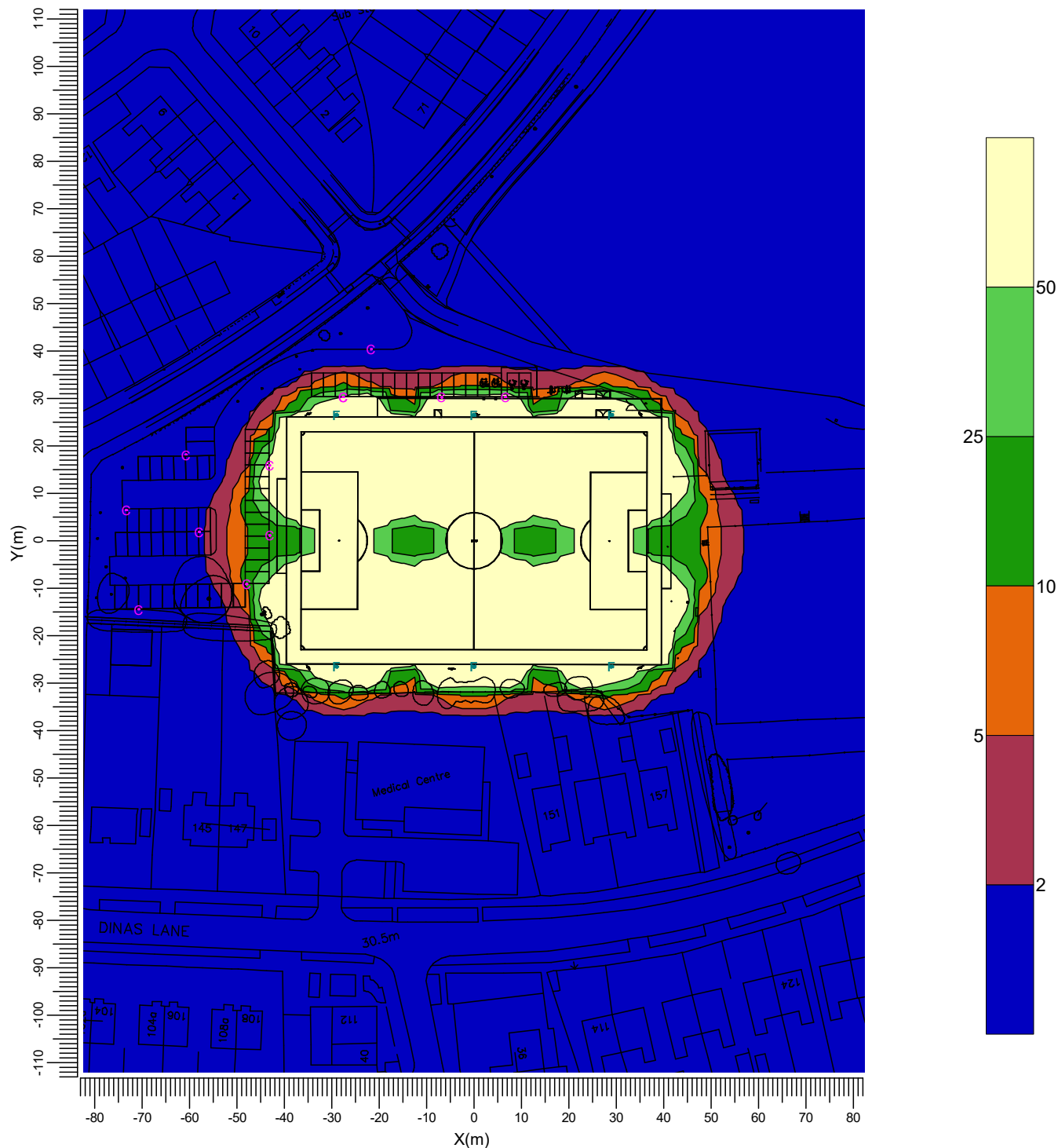
Project maintenance factor
1.00

Scale
1:4000

3.10 Horizontal 3m Zoom: Filled Iso Contour

Spillage Switching

Grid : Spillage Grid at Z = -0.00 m
Calculation : Horizontal Illuminance (lux)
Height above grid : 3.00 m



C : BCB500 T25 S
F : BVP518 OUT T35 A35-NB LT

E : BVP528 A35-NB +BL

Project maintenance factor
1.00

Scale
1:1250

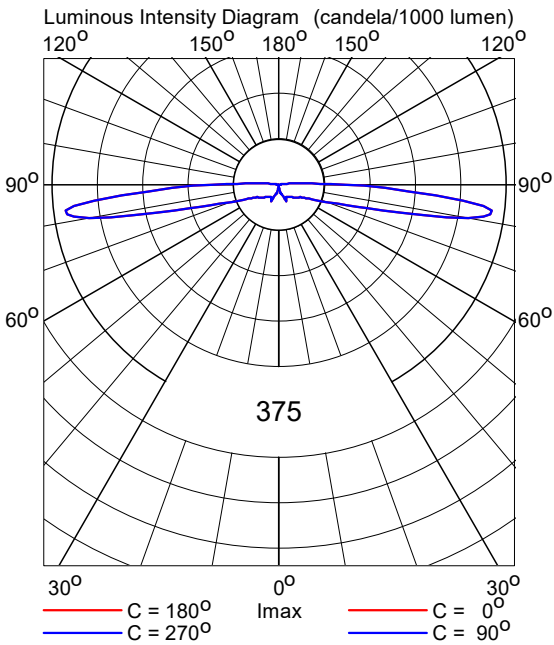
4. Luminaire Details

4.1 Project Luminaires

OptiSpace
BCB500 T25 1 xLED27/830 S



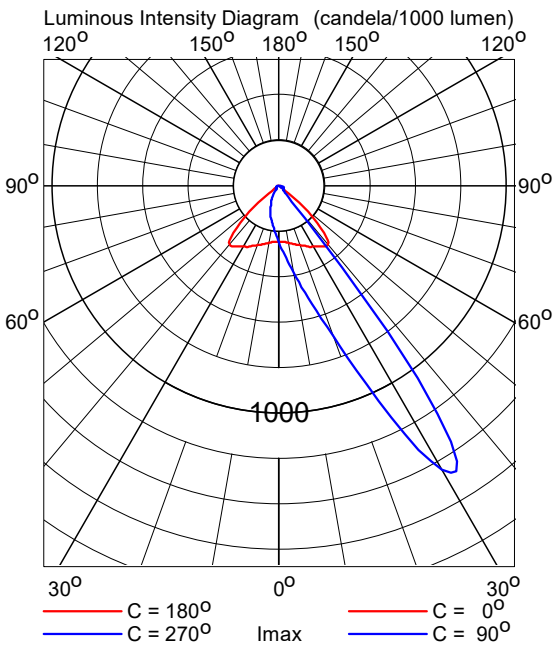
Light output ratios
DLOR : 0.63
ULOR : 0.06
TLOR : 0.69
Ballast : -
Lamp flux : 2700 lm
Luminaire wattage : 20.5 W
Measurement code : LVM1821600



OptiVision LED gen3.5 2022
BVP518 OUT T35 1xLED1720-4S/740/740 E3/D4I A35-NB LT

Light output ratios
DLOR : 0.77
ULOR : 0.00
TLOR : 0.77
Ballast : E3/D4I
Lamp flux : 172000 lm
Luminaire wattage : 1006.0 W
Measurement code : LVM2048800

Note: Luminaire data not from database.



5. Installation Data

5.1 Legends

Project Luminaires:

Code	Qty	Luminaire Type	Lamp Type	Flux (lm)
C	12	BCB500 T25 S	1 * LED27/830	1 * 2700
F	12	BVP518 OUT T35 A35-NB LT	1 * LED1720-4S/740	1 * 172000

Switching Modes:

Code	Switching Mode
1	200lux Switching
2	120 Lux Switching
3	Spillage Switching
4	North Car Park
5	West Car Park

5.2 Luminaire Positioning and Orientation

Qty and Code	Position			Aiming Angles			Switching Modes (%)				
	X (m)	Y (m)	Z (m)	Rot.	Tilt90	Tilt0	1	2	3	4	5
1 * C	-73.37	6.48	1.00	-47.5	0.0	0.0	-	-	100	-	100
1 * C	-70.75	-14.44	1.00	26.2	0.0	0.0	-	-	100	-	100
1 * C	-60.77	18.17	1.00	-47.5	0.0	0.0	-	-	100	-	100
1 * C	-57.99	1.86	1.00	90.0	0.0	0.0	-	-	100	-	100
1 * C	-48.00	-9.11	1.00	154.1	0.0	0.0	-	-	100	-	100
1 * C	-43.16	15.88	1.00	-176.4	0.0	0.0	-	-	100	-	100
1 * C	-43.13	1.16	1.00	-90.0	0.0	0.0	-	-	100	-	100
1 * F	-29.00	-26.50	10.00	100.2	70.0	0.0	70	70	100	-	-
1 * F	-29.00	-26.50	10.00	66.2	70.0	0.0	70	70	100	-	-
1 * F	-29.00	26.50	10.00	-100.2	70.0	-0.0	70	70	100	-	-
1 * F	-29.00	26.50	10.00	-66.2	70.0	-0.0	70	70	100	-	-
1 * C	-27.62	30.29	1.00	-176.4	0.0	0.0	-	-	100	100	-
1 * C	-27.62	30.29	1.00	-176.4	0.0	0.0	-	-	100	100	-
1 * C	-21.70	40.40	1.00	-176.4	0.0	0.0	-	-	100	100	-
1 * C	-6.82	30.25	1.00	-176.4	0.0	0.0	-	-	100	100	-
1 * F	-0.00	-26.50	10.00	113.0	70.0	0.0	70	70	100	-	-
1 * F	-0.00	-26.50	10.00	67.0	70.0	-0.0	70	70	100	-	-
1 * F	-0.00	26.50	10.00	-113.0	70.0	-0.0	70	70	100	-	-
1 * F	-0.00	26.50	10.00	-67.0	70.0	0.0	70	70	100	-	-
1 * C	6.61	30.29	1.00	-176.4	0.0	0.0	-	-	100	100	-
1 * F	29.00	-26.50	10.00	79.8	70.0	-0.0	70	70	100	-	-
1 * F	29.00	-26.50	10.00	113.8	70.0	-0.0	70	70	100	-	-
1 * F	29.00	26.50	10.00	-79.8	70.0	0.0	70	70	100	-	-
1 * F	29.00	26.50	10.00	-113.8	70.0	0.0	70	70	100	-	-