

Boldon Lawn Tennis Club

Installation : Proposed Lighting

Project number :
Customer :
Processed by : Lewis Quayle
Date : 18.06.2021

Project description:

Design based on Google Maps images and aimed to achieve LTA recommended guidelines for Tennis.

We have concluded our lighting design while each court is individually switched ON.

We have utilized total 10no of 450W LED 4000K Asymmetrical Floodlights and 8no of 600W LED 4000K Asymmetrical Floodlights mounted to 6.7m high columns, resulting:
Court 1 to 3 PPA – $E_m \geq 500$, $U_o \geq 0.70$ TPA $E_m \geq 400$, $U_o \geq 0.60$

Luminaire symbols enlarged for better visibility and are not to scale.

If our proposals are based on Google Maps, photographs or unscaled drawings, results are indicative only and full site survey will be required prior to placing an order.

Full installation, vertical tilt angles and aiming coordinates guidance/drawings can be provided on request when an order has been placed.

Please verify all dimensions, heights and if all areas requiring lighting design are included. Any assumptions made at design stage should be verified prior to ordering please and do not hesitate to contact us if any alterations or additional details required.

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.

Luminaire data

450W LED 4000K... (!EX1 871)

Data sheet

!EX1 871 450W LED 4000K Floodlight

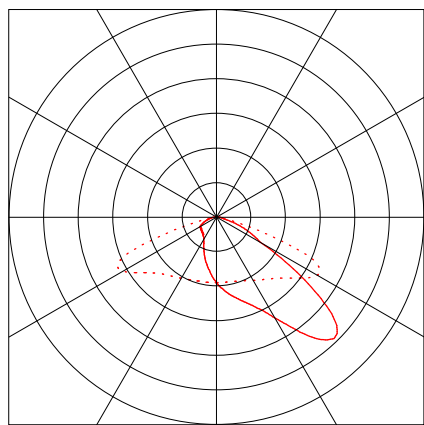
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 146.61 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 32 73 97 100 100
UGR 4H 8H : 35.9 / 37.9
Power : 444 W
Luminous flux : 65094 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Luminous flux : 65094 lm
Colour reproduction : 80

Dimensions : 621 mm x 601 mm x 104 mm



Luminaire data

600W LED 4000K... (!EX2 875)

Data sheet

!EX2 875 600W LED 4000K Floodlight

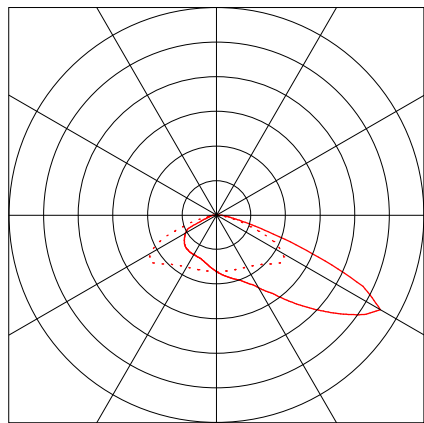
Luminaire data

Luminaire efficiency : 100%
Luminaire efficacy : 139.76 lm/W
Classification : A30 ↓100.0% ↑0.0%
CIE Flux Codes : 28 66 95 100 100
UGR 4H 8H : 41.3 / 36.0
Power : 595 W
Luminous flux : 83156 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 4000K
Luminous flux : 83156 lm
Colour reproduction : 80

Dimensions : 621 mm x 601 mm x 104 mm



Court 1 Switched ON

Description, Court 1 Switched ON

Floor plan

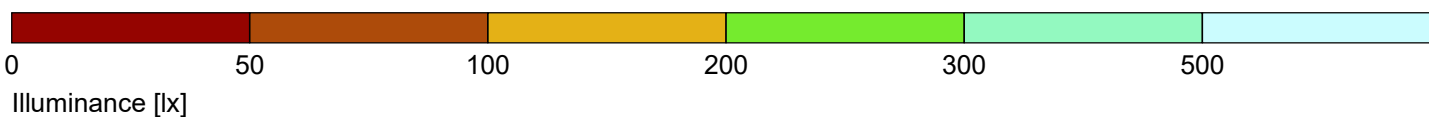
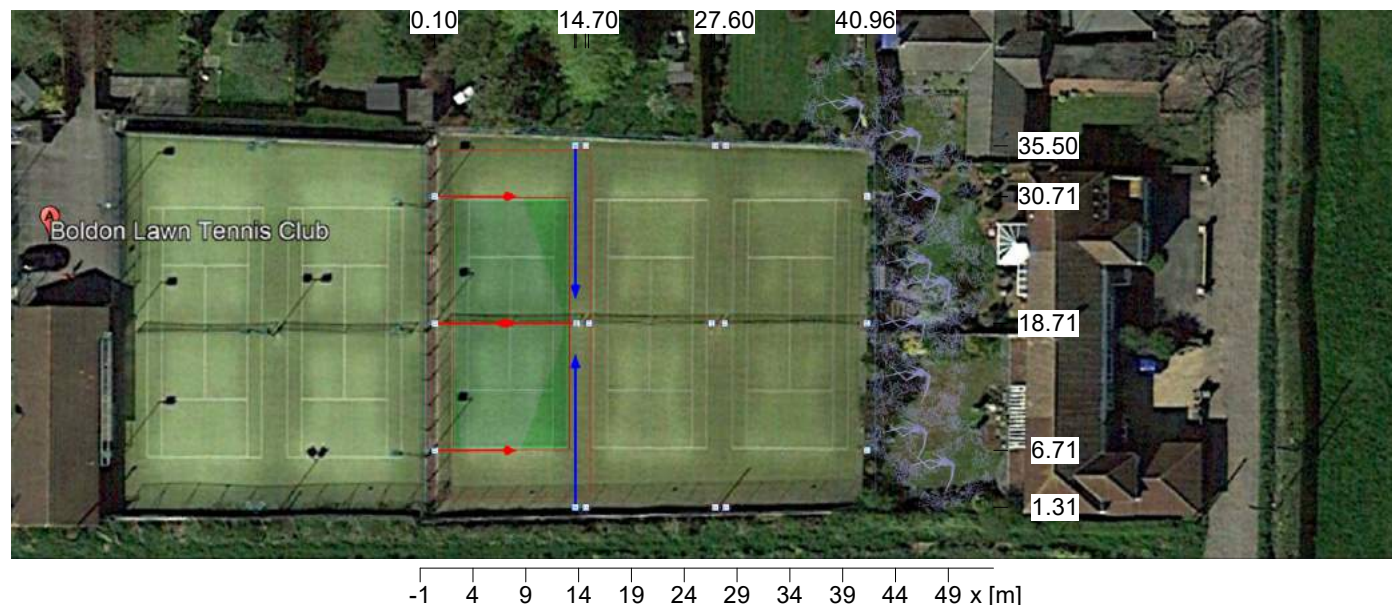


Object : Boldon Lawn Tennis Club
 Installation : Proposed Lighting
 Project number :
 Date : 18.06.2021

Court 1 Switched ON

Summary, Court 1 Switched ON

Result overview, Court 1 PPA



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.75 m
Maintenance factor	1.00

Total luminous flux of all lamps	426688 lm
Total power	2966 W
Total power per area (1548.15 m ²)	1.92 W/m ²
Upward light ratio (ULR)	0.00

Illuminance

Average illuminance	Em	528 lx
Minimum illuminance	Emin	386 lx
Maximum illuminance	Emax	674 lx
Uniformity Uo	Emin/Em	1:1.37 (0.73)
Diversity Ud	Emin/Emax	1:1.75 (0.57)

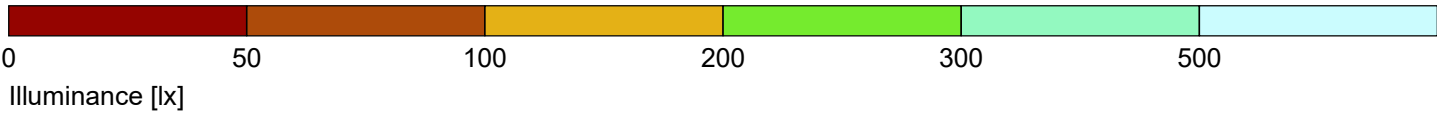
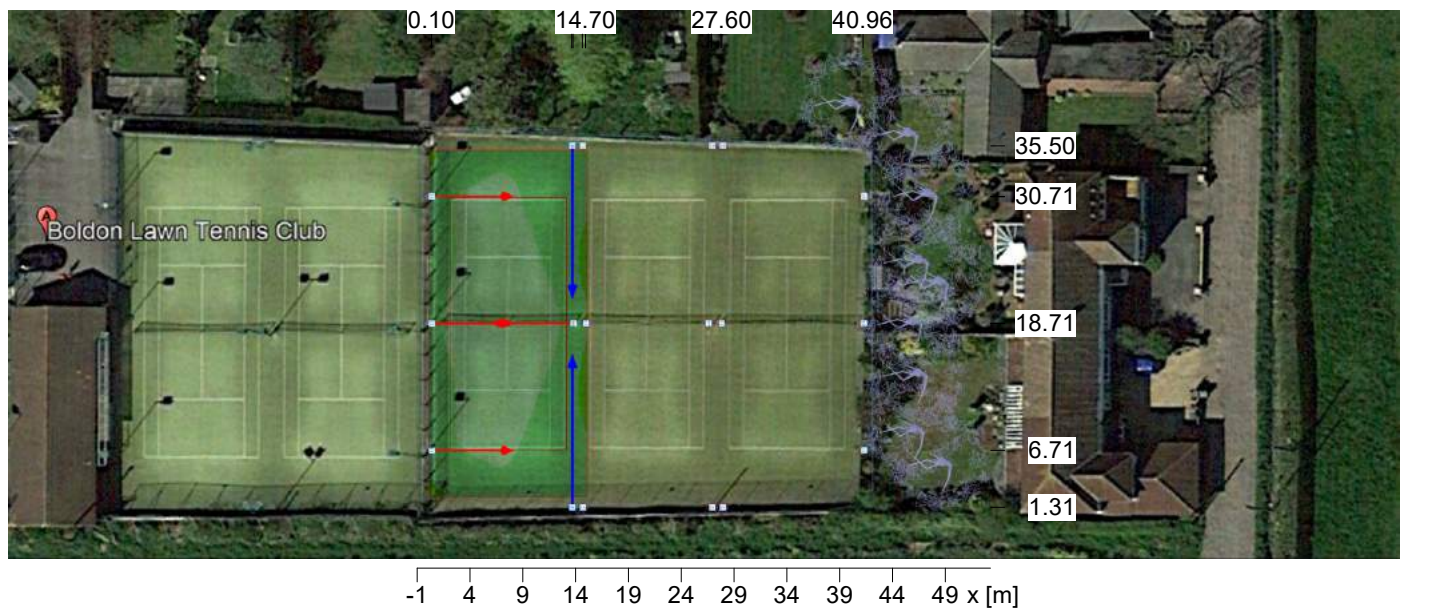
Type No. Make

1	4	Order No.	: !EX1 871
		Luminaire name	: 450W LED 4000K Floodlight
		Equipment	: 1 x LED 444 W / 65094 lm
2	2	Order No.	: !EX2 875
		Luminaire name	: 600W LED 4000K Floodlight
		Equipment	: 1 x LED 595 W / 83156 lm

The ULR value has been calculated without obstruction by other objects.

Summary, Court 1 Switched ON

Result overview, Court 1 TPA



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.75 m
Maintenance factor	1.00

Total luminous flux of all lamps	426688 lm
Total power	2966 W
Total power per area (1548.15 m²)	1.92 W/m²
Upward light ratio (ULR)	0.00

Illuminance

Average illuminance	Em	464 lx
Minimum illuminance	Emin	286 lx
Maximum illuminance	Emax	674 lx
Uniformity Uo	Emin/Em	1:1.62 (0.62)
Diversity Ud	Emin/Emax	1:2.36 (0.42)

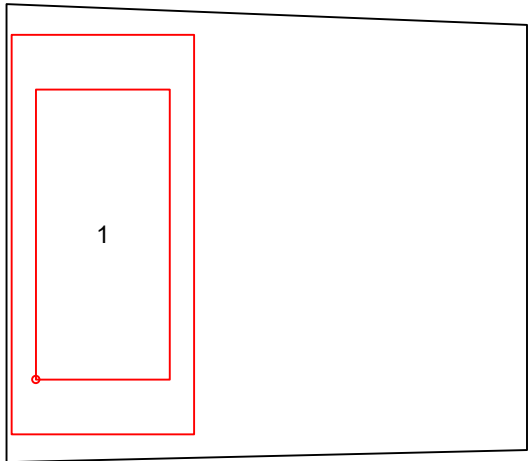
Type No. Make

1	4	Order No.	: !EX1 871
		Luminaire name	: 450W LED 4000K Floodlight
		Equipment	: 1 x LED 444 W / 65094 lm
2	2	Order No.	: !EX2 875
		Luminaire name	: 600W LED 4000K Floodlight
		Equipment	: 1 x LED 595 W / 83156 lm

The ULR value has been calculated without obstruction by other objects.

Summary, Court 1 Switched ON

Result overview, Results Overview (1)



Horizontal illuminance

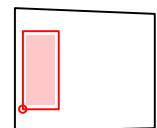
No.	Measuring surface	Grid	Em	Emin	Emax	Uo	Ud
1.1	Court 1 PPA	5 x 9	528 lx	386 lx	674 lx	0.73	0.57
1.2	Court 1 TPA	9 x 13	464 lx	286 lx	674 lx	0.62	0.42
Summary			486 lx	286 lx	674 lx	0.59	0.42

Court 1 Switched ON

Calculation results, Court 1 Switched ON

Table, Court 1 PPA (GR)

[m]	36.1	36.9	37.9	37.5	36.8				
22									
20	35.5	37.5	37.9	38	38				
18	34.7	37.2	38.9	[39.5]	39.2				
16									
14	36.8	37.9	38.4	38	37.5				
12	36.5	37.1	36.7	35.5	(34.2)				
10	36.9	37.9	38.1	37.4	36.8				
8									
6	34.9	37.3	38.9	39.4	38.9				
4	35.6	37.4	38.2	38.6	38.5				
2	36.1	37.1	38.1	37.8	37.1				
	2	3	4	5	6	7	8	9	[m]



Observer GR

Lve = 1.18 cd/m², Ehav(MF:1.0) = 530 lx, ρ = 20 % (-2°)

Height reference plane : 1.60 m
Minimum : 34.2
Maximum : 39.5

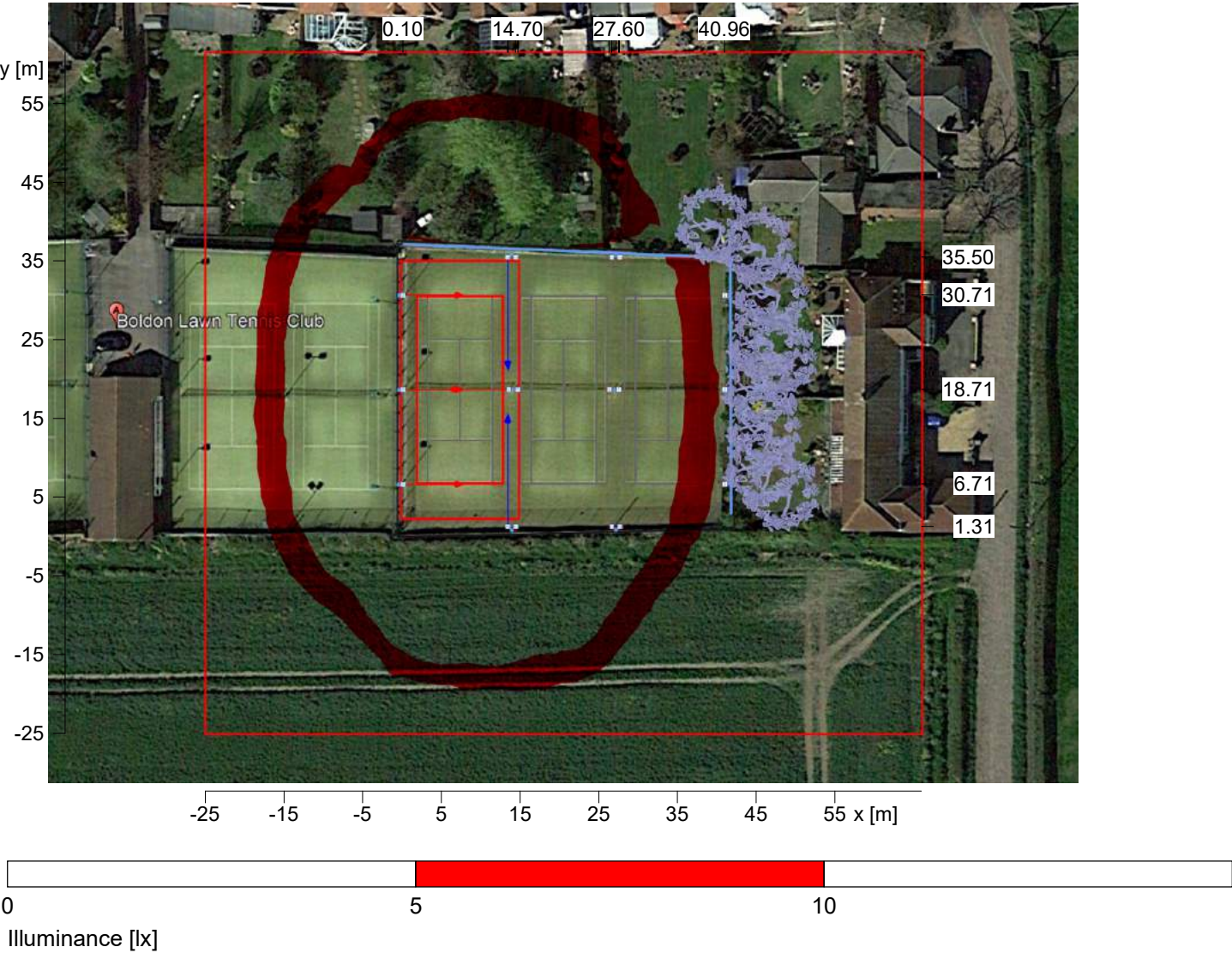
Court 1 Switched ON : Horizontal Lighting Spillage

Description, Court 1 Switched ON : Horizontal Lighting Spillage

Floor plan



Court 1 Switched ON : Horizontal Lighting Spillage
Calculation results, Court 1 Switched ON : Horizontal Lighting Spillage
Pseudo colours, Horizontal Spillage (E)

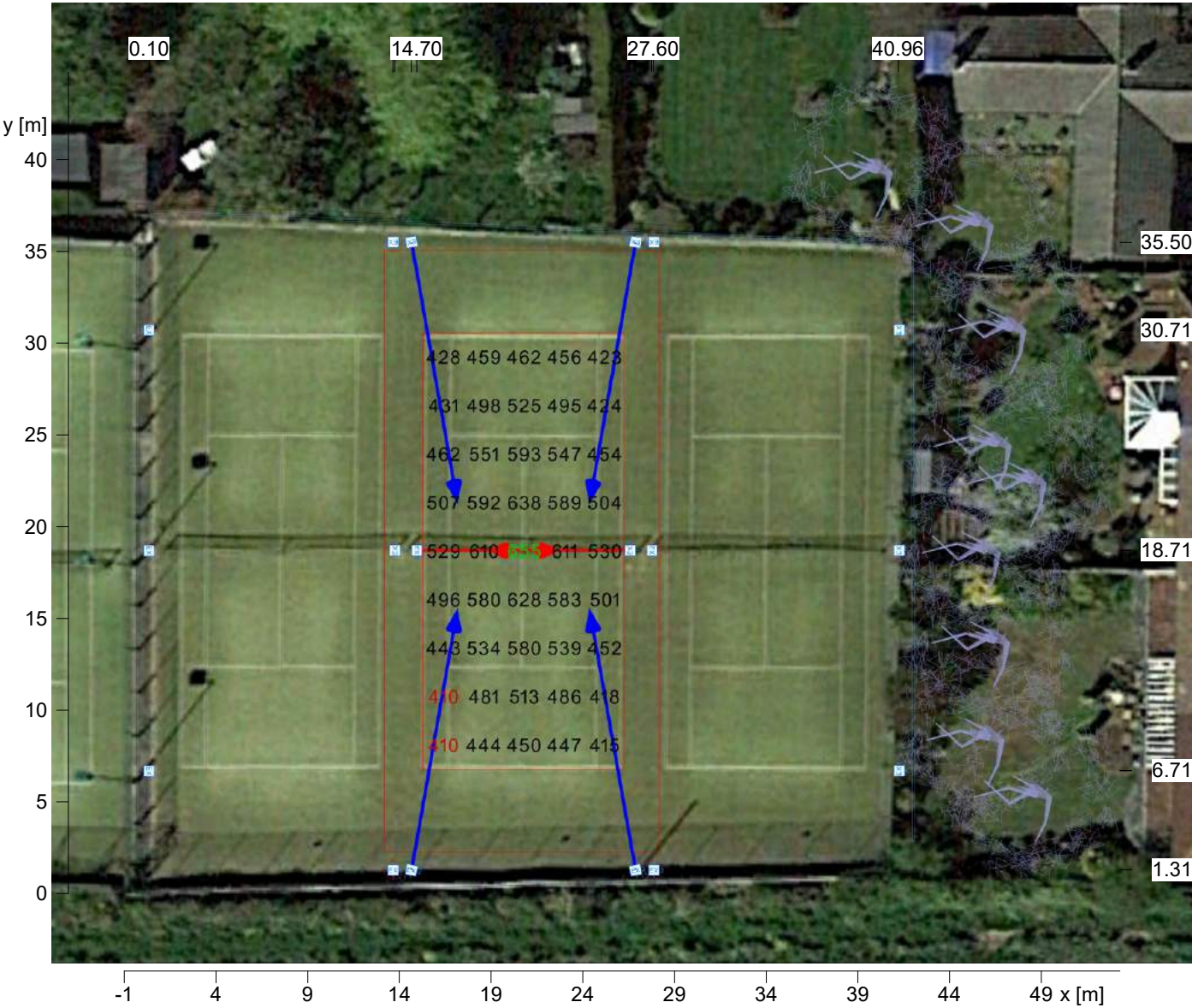


Height reference plane		: 0.00 m
Average illuminance	Em	: 54 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 658 lx
Uniformity Uo	Emin/Em	: ---
Diversity Ud	Emin/Emax	: ---

Court 2 Switched ON

Description, Court 2 Switched ON

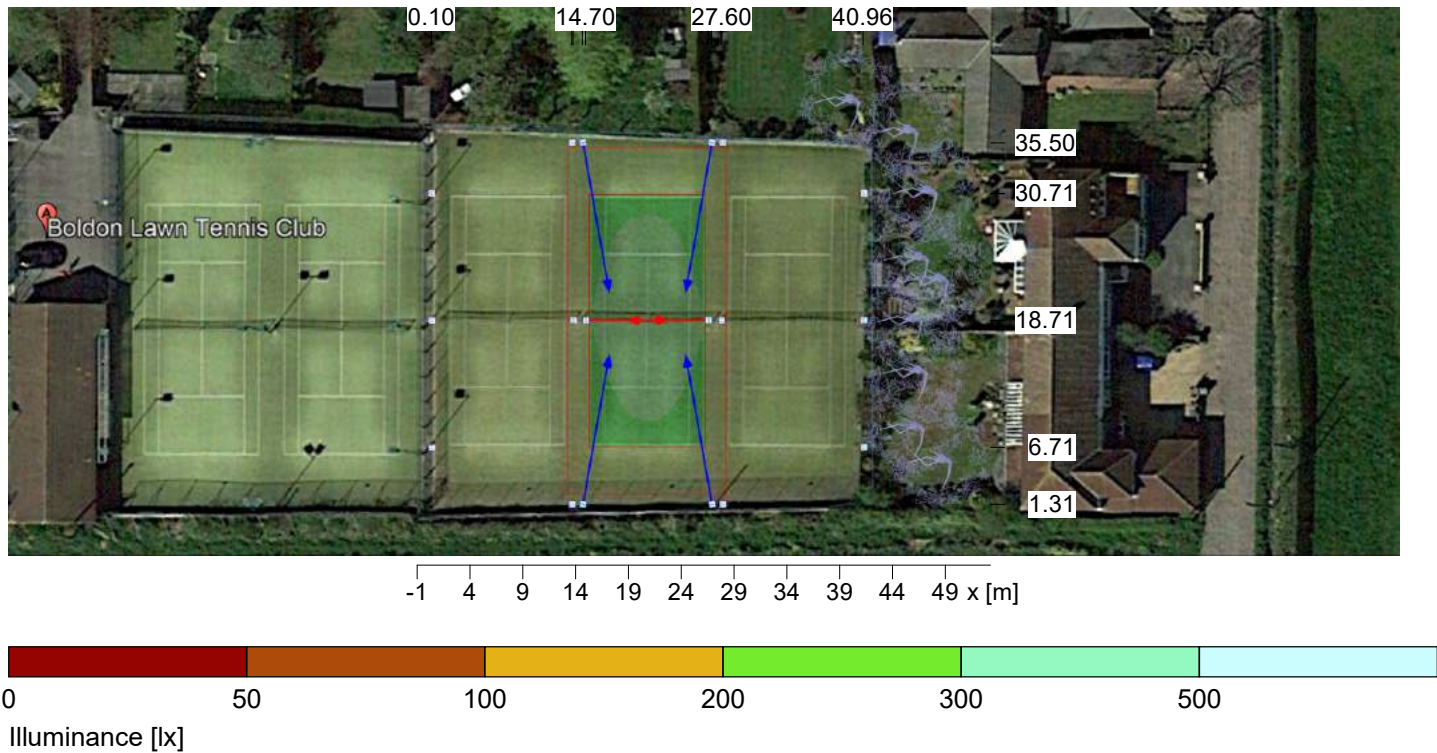
Floor plan



Court 2 Switched ON

Summary, Court 2 Switched ON

Result overview, Court 2 PPA



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.75 m
Maintenance factor	1.00

Total luminous flux of all lamps	462812 lm
Total power	3268 W
Total power per area (1548.15 m²)	2.11 W/m²
Upward light ratio (ULR)	0.00

Illuminance

Average illuminance	Em	506 lx
Minimum illuminance	Emin	410 lx
Maximum illuminance	Emax	655 lx
Uniformity Uo	Emin/Em	1:1.24 (0.81)
Diversity Ud	Emin/Emax	1:1.6 (0.63)

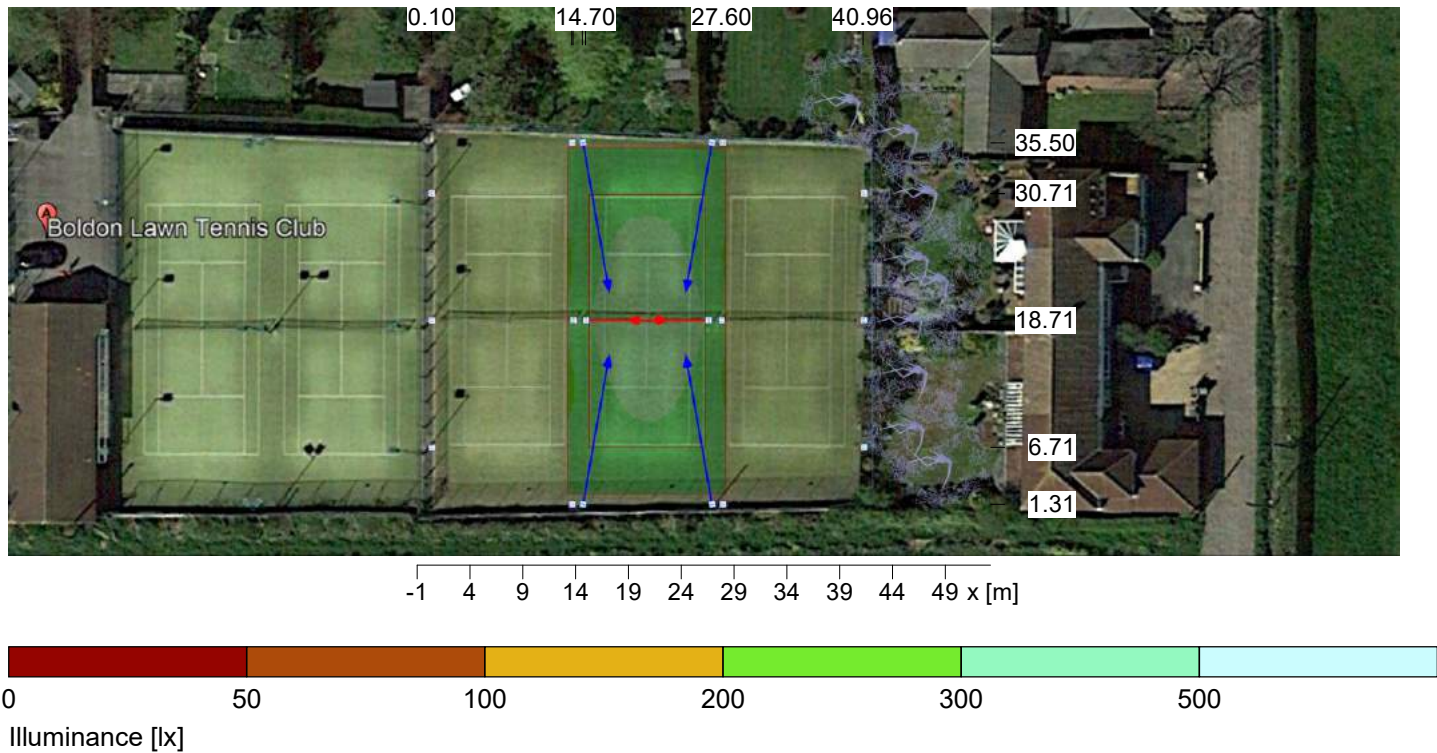
Type No. Make

1	2	Order No.	: !EX1 871
		Luminaire name	: 450W LED 4000K Floodlight
		Equipment	: 1 x LED 444 W / 65094 lm
2	4	Order No.	: !EX2 875
		Luminaire name	: 600W LED 4000K Floodlight
		Equipment	: 1 x LED 595 W / 83156 lm

The ULR value has been calculated without obstruction by other objects.

Summary, Court 2 Switched ON

Result overview, Court 2 TPA



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.75 m
Maintenance factor	1.00
Total luminous flux of all lamps	462812 lm
Total power	3268 W
Total power per area (1548.15 m²)	2.11 W/m²
Upward light ratio (ULR)	0.00

Illuminance

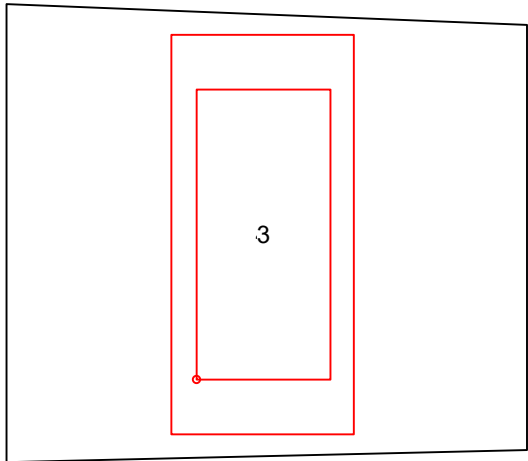
Average illuminance	Em	450 lx
Minimum illuminance	Emin	296 lx
Maximum illuminance	Emax	655 lx
Uniformity Uo	Emin/Em	1:1.52 (0.66)
Diversity Ud	Emin/Emax	1:2.21 (0.45)

Type No. Make

1	2	Order No.	: !EX1 871
		Luminaire name	: 450W LED 4000K Floodlight
		Equipment	: 1 x LED 444 W / 65094 lm
2	4	Order No.	: !EX2 875
		Luminaire name	: 600W LED 4000K Floodlight
		Equipment	: 1 x LED 595 W / 83156 lm

The ULR value has been calculated without obstruction by other objects.

Summary, Court 2 Switched ON
Result overview, Results Overview (1)



Horizontal illuminance

No.	Measuring surface	Grid	Em	Emin	Emax	Uo	Ud
1.3	Court 2 PPA	5 x 9	506 lx	410 lx	655 lx	0.81	0.63
1.4	Court 2 TPA	9 x 13	450 lx	296 lx	655 lx	0.66	0.45
Summary			470 lx	296 lx	655 lx	0.63	0.45

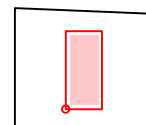
Object : Boldon Lawn Tennis Club
 Installation : Proposed Lighting
 Project number :
 Date : 18.06.2021

Court 2 Switched ON

Calculation results, Court 2 Switched ON

Table, Court 2 PPA (GR)

[m]	37.8	38.5	38.7	38.3	37.6				
22									
20	38.7	39	39.2	39	38.7				
18	40.1	40.4	[40.6]	40.4	40.1				
16									
14	38.7	38.7	38.3	38.7	38.7				
12	36.2	35.6	(34.9)	35.6	36.2				
10	38.3	38.1	37.6	38.1	38.3				
8									
6	39.9	40.4	40.4	40.4	39.9				
4	39.4	39.4	39.6	39.4	39.4				
2	37.7	38.4	38.8	38.6	38				
	2	3	4	5	6	7	8	9	[m]



Observer GR

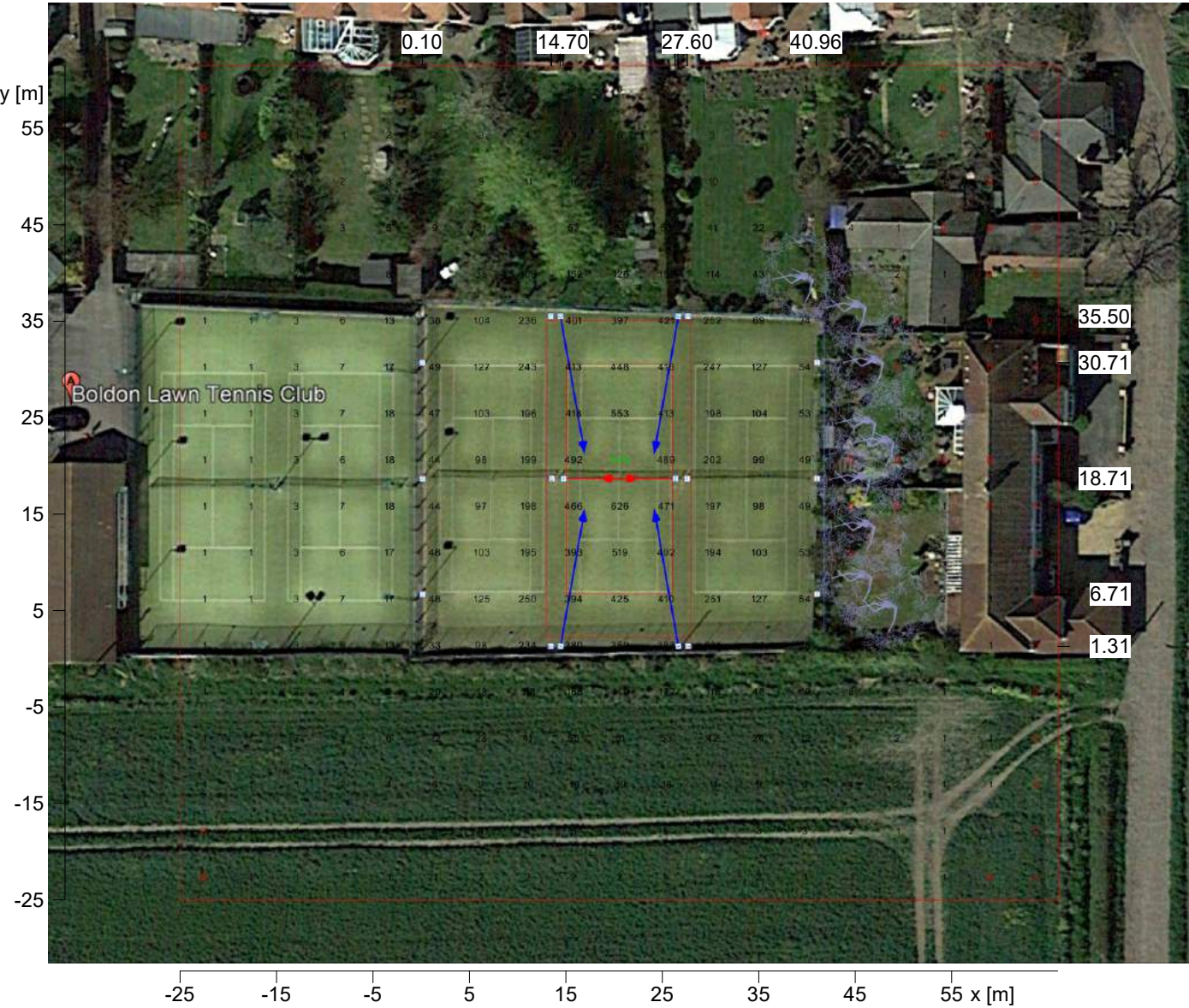
Lve = 1.13 cd/m², Ehav(MF:1.0) = 510 lx, ρ = 20 % (-2°)

Height reference plane : 1.60 m
 Minimum : 34.9
 Maximum : 40.6

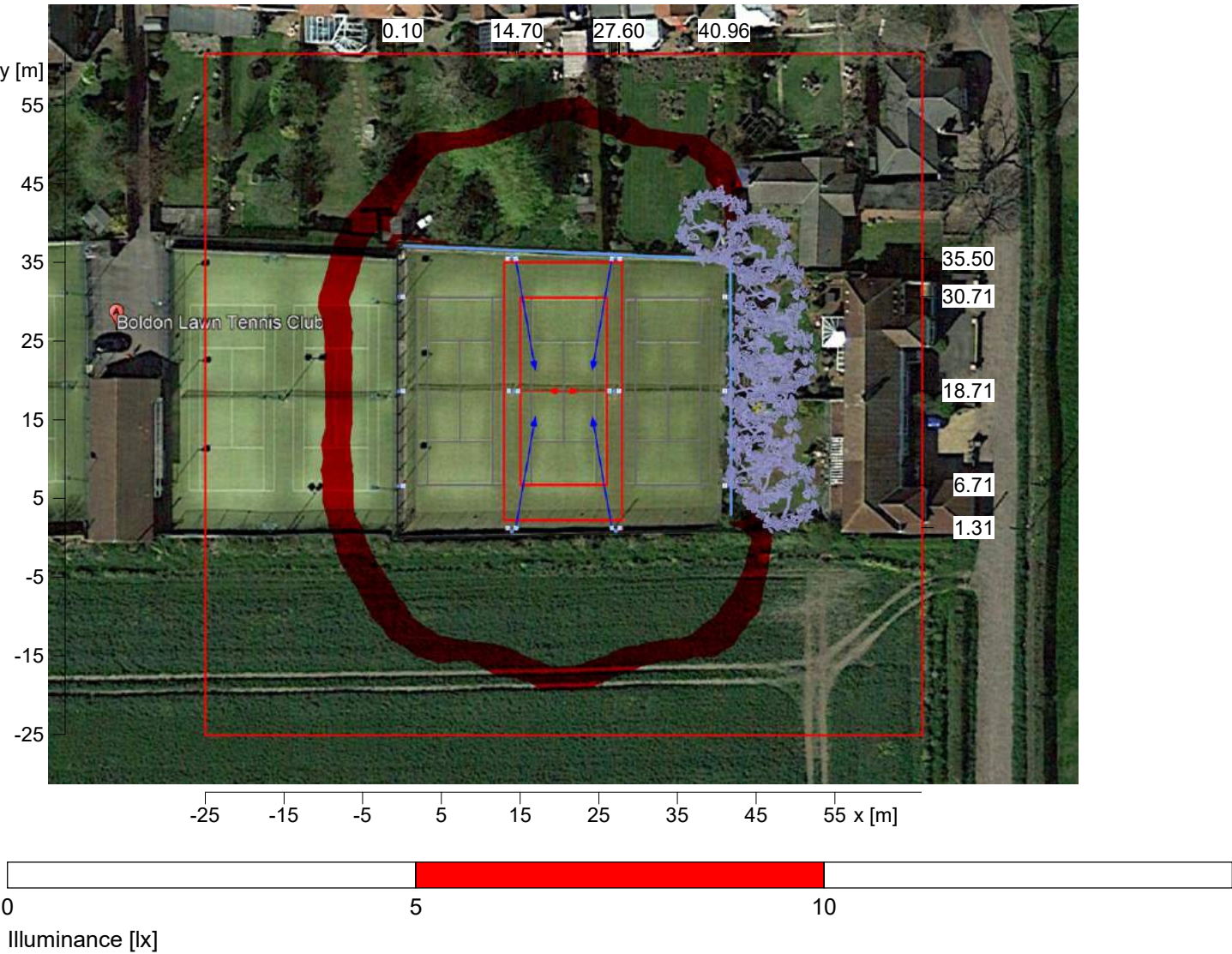
Court 2 Switched ON : Horizontal Lighting Spillage

Description, Court 2 Switched ON : Horizontal Lighting Spillage

Floor plan



Court 2 Switched ON : Horizontal Lighting Spillage
Calculation results, Court 2 Switched ON : Horizontal Lighting Spillage
Pseudo colours, Horizontal Spillage (E)

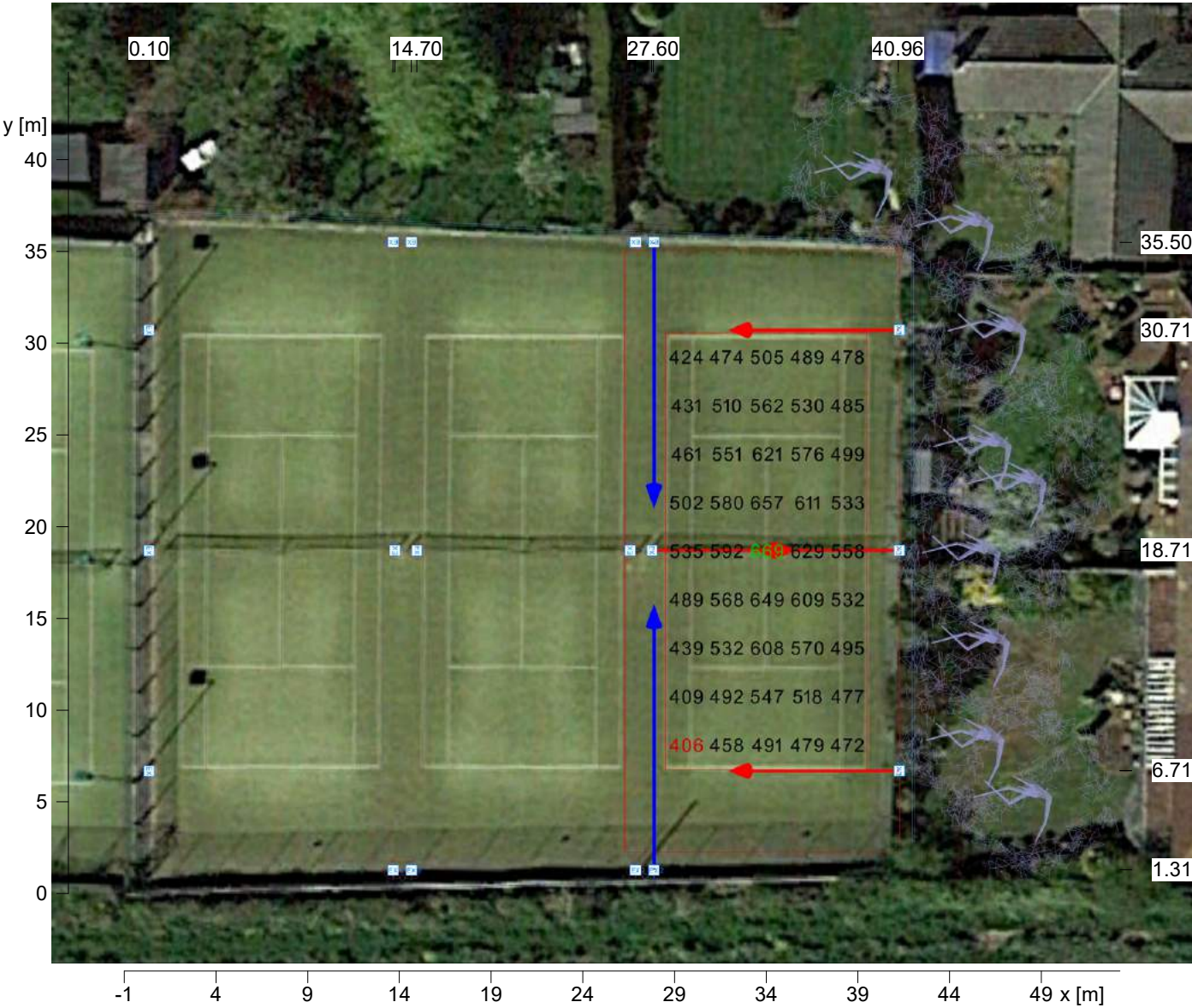


Height reference plane		: 0.00 m
Average illuminance	Em	: 58 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 643 lx
Uniformity Uo	Emin/Em	: 1 : 25524.21 (0.00)
Diversity Ud	Emin/Emax	: 1 : 281217.72 (0.00)

Court 3 Switched ON

Description, Court 3 Switched ON

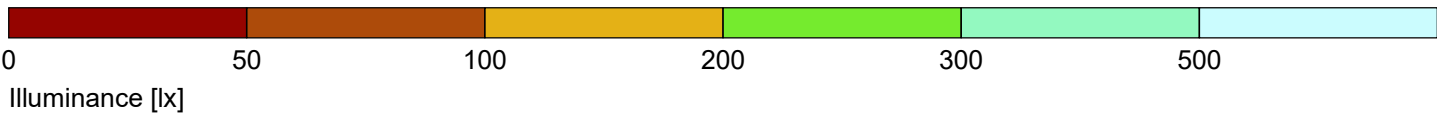
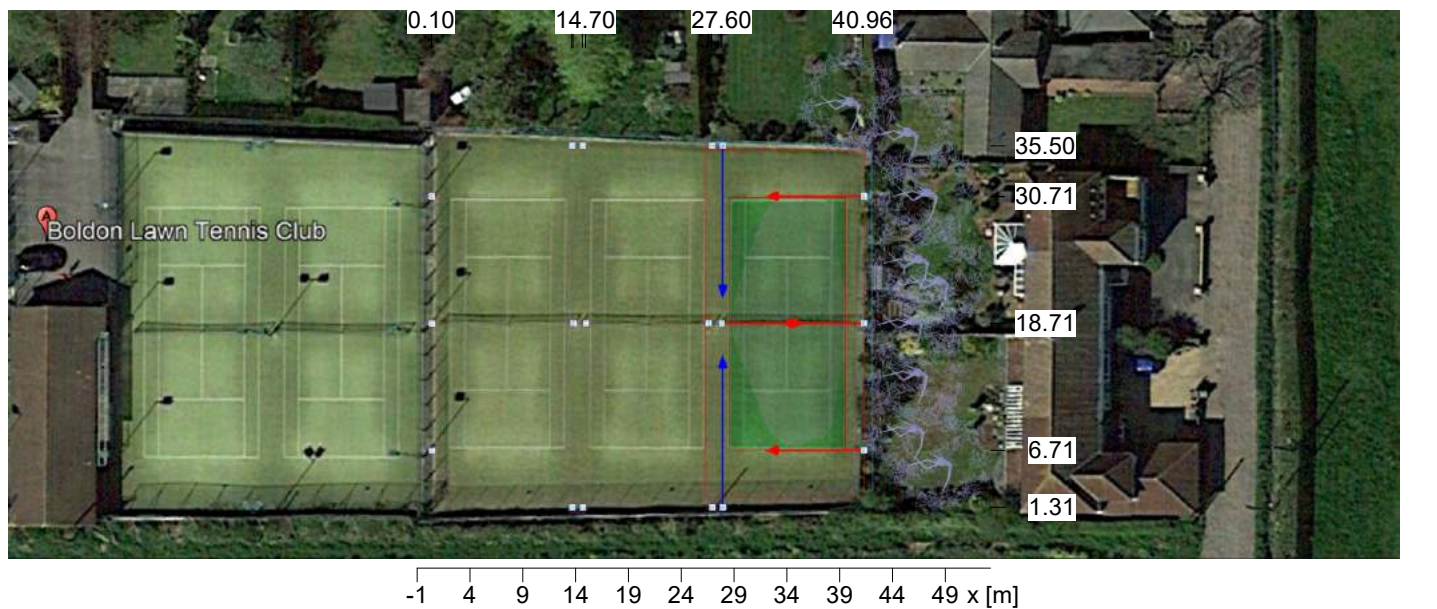
Floor plan



Court 3 Switched ON

Summary, Court 3 Switched ON

Result overview, Court 3 PPA



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.75 m
Maintenance factor	1.00

Total luminous flux of all lamps	426688 lm
Total power	2966 W
Total power per area (1548.15 m²)	1.92 W/m²
Upward light ratio (ULR)	0.00

Illuminance

Average illuminance	Em	527 lx
Minimum illuminance	Emin	406 lx
Maximum illuminance	Emax	669 lx
Uniformity Uo	Emin/Em	1:1.3 (0.77)
Diversity Ud	Emin/Emax	1:1.65 (0.61)

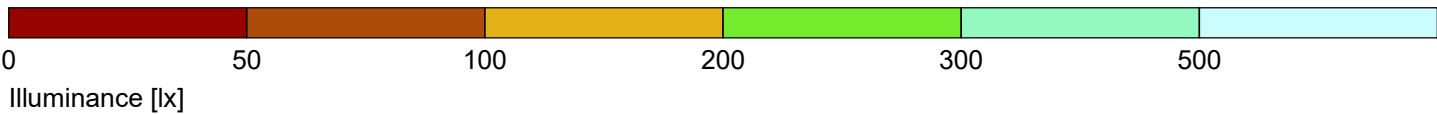
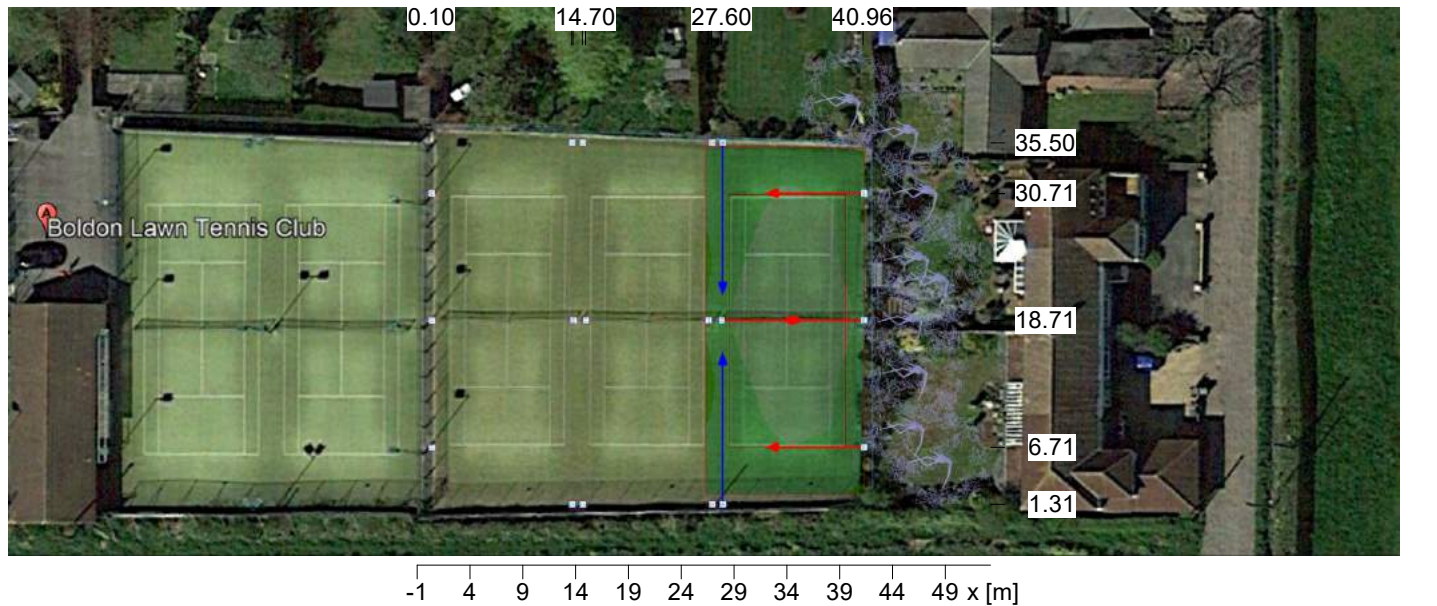
Type No. Make

1	4	Order No.	: !EX1 871
		Luminaire name	: 450W LED 4000K Floodlight
		Equipment	: 1 x LED 444 W / 65094 lm
2	2	Order No.	: !EX2 875
		Luminaire name	: 600W LED 4000K Floodlight
		Equipment	: 1 x LED 595 W / 83156 lm

The ULR value has been calculated without obstruction by other objects.

Summary, Court 3 Switched ON

Result overview, Court 3 TPA



General

Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.75 m
Maintenance factor	1.00
Total luminous flux of all lamps	426688 lm
Total power	2966 W
Total power per area (1548.15 m²)	1.92 W/m²
Upward light ratio (ULR)	0.00

Illuminance

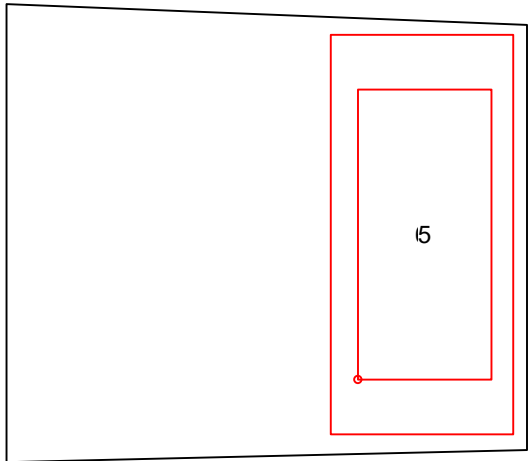
Average illuminance	Em	464 lx
Minimum illuminance	Emin	289 lx
Maximum illuminance	Emax	665 lx
Uniformity Uo	Emin/Em	1:1.61 (0.62)
Diversity Ud	Emin/Emax	1:2.3 (0.43)

Type No. Make

1	4	Order No.	: !EX1 871
		Luminaire name	: 450W LED 4000K Floodlight
		Equipment	: 1 x LED 444 W / 65094 lm
2	2	Order No.	: !EX2 875
		Luminaire name	: 600W LED 4000K Floodlight
		Equipment	: 1 x LED 595 W / 83156 lm

The ULR value has been calculated without obstruction by other objects.

Summary, Court 3 Switched ON
Result overview, Results Overview (1)



Horizontal illuminance

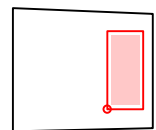
No.	Measuring surface	Grid	Em	Emin	Emax	Uo	Ud
1.5	Court 3 PPA	5 x 9	527 lx	406 lx	669 lx	0.77	0.61
1.6	Court 3 TPA	9 x 13	464 lx	289 lx	665 lx	0.62	0.43
Summary			486 lx	289 lx	669 lx	0.59	0.43

Court 3 Switched ON

Calculation results, Court 3 Switched ON

Table, Court 3 PPA (GR)

[m]	37.3	37.7	38	37.4	36.2				
22									
20	38	38.1	38.1	37.7	35.6				
18	39.2	[39.5]	38.9	37.3	(34.9)				
16									
14	37.7	38.1	38.5	37.9	36.8				
12	35.3	37.4	37	37.2	36.5				
10	37	37.6	38.2	37.8	36.7				
8									
6	39	39.4	38.9	37.3	(34.9)				
4	38.6	38.6	38.1	37.9	35.8				
2	37.1	37.7	38.1	37.2	36.2				
	2	3	4	5	6	7	8	9	[m]



Observer GR

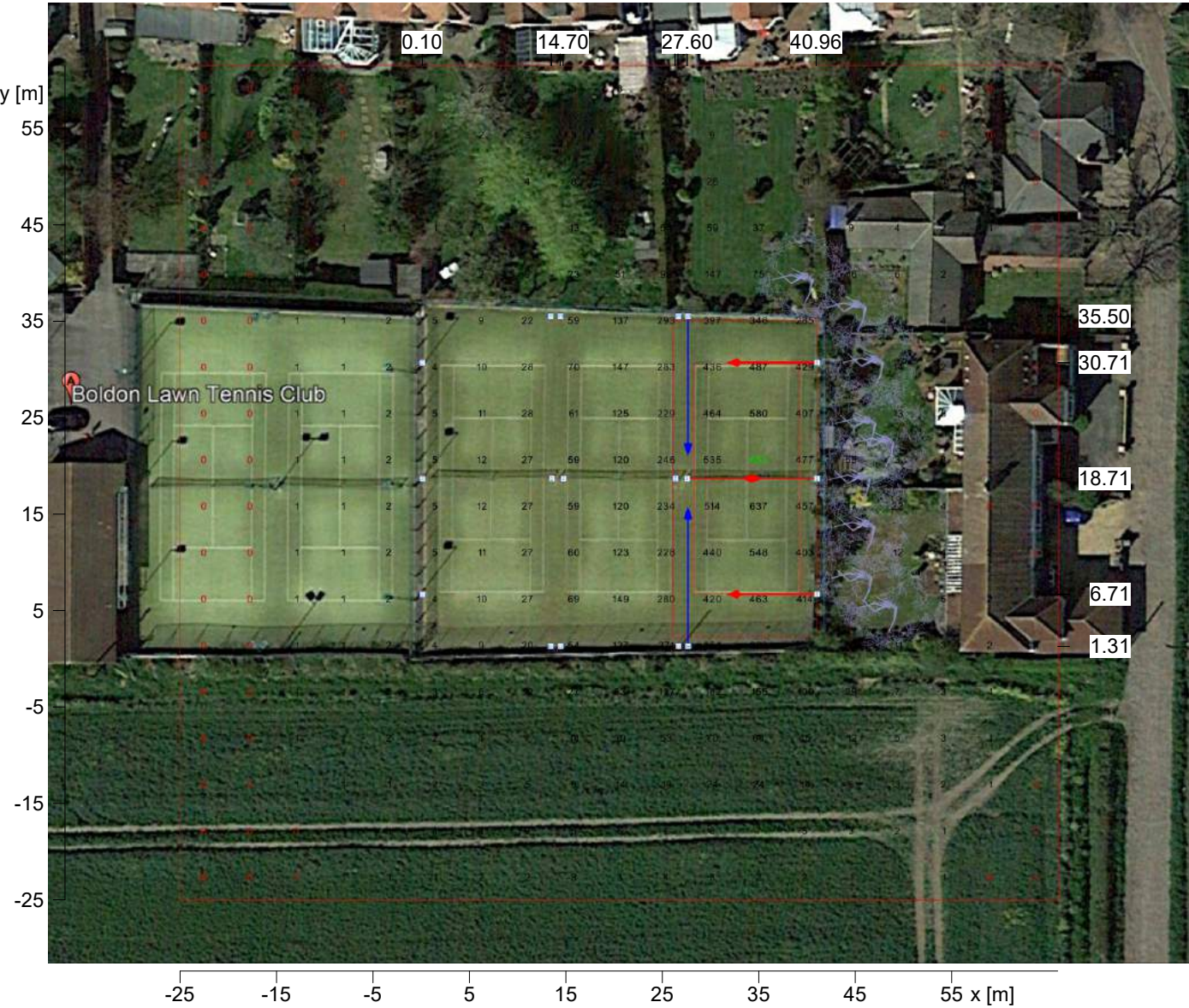
Lve = 1.17 cd/m², Ehav(MF:1.0) = 530 lx, ρ = 20 % (-2°)

Height reference plane : 1.60 m
Minimum : 34.9
Maximum : 39.5

Court 3 Switched ON : Horizontal Lighting Spillage

Description, Court 3 Switched ON : Horizontal Lighting Spillage

Floor plan



Court 3 Switched ON : Horizontal Lighting Spillage
Calculation results, Court 3 Switched ON : Horizontal Lighting Spillage
Pseudo colours, Horizontal Spillage (E)



Height reference plane		: 0.00 m
Average illuminance	Em	: 51 lx
Minimum illuminance	Emin	: 0 lx
Maximum illuminance	Emax	: 653 lx
Uniformity Uo	Emin/Em	: 1 : 356.63 (0.00)
Diversity Ud	Emin/Emax	: 1 : 4566.65 (0.00)