



PLANNING SECTION  
LEITRIM COUNTY COUNCIL  
Rec'd 2.09.25  
REF P/ED/25/38

## Project Technical Details

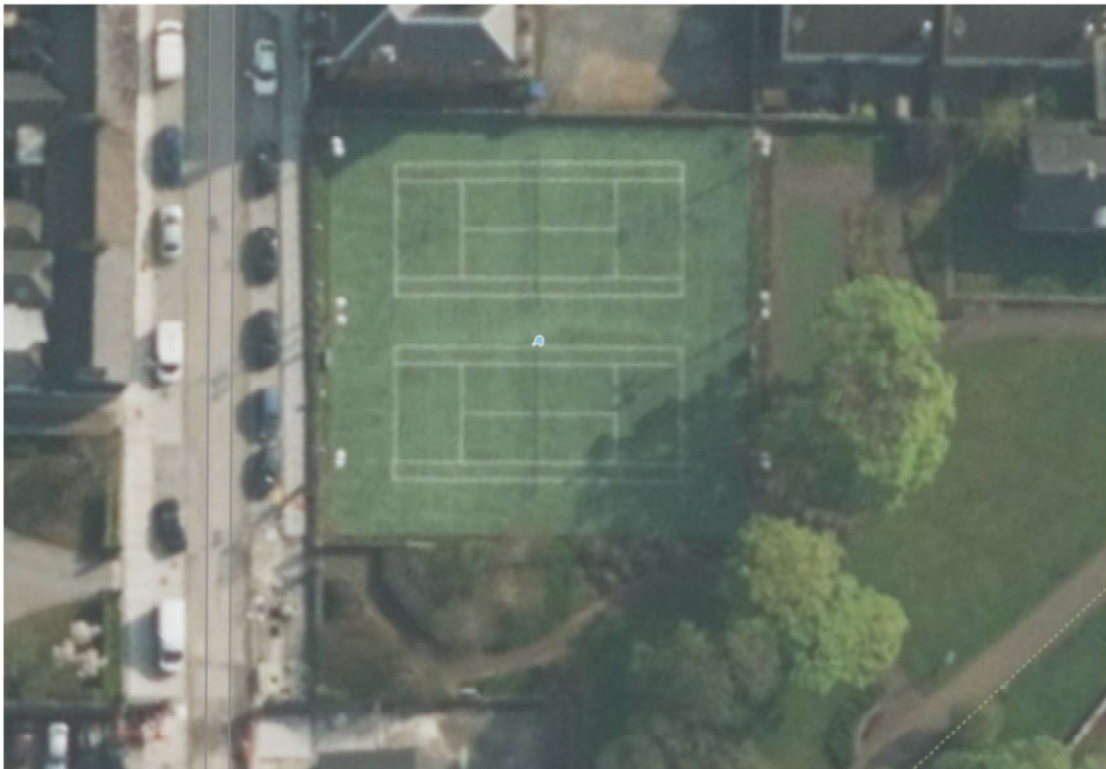
**Project: LED Lighting upgrade**

**Location: Carrick OnShannon Tennis Club**

**Contact: Philip Kelly**

**Ref: 25146**

**Date: 4/7/25**



## Project Brief

Specification: 400lx average

Uniformity: PPA:>0.7 TPA :>0.6

lowest level of light to be 70% of average on PPA

$E_{av}$  [lx] Symbol for average Lux levels

$u_0$  Symbol for uniformity (lowest level as a % of Average)

Better Energy Management Ltd

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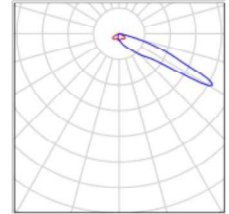
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## Carrick on Shannon Tennis Club / Luminaire parts list

8 Pieces VG-1200-AS-1 Front+Rear Visors  
Article No.:  
Luminous flux (Luminaire): 143165 lm  
Luminous flux (Lamps): 143344 lm  
Luminaire Wattage: 1196.6 W  
Luminaire classification according to CIE: 100  
CIE flux code: 23 62 97 100 100  
Fitting: 1 x User defined (Correction Factor 1.000).

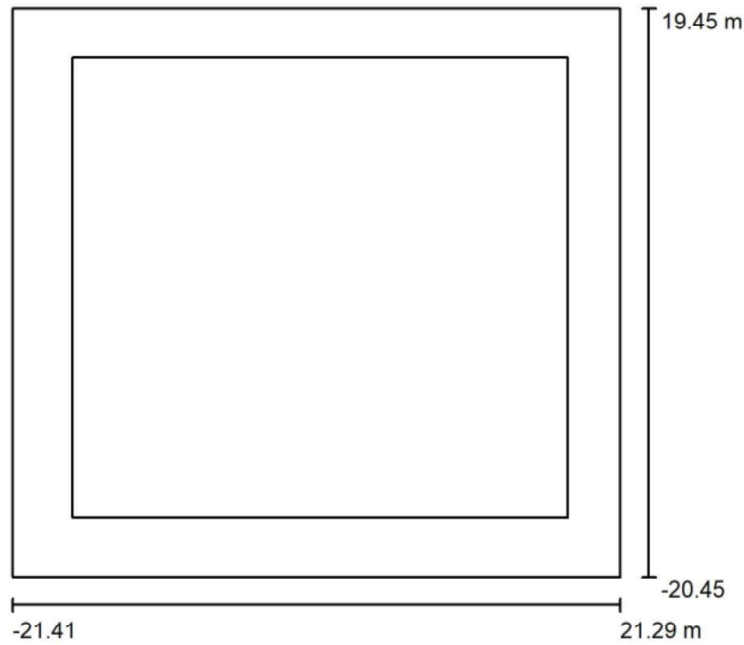
See our luminaire catalog for an image of the luminaire.



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### Carrick on Shannon Tennis Club / Court 1 Only / Planning data



Maintenance factor: 0.85, ULR (Upward Light Ratio): 0.0%

Scale 1:500

#### Luminaire Parts List

No.	Pieces	Designation (Correction Factor)	$\Phi$ (Luminaire) [lm]	$\Phi$ (Lamps) [lm]	P [W]
1	4	VG-1200-AS-1 Front+Rear Visors (1.000)	143165	143344	1196.6
Total:			572659	573376	4786.4

#### Existing electrical load:

8no 1kw Mh = 8kw (allowing for ballast) total = 9.2kw

Running cost: €0.3112 +9% = €0.34/kw  $9.2 * .34 = €3.13$  per hour to run one court

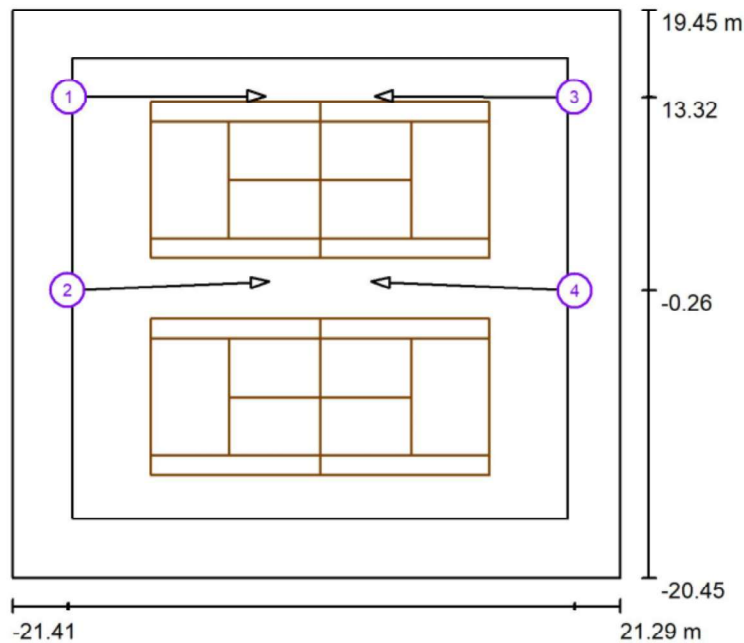
#### LED Lighting

4no 1.2kw = 4.8kw

Running cost: €0.3112 +9% = €0.34/kw  $4.8 * .34 = €1.63$  per hour to run one court

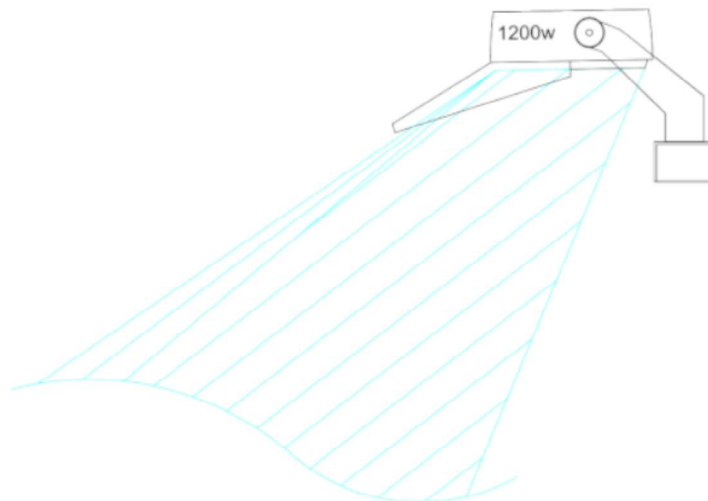
Energy saving = 48%

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e-Mail bmurphy@bem-ltd.com**Carrick on Shannon Tennis Club / Court 1 Only / Sport Luminaires (Coordinates List)**

Scale 1 : 500

Actual angle of fitting

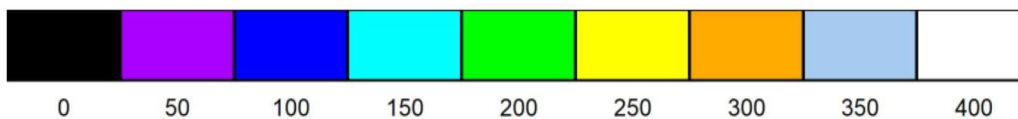
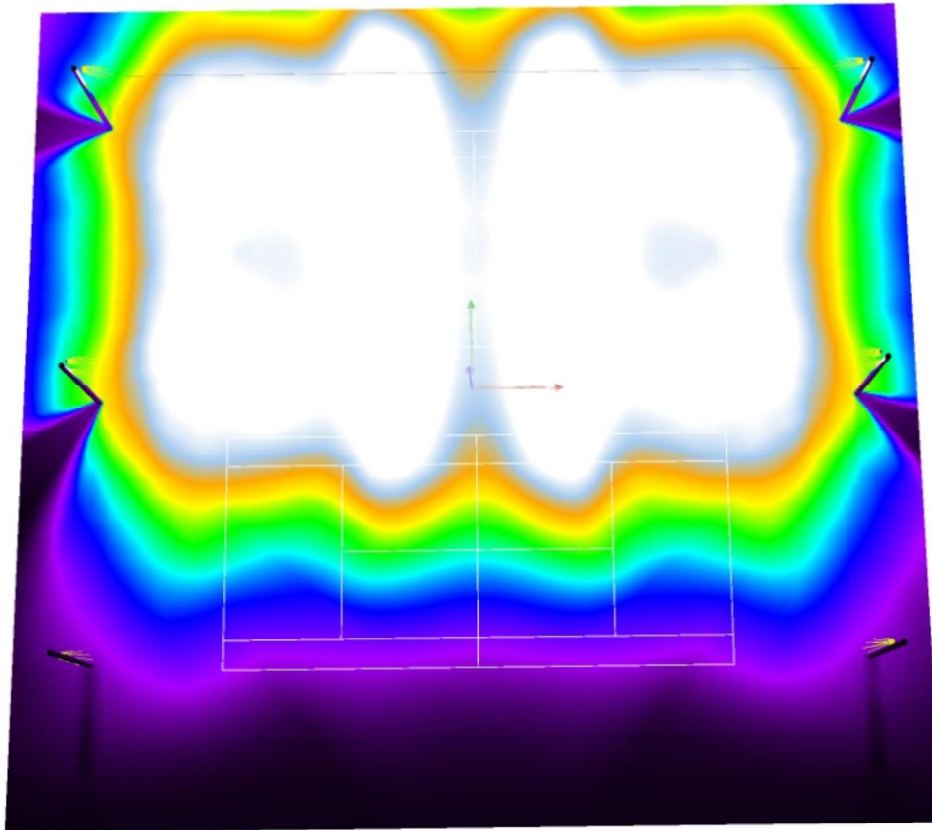


New design from BEM Ltd  
ASYMMETRICAL LENS ALLOWS FOR  
LIGHT TO BE DIRECTED FORWARD  
RESULTING IN LOW GLARE

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## Carrick on Shannon Tennis Club / Court 1 Only / False Colour Rendering



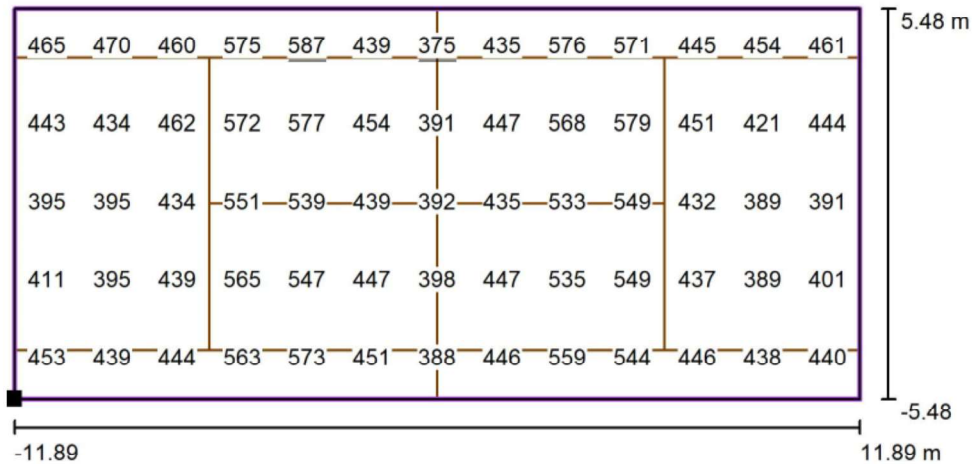
lx



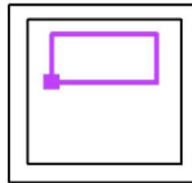
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### Carrick on Shannon Tennis Club / Court 1 Only / Court 1 Calculation Grid (PPA) / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 200

Position of surface in external scene:  
Marked point: (-11.690 m, 2.020 m,  
0.000 m)

Grid: 13 x 5 Points

 $E_{av}$  [lx]  
470

 $E_{min}$  [lx]  
375

 $E_{max}$  [lx]  
587

 $u_0$   
0.80

 $E_{min} / E_{max}$   
0.64

### Principle Playinig Area

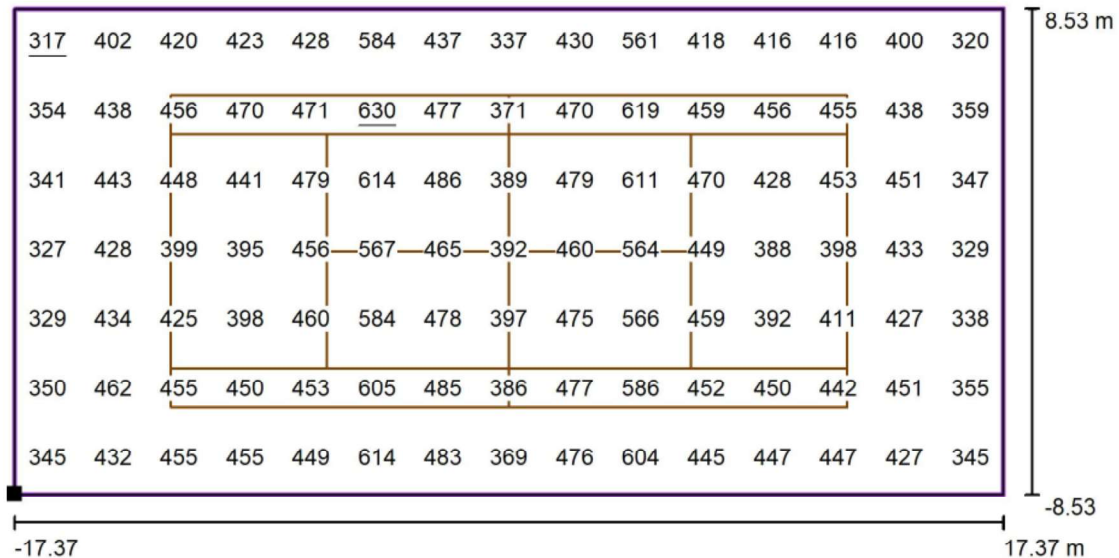
Average Lux: 470Lx

Uniformity: 0.8 (Lowest level of light is 80% of average)

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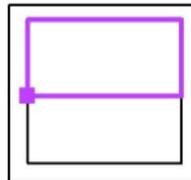
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### Carrick on Shannon Tennis Club / Court 1 Only / Court 1 Calculation Grid (TPA) / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 250

Position of surface in external scene:  
Marked point: (-17.175 m, -1.035 m,  
0.000 m)



Grid: 15 x 7 Points

 $E_{av}$  [lx]  
446

 $E_{min}$  [lx]  
317

 $E_{max}$  [lx]  
630

 $u0$   
0.71

 $E_{min} / E_{max}$   
0.50

Total Playing Area

Average Lux: 446Lx

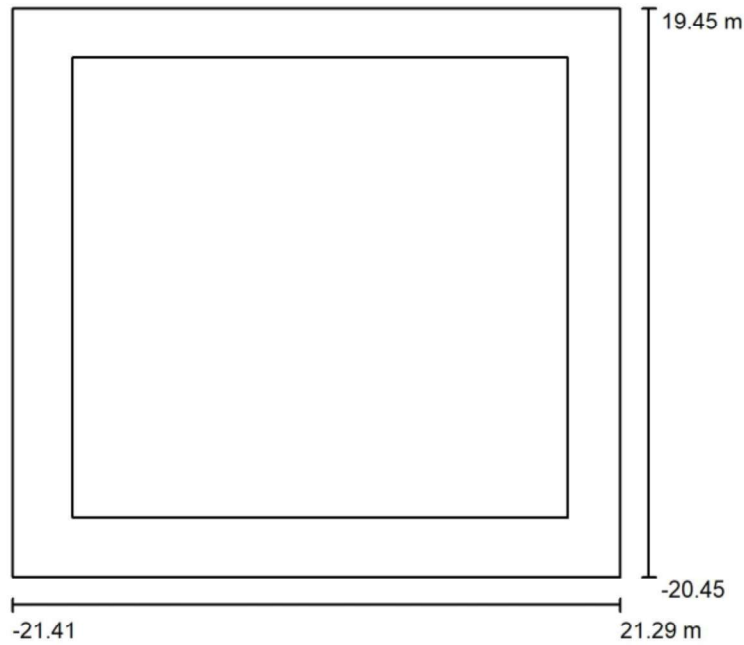
Uniformity: 0.71 (Lowest level of light is 71% of average)



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### Carrick on Shannon Tennis Club / Cour 2 Only / Planning data



Maintenance factor: 0.85, ULR (Upward Light Ratio): 0.0%

Scale 1:500

#### Luminaire Parts List

No.	Pieces	Designation (Correction Factor)	$\Phi$ (Luminaire) [lm]	$\Phi$ (Lamps) [lm]	P [W]
1	4	VG-1200-AS-1 Front+Rear Visors (1.000)	143165	143344	1196.6
Total:			572659	573376	4786.4

#### Existing electrical load:

8no 1kw Mh = 8kw (allowing for ballast) total = 9.2kw

Running cost: €0.3112 +9% = €0.34/kw  $9.2 * .34 = €3.13$  per hour to run one court

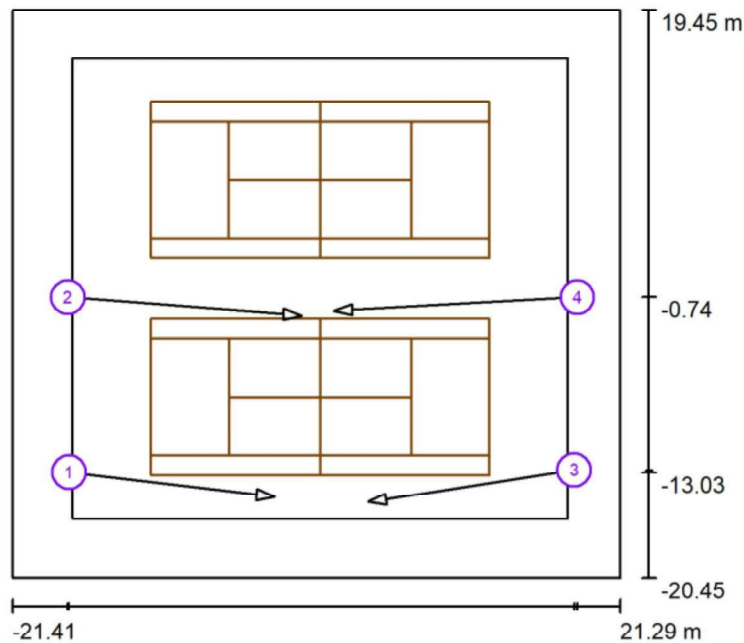
#### LED Lighting

4no 1.2kw = 4.8kw

Running cost: €0.3112 +9% = €0.34/kw  $4.8 * .34 = €1.63$  per hour to run one court

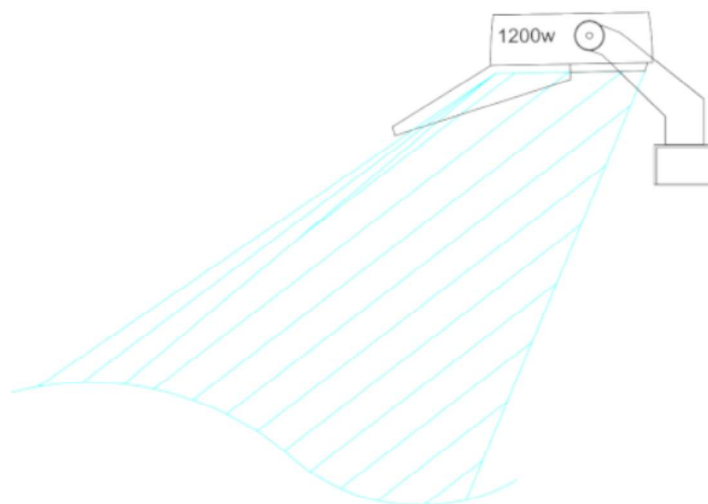
Energy saving = 48%

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Scale 1 : 500

Actual angle of fitting

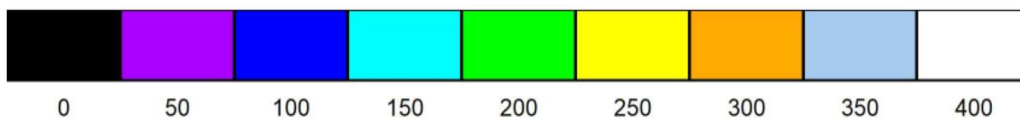
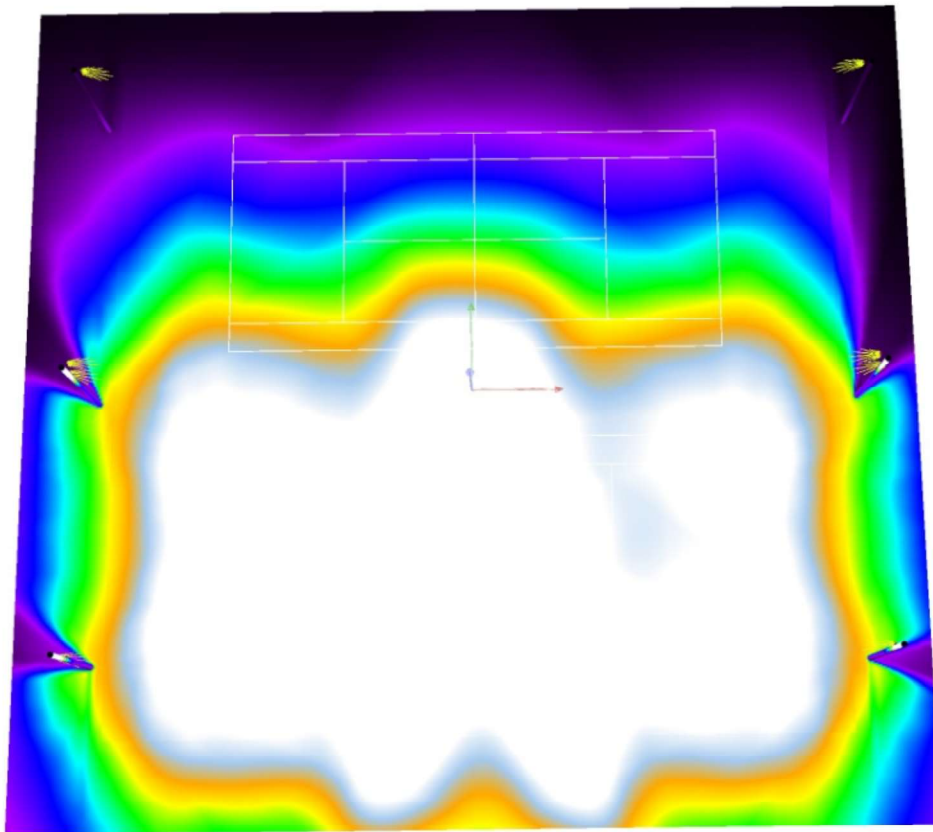


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## Carrick on Shannon Tennis Club / Cour 2 Only / False Colour Rendering

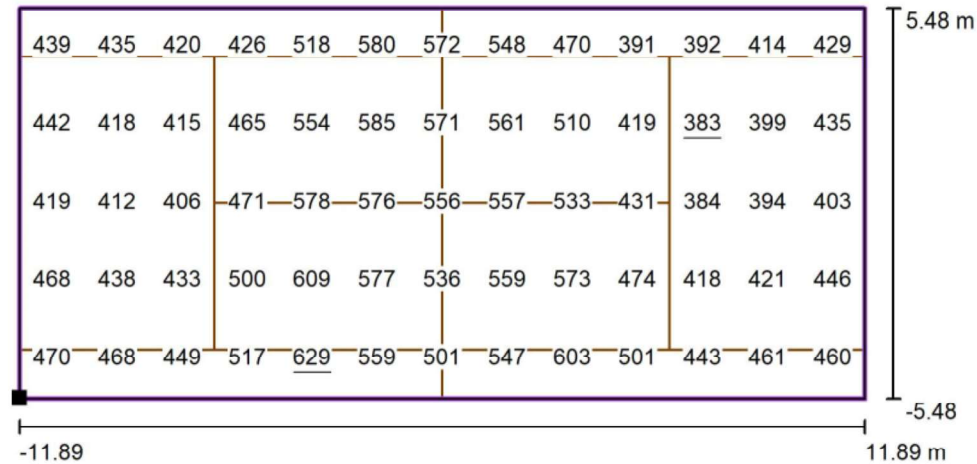


lx

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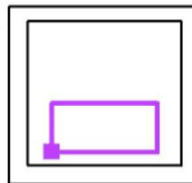
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## Carrick on Shannon Tennis Club / Cour 2 Only / Court 2 Calculation Grid (PPA) / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 200

Position of surface in external scene:  
Marked point: (-11.672 m, -13.233 m,  
0.000 m)



Grid: 13 x 5 Points

 $E_{av}$  [lx]  
483

 $E_{min}$  [lx]  
383

 $E_{max}$  [lx]  
629

 $u_0$   
0.79

 $E_{min} / E_{max}$   
0.61

### Principle Playinig Area

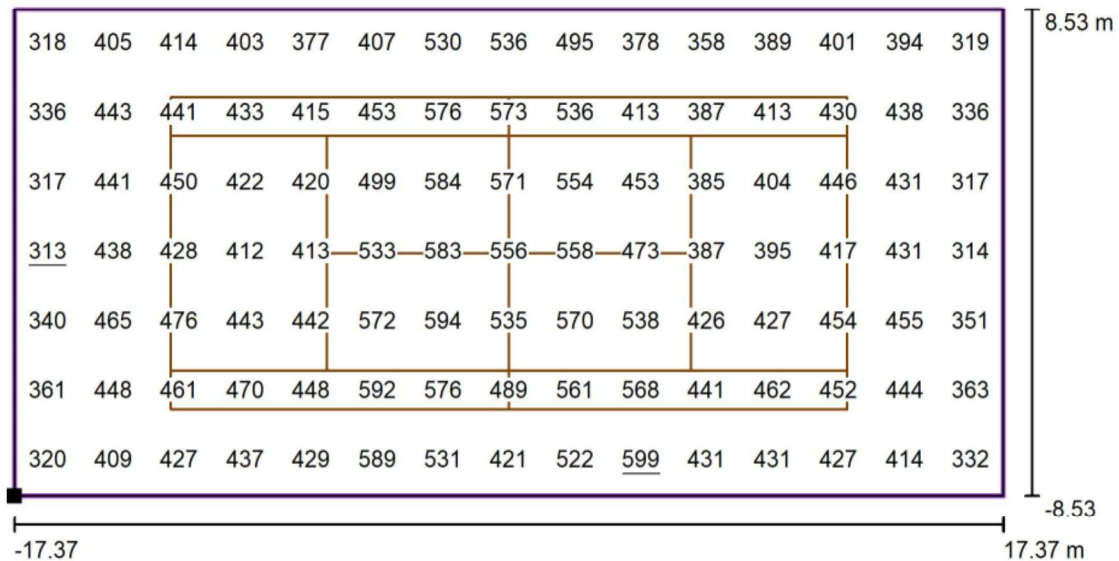
Average Lux: 483Lx

Uniformity: 0.79 (Lowest level of light is 79% of average)

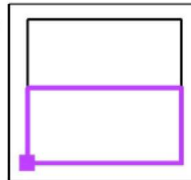
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## Carrick on Shannon Tennis Club / Cour 2 Only / Court 2 Calculation Grid (TPA) / Value Chart (E, Perpendicular)



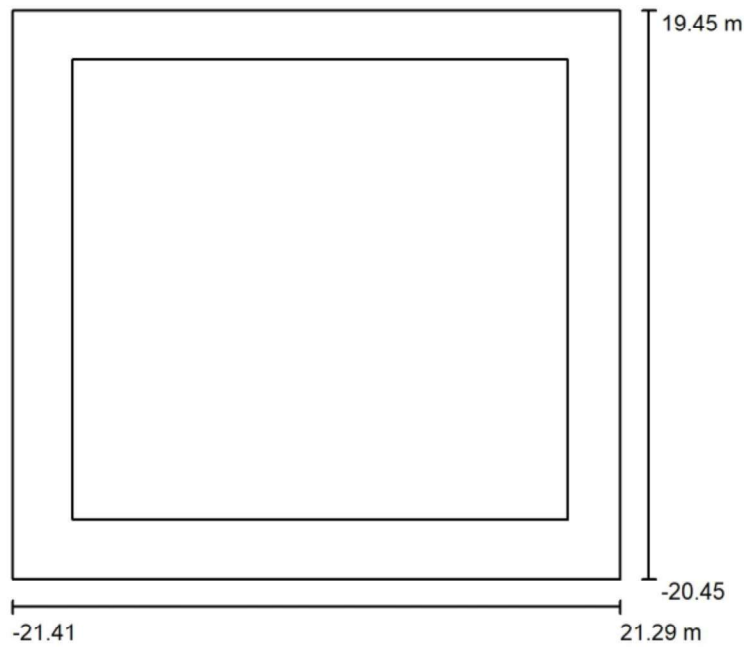
Values in Lux, Scale 1 : 250

Position of surface in external scene:  
Marked point: (-17.157 m, -16.288 m,  
0.000 m)

Grid: 15 x 7 Points

 $E_{av}$  [lx]  
448 $E_{min}$  [lx]  
313 $E_{max}$  [lx]  
599 $u0$   
0.70 $E_{min} / E_{max}$   
0.52**Total Playing Area****Average Lux: 448Lx****Uniformity: 0.70 (Lowest level of light is 70% of average)**

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Maintenance factor: 0.85, ULR (Upward Light Ratio): 0.0%

Scale 1:500

**Luminaire Parts List**

No.	Pieces	Designation (Correction Factor)	$\Phi$ (Luminaire) [lm]	$\Phi$ (Lamps) [lm]	P [W]
1	8	VG-1200-AS-1 Front+Rear Visors (1.000)	143165	143344	1196.6
Total:			1145318	Total: 1146752	9572.8

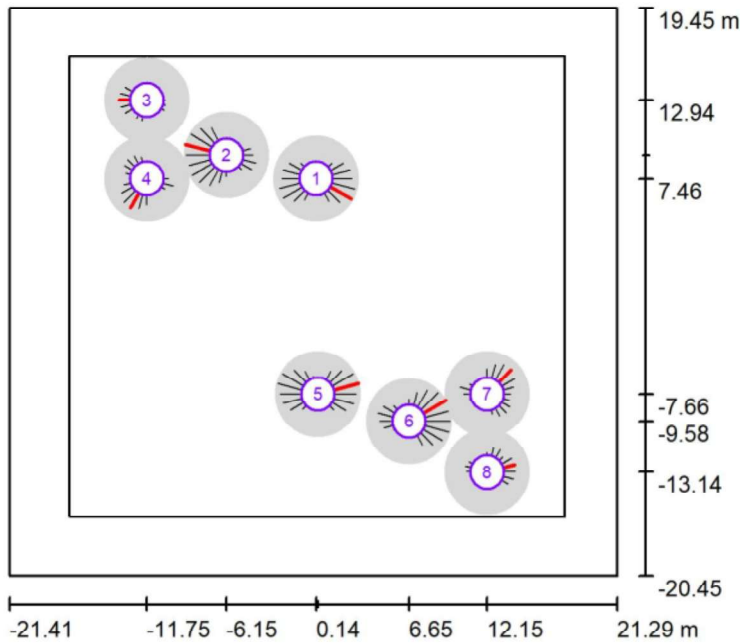
**Total Electrical Load for 2 courts****9.6kw**



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**Carrick on Shannon Tennis Club / All Lights On / GR Observer (Results Overview)**



Scale 1 : 500

**GR Observerlist**

No.	Designation	Position [m]			Viewing sector [°]				Max
		X	Y	Z	Start	End	Increment	Slope angle	
1	GR Observer 1	0.145	7.460	1.500	0.0	360.0	15.0	-2.0	44 <sup>2)</sup>
2	GR Observer 1	-6.155	9.110	1.500	0.0	360.0	15.0	-2.0	47 <sup>2)</sup>
3	GR Observer 1	-11.745	12.940	1.500	0.0	360.0	15.0	-2.0	31 <sup>2)</sup>
4	GR Observer 1	-11.745	7.460	1.500	0.0	360.0	15.0	-2.0	37 <sup>2)</sup>

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## Carrick on Shannon Tennis Club / All Lights On / GR Observer (Results Overview)

### GR Observerlist

No.	Designation	Position [m]			Start	Viewing sector [°]		Slope angle	Max
		X	Y	Z		End	Increment		
5	GR Observer 2	0.255	-7.660	1.500	0.0	360.0	15.0	-2.0	46 <sup>2)</sup>
6	GR Observer 2	6.655	-9.578	1.500	0.0	360.0	15.0	-2.0	47 <sup>2)</sup>
7	GR Observer 2	12.145	-7.660	1.500	0.0	360.0	15.0	-2.0	37 <sup>2)</sup>
8	GR Observer 2	12.145	-13.140	1.500	0.0	360.0	15.0	-2.0	31 <sup>2)</sup>

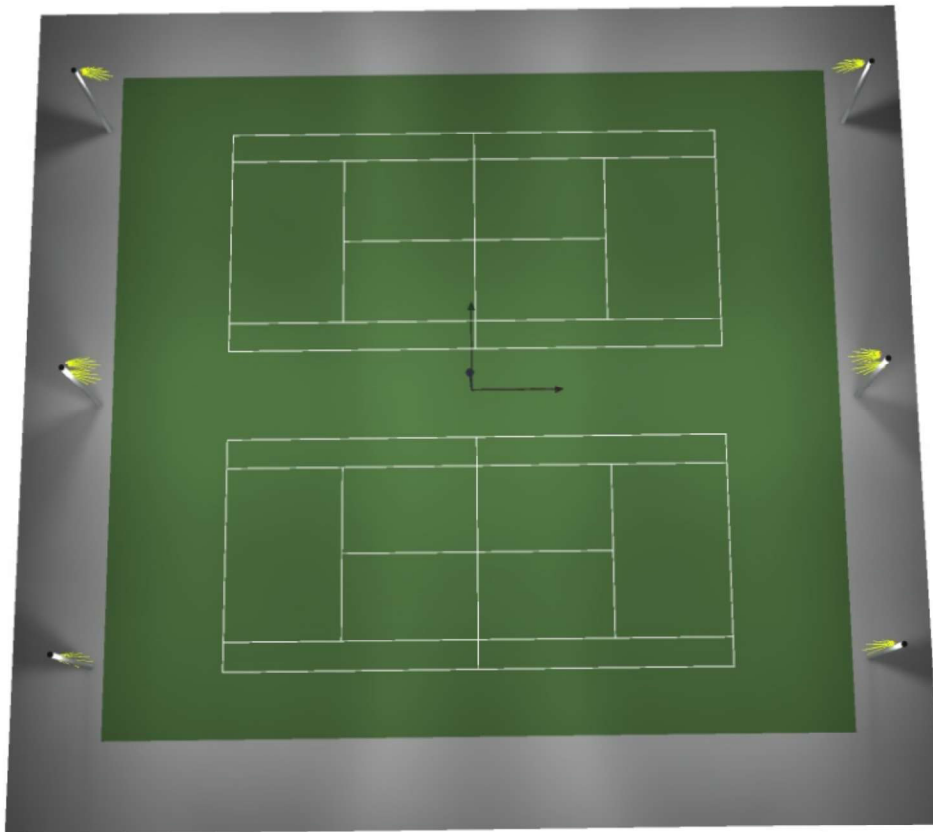
2) The calculated equivalent veil luminance of the environment is based on the assumption of a complete diffuse reflection behavior of the environment (acc. EN 12464-2).

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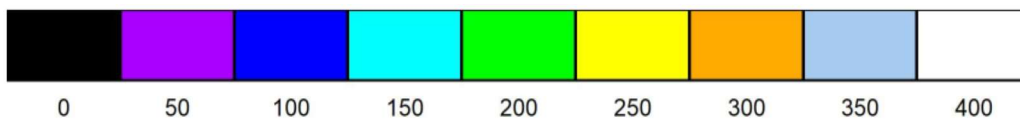
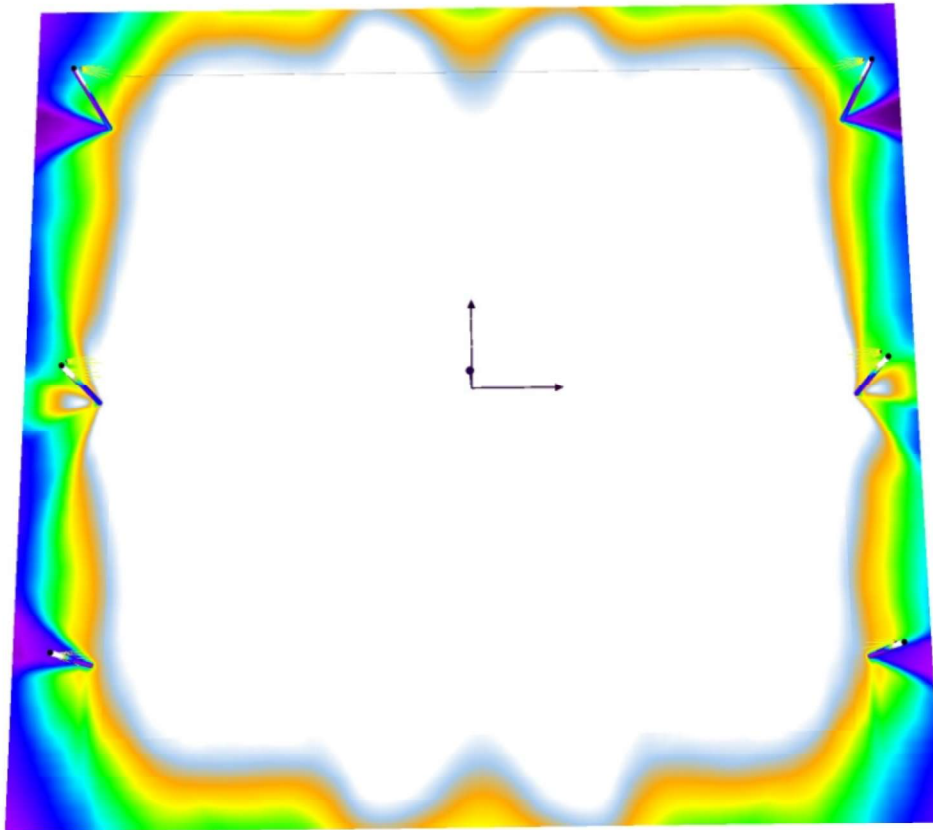
### Carrick on Shannon Tennis Club / All Lights On / 3D Rendering



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## Carrick on Shannon Tennis Club / All Lights On / False Colour Rendering

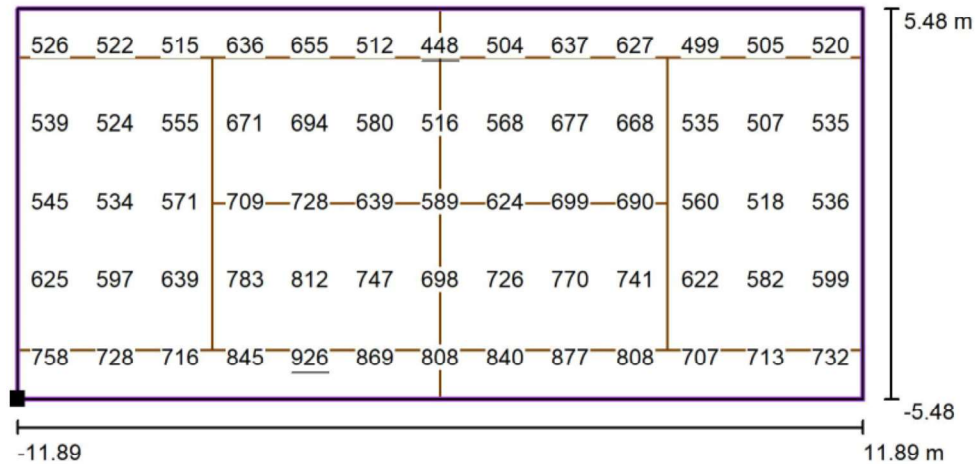


lx

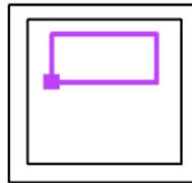
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### Carrick on Shannon Tennis Club / All Lights On / Court 1 Calculation Grid (PPA) / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 200

Position of surface in external scene:  
Marked point: (-11.690 m, 2.020 m,  
0.000 m)

Grid: 13 x 5 Points

 $E_{av}$  [lx]  
644

 $E_{min}$  [lx]  
448

 $E_{max}$  [lx]  
926

 $u_0$   
0.70

 $E_{min} / E_{max}$   
0.48

### Both Courts Lighting

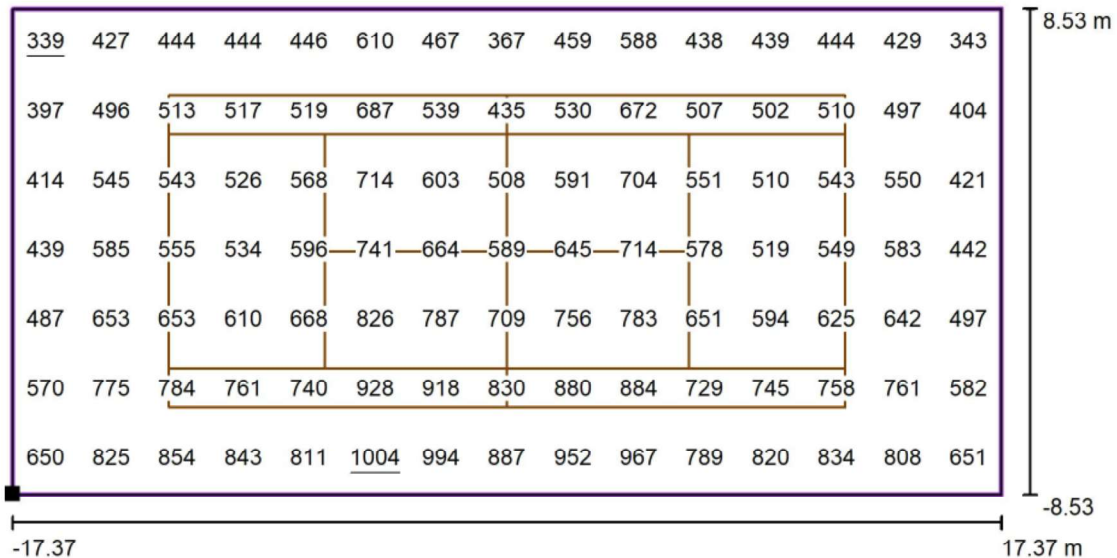
Average Lux Court 2 = 664lx

Uniformity: 0.7

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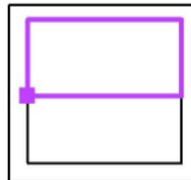
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Values in Lux, Scale 1 : 250

Position of surface in external scene:  
Marked point: (-17.175 m, -1.035 m,  
0.000 m)



Grid: 15 x 7 Points

 $E_{av}$  [lx]  
626

 $E_{min}$  [lx]  
339

 $E_{max}$  [lx]  
1004

 $u_0$   
0.54

 $E_{min} / E_{max}$   
0.34

### Both Courts Lighting

Average Lux Court 2 = 626lx (Total Playing Area)

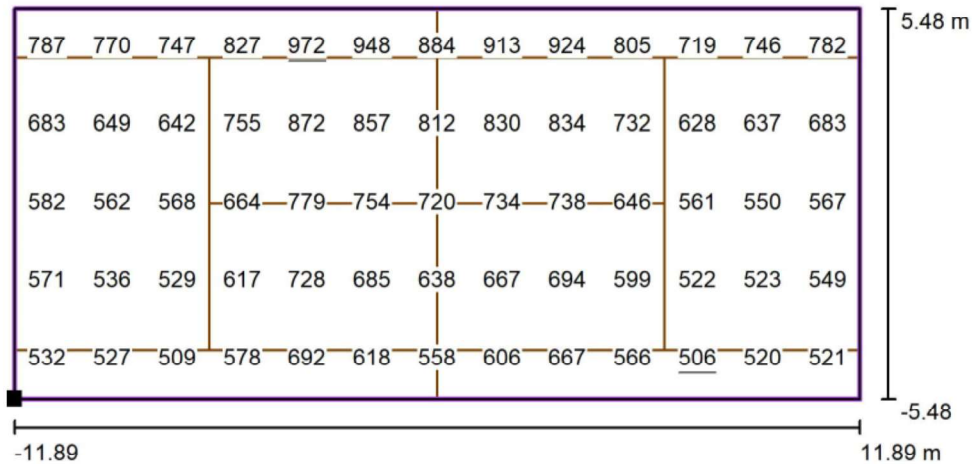
Uniformity: 0.54



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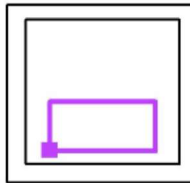
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### Carrick on Shannon Tennis Club / All Lights On / Court 2 Calculation Grid (PPA) / Value Chart (E, Perpendicular)



Values in Lux, Scale 1 : 200

Position of surface in external scene:  
Marked point: (-11.672 m, -13.233 m,  
0.000 m)



Grid: 13 x 5 Points

 $E_{av}$  [lx]  
679

 $E_{min}$  [lx]  
506

 $E_{max}$  [lx]  
972

 $u_0$   
0.75

 $E_{min} / E_{max}$   
0.52

### Both courts Lighting

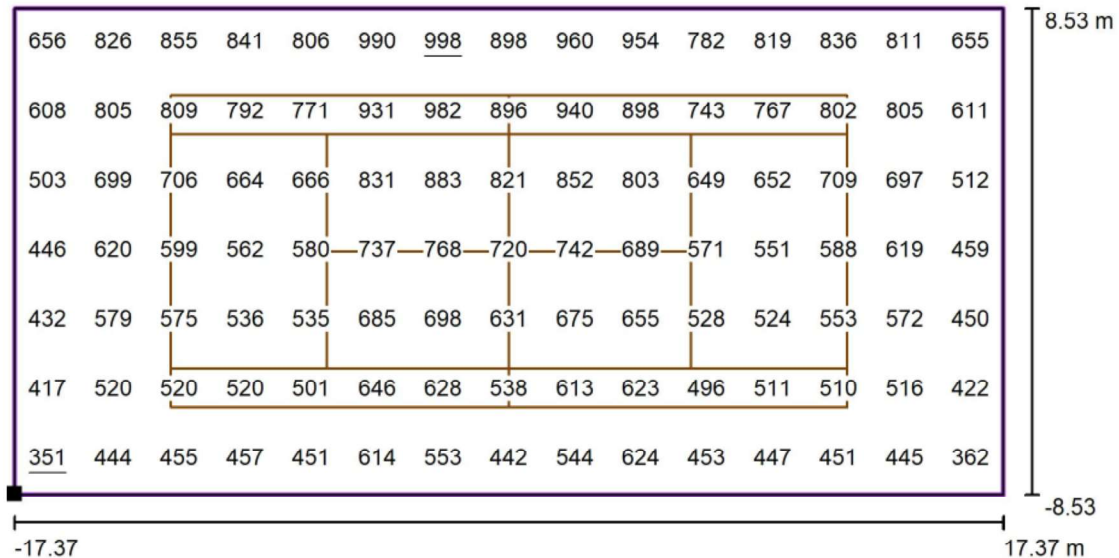
Average Lux: 679lx (Principle Playing Area)

Uniformity: 0.75

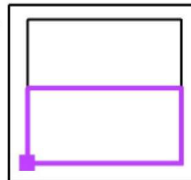
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Values in Lux, Scale 1 : 250

Position of surface in external scene:  
Marked point: (-17.157 m, -16.288 m,  
0.000 m)

Grid: 15 x 7 Points

 $E_{av}$  [lx]  
652 $E_{min}$  [lx]  
351 $E_{max}$  [lx]  
998 $u0$   
0.54 $E_{min} / E_{max}$   
0.35

### Both Courts Lighting

Average Lux Court 2 = 652lx (Total Playing Area)

Uniformity: 0.54