
S.F.P.D LIMITED OUTDOOR LIGHTING DESIGN

FOR T.F.C. LEISURE LIMITED

FLOODLIGHT TWO PITCHES AT TOOTING TRIANGLE

LIGHTING DESIGN P.A. 07

Project Details

PROJECT : FLOODLIGHT OUTDOOR PITCHES

CLIENT : T.F.C. LEISURE LIMITED

AREA : PITCH NRS 1 - 2

SPORTS FACILITY PLANNING AND DESIGN LIMITED39 HEMWOOD ROAD, WINDSOR,
BERKSHIRE. SL4 4YX.

TEL. 01753 850123 MOB. 07770 366259

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SFPD LIMITED OUTDOOR LIGHTING DESIGN
FLOODLIGHT TWO NEW OUTDOOR PITCHES NRS 1 - 2

DESIGN CRITERIA.

To provide pitch lighting scheme suitable for the F.A. minimum, whilst minimising sky glow, light spill and glare.

Performance standard applied to an individually switched pitch by pitch basis.

Results provided within this lighting design for two pitches operating at the same time.

Pitch Performance Area (P.A.) 200 lux 0.5 Uniformity. Design grid based on 2.5m spacing of calculation points.

Phillips Lighting PLC Optivision LED Panel Type Fittings 4000 Kelvin. All fittings include back light reduction integral louvre.

Mounting Height of Fittings 8.2m. Fittings installed within a tilt angle of less than 12 degrees.

Columns 8.00m High. Perimeter columns to West and East generally retained in the locations as existing columns.

Columns positioned inside fence elevations.

Light Loss Factor 1.0 has been applied.

0.5 Lux Outer Contour Line Horizontal Included.




Lighting Design Software : AGI32 V19.10

CAD Software : AutoCad 2020

Designer : Lee West BCc. (Hons) MRICS MCIOB

Note : The nominal values shown in this design report are the result of precision calculations, based upon 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 luminaries, luminaire positioning, reflection properties and electrical supply.

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AREA : PITCH NRS 1 - 2	EMAIL : OFFICE@SFPAD.CO.UK WEB : WWW.SFPAD.CO.UK	

Luminaire Schedule							
Symbol	Qty	Label	Description	Lumens/Lamp	LLF	Lum. Watts	Total Watts
	4	BVP517 OT40100K A55MBBL 100L	BVP517 OT40100K A55MBBL 100L	112849	1.000	780	3120
	10	BVP517 OT40100K A55NBBL 100L	BVP517 OT40100K A55NBBL 100L	112849	1.000	780	7800
	2	BVP517 OT40100K A55NBBL 100L	BVP517 OT40100K A55NBBL 100L	112849	1.000	780	1560

Statistical Area Summary							
Label	Avg	Max	Min	Min/Avg	Meter Type	CalcType	Units
PITCH 1 - ALL ON	275.51	565.7	139.1	0.50	Horizontal	Illuminance	Lux
PITCH 2 - ALL ON	287.80	547.3	188.2	0.65	Horizontal	Illuminance	Lux
SITE AREA	12.11	503.0	0.0	0.00	Horizontal	Illuminance	Lux

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Luminaire Schedule							
Symbol	Qty	Label	Description	Lumens/Lamp	LLF	UWLR	Lum. Watts
⬇	4	BVP517 OT40100K A55MBBL 100L	BVP517 OT40100K A55MBBL 100L	112849	1.000	0.00	780
⬆	10	BVP517 OT40100K A55NBBL 100L	BVP517 OT40100K A55NBBL 100L	112849	1.000	0.00	780
⬇	2	BVP517 OT40100K A55NMBBL 100L	BVP517 OT40100K A55NMBBL 100L	112849	1.000	0.00	780

Statistical Area Summary				
Label	Avg	Max	Min	Units
PITCH 1 - ALL ON	275.51	565.7	139.1	Lux
PITCH 2 - ALL ON	287.80	547.3	188.2	Lux
SITE AREA	12.11	503.0	0.0	Lux

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Luminaire Location Summary										
UserField5	Label	X	Y	Z	Orient	LumNo	Switched	Dimming	Tilt	
Pitch Nr 1	BVP517 OT40100K A55NBBL 100L	12.44	-36.39	8.2	220	1	On	1.00	8	
Pitch Nr 1	BVP517 OT40100K A55MBBL 100L	12.44	-35.44	8.2	160	2	On	1.00	12	
Pitch Nr 1	BVP517 OT40100K A55NBBL 100L	12.441	-12.31	8.2	210	3	On	1.00	12	
Pitch Nr 1	BVP517 OT40100K A55MBBL 100L	-13.48	-48.99	8.2	90	4	On	1.00	12	
Pitch Nr 1	BVP517 OT40100K A55NBBL 100L	-13.48	-12.57	8.2	270	5	On	1.00	10	
Pitch Nr 1	BVP517 OT40100K A55NBBL 100L	-39.41	-36.39	8.2	320	6	On	1.00	8	
Pitch Nr 1	BVP517 OT40100K A55MBBL 100L	-39.41	-35.44	8.2	20	7	On	1.00	12	
Pitch Nr 1	BVP517 OT40100K A55NBBL 100L	-39.41	-12.47	8.2	330	8	On	1.00	12	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	12.441	-11.36	8.2	155	9	On	1.00	12	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	12.44	13.609	8.2	205	10	On	1.00	12	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	12.44	14.559	8.2	155	11	On	1.00	10	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	-13.48	-11.09	8.2	90	12	On	1.00	10	
Pitch Nr 2	BVP517 OT40100K A55MBBL 100L	-13.48	24.659	8.2	270	13	On	1.00	12	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	-39.41	-11.52	8.2	25	14	On	1.00	12	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	-39.41	13.609	8.2	335	15	On	1.00	12	
Pitch Nr 2	BVP517 OT40100K A55NBBL 100L	-39.41	14.559	8.2	25	16	On	1.00	10	

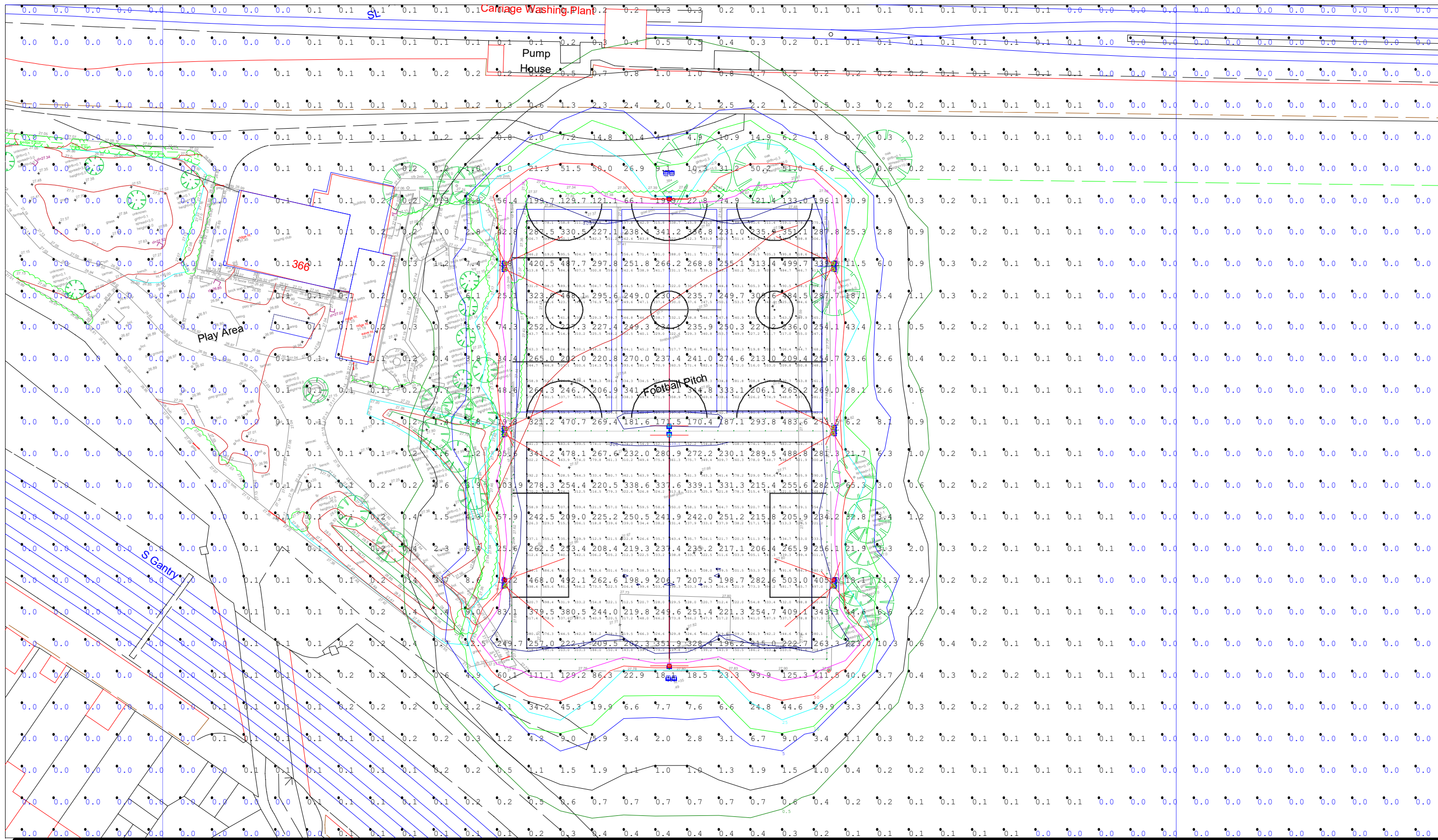
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Object Summary		
Label	Type	Description
Floodlight Column Nr 1	Round-Flat	Column 8.0m High
Floodlight Column Nr 2	Round-Flat	Column 8.0m High
Floodlight Column Nr 3	Round-Flat	Column 8.0m High
Floodlight Column Nr 4	Round-Flat	Column 8.0m High
Floodlight Column Nr 5	Round-Flat	Column 8.0m High
Floodlight Column Nr 6	Round-Flat	Column 8.0m High
Floodlight Column Nr 7	Round-Flat	Column 8.0m High
Floodlight Column Nr 8	Round-Flat	Column 8.0m High
Floodlight Column Nr 9	Round-Flat	Column 8.0m High
Site Area	Planar	

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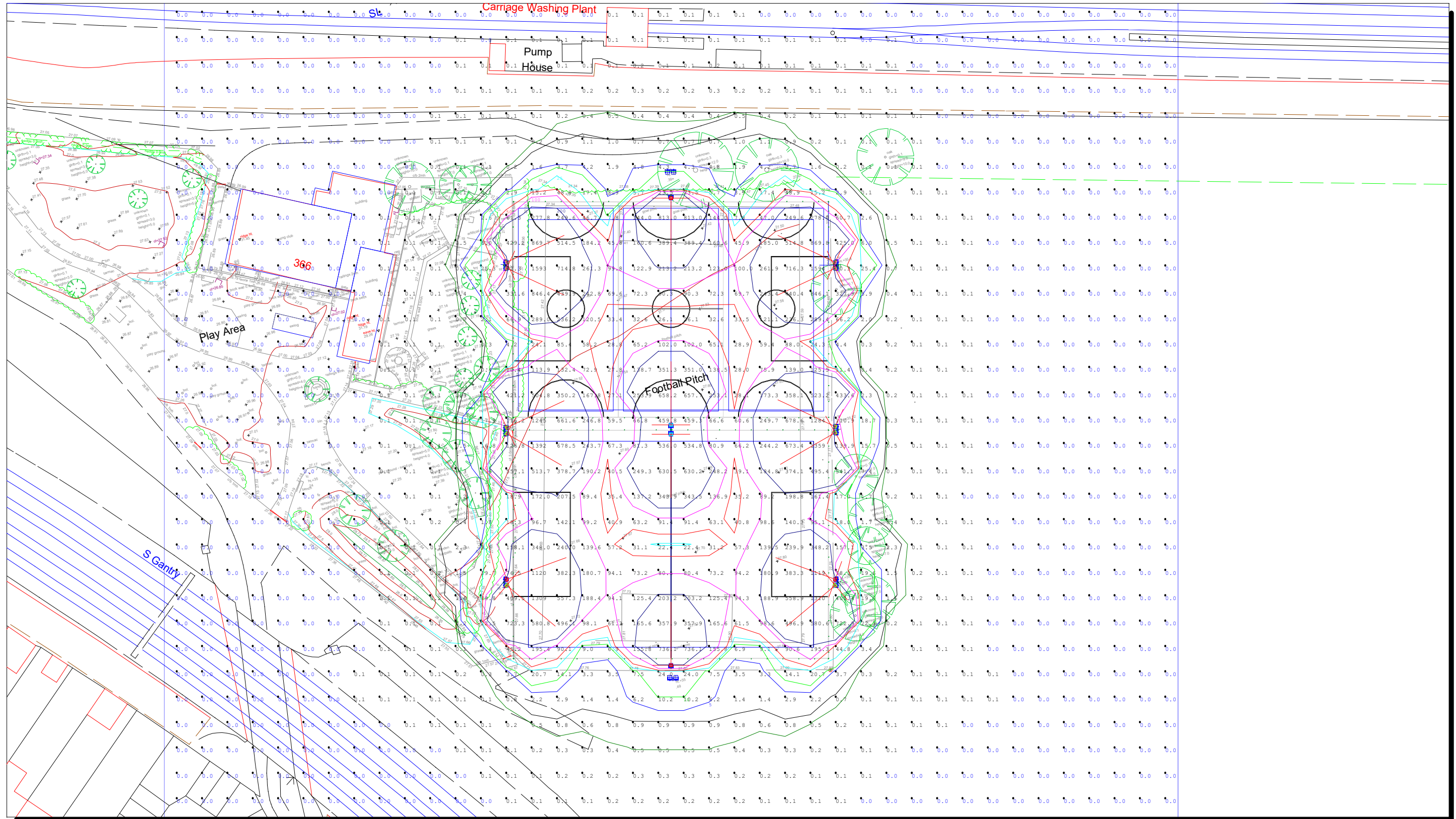


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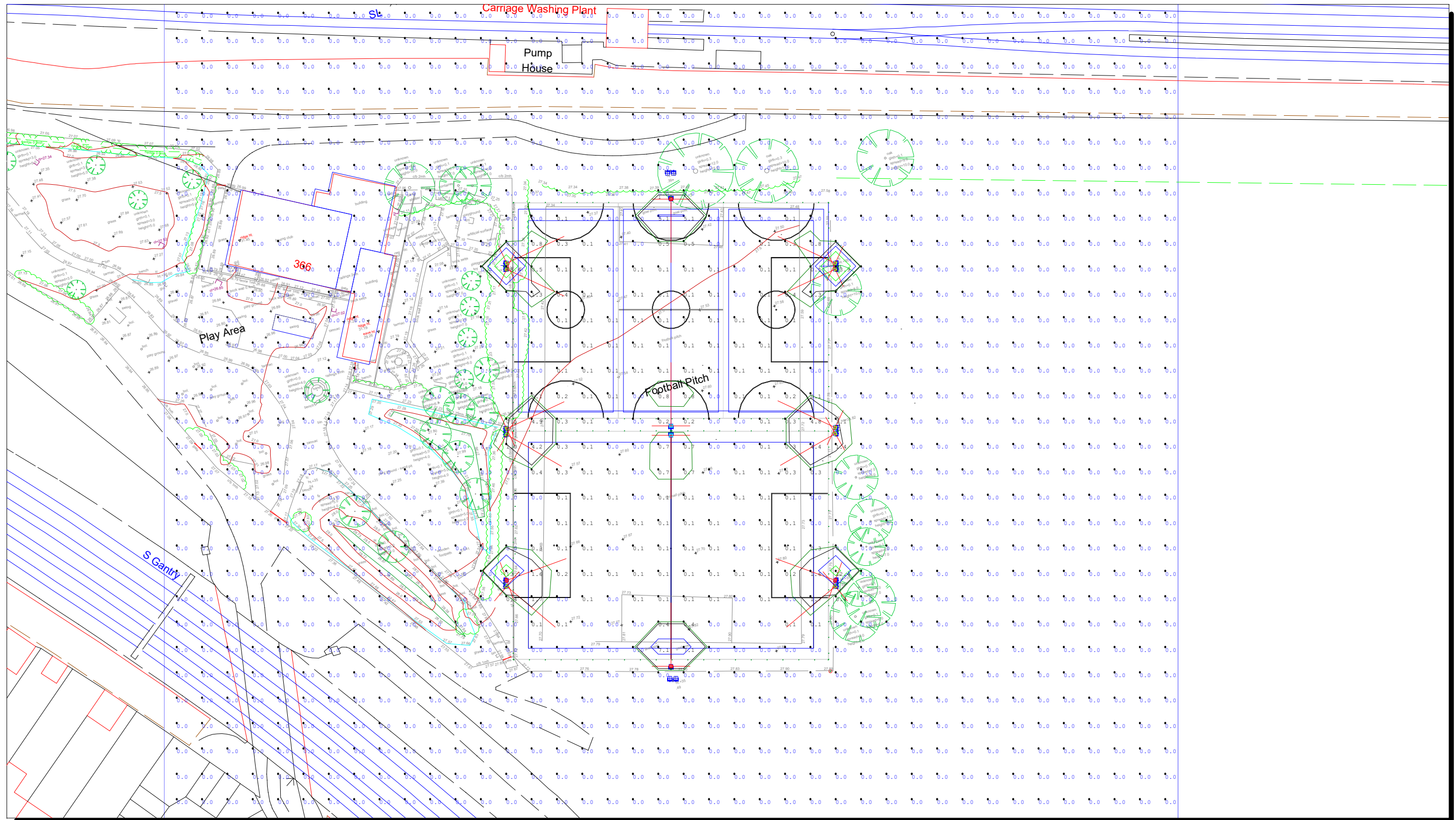




LUX 4M ABOVE GROUND LEVEL
Scale= 1: 600

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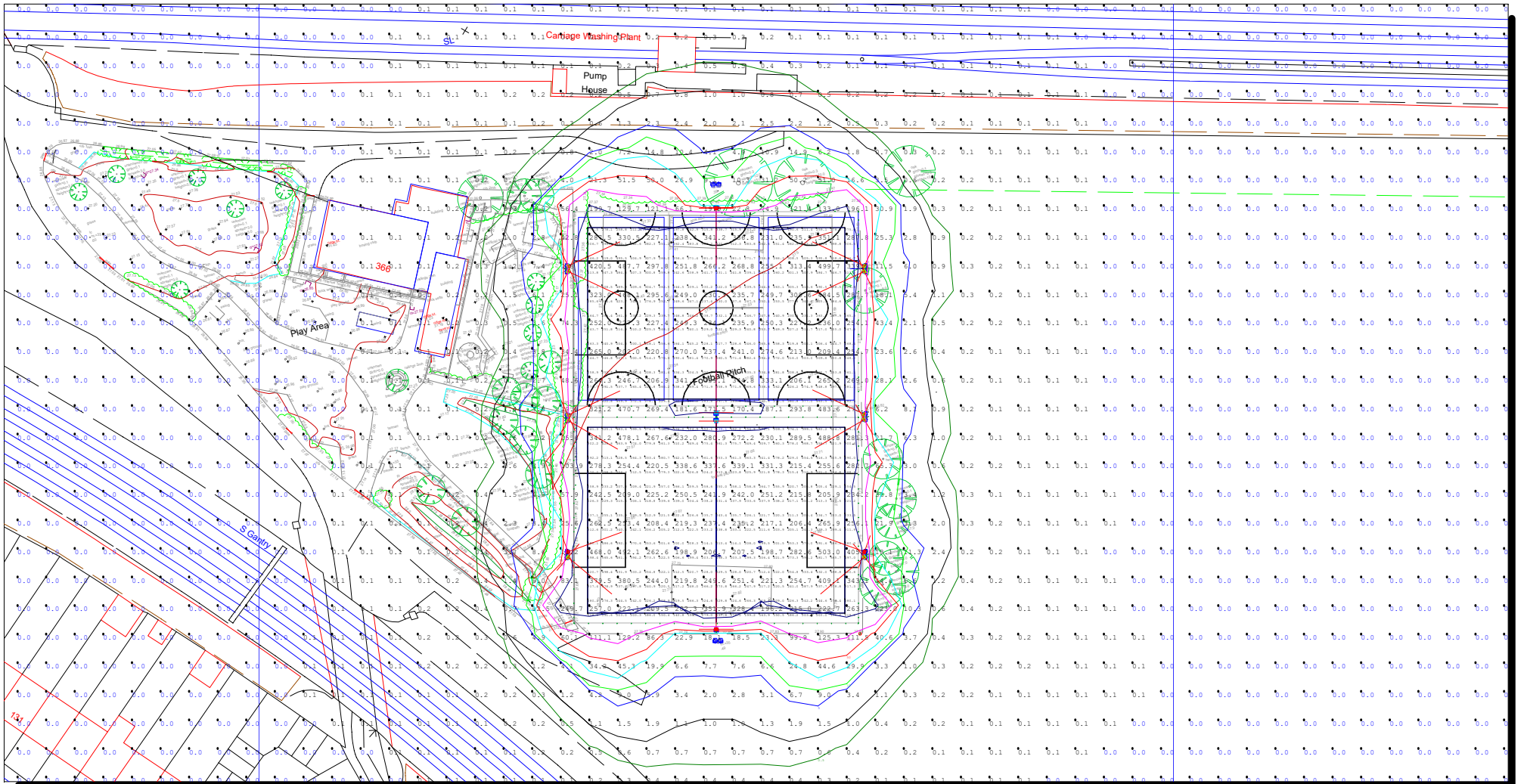




LUX 8M ABOVE GROUND LEVEL
 Scale= 1: 600

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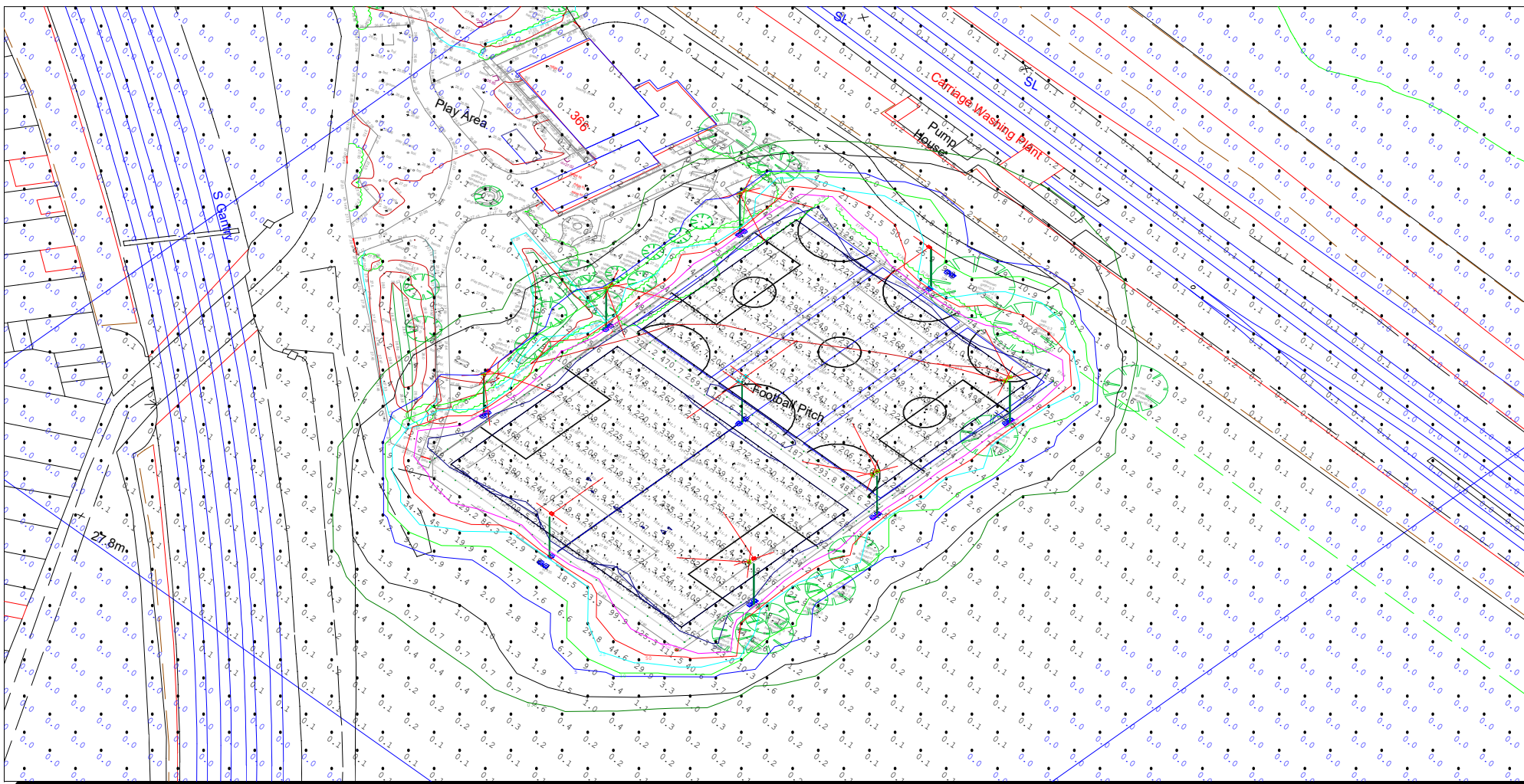




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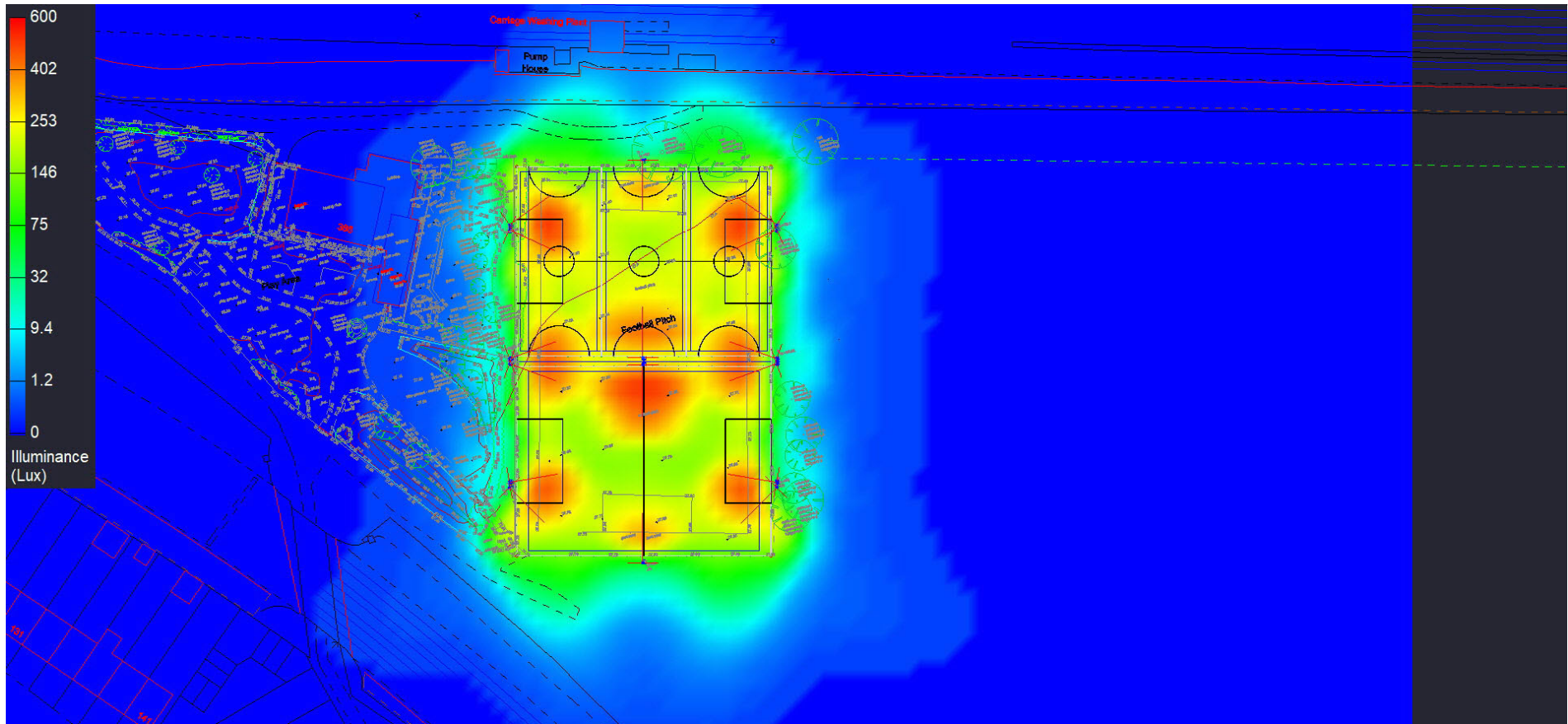




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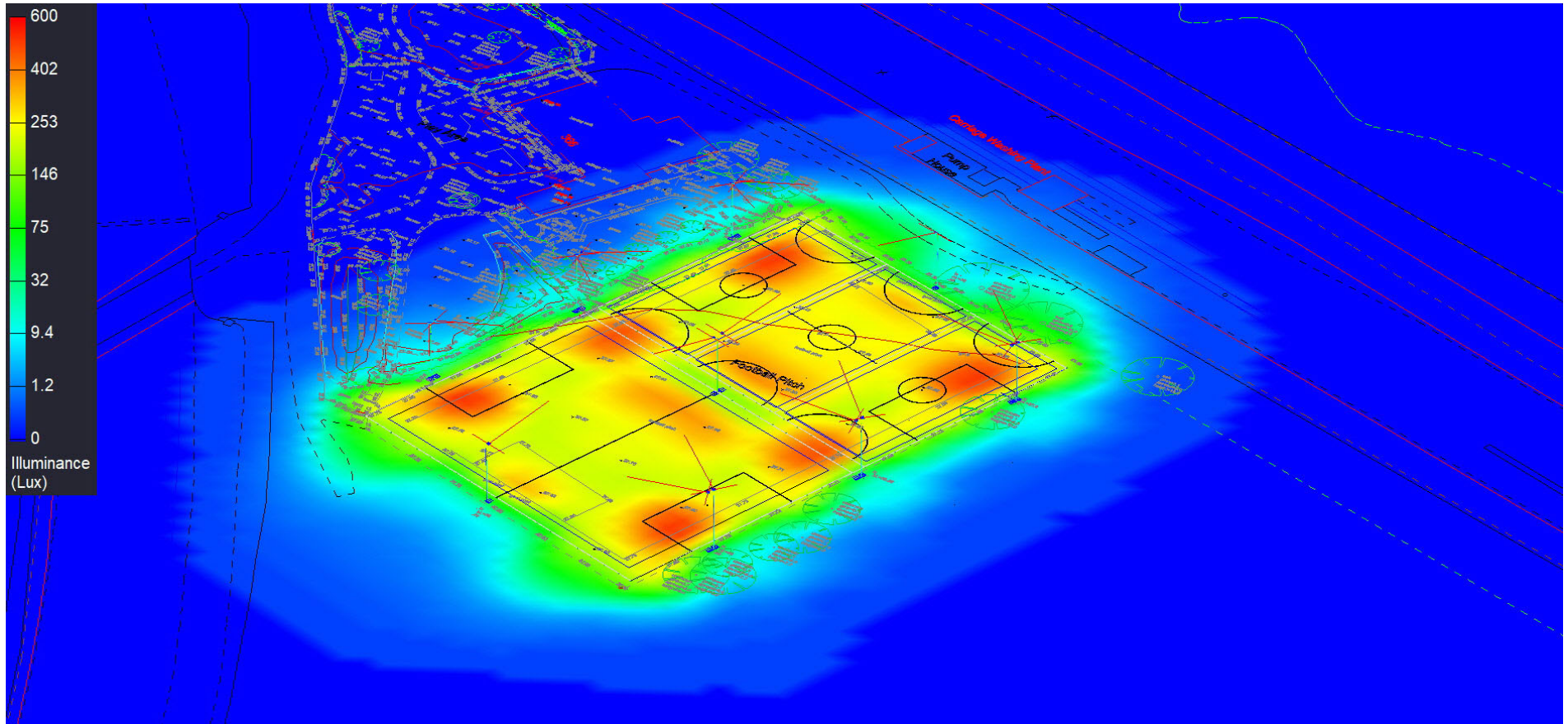
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APPENDIX 1 - PROPOSED LED LIGHT FITTING & COLUMN DETAIL

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OptiVision LED gen3 – Smart area and recreational sports lighting

OptiVision LED gen3

The Philips OptiVision LED gen3 floodlighting system provides a complete lighting solution for the simplest through to the most complex area and recreational sports lighting applications. The high-efficiency floodlight comes with a single piece die cast housing, hosting 2 and 3 LED engines respectively, which also function with an external driver box – separate for use at a distance from the floodlight (BV), or pre-fixed onto the mounting bracket of the floodlight (HGB) for ease of installation and lower initial cost. It meets the highest performance standards, provides outstanding light, quality, uniformity and ensures safety and visual comfort. OptiVision LED offers new possibilities to reduce energy consumption and increase flexibility (instant start, programmable lighting levels) when used in conjunction with Interact Sports lighting management system, dedicatedly designed for recreational and training facilities. The floodlight is also compatible with other external control systems through DALI.

Benefits

- The wide range of optics ensure maximum optical efficiency and enables highly precise light distribution with minimum spill light
- 0-tilt allows for low sCx value for projects that want to re-use installed pole structures to minimize required investment. 0 tilt option further increases comfort and minimizes complaints on light trespass from residents
- When combined with Philips controls or Interact Sports lighting management system, the floodlight enables additional energy savings (up to 65%) in different area lighting applications

OptiVision LED gen3

Features

- Single piece pressure die cast housing, with a protection level of IP66 against dust and water
- Wide range of ambient temperature tolerance making it suitable for a variety of sports applications
- Option to add additional accessories to have the best in class spill light, 0 tilt, glare and up-light control
- Single High-power driver with IP66 protection pressure die cast housing and 10kV surge protection
- Programmable DALI Driver making it suitable to connect to lighting management systems like Interact Sports

Application

- Logistics areas (Ports)
- Apron lighting (Airports), Parking and Industrial areas
- Recreational sports lighting applications (Football, Hockey, Basketball, Golf, Tennis, etc)

Specifications

Ambient Temperature	-40 to +45 °C
Beam spread luminaire	38° - 21° × 96°, 50° - 16° × 116°, 70° - 54° × 112°
Dimming	Yes
Driver	Power supply unit with DALI interface (Power supply unit with DALI interface)
Driver failure rate at 5000 h in %	0.15% per 5000 hours
Initial correlated color temperature	4000, 5700 K
Initial input power	945, 1051, 1415, 1500, 1580 W
Initial luminous flux	89000, 91000, 93000, 103000, 107000, 109000, 111000, 113000, 136000, 142000, 142200, 155000, 161000, 163000, 170000 lm
Input frequency	50 to 60 Hz
Input voltage	230-400 V

Inrush current (A)	20 A
Light source color	740 neutral white, 757 cool white
Material	Gear box: Pressure Die cast housing
Material	Housing: aluminum
Optical cover	Polycarbonate Polycarbonate
Remarks	Driver box EVP500 is ordered together with floodlight (BVP517/527) either pre-fitted on bracket (HGB) or Separate (BV) version. Floodlight and driver box are delivered inside the same packing as a complete set.
Type	BVP517 BVP527 BVP517 BVP527

Versions



OptiVision LED gen3, BVP527 floodlight with 3 light Engine version with separate driver box, Grey housing



OptiVision LED gen3, BVP527 floodlight with 3 light Engine version with integral driver box, Grey housing

OptiVision LED gen3

Versions



OptiVision LED gen3, BVP517 floodlight with 2 light Engine version with separate driver box, Grey housing

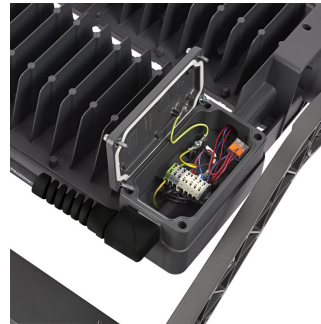


OptiVision LED gen3, BVP517 floodlight with 2 light Engine version with integral driver box, Grey housing

Product details



Front View of BVP527 floodlight (Grey painted housing)



Electrical Connection box of BVP527 floodlight with cable gland and push-in terminals enabling electrical connection to driver box (Grey painted housing)



Side View of BVP527 floodlight (BV : With External Driver Box, Grey painted housing)



Rear View of BVP527 floodlight (BV : With External Driver Box, Grey painted housing)



Access Bolt to AIM the BVP527 floodlight easily (Grey painted housing)



Side View of BVP527 floodlight (HGB : With attached Driver Box, Grey painted housing, Al Colour Driver housing)

Product details



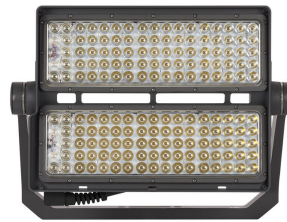
Rear View of BVP527 floodlight
(HGB : With attached Driver Box,
Grey painted housing, Al Colour
Driver housing)



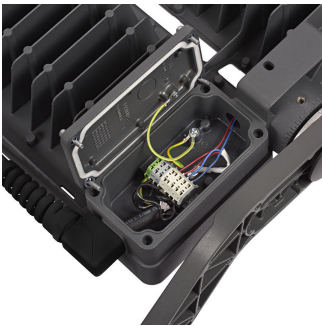
Side View of BVP517 floodlight
(BV : With External Driver Box,
Grey painted housing)



Rear View of BVP517 floodlight
(BV : With External Driver Box,
Grey painted housing)



Front View of BVP517 floodlight
(Grey painted housing)



Electrical Connection box of
BVP517 floodlight with cable gland
and push-in terminals enabling
electrical connection to driver box
(Grey painted housing)



Side View of BVP517 floodlight
(HGB : With attached Driver Box,
Grey painted housing, Al Colour
Driver housing)



Rear View of BVP517 floodlight
(HGB : With attached Driver Box,
Grey painted housing, Al Colour
Driver housing)

Application Conditions	
Maximum dim level	10%
Approval and Application	
Mech. impact protection code	IK08
Surge Protection (Common/Differential)	Surge protection level until 10 kV differential mode
Controls and Dimming	
Dimmable	Yes
General Information	
CE mark	CE mark
Optical cover/lens type	Polycarbonate bowl/cover clear
Driver included	Yes
ENEC mark	ENEC mark
Flammability mark	For mounting on normally flammable surfaces
Light source replaceable	Yes
Number of gear units	1 unit
Optic type	Asymmetrical
Initial Performance (IEC Compliant)	
Init. Color Rendering Index	>70
Light Technical	
Standard tilt angle side entry	-
Standard tilt angle posttop	0°
Upward light output ratio	0
Mechanical and Housing	
Color	Aluminum

General Information

Order Code	Full Product Name	Luminaire light beam spread	Light source color	Lamp family code	Product Family Code
912300024297	BVP527 2210/757 BV A35-WB D9 T25 50K	50° - 16° × 116°	757 cool white	LED2210	BVP527
912300024299	BVP527 2120/740 BV A35-WB D9 T25 50K	50° - 16° × 116°	740 neutral white	LED2120	BVP527
912300024306	BVP527 2030/757 BV A35-WB D9 T25 100K	50° - 16° × 116°	757 cool white	LED2040	BVP527
912300024308	BVP527 1960/740 BV A35-WB D9 T25 100K	50° - 16° × 116°	740 neutral white	LED1960	BVP527
912300024314	BVP527 2030/757 BV A65-WB T25 D9 100K	70° - 54° × 112°	757 cool white	LED2030	BVP527
912300024316	BVP527 1960/740 BV A65-WB T25 D9 100K	70° - 54° × 112°	740 neutral white	LED1960	BVP527
912300024330	BVP527 2120/740 BV A35-WB D9 T20 LO	50° - 16° × 116°	740 neutral white	LED2120	BVP527
912300024331	BVP527 2120/740 BV A35-NB D9 T20 LO	38° - 21° × 96°	740 neutral white	LED2120	BVP527
912300024298	BVP527 2210/757 HGB A35-WB D9 T25 50K	50° - 16° × 116°	757 cool white	LED2210	BVP527
912300024301	BVP527 2120/740 HGB A35-WB D9 T25 50K	50° - 16° × 116°	740 neutral white	LED2120	BVP527
912300024307	BVP527 2030/757 HGB A35-WB D9 T25 100K	50° - 16° × 116°	757 cool white	LED2040	BVP527
912300024309	BVP527 1960/740 HGB A35-WB D9 T25 100K	50° - 16° × 116°	740 neutral white	LED1960	BVP527
912300024315	BVP527 2030/757 HGB A65-WB T25 D9 100K	70° - 54° × 112°	757 cool white	LED2030	BVP527
912300024317	BVP527 1960/740 HGB A65-WB T25 D9 100K	70° - 54° × 112°	740 neutral white	LED1960	BVP527
912300024302	BVP517 1470/757 BV A35-WB D9 T25 50K	50° - 16° × 116°	757 cool white	LED1470	BVP517
912300024304	BVP517 1410/740 BV A35-WB D9 T25 50K	50° - 16° × 116°	740 neutral white	LED1410	BVP517
912300024310	BVP517 1360/757 BV A35-WB D9 T25 100K	50° - 16° × 116°	757 cool white	LED1360	BVP517
912300024312	BVP517 1310/740 BV A35-WB D9 T25 100K	50° - 16° × 116°	740 neutral white	LED1310	BVP517
912300024318	BVP517 1360/757 BV A65-WB T25 D9 100K	70° - 54° × 112°	757 cool white	LED1360	BVP517
912300024320	BVP517 1310/740 BV A65-WB T25 D9 100K	70° - 54° × 112°	740 neutral white	LED1310	BVP517
912300024332	BVP517 1410/740 BV A35-WB D9 T20 LO	50° - 16° × 116°	740 neutral white	LED1410	BVP517
912300024303	BVP517 1470/757 HGB A35-WB D9 T25 50K	50° - 16° × 116°	757 cool white	LED1470	BVP517
912300024305	BVP517 1410/740 HGB A35-WB D9 T25 50K	50° - 16° × 116°	740 neutral white	LED1410	BVP517
912300024311	BVP517 1360/757 HGB A35-WB D9 T25 100K	50° - 16° × 116°	757 cool white	LED1360	BVP517

Order Code	Full Product Name	Luminaire light beam spread	Light source color	Lamp family code	Product Family Code
912300024313	BVP517 1310/740 HGB A35-WB D9 T25 100K	50° - 16° x 116°	740 neutral white	LED1310	BVP517
912300024319	BVP517 1360/757 HGB A65-WB T25 D9 100K	70° - 54° x 112°	757 cool white	LED1360	BVP517
912300024321	BVP517 1310/740 HGB A65-WB T25 D9 100K	70° - 54° x 112°	740 neutral white	LED1310	BVP517

Initial Performance (IEC Compliant)

Order Code	Full Product Name	Init. Corr. Color Temperature	Initial luminous flux	Order Code	Full Product Name	Init. Corr. Color Temperature	Initial luminous flux
912300024297	BVP527 2210/757 BV A35-WB D9 T25 50K	5700 K	170000 lm	912300024302	BVP517 1470/757 BV A35-WB D9 T25 50K	5700 K	113000 lm
912300024299	BVP527 2120/740 BV A35-WB D9 T25 50K	4000 K	163000 lm	912300024304	BVP517 1410/740 BV A35-WB D9 T25 50K	4000 K	109000 lm
912300024306	BVP527 2030/757 BV A35-WB D9 T25 100K	5700 K	161000 lm	912300024310	BVP517 1360/757 BV A35-WB D9 T25 100K	5700 K	107000 lm
912300024308	BVP527 1960/740 BV A35-WB D9 T25 100K	4000 K	155000 lm	912300024312	BVP517 1310/740 BV A35-WB D9 T25 100K	4000 K	103000 lm
912300024314	BVP527 2030/757 BV A65-WB T25 D9 100K	5700 K	142000 lm	912300024318	BVP517 1360/757 BV A65-WB T25 D9 100K	5700 K	93000 lm
912300024316	BVP527 1960/740 BV A65-WB T25 D9 100K	4000 K	142200 lm	912300024320	BVP517 1310/740 BV A65-WB T25 D9 100K	4000 K	89000 lm
912300024330	BVP527 2120/740 BV A35-WB D9 T20 LO	4000 K	136000 lm	912300024332	BVP517 1410/740 BV A35-WB D9 T20 LO	4000 K	91000 lm
912300024331	BVP527 2120/740 BV A35-WB D9 T20 LO	4000 K	111000 lm	912300024303	BVP517 1470/757 HGB A35-WB D9 T25 50K	5700 K	113000 lm
912300024298	BVP527 2210/757 HGB A35-WB D9 T25 50K	5700 K	170000 lm	912300024305	BVP517 1410/740 HGB A35-WB D9 T25 50K	4000 K	109000 lm
912300024301	BVP527 2120/740 HGB A35-WB D9 T25 50K	4000 K	163000 lm	912300024311	BVP517 1360/757 HGB A35-WB D9 T25 100K	5700 K	107000 lm
912300024307	BVP527 2030/757 HGB A35-WB D9 T25 100K	5700 K	161000 lm	912300024313	BVP517 1310/740 HGB A35-WB D9 T25 100K	4000 K	103000 lm
912300024309	BVP527 1960/740 HGB A35-WB D9 T25 100K	4000 K	155000 lm	912300024319	BVP517 1360/757 HGB A65-WB T25 D9 100K	5700 K	93000 lm
912300024315	BVP527 2030/757 HGB A65-WB T25 D9 100K	5700 K	142000 lm	912300024321	BVP517 1310/740 HGB A65-WB T25 D9 100K	4000 K	89000 lm
912300024317	BVP527 1960/740 HGB A65-WB T25 D9 100K	4000 K	142200 lm				



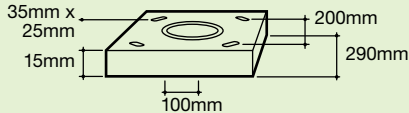
HEAVY DUTY

5-12M TUBULAR STEEL

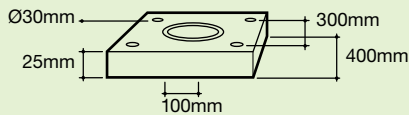
Designed to EN40. Hot dip galvanised to BS EN ISO 1461:2009. Manufactured in steel tube to EN10210

Flange Plate

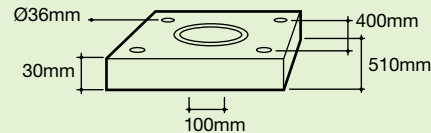
Type 1 FA001G Bolts/cross brace M20 x 500mm
FC021 Template



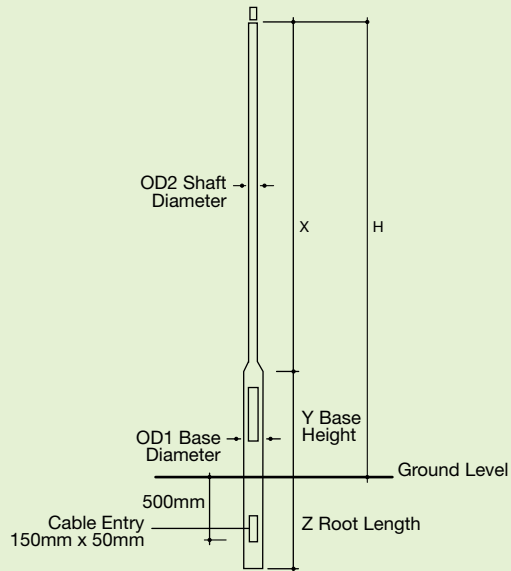
Type 2 FA002G Bolts/cross brace M24 x 600mm
FC022 Template



Type 3 FA003G Bolts/cross brace M30 x 800mm
FC023 Template



Column Dimensions



Accessories ELSAB1/6A Single fuse cut-out, 6A, loop in/out (not fitted) ELSAB12/6A Twin fuse cut-out, 6A, loop in/out (not fitted)

Root Mounted

Product Code	Height	OD1	OD2	x	y	z	Door Opening	Weight (kg)	OTM (kNm)	Shear (kN)	Min. Concrete Diameter*
TB058	5m	168	114	3675	1250	1000	600x115	59	9.1	2.1	575
TB068	6m	168	114	4660	1250	1000	600x115	67	9.0	1.8	556
TB088/H	8m	194	114	6630	1250	1200	600x115	101	13.0	2.2	467
TB108/H/SP†	10m	194	140/127	8370	1250	1500	600x115	158	19.5	2.5	358
TB128/H/SP†	12m	219	168/152	9840	1750	1700	600x115	257	36.4	3.9	454

*Root concrete diameter based on poor soil or better, min. 230kN/m² per m

†Supplied as standard with spigot, length 230mm

Flange Plate Mounted

Product Code	Height	OD1	OD2	x	y	Door Opening	Flange Plate	Weight (kg)	OTM (kNm)	Shear (kN)	Concrete Dimension*
TB058/FP	5m	168	114	3675	1250	600x115	Type 1	75	9.1	2.1	900 x 950
TB068/FP	6m	168	114	4660	1250	600x115	Type 2	78	9.0	1.8	900 x 950
TB088/H/FP	8m	194	114	6630	1250	600x115	Type 2	108	13.0	2.2	950 x 1100
TB108/H/FP/SP†	10m	194	140/127	8370	1250	600x115	Type 2	158	19.5	2.5	1050 x 1200
TB128/H/FP/SP†	12m	219	168/152	9840	1750	600x115	Type 3	258	36.4	3.9	1250 x 1300

*Concrete dimension based on a minimum ground bearing pressure of 150kN/m², (S = square dimension, H = depth)

†Supplied as standard with spigot, length 230mm

For complete information on foundation options please refer to www.abaculighting.com/base-hinged-fixed-columns.asp

Outreach & Floodlight Brackets

Height	Projection Length	Outreach Brackets		Spigot Lengths	Floodlight Brackets	
		Single (S)	Double (D)	/SP 230mm	Overlap Fit on Shaft	Flush Fit on Spigot
5m		TB058	TB058/SP		TB058	TB058/SP
	0.30m	PR6-03/S or /D	PR7-03/S or/D	Double (800)	FL4/3	FL5/3
	0.50m	PR6-05/S or /D	PR7-05/S or/D	Triple (600)	FL4/4	FL5/4
				Triple (800)	FL4/5	FL5/5
6m		TB068	TB068/SP		TB068	TB068/SP
	0.30m	PR6-03/S or /D	PR7-03/S or /D	Double (800)	FL4/3	FL5/3
	0.50m	PR6-05/S or /D	PR7-05/S or /D	Triple (600)	FL4/4	FL5/4
				Triple (800)	FL4/5	FL5/5
8m		TB088/H	TB088/H/SP		TB088/H	TB088/H/SP
	1.0m	PR6-10/S or /D	PR7-10/S or /D	Double (800)	FL4/3	FL5/3
	1.5m	PR6-15/S or /D	PR7-15/S or /D	Triple (600)	FL4/4	FL5/4
				Triple (800)	FL4/5	FL5/5
10m			TB108/H/SP			TB108/H/SP
	1.5m	-	PR5-15/S or /D	Double (800)	-	FL3/3
	2.0m	-	PR5-20/S or /D	Triple (600)	-	FL3/4
	2.5m	-	PR5-25/S or /D	Triple (800)	-	FL3/5
				Quadruple (800)	-	FL3/7
12m			TB128/H/SP			TB128/H/SP
	1.5m	-	PR8-15/S or /D	Double (800)	-	FL7/3
	2.0m	-	PR8-20/S or /D	Triple (600)	-	FL7/4
	2.5m	-	PR8-25/S or /D	Triple (800)	-	FL7/5
				Quadruple (800)	-	FL7/7

For complete bracket information please refer to pages 37-39

Column Headload Capacity (m²)

Based on UK rationalised wind loading factors for EN40

Product Code	Lantern Mounting/Projection	Max. Headload (kg)	Light 396	Medium 429	Heavy 466	Extra Heavy 576
TB058	Post Top	60	1.824	1.675	1.533	1.224
	0.50m Single Outreach	20	1.138	1.043	0.954	0.76
	0.75m Single Outreach	20	0.99	0.907	0.829	0.658
TB068	Post Top	75	1.301	1.19	1.084	0.857
	0.50m Single Outreach	20	0.903	0.825	0.751	0.592
	0.75m Single Outreach	20	0.793	0.723	0.658	0.516
TB088/H	Post Top	100	0.838	0.764	0.696	0.553
	0.50m Single Outreach	20	0.866	0.799	0.735	0.59
	0.75m Single Outreach	20	0.659	0.608	0.558	0.45
TB108/H/SP	Post Top	100	0.992	0.916	0.845	0.647
	1m Single Outreach	20	0.446	0.411	0.377	0.302
	1.5m Single Outreach	20	0.297	0.272	0.248	0.195
TB128/H/SP	Post Top	100	1.653	1.495	1.344	1.007
	1m Single Outreach	20	0.428	0.394	0.362	0.29
	2m Single Outreach	20	0.363	0.332	0.302	0.235

For complete information on column headloads refer to www.abaculighting.com/base-hinged-fixed-columns.asp

APPENDIX 2 - ILP REDUCTION OF OBTRUSIVE LIGHT

Project Details PROJECT : FLOODLIGHT OUTDOOR PITCHES CLIENT : T.F.C. LEISURE LIMITED AREA : PITCH NRS 1 - 2	SPORTS FACILITY PLANNING AND DESIGN LIMITED 39 HEMWOOD ROAD, WINDSOR, BERKSHIRE. SL4 4YX. TEL. 01753 850123 MOB. 07770 366259 EMAIL : OFFICE@SFPAD.CO.UK WEB : WWW.SFPAD.CO.UK
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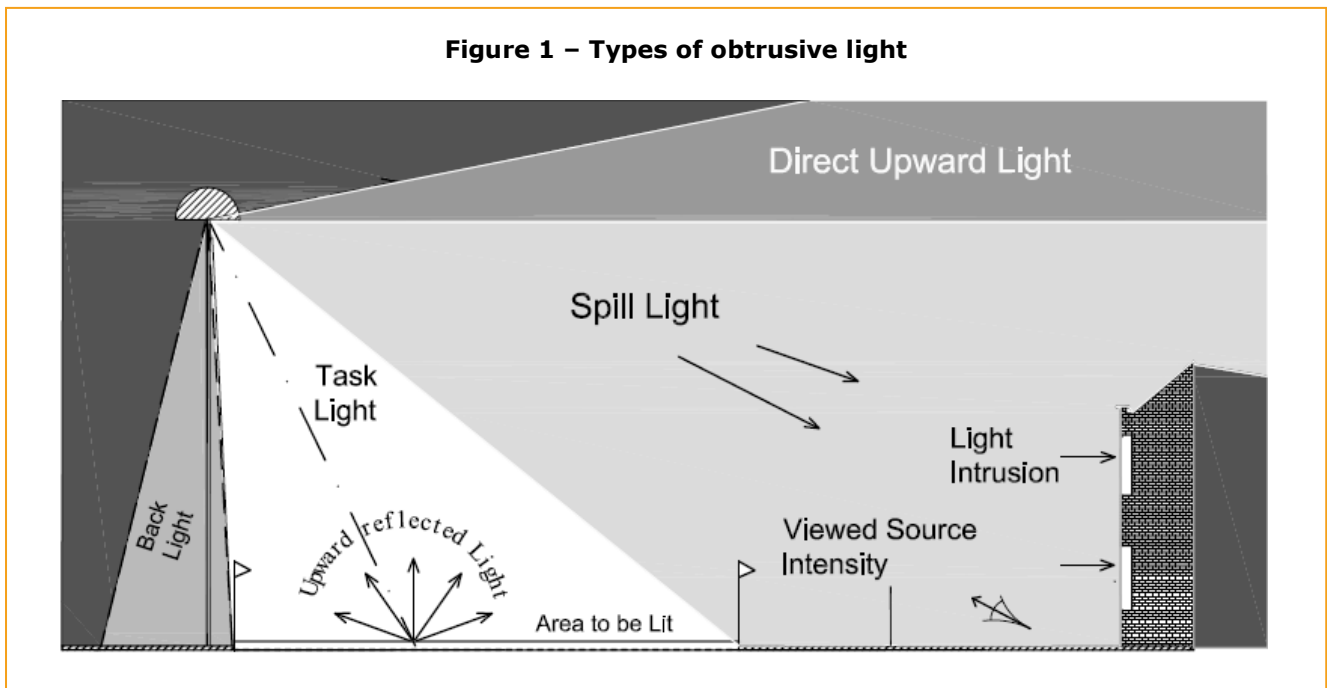
GUIDANCE NOTES FOR THE REDUCTION OF OBTRUSIVE LIGHT

“Think before you light - The right amount of light, where wanted, when wanted.”

Man's invention of artificial light has done much to safeguard and enhance our night-time environment but, if not properly controlled, **obtrusive light** (sometimes referred to as light pollution) can present serious physiological and ecological problems.

Obtrusive Light, whether it keeps you awake through a bedroom window or impedes your view of the night sky, is a form of pollution, which may also be a nuisance in law and which can be substantially reduced without detriment to the lighting task.

Sky glow, the brightening of the night sky, **Glare** the uncomfortable brightness of a light source when viewed against a darker background, and **Light Intrusion (“Trespass”)**, the spilling of light beyond the boundary of the property or area being lit, are all forms of obtrusive light which may cause nuisance to others and waste money and energy. Think before you light. Is it necessary? What effect will it have on others? Will it cause a nuisance? How can you minimise the problem?



Do not "over" light. This is a major cause of obtrusive light and is a waste of energy. There are published standards for most lighting tasks, adherence to which will help minimise upward reflected light. Organisations from which full details of these standards can be obtained are given on the last page of this leaflet.

Dim or switch off lights when the task is finished. Generally a lower level of lighting will suffice to enhance the night time scene than that required for safety and security.

“Good Design equals Good Lighting”

Any lighting scheme will consist of three basic elements: a light source, a luminaire and a method of installation.

Light sources (Lamps)

Remember that the light source output in LUMENS is not the same as the wattage and that it is the former that is important in combating the problems of obtrusive light.

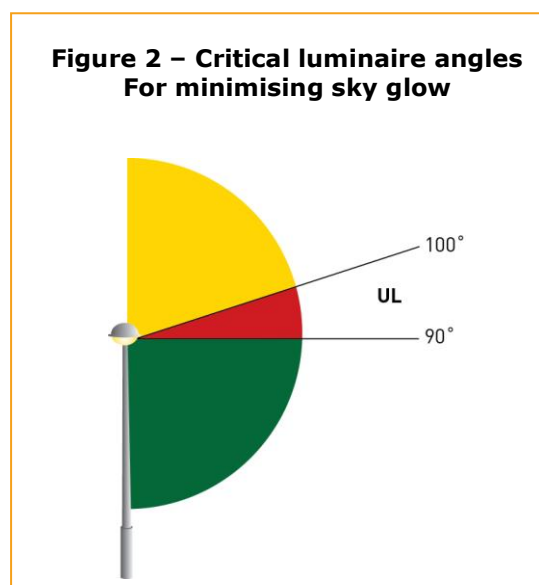
Most nighttime visual tasks are only dependant on light radiated within the visual spectrum. It is therefore NOT necessary for light sources to emit either ultra-violet or infra-red radiation unless specifically designed to do so. It is also understood that light from the shorter wavelengths of the spectrum has important effects on both flora and fauna that should be considered.

Research indicates that light from the blue end of the spectrum has important non-visual effects on the health of the human body, in particular in our sleep/wake patterns. It is therefore important to appreciate that while in obtrusive light terms the use of blue light should be minimised, there are many night-time tasks such as driving and sports where to be fully awake is an important aid to safety.

Luminaires

Care should always be taken when selecting luminaires to ensure that appropriate products are chosen and that their location will reduce spill light and glare to a minimum.

Use specifically designed lighting equipment that minimises the upward spread of light near to and above the horizontal. The most sensitive/critical zones for minimising sky glow are those between 90° and 100° as shown in Figure 2 and referred to as the lower, upward light output zone (UL).



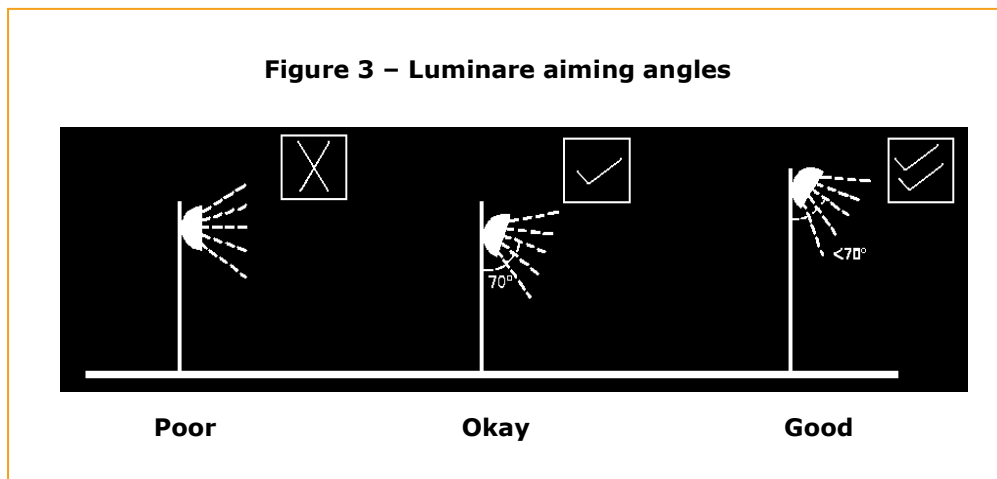
For most sports and area lighting installations the use of luminaires with double-asymmetric beams designed so that the front glazing is kept at or near parallel to the surface being lit should, if correctly aimed, ensures minimum obtrusive light.

Appendices 1 and 2 to these notes gives more details of how to choose and if necessary modify luminaires.

Installation

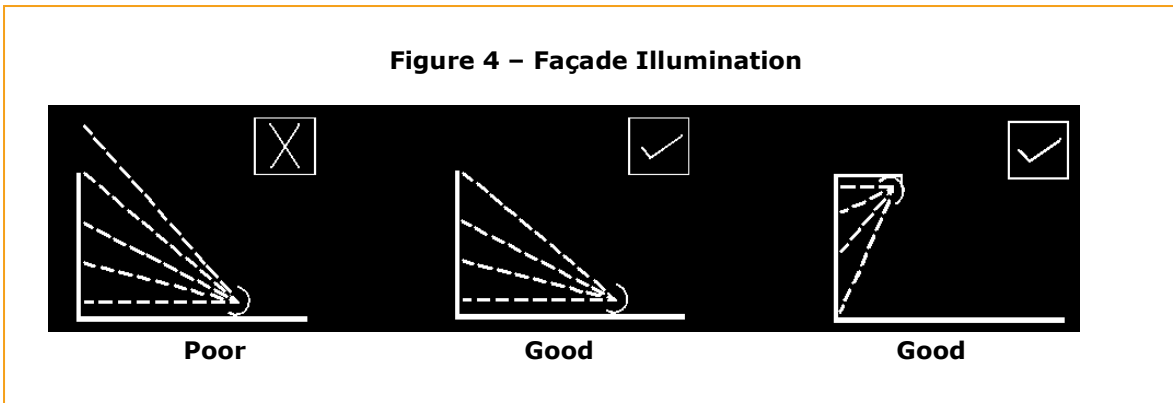
In most cases it will be beneficial to use as high a mounting height as possible, giving due regard to the daytime appearance of the installation. The requirements to control glare for the safety of road users are given in Table 3.

Keep glare to a minimum by ensuring that the main beam angle of all lights directed towards any potential observer is not more than 70°. Higher mounting heights allow lower main beam angles, which can assist in reducing glare. In areas with low ambient lighting levels, glare can be very obtrusive and extra care should be taken when positioning and aiming lighting equipment. With regard to domestic security lighting the ILP produces an information leaflet GN02:2009 that is freely available from its website.



When lighting vertical structures such as advertising signs, direct light downwards wherever possible. If there is no alternative to up-lighting, as with much decorative lighting of buildings, then the use of shields, baffles and louvres will help reduce spill light around and over the structure to a minimum.

For road and amenity lighting installations, (see also design standards listed on Page 5) light near to and above the horizontal should normally be minimised to reduce glare and sky glow (Note ULR's in Table 2). In rural areas the use of full horizontal cut off luminaires installed at 0° uplift will, in addition to reducing sky glow, also help to minimise visual intrusion within the open landscape. However in some urban locations, luminaires fitted with a more decorative bowl and good optical control of light should be acceptable and may be more appropriate.



Since 2006 “Artificial Light” has been added to the list of possible Statutory Nuisances in England, Wales and Scotland. The monitoring of such nuisances will be the responsibility of Environmental Health Officers (EHOs) for which separate guidance is being produced.

With regard to the planning aspect, many Local Planning Authorities (LPAs) have already produced, or are producing, policies that within the planning system will become part of their local development framework. For new developments there is an opportunity for LPAs to impose planning conditions related to external lighting, including curfew hours.

The Scottish Executive has published a design methodology document (March 2007) entitled [“Controlling Light Pollution and Reducing Energy Consumption”](#) to further assist in mitigating obtrusive light elements at the design stage.

ENVIRONMENTAL ZONES

It is recommended that Local Planning Authorities specify the following environmental zones for exterior lighting control within their Development Plans.

Table 1 – Environmental Zones			
Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.

NB: Zone E0 must always be surrounded by an E1 Zone.

DESIGN GUIDANCE

The following limitations may be supplemented or replaced by a LPA's own planning guidance for exterior lighting installations. As lighting design is not as simple as it may seem, you are advised to consult and/or work with a professional lighting designer before installing any exterior lighting.

Table 2 – Obtrusive Light Limitations for Exterior Lighting Installations – General Observers

Environmental Zone	Sky Glow ULR [Max %] ⁽¹⁾	Light Intrusion (into Windows) E _v [lux] ⁽²⁾		Luminaire Intensity I [candelas] ⁽³⁾		Building Luminance Pre-curfew ⁽⁴⁾
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Average, L [cd/m ²]
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2,500	0	0
E2	2.5	5	1	7,500	500	5
E3	5.0	10	2	10,000	1,000	10
E4	15	25	5	25,000	2,500	25

ULR = **Upward Light Ratio of the Installation** is the maximum permitted percentage of luminaire flux that goes directly into the sky.

E_v = **Vertical Illuminance in Lux** - measured flat on the glazing at the centre of the window.

I = **Light Intensity in Candelas (cd)**

L = **Luminance in Candelas per Square Metre (cd/m²)**

Curfew = **the time after which stricter requirements (for the control of obtrusive light) will apply**; often a condition of use of lighting applied by the local planning authority. If not otherwise stated - 23.00hrs is suggested.

***** = **Permitted only from** Public road lighting installations

(1) Upward Light Ratio – Some lighting schemes will require the deliberate and careful use of upward light, e.g. ground recessed luminaires, ground mounted floodlights, festive lighting, to which these limits cannot apply. However, care should always be taken to minimise any upward waste light by the proper application of suitably directional luminaires and light controlling attachments.

(2) Light Intrusion (into Windows) – These values are suggested maxima and need to take account of existing light intrusion at the point of measurement. In the case of road lighting on public highways where building facades are adjacent to the lit highway, these levels may not be obtainable. In such cases where a specific complaint has been received, the Highway Authority should endeavour to reduce the light intrusion into the window down to the post curfew value by fitting a shield, replacing the luminaire, or by varying the lighting level.

(3) Luminaire Intensity – This applies to each luminaire in the potentially obtrusive direction, outside of the area being lit. The figures given are for general guidance only and for some sports lighting applications with limited mounting heights, may be difficult to achieve.

(4) Building Luminance – This should be limited to avoid over lighting, and related to the general district brightness. In this reference building luminance is applicable to buildings directly illuminated as a night-time feature as against the illumination of a building caused by spill light from adjacent luminaires or luminaires fixed to the building but used to light an adjacent area.

Table 3 – Obtrusive Light Limitations for Exterior Lighting Installations – Road Users		
Road Classification ⁽¹⁾	Threshold Increment (TI)	Veiling Luminance (Lv)
No road lighting	15% based on adaptation luminance of 0.1cd/m ²	0.04
ME6/ ME5	15% based on adaptation luminance of 1cd/m ²	0.25
ME4/ ME3	15% based on adaptation luminance of 2cd/m	0.40
ME2 / ME1	15% based on adaptation luminance of 5cd/m ²	0.84

TI = Threshold Increment is a measure of the loss of visibility caused by the disability glare from the obtrusive light installation

Lv = Veiling Luminance is a measure of the adaptation luminance caused by the disability glare from the obtrusive light installation

(1) = Road Classifications as given in BS EN 13201 - 2: 2003 Road lighting Performance requirements. Limits apply where users of transport systems are subject to a reduction in the ability to see essential information. Values given are for relevant positions and for viewing directions in path of travel. For a more detailed description and methods for determining, calculating and measuring the above parameters see CIE Publication 150:2003.

RELEVANT PUBLICATIONS AND STANDARDS:

British Standards: www.bsi.org.uk	BS 5489-1: 2003 Code of practice for the design of road lighting – Part 1: Lighting of roads and public amenity areas BS EN 13201-2:2003 Road lighting – Part 2: Performance requirements BS EN 13201-3:2003 Road lighting – Part 3: Calculation of performance BS EN 13201-4:2003 Road lighting – Part 4: Methods of measuring lighting performance. BS EN 12193: 1999 Light and lighting – Sports lighting BS EN 12464-2: 2007 Lighting of work places – Outdoor work places
Countryside Commission/ DOE	Lighting in the Countryside: Towards good practice (1997) (<i>Out of Print but available on www.communities.gov.uk/index.asp?id=1144823</i>)
UK Government / Defra www.defra.gov.uk	Statutory Nuisance from Insects and Artificial Light – Guidance on Sections 101 to 103 of the Clean Neighbourhoods and Environment Act 2005 Road Lighting and the Environment (1993) (Out of Print)
CIBSE/SLL Publications: www.cibse.org	CoL Code for Lighting (2002) LG1 The Industrial Environment (1989) LG4 Sports (1990+Addendum 2000) LG6 The Exterior Environment (1992) FF7 Environmental Considerations for Exterior Lighting (2003)
CIE Publications: www.cie.co.at	01 Guidelines for minimizing Urban Sky Glow near Astronomical Observatories (1980) 83 Guide for the lighting of sports events for colour television and film systems (1989) 92 Guide for floodlighting (1992) 115 Recommendations for the lighting of roads for motor and pedestrian traffic – Second Edition (2010) 126 Guidelines for minimizing Sky glow (1997) 129 Guide for lighting exterior work areas (1998) 136 Guide to the lighting of urban areas (2000) 150 Guide on the limitations of the effect of obtrusive light from outdoor lighting installations (2003) 154 The Maintenance of outdoor lighting systems (2003)
ILP Publications: www.theilp.org.uk	TR 5 Brightness of Illuminated Advertisements (2001) TR24 A Practical Guide to the Development of a Public Lighting Policy for Local Authorities (1999) GN02 Domestic Security Lighting, Friend or Foe
ILP/CIBSE Joint Publications	Lighting the Environment - A guide to good urban lighting (1995)
ILP/CSS Publications	Joint Code of Practice for the installation, maintenance and removal of seasonal decorations. (2005)
ILP/CfDS Joint Publication www.dark-skies.org	Towards Understanding Sky glow. 2007
IESNA www.iesna.org	TM-15-07 (R) Luminaire Classification System for Outdoor Luminaires

NB: These notes are intended as guidance only and the application of the values given in Tables 2 & 3 should be given due consideration along with all other factors in the lighting design. Lighting is a complex subject with both objective and subjective criteria to be considered. The notes are therefore no substitute for professionally assessed and designed lighting, where the various and maybe conflicting visual requirements need to be balanced.

APPENDIX 1 - PROPOSED OUTDOOR LUMINAIRE CLASSIFICATION SYSTEM

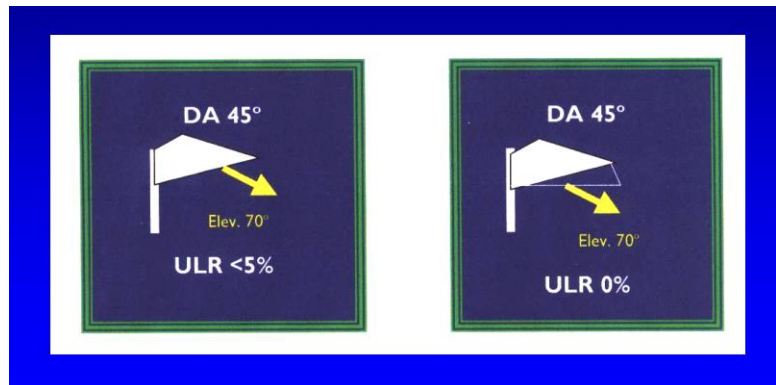
Variable Aim Luminaires – General Classifications:

➤ Type A	Symmetrical	
➤ Type B	Asymmetrical	
➤ Type C	Double-Asymmetrical	

Proposed labelling System:

Fixed Position luminaires

Variable Aim Luminaires
(Shown here for a 45° Double-Asymmetric luminaire aimed at 70° – with and without a cowl).



APPENDIX 2 - ILLUSTRATIONS OF LUMINAIRE ACCESSORIES FOR LIMITING OBTRUSIVE LIGHT (images provided by Philips and Thorn)

Cowl (or Hood)



External Louvre



SHIELD



SHIELD "Barn Doors"



Double Asymmetric Luminaire



Simple Hood



Circular Louvre



Cowl & Louvre



Internal Louvre (horizontal)



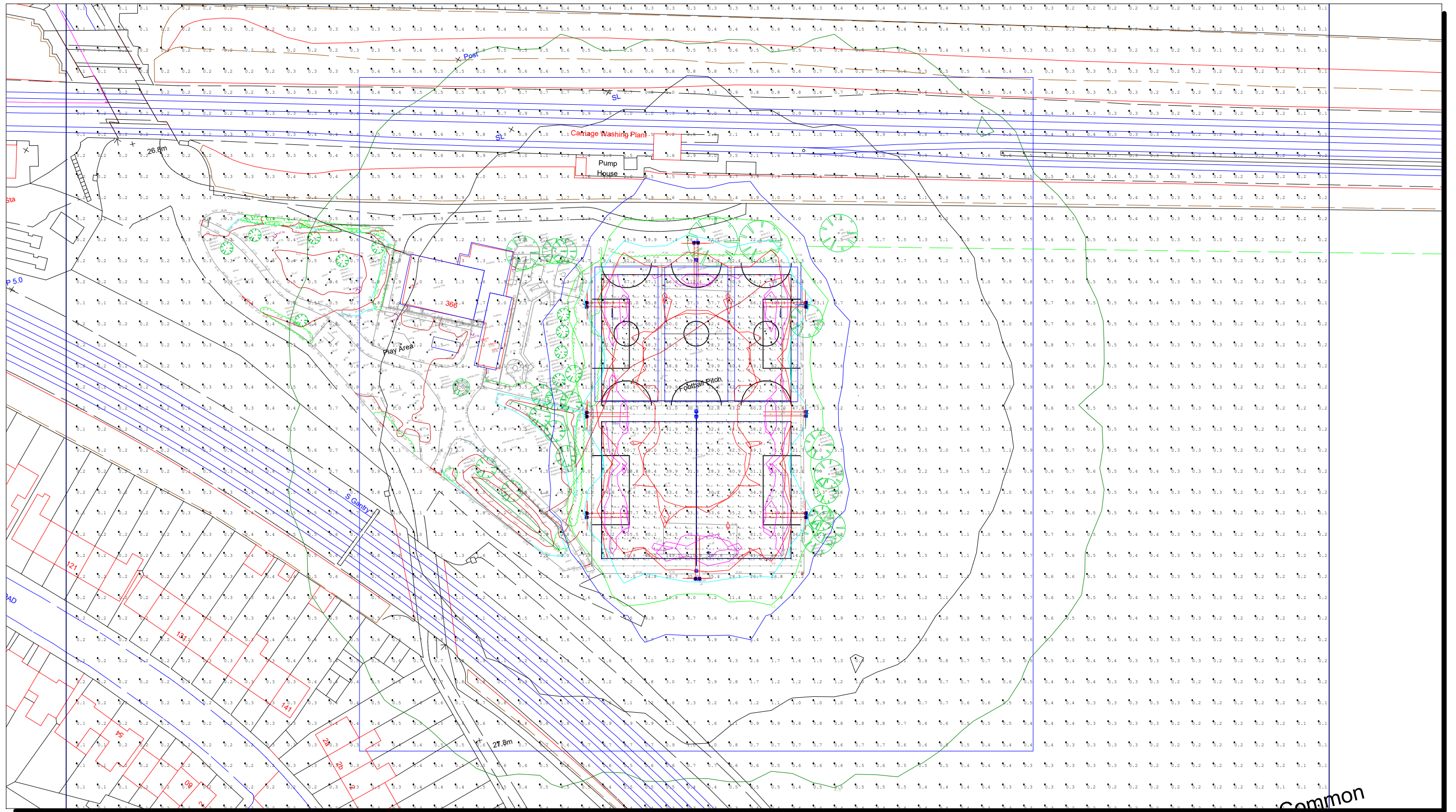
Internal Louvre (vertical)



APPENDIX 3 - MODEL OF EXISTING METAL SCHEME

<p>Project Details</p> <p>PROJECT : FLOODLIGHT OUTDOOR PITCHES</p> <p>CLIENT : T.F.C. LEISURE LIMITED</p> <p>AREA : PITCH NRS 1 - 2</p>	<p>SPORTS FACILITY PLANNING AND DESIGN LIMITED</p> <p>39 HEMWOOD ROAD, WINDSOR, BERKSHIRE. SL4 4YX.</p> <p>TEL. 01753 850123 MOB. 07770 366259</p> <p>EMAIL : OFFICE@SFPAD.CO.UK WEB : WWW.SFPAD.CO.UK</p>	 <p>SPORTSFACILITY PLANNING&DESIGNLTD</p>
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METAL HALIDE SCHEME AT GROUND LEVEL

Scale= 1: 900

Project Details

PROJECT : FLOODLIGHT OUTDOOR PITCHES

CLIENT : T.F.C. LESIURE LIMITED

AREA : PITCH NRS 1 - 2

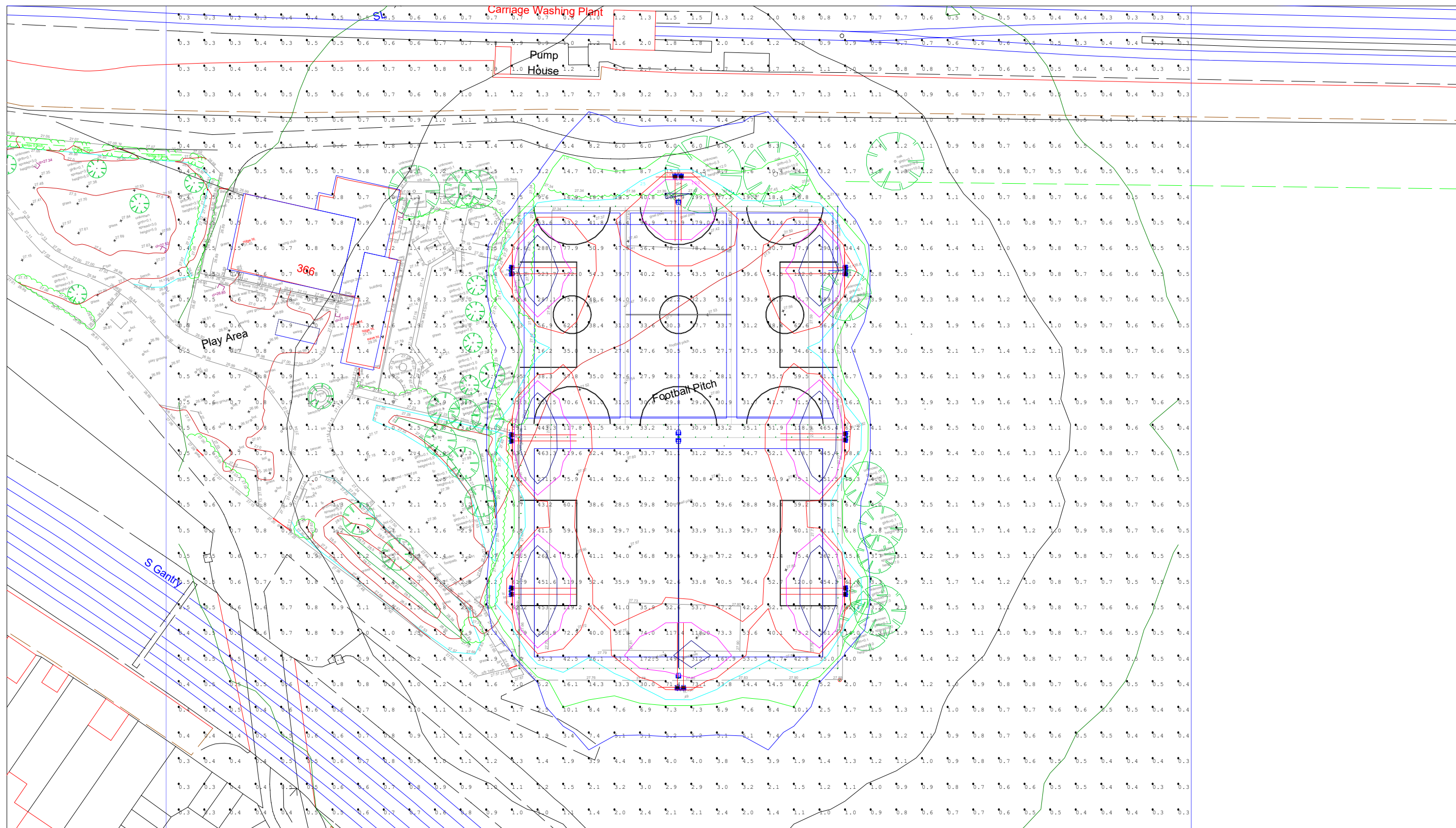
SPORTS FACILITY PLANNING AND DESIGN LIMITED

39 HEMWOOD ROAD, WINDSOR,
BERKSHIRE. SL4 4YX.

TEL. 01753 850123 MOB. 07770 366259

EMAIL : OFFICE@SFPAD.CO.UK
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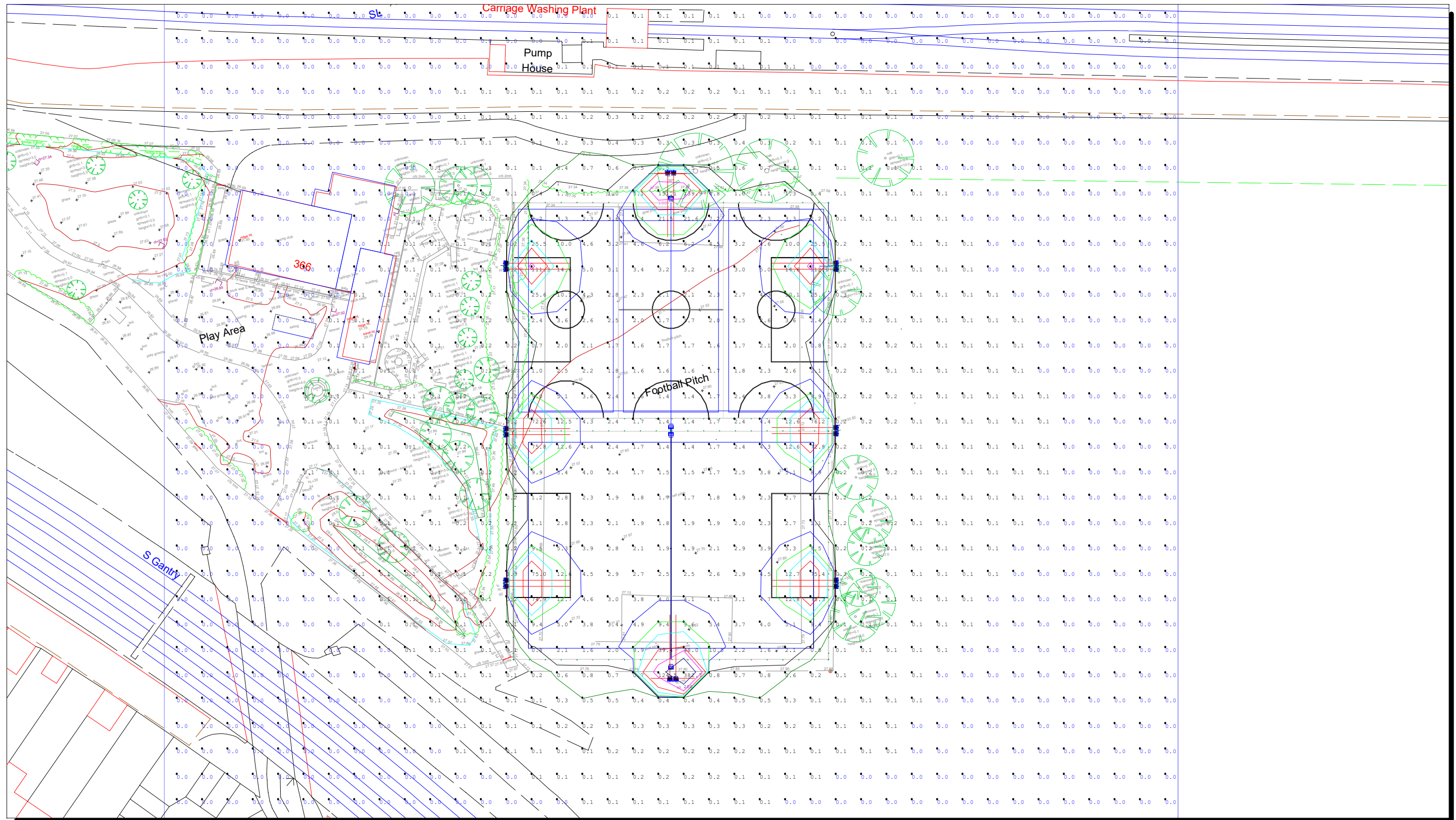




LUX 4M ABOVE GROUND LEVEL
Scale= 1: 600

<p>Project Details PROJECT : FLOODLIGHT OUTDOOR PITCHES CLIENT : T.F.C. LESIURE LIMITED AREA : PITCH NRS 1 - 2</p>	<p>SPORTS FACILITY PLANNING AND DESIGN LIMITED 39 HEMWOOD ROAD, WINDSOR, BERKSHIRE. SL4 4YX. TEL. 01753 850123 MOB. 07770 366259 EMAIL : OFFICE@SFPAD.CO.UK WEB : WWW.SFPAD.CO.UK</p>
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LUX 8M ABOVE GROUND LEVEL
Scale= 1: 600

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