

Havant Thicket

Solar Project

Prepared by

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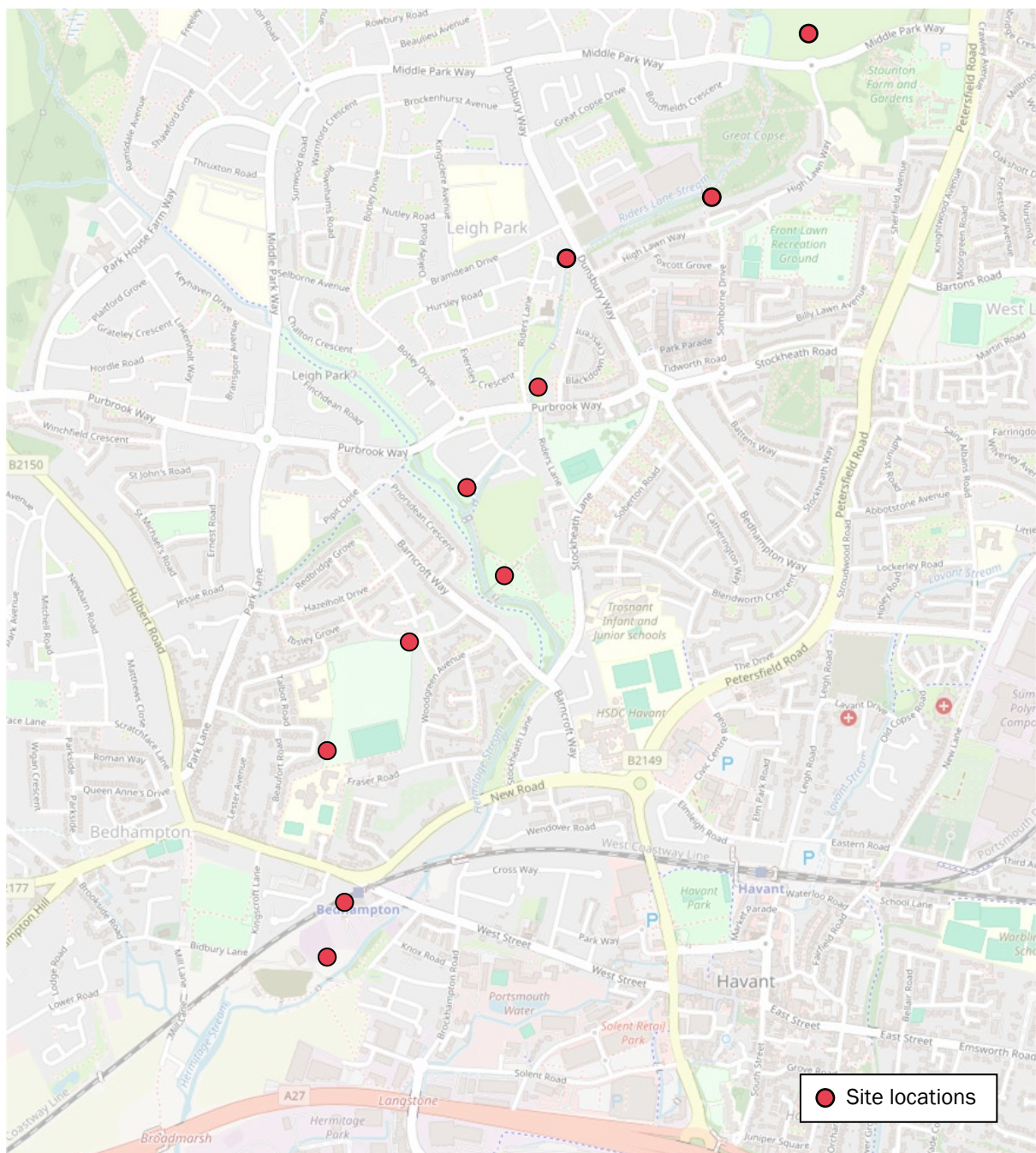
About DW Windsor

DW Windsor designs and manufactures high-quality lighting equipment and smart IoT technology solutions for the global specification market. Recognised as an innovator in intelligent lighting, DW Windsor comprises three specialist brands: DW Windsor for exterior lighting, Pulsar for architectural lighting, and Urban Control for IoT technologies. Driven by a shared passion for light and innovation, DW Windsor is dedicated to delivering outstanding products and services.

Havant Thicket Solar Project

1. Introduction

SWECO UK is working on a project entitled Havant Thicket Reservoir Project where their aim is to utilise portable, column mounted solar lighting across a number of short-term construction sites. SWECO has carried out and provided lighting designs for each of the sites, and DW Windsor has been engaged to provide solar solutions to ensure the lighting levels could be met with only solar energy being utilised.



2. Lighting Requirements

Lighting design has been carried out by SWECO.

Design Standard:

BS EN 12464-2 - Section 5.4

Required Minimum Levels:

Zone 1 (Walkways) - Eav = 5lux, Uo = 0.25

Zone 2 (Traffic Areas) - Eav = 10lux, Uo = 0.40

Zone 3 (Construction Area) - Eav = 50lux, Uo = 0.40

MF = $0.84 * 1 * 0.90 = 0.75$

3. Lantern Quantities

Working area 1

2 X Sierra Solar Midi 30W Wide Road Type 2. Mounted at 5M

3 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 6M

Working area 2

5 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

8 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Working area 3

5 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

1 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Working area 4

4 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

6 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Working area 5

5 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

7 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Working area 6

1 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

2 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Working area 7

3 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

7 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Working area 8

4 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

3 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

Emergency Zone

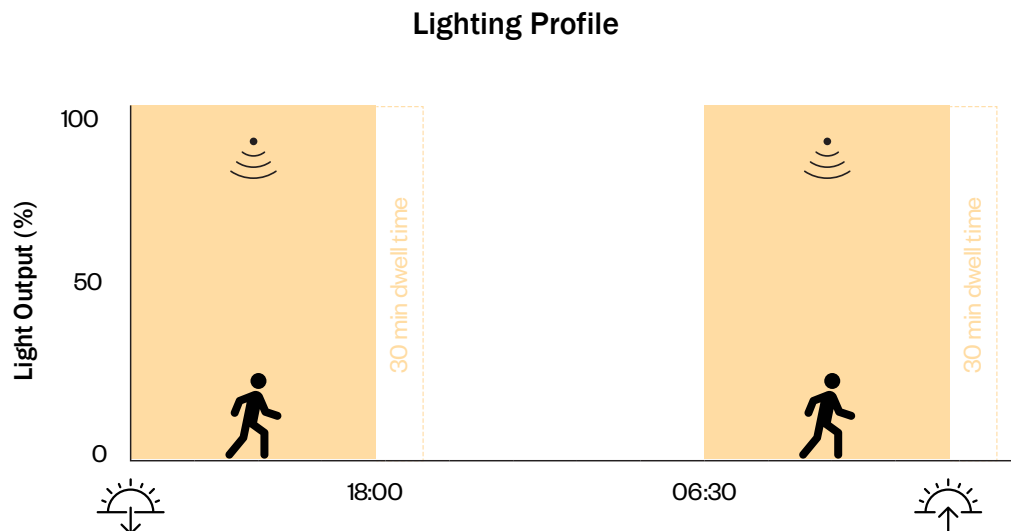
5 X Sierra Solar Midi 30W Asymmetrical Area. Mounted at 5M

4 X Sierra Solar Max 50W Asymmetrical Area. Mounted at 5M

4. Solar Design Requirements

Solar Conditions:

The product is required to be illuminated during site working hours with some flexibility before and after site hours. Site hours Mon to Fri 07:30 - 18:00 / Sat 07:30 - 13:00 / Sunday CLOSED.



Evening

Dusk approximately 15:30/16:00 - 18:00 On at 100% output [30W Sierra Midi, 50W Sierra Max] with PIR detection and 30-minute dwell after last activation. Product off when no activation. Allow energy budget for 30 minutes after site working hours. i.e. 15:30 - 18:30. Product off during the night.

Morning

On at 100% output [30W Sierra Midi, 50W Sierra Max] with PIR detection from trigger and off at dawn (December approximately 8am) and 30-minute dwell after last activation. Product off when no activation. Allow energy budget for 1 hour before site working hours and 30 minutes after typical December dawn. i.e. 06:30 - 08:30

5. Power Budget

We know that having products operating permanently at high wattages, requires significant solar generation. A quick calculation reveals we need to generate in excess of 150Wh to operate the Sierra Midi and 250Wh to operate the Sierra Max. This, therefore, means we need to add auxiliary PV panels or sleeves.

December is, of course, the month of the shortest day and longest night of the year and the December & January months are also the worst for solar irradiance, i.e. the amount of sunlight penetrating the cloudy winter skies. It's therefore December we need to focus on to achieve a working solution year-round.

Furthermore, the solar database we use, takes average weather over the month, so we must add a factor of safety and also a maintenance factor for dirt build-up on the panels, reducing their efficiency. Our preferred factor of safety is 25%.

We use solar irradiance data for the luminaires' PV panels and the auxiliary PV panels for both solutions, as shown below.

6. Solar Data – Sierra Midi + Torino 150W PV panel

Sierra Midi integrated 45W PV panel

Average hourly profiles

Total photovoltaic power output [Wh]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 - 1												
1 - 2												
2 - 3												
3 - 4												
4 - 5					0	0	0					
5 - 6				0	2	3	2	0				
6 - 7			0	3	6	6	6	4	1			
7 - 8		0	3	7	10	10	10	7	5	2		
8 - 9	0	2	6	11	13	14	13	11	9	5	2	0
9 - 10	2	5	9	14	16	16	16	14	11	7	4	2
10 - 11	4	7	11	16	17	18	17	15	13	9	6	4
11 - 12	5	9	13	17	19	19	18	17	14	11	7	5
12 - 13	6	9	14	17	19	19	19	17	14	10	6	5
13 - 14	5	8	12	16	17	18	18	16	13	8	5	4
14 - 15	3	6	10	14	16	17	17	14	11	6	3	2
15 - 16	1	4	7	11	13	14	14	12	8	4	1	0
16 - 17	0	1	4	8	10	11	11	8	5	1		
17 - 18			1	4	6	7	7	5	1			
18 - 19				0	2	3	3	1				
19 - 20					0	1	1					
20 - 21												
21 - 22												
22 - 23												
23 - 24												
Sum	27	51	91	140	166	178	171	141	105	63	34	21

Torino 150W PV panel set at 65°

Average hourly profiles

Total photovoltaic power output [Wh]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 - 1												
1 - 2												
2 - 3												
3 - 4												
4 - 5						1	0					
5 - 6				0	4	5	4	1				
6 - 7			0	6	9	9	8	6	3			
7 - 8		0	12	22	23	21	20	20	20	11		
8 - 9	5	18	30	40	40	37	36	37	37	30	18	5
9 - 10	23	34	43	55	53	50	50	50	50	43	33	23
10 - 11	36	45	54	65	61	58	57	57	59	53	44	34
11 - 12	43	53	63	71	66	65	64	64	64	60	48	40
12 - 13	44	55	65	70	66	66	66	64	63	53	46	39
13 - 14	38	47	56	65	61	61	61	59	56	44	38	32
14 - 15	28	38	47	55	53	53	54	51	46	35	27	22
15 - 16	15	28	35	42	39	40	42	40	35	24	12	6
16 - 17	0	12	20	24	23	24	26	24	18	5		
17 - 18			4	8	9	10	11	9	4			
18 - 19				1	4	5	5	2				
19 - 20					0	1	1					
20 - 21												
21 - 22												
22 - 23												
23 - 24												
Sum	231	329	429	523	510	506	503	483	455	358	267	201

With this information, we can complete the power design table, shown below to verify the results.

7. Power Design – Sierra Midi



Photovoltaic Power	
Lantern PV (Wh)	21.5 (Midi)
Additional PV (Wh)	201 (150W Panel)
Total PV (Wh)	222.5

Lantern Power	
Sierra Power (W)	30
Dimmed to %	100

Power Calculation								
Regime Start	Regime End	Total Hours	Detection Power (W)	Dormant Power (W)	Dormant % of Output	Trigger %	Dormant %	Total Power (W)
15:30	18:30	3	30	0	0	1	0	90
18:30	06:30	12	0	0	0	0	0	0
06:30	08:30	2	30	0	0	1	0	60
Total (W)								150
Total PV Wh								222.5
PV Balance								72.5
PV Surplus								33%

8. Solar Data – Sierra Max + Torino 300W PV panel

Sierra Max integrated 75W PV panel

Average hourly profiles

Total photovoltaic power output [Wh]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 - 1												
1 - 2												
2 - 3												
3 - 4												
4 - 5					0	1	0					
5 - 6				0	4	5	4	1				
6 - 7			0	5	10	12	10	7	2			
7 - 8		0	5	13	17	18	17	13	9	3		
8 - 9	1	4	11	20	24	24	23	20	16	9	3	1
9 - 10	4	9	16	25	28	29	28	24	20	13	7	4
10 - 11	8	13	20	28	31	31	30	27	23	17	10	6
11 - 12	10	15	23	31	33	33	32	29	25	19	12	8
12 - 13	10	16	24	30	32	34	33	29	25	17	11	8
13 - 14	8	14	21	28	30	32	31	27	22	14	9	6
14 - 15	5	10	17	24	28	29	29	24	18	11	5	3
15 - 16	2	7	13	20	23	25	25	20	14	6	2	1
16 - 17	0	2	7	13	17	19	19	14	8	1		
17 - 18			1	6	10	12	12	8	2			
18 - 19				1	3	6	5	2				
19 - 20					0	1	1					
20 - 21												
21 - 22												
22 - 23												
23 - 24												
Sum	47	89	158	245	290	311	298	246	184	110	59	36

Torino 300W PV panel set at 65°

Average hourly profiles

Total photovoltaic power output [Wh]

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0 - 1												
1 - 2												
2 - 3												
3 - 4												
4 - 5						1	0					
5 - 6				0	7	9	7	2				
6 - 7			1	12	18	19	17	13	7			
7 - 8		1	24	44	46	42	40	39	40	23		
8 - 9	10	36	60	81	80	75	72	73	75	60	37	9
9 - 10	47	68	86	110	106	101	99	99	100	86	66	46
10 - 11	72	91	109	129	121	116	114	115	118	106	88	68
11 - 12	85	106	125	142	132	129	127	127	128	119	97	79
12 - 13	87	110	129	140	132	131	131	127	126	105	92	78
13 - 14	76	93	112	130	121	121	121	118	112	89	76	64
14 - 15	56	75	94	110	105	107	108	103	92	70	54	45
15 - 16	30	56	71	83	78	80	84	79	69	48	24	12
16 - 17	0	24	40	48	46	47	51	48	37	11		
17 - 18			8	16	18	21	21	18	7			
18 - 19				2	7	11	10	4				
19 - 20					0	2	2					
20 - 21												
21 - 22												
22 - 23												
23 - 24												
Sum	463	658	858	1,046	1,019	1,013	1,006	966	910	716	534	401

9. Power Design – Sierra Max



Photovoltaic Power	
Lantern PV (Wh)	36 (Midi)
Additional PV (Wh)	401 (300W Panel)
Total PV (Wh)	437

Lantern Power	
Sierra Power (W)	50
Dimmed to %	100

Power Calculation								
Regime Start	Regime End	Total Hours	Detection Power (W)	Dormant Power (W)	Dormant % of Output	Trigger %	Dormant %	Total Power (W)
15:30	18:30	3	50	0	0	1	0	150
18:30	06:30	12	0	0	0	0	0	0
06:30	08:30	2	50	0	0	1	0	100
Total (W)								250
Total PV Wh								437
PV Balance								187
PV Surplus								43%

10. Conclusion

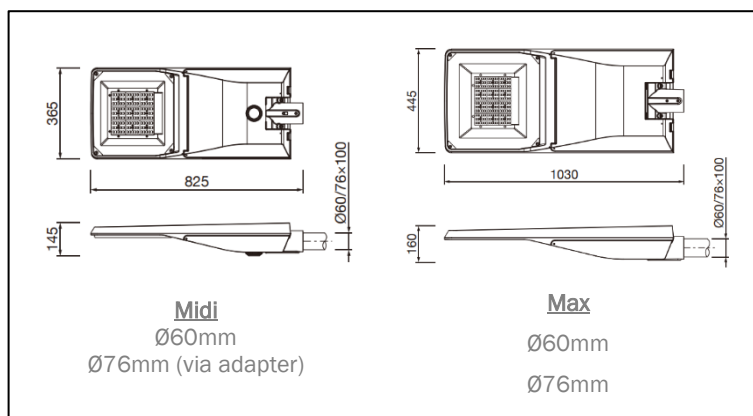
The above data illustrates that when using a Sierra Midi with an auxiliary 150W Torino PV panel, we can generate typically 222Wh for an energy budget of 150W. This provides a typical surplus of 72Wh or 33%.

Using the Sierra Max with an auxiliary 300W Torino PV panel, we can generate typically 437Wh for an energy budget of 250W. This provides a typical surplus of 187Wh or 43%.

A 300W PV panel generates significantly more energy than we need, but using a 200W panel does not provide the factor of safety required.

This takes into account periods of very poor irradiance caused by fog, rain, frost or snow, and a build-up of dirt on the panels as may be typical in a construction environment. It also allows for the site to stay open beyond the anticipated closing time, should this be necessary in any circumstances.

11. Product Datasheet – Sierra Solar



Performance

Lumen Output	6,100lm (Midi)
	9,700lm (Max)
Power	30W (Midi)
	50W (Max)
LEDs	126 (Midi)
	168 (Max)
CCT	3,000K / 4,000K
CRI	70
Distributions	Road - Type 1 / Type 2
	Area – Asymmetric
Certifications	UKCA, CE

Mechanical

Mounting Options	Post top / side entry
Glazing	Flat toughened glass
Housing	Aluminium
Colours	RAL 9005 Black
	RAL 9007 Metallic Grey
Finish	Polyester power coat
IP Rating	IP66
IK Rating	IK08
Weight	15.5kg (Midi)
	23.5kg (Max)
Windage	0.060m ² (Midi)
	0.093m ² (Max)

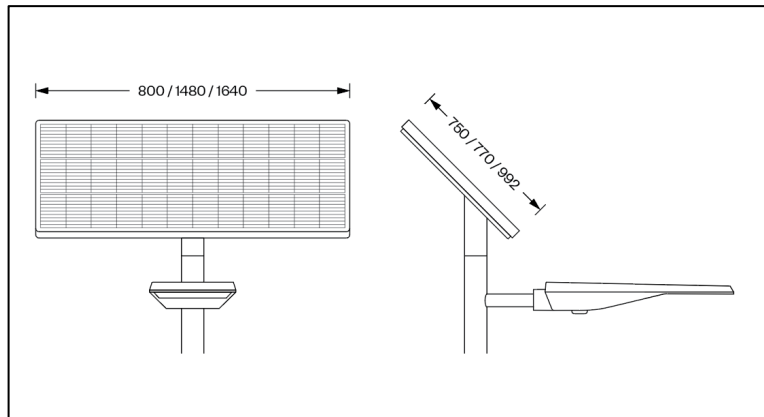
Electrical

Driver options	Switched (on/off)
	Dimmable
Solar Panel Type	Monocrystalline
Solar Panel Power	18V / 45W (Midi)
	18V / 75W (Max)
Panel Efficiency	22%
Battery Type	Lithium iron phosphate (LiFePO4)
Battery Options	42Ah / 538Wh (Midi)
	72Ah / 922Wh (Max)
Electrical Class	Class III
Solar Charge Control	Integral
Rated Lifetime	100,000 hrs (L90 B10)

Controls

Control Options	Dimmable set via solar controller
	Presence detector

12. Product Datasheet – Torino Panel



Electrical

Solar Panel Type	Monocrystalline
Solar Panel Power	100W / 200W / 300W
Panel Efficiency	22%
Electrical Class	Class III
Operating Temp	-20 °C to +40 °C

Mechanical

Glazing	Flat toughened glass
Housing	Aluminium
Colours	RAL 9005 Black
IP Rating	IP66
IK Rating	IK09

DW Windsor

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Appendix E – Lighting Calculation Reports

DATE: 25 March 2025
DESIGNER: David Hendry
PROJECT No: 65209354
PROJECT NAME: Havant Pipeline



Document ID: 65209354-SWE-ZZ-ZZ-C-E-1301

Revision: P01

Location: Havant, Hampshire

Design Standard: BS EN 12464-2 - Section 5.4

Required Minimum Levels:

Zone 1 (Walkways) - Eav = 5lux, Uo = 0.25

Zone 2 (Traffic Areas) - Eav = 10lux, Uo = 0.40

Zone 3 (Construction Area) - Eav = 50lux, Uo = 0.40

$MF = 0.84 * 1 * 0.90 = 0.75$

Outdoor Lighting Report

PREPARED BY: Sweco UK Limited
Sweco 2nd Floor Quay 2
139 Fountainbridge
Edinburgh, EH3 9QG
+44 131 550 6300
www.sweco.co.uk

Layout Report

General Data

Dimensions in Metres Angles in Degrees

Calculation Grids

ID	Grid Name	X	Y	X' Length	Y' Length	X' Spacing	Y' Spacing
1	Grid 1 - Work Area 1 Zone ...	470662.38	106439.66	18.00	27.00	1.50	1.50
2	Grid 2 - Work Area 1 Zone ...	470660.12	106441.97	38.90	30.00	1.50	1.50
3	Grid 3 - Work Area 1 Zone ...	470675.04	106455.32	24.00	30.00	1.50	1.50
4	Grid 4 - Work Area 2 Zone ...	470696.70	106922.21	27.00	41.87	1.50	1.50
5	Grid 5 - Work Area 2 Zone ...	470688.07	106894.35	40.33	67.01	1.49	1.49
6	Grid 6 - Work Area 2 Zone ...	470700.30	106865.85	33.00	30.00	1.50	1.50
7	Grid 7 - Work Area 3 Zone ...	470844.05	107135.80	42.00	54.00	1.50	1.50
8	Grid 8 - Work Area 3 Zone ...	470845.51	107137.76	36.00	51.00	1.50	1.50
9	Grid 9 - Work Area 4 - Zo...	471092.66	107289.74	90.00	81.00	1.50	1.50
10	Grid 10 Work Area 4 - Zon...	471124.39	107312.99	46.36	20.85	1.50	1.49
11	Grid 11 - Work Area 4 - Z...	471105.00	107327.95	27.00	24.00	1.50	1.50
12	Grid 12 - Work Area 4 - Z...	471133.98	107329.39	27.05	13.51	1.50	1.50
13	Grid 13 - Emergency Site Z...	470982.97	107563.44	60.00	24.00	1.50	1.50
14	Grid 14 - Emergency Site Z...	470984.54	107572.91	29.90	28.13	1.50	1.48
15	Grid 15 - Emergency Site -...	471002.40	107537.33	33.00	27.00	1.50	1.50
16	Grid 16 - Work Area 2 Zone...	470699.95	106903.60	24.00	19.43	1.50	1.49

Luminaire



Luminaire A Data

Supplier	
Type	STEALTH ELITE 3000K M1 LENS LED1500
Lamp(s)	LED
LampFlux(klm)/Colour	1.49 3000K/70
File Name	SEL-#3LED1500-M1.lid
Maintenance Factor	0.75
Imax70,80,90(cd/klm)	850.2, 290.8, 15.6
No. in Project	17



Luminaire D Data

Supplier	
Type	Sierra Solar Midi 30W 3000K Asymmetrical Area
Lamp(s)	LED
Lamp Flux (klm)	5.79
File Name	Sierra Solar Midi 30W 3000K Asymmetrical Area.IES
Maintenance Factor	0.75
Imax70,80,90(cd/klm)	350.3, 52.4, 0.3
No. in Project	19



Luminaire E Data

Supplier	
Type	Sierra Solar Midi 30W 3000K Wide Road Type 2
Lamp(s)	LED
Lamp Flux (klm)	5.54
File Name	Sierra Solar Midi 30W 3000K Wide Road Type 2.IES
Maintenance Factor	0.75
Imax70,80,90(cd/klm)	428.7, 121.7, 0.4
No. in Project	2



Luminaire F Data

Supplier	
Type	Sierra Solar Max 50W 3000K Asymmetrical Area
Lamp(s)	LED
Lamp Flux (klm)	9.43
File Name	Sierra Solar Max 50W 3000K Asymmetrical Area.IES
Maintenance Factor	0.75
Imax70,80,90(cd/klm)	328.6, 48.1, 0.4
No. in Project	22

Layout

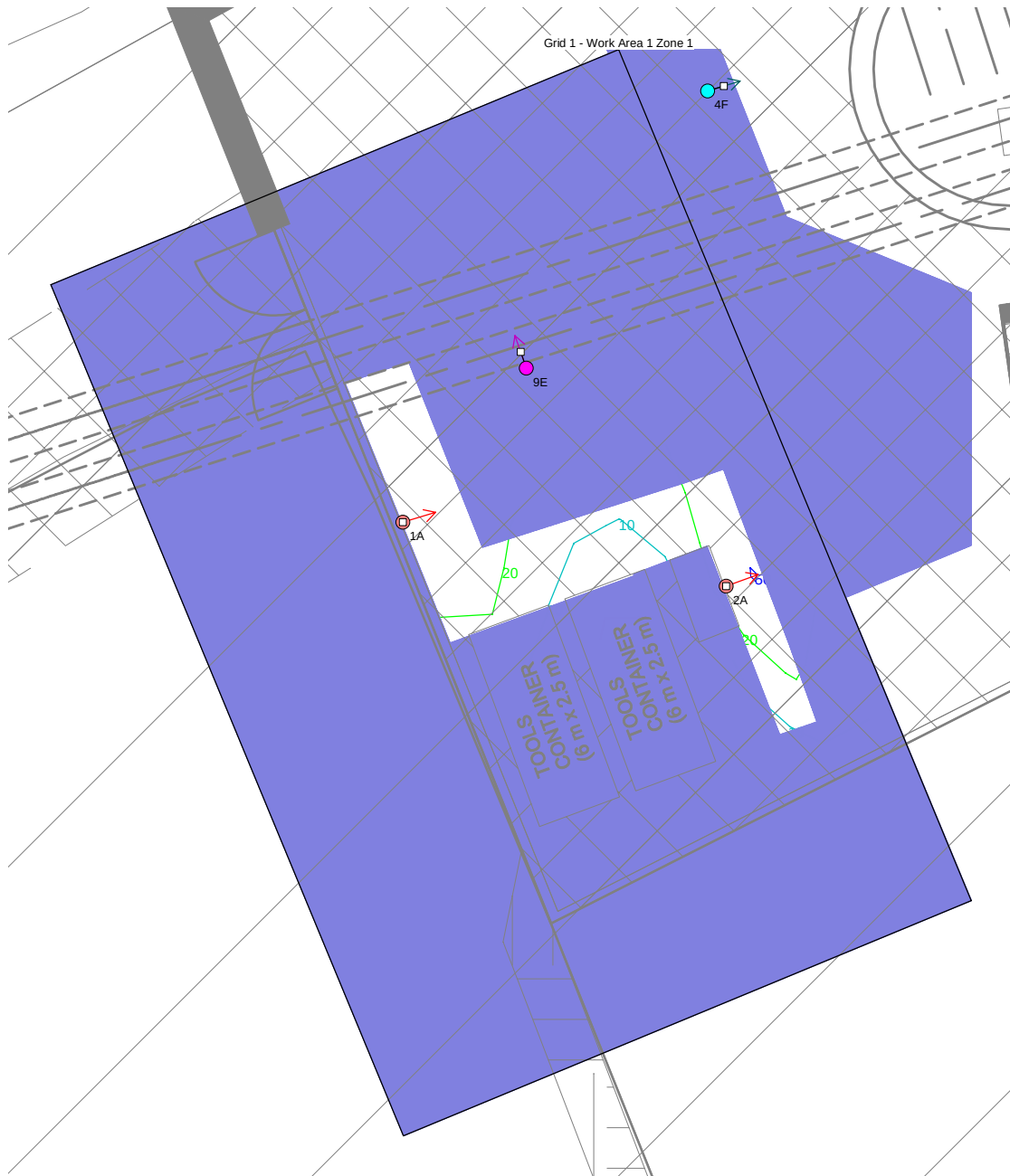
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	470662.36	106457.64	2.50	17.00	0.00	0.00	0.00			
2	A	470671.83	106455.77	2.50	20.00	0.00	0.00	0.00			
4	F	470671.28	106470.28	6.00	17.00	0.00	0.00	0.50			
9	E	470665.97	106462.16	5.00	109.00	0.00	0.00	0.50			
5	A	470872.46	107181.88	2.50	174.00	0.00	0.00	0.00			
6	A	470874.62	107175.47	2.50	221.00	0.00	0.00	0.00			
7	A	470878.68	107169.47	2.50	187.00	0.00	0.00	0.00			
8	A	470873.53	107163.75	2.50	90.00	0.00	0.00	0.00			
9	A	470869.06	107160.90	2.50	180.00	0.00	0.00	0.00			
10	A	470872.98	107158.27	2.50	270.00	0.00	0.00	0.00			
11	A	470876.51	107151.97	2.50	180.00	0.00	0.00	0.00			
12	A	470872.34	107144.90	2.50	90.00	0.00	0.00	0.00			
19	E	470685.00	106460.04	5.00	109.00	0.00	0.00	0.50			
20	F	470676.80	106478.74	6.00	290.00	0.00	0.00	0.50			
15	D	470861.21	107180.77	5.00	332.00	0.00	0.00	0.50			
16	D	470852.69	107175.21	5.00	275.00	0.00	0.00	0.50			
24	F	470687.22	106473.03	6.00	197.00	0.00	0.00	0.50			
19	D	470692.80	106951.09	5.00	12.00	0.00	0.00	0.50			
31	F	470727.01	106884.06	5.00	192.00	0.00	0.00	0.50			
32	F	470715.70	106892.81	5.00	276.00	0.00	0.00	0.50			
35	D	470711.16	106941.60	5.00	191.00	0.00	0.00	0.50			
36	D	470706.05	106930.16	5.00	192.00	0.00	0.00	0.50			
35	A	470713.56	106948.89	2.50	192.00	0.00	0.00	0.00			
38	D	470708.13	106954.91	5.00	192.00	0.00	0.00	0.50			
37	F	470701.88	106887.63	5.00	1.00	0.00	0.00	0.50			
38	F	470700.28	106917.19	5.00	11.00	0.00	0.00	0.50			
39	F	470712.47	106875.79	5.00	73.00	0.00	0.00	0.50			
40	F	470724.43	106871.93	5.00	104.00	0.00	0.00	0.50			
41	F	470711.05	106897.99	5.00	186.00	0.00	0.00	0.50			
42	D	470865.99	107160.62	5.00	184.00	0.00	0.00	0.50			
43	D	470866.24	107149.19	5.00	181.00	0.00	0.00	0.50			
44	A	470863.58	107138.47	2.50	94.00	0.00	0.00	0.00			
44	A	471147.44	107309.81	2.50	76.00	0.00	0.00	0.00			
45	A	471153.31	107301.38	2.50	76.00	0.00	0.00	0.00			
46	A	471135.63	107312.80	2.50	76.00	0.00	0.00	0.00			
47	D	471158.93	107305.38	5.00	75.00	0.00	0.00	0.50			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
48	D	471145.47	107314.40	5.00	70.00	0.00	0.00	0.50			
49	D	471163.15	107316.99	5.00	250.00	0.00	0.00	0.50			
50	F	471147.97	107326.90	5.00	45.00	0.00	0.00	0.50			
51	F	471141.12	107332.59	5.00	48.00	0.00	0.00	0.50			
52	F	471119.06	107322.63	5.00	61.00	0.00	0.00	0.50			
53	F	471112.11	107335.46	5.00	345.00	0.00	0.00	0.50			
54	F	471130.49	107332.70	5.00	199.00	0.00	0.00	0.50			
55	D	471136.28	107328.33	5.00	249.00	0.00	0.00	0.50			
56	F	471122.18	107343.08	5.00	252.00	0.00	0.00	0.50			
57	D	470989.84	107569.51	5.00	46.00	0.00	0.00	0.50			
58	D	470997.59	107562.60	5.00	45.00	0.00	0.00	0.50			
59	F	471017.05	107560.18	5.00	271.00	0.00	0.00	0.50			
60	F	471027.51	107553.59	5.00	208.00	0.00	0.00	0.50			
61	F	471018.09	107540.22	5.00	81.00	0.00	0.00	0.50			
62	F	471008.38	107549.64	5.00	0.00	0.00	0.00	0.50			
63	D	471010.40	107562.68	5.00	229.00	0.00	0.00	0.50			
65	A	471029.10	107573.52	2.50	282.00	0.00	0.00	0.00			
66	A	471011.61	107578.24	2.50	270.00	0.00	0.00	0.00			
68	D	471013.41	107566.72	5.00	102.00	0.00	0.00	0.50			
68	D	471004.02	107575.22	5.00	259.00	0.00	0.00	0.50			
68	D	470869.06	107178.38	5.00	270.00	0.00	0.00	0.50			
69	F	470870.10	107165.79	5.00	93.00	0.00	0.00	0.50			
59	F	470701.74	106910.03	5.00	11.00	0.00	0.00	0.50			
60	D	470696.37	106938.86	5.00	12.00	0.00	0.00	0.50			

Horizontal Illuminance (lux)

Grid 1 - Work Area 1 Zone 1

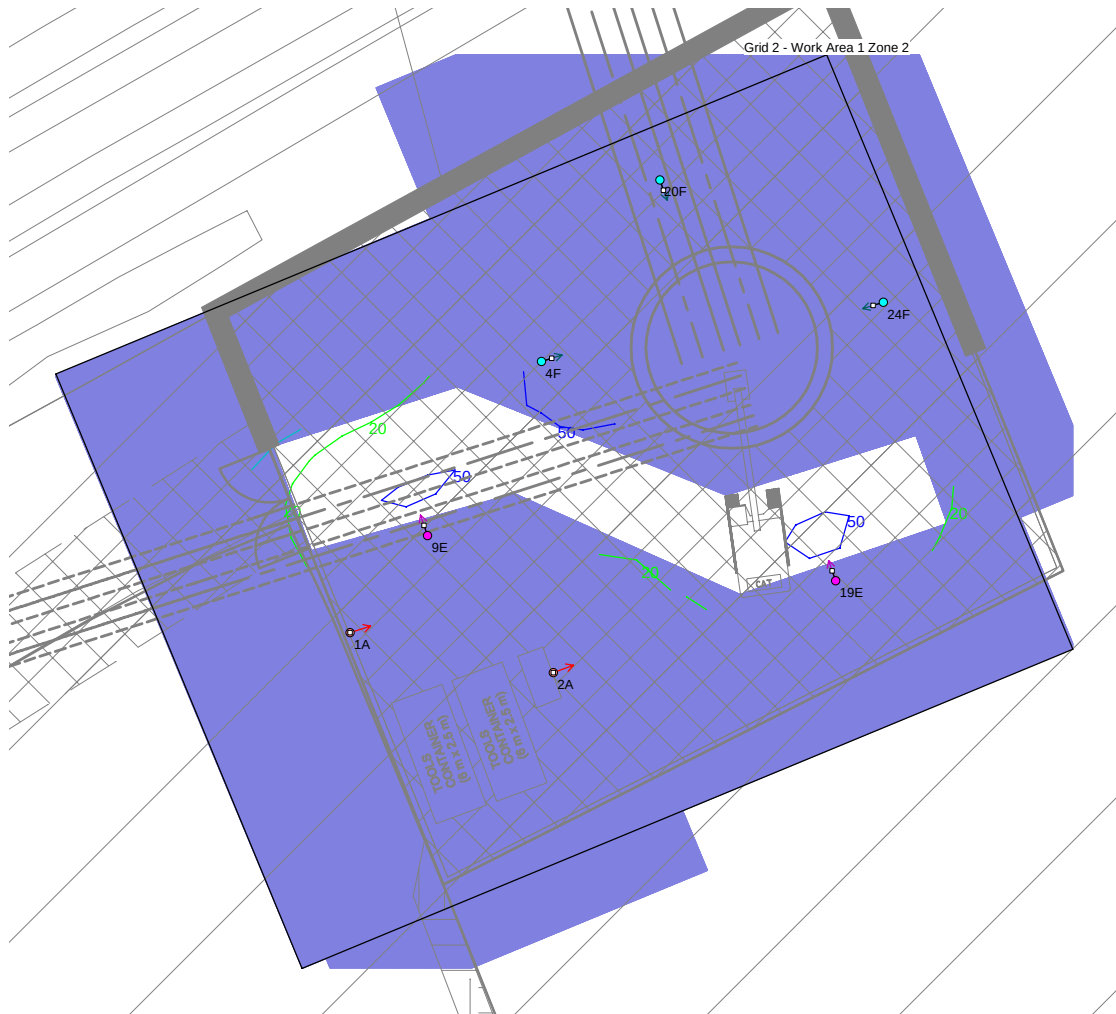


Results

Eav	24.18
Emin	6.70
Emax	52.00
Emin/Emax	0.13
Emin/Eav	0.28

Horizontal Illuminance (lux)

Grid 2 - Work Area 1 Zone 2

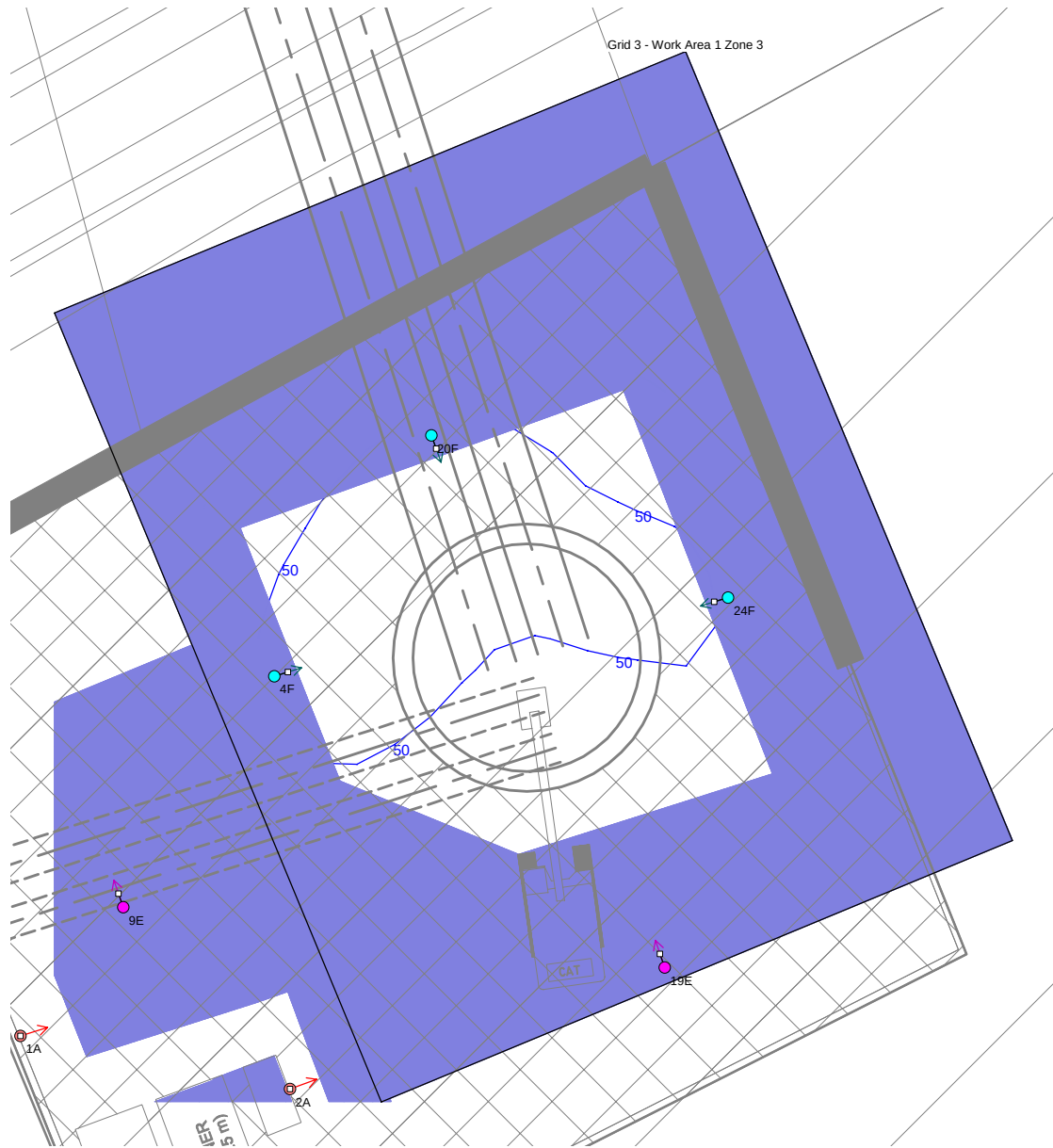


Results

Eav	36.95
Emin	16.73
Emax	53.31
Emin/Emax	0.31
Emin/Eav	0.45

Horizontal Illuminance (lux)

Grid 3 - Work Area 1 Zone 3



Results

Eav	50.62
Emin	30.02
Emax	69.95
Emin/Emax	0.43
Emin/Eav	0.59

Horizontal Illuminance (lux)

Grid 4 - Work Area 2 Zone 1

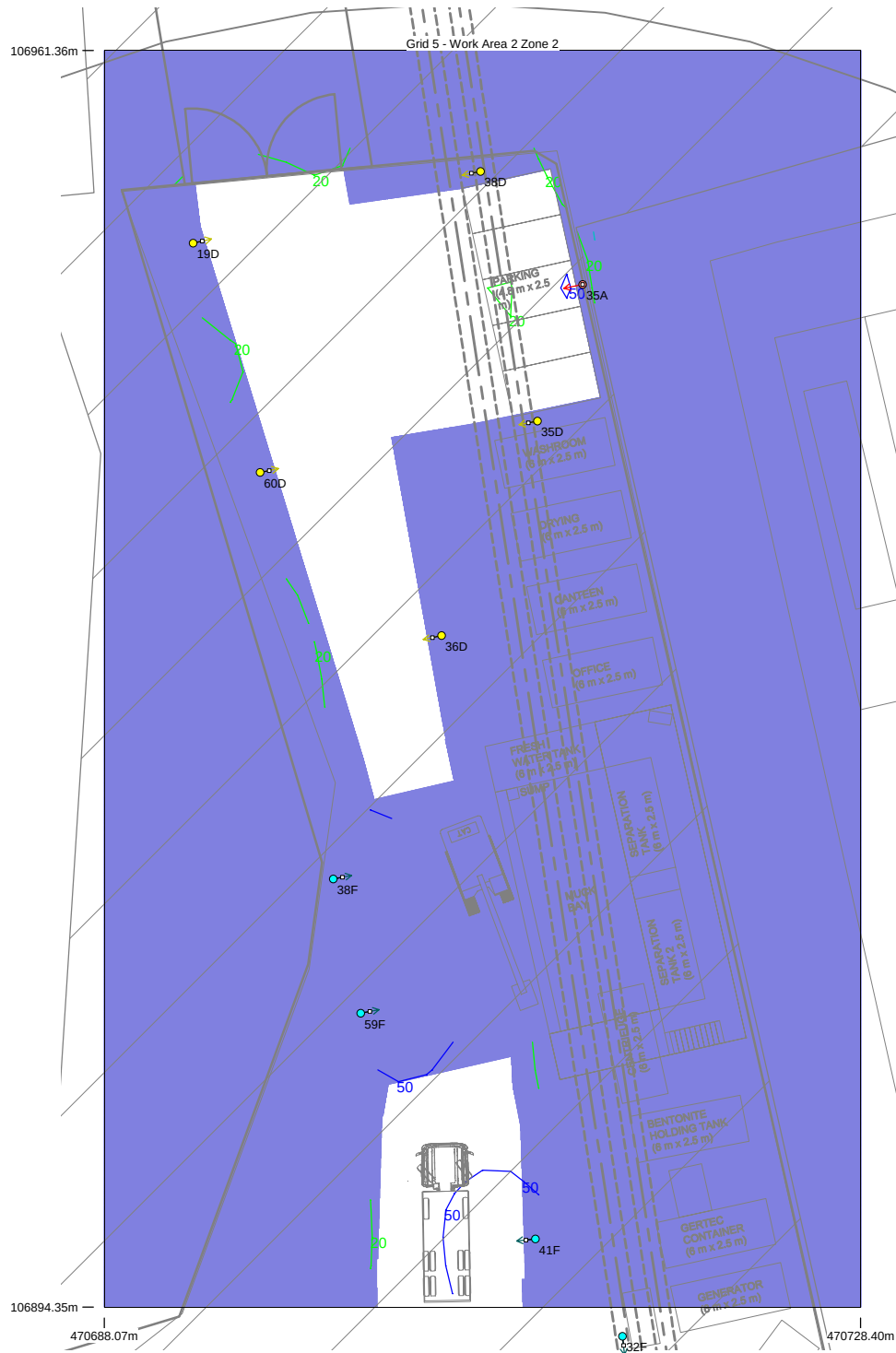


Results

Eav	25.23
Emin	9.54
Emax	40.72
Emin/Emax	0.23
Emin/Eav	0.38

Horizontal Illuminance (lux)

Grid 5 - Work Area 2 Zone 2

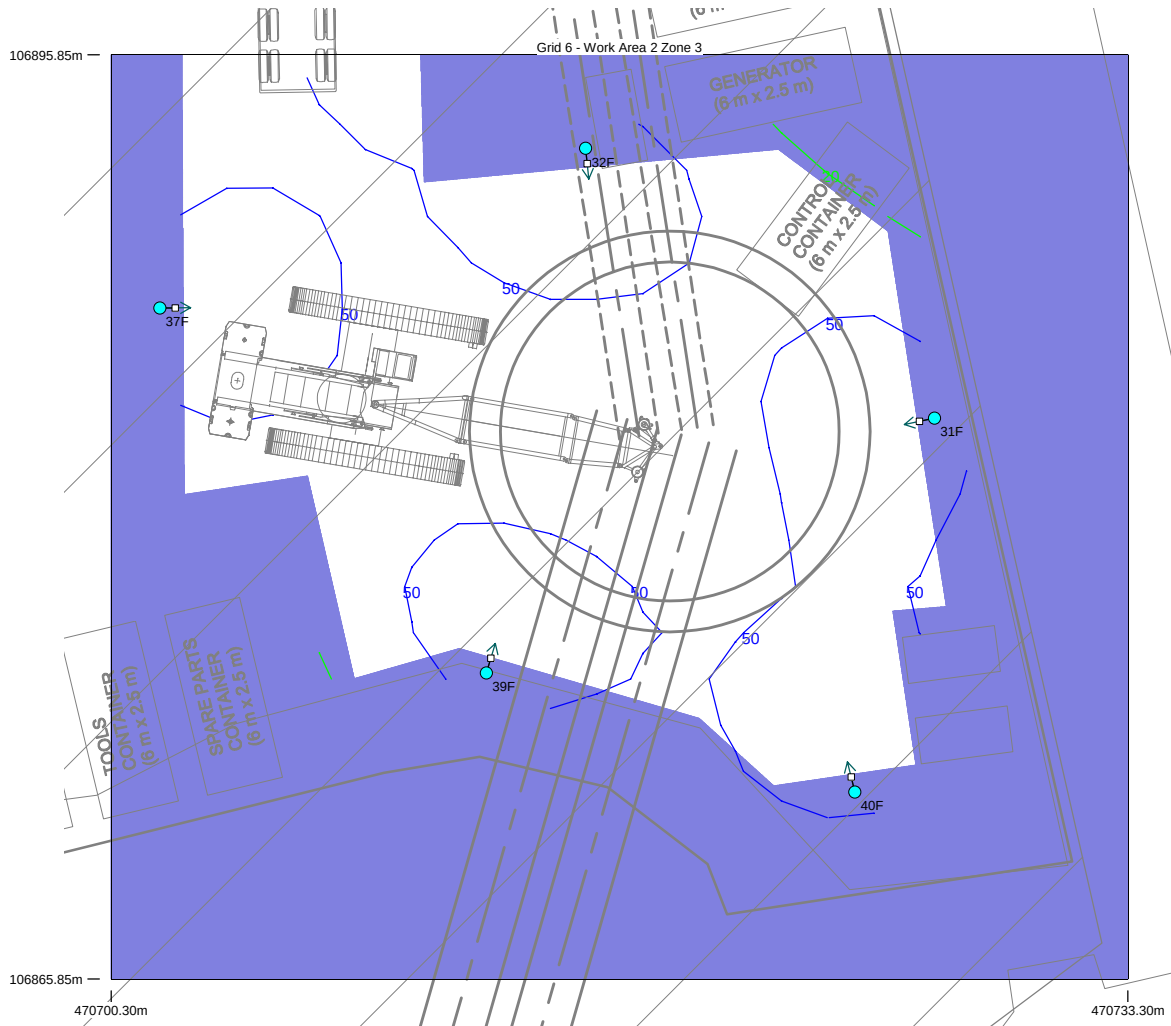


Results

Eav	32.88
Emin	19.61
Emax	78.42
Emin/Emax	0.25
Emin/Eav	0.60

Horizontal Illuminance (lux)

Grid 6 - Work Area 2 Zone 3

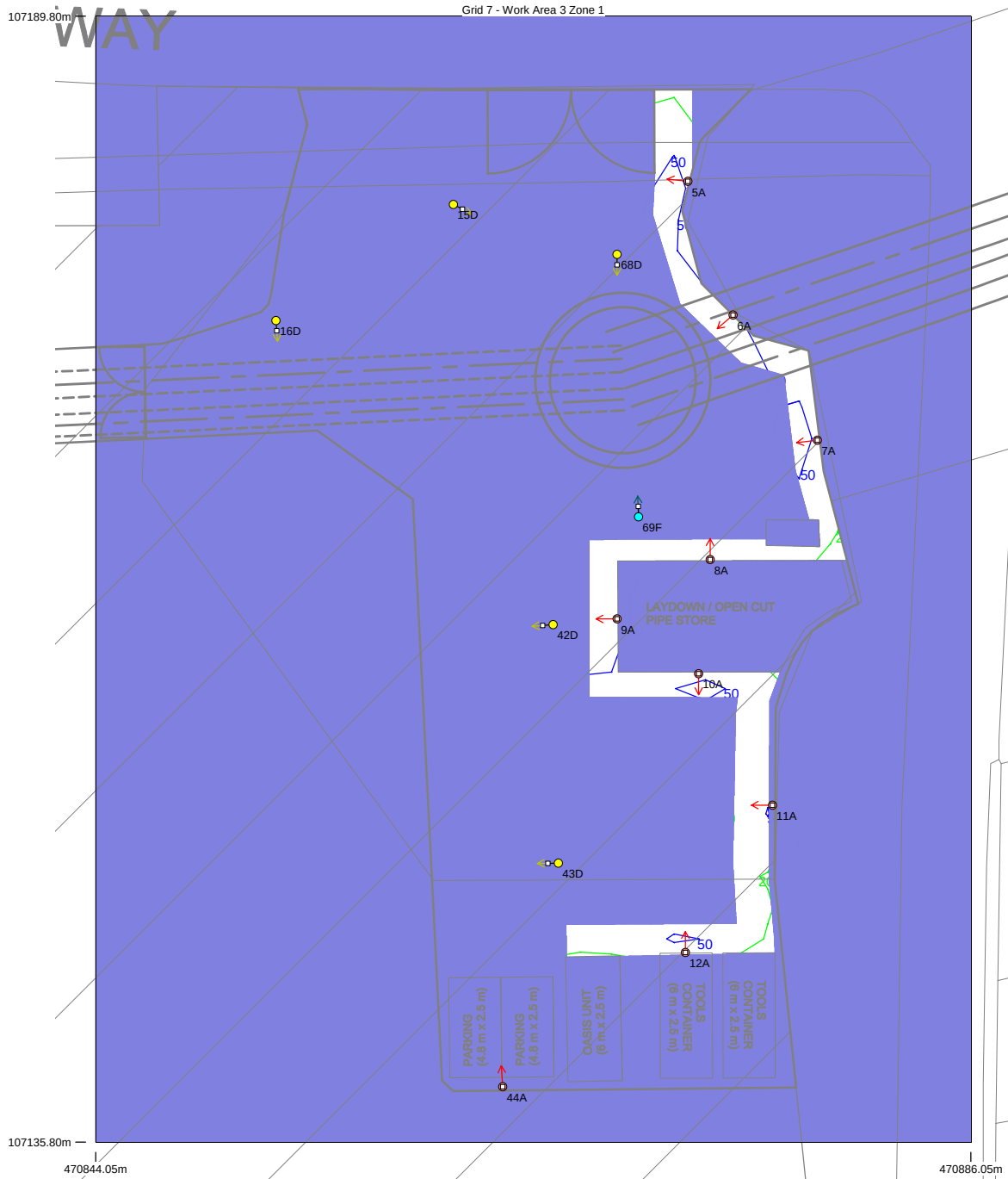


Results

Eav	50.13
Emin	25.64
Emax	76.09
Emin/Emax	0.34
Emin/Eav	0.51

Horizontal Illuminance (lux)

Grid 7 - Work Area 3 Zone 1



Results

Eav	41.76
Emin	18.19
Emax	80.78
Emin/Emax	0.23
Emin/Eav	0.44