

Lighting Calculation

Installation : Outdoor Riding Areas

Project number : Greens Lane Livery Yard
Customer : RPS Equine
Processed by : Callum McCall
Date : 07.12.2023

Qvis Lighting Limited

This lighting design is for general guidance only and must not be relied upon when ordering the correct quantities or types of light fittings, as this must be checked and confirmed by you/the installer.

All calculations, unless stated otherwise, have been based upon an open plan area without any obstructions above the working plane.

With regards to CIBSE LG7/BSEN12464 we have shown illuminance levels and ratios for your ultimate approval. UGR and luminance values are all available for your approval if necessary.

It may be necessary in some instances to check UGR values even if the luminance values are below the compliant threshold. Emergency scheme is to be checked and confirmed with a local building/fire control officer and ultimately approved by the owner of the building.

Any emergency calculations that have been completed have been based so far as possible on 0.5 lux for open areas and 1 lux for escape routes. Please be aware of L2 requirements and check that conformity has been met where required. In addition, ensuring that fire tents are used to conform to current building regulations is vital, a quotation for these can be obtained via the sales department.

Please be advised that this Qvis proposal is not suitable for anti-ligature applications, if areas included in this proposal are in need of this type of luminaire, then an alternative supplier will need to be sourced.

Common design parameters have been used in order to carry out all calculations. If any part of the scheme or luminaire choice within the scheme are deemed to be not suitable for the application, please contact us for re-calculations to be carried out prior to an order being placed.

All calculations have been based upon rated lumen outputs supplied by lamp manufacturers and may vary with ambient on-site temperatures.

Please ensure that this lighting scheme complies with all requirements, and if further details/ calculations are required please contact us on the above number.

Final quantities are to be confirmed prior to an order/installation and we will not be held responsible for any errors or omissions.

Qvis is not contracted or paid to supply advice of any kind and it is entirely the responsibility of you/the installer to ensure that the design ultimately meets your requirements and complies with any legal requirements or regulations. Qvis can accept no responsibility or liability if this design does not meet any such requirements.

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.

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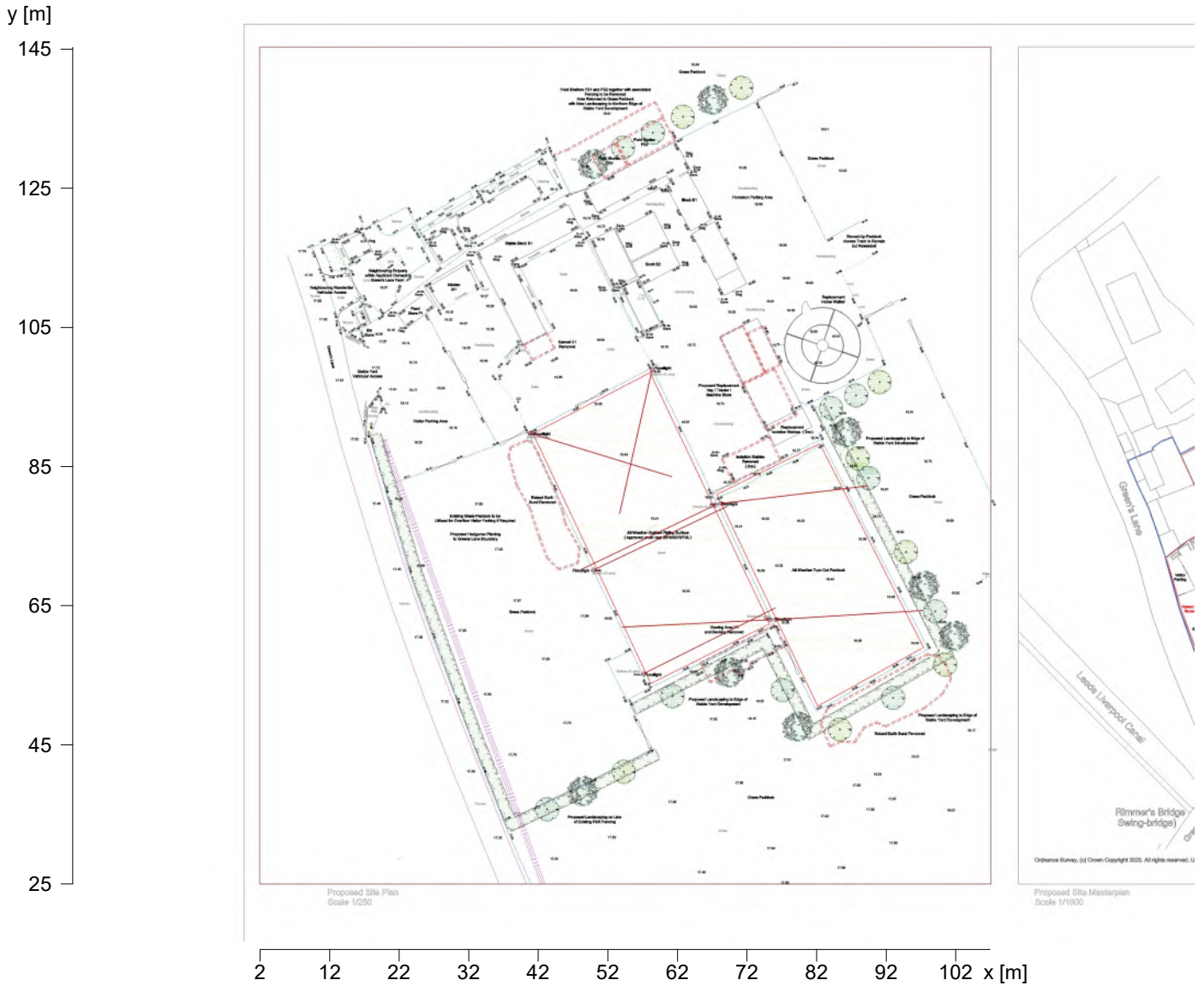
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1 Exterior

1.1 Description, Exterior

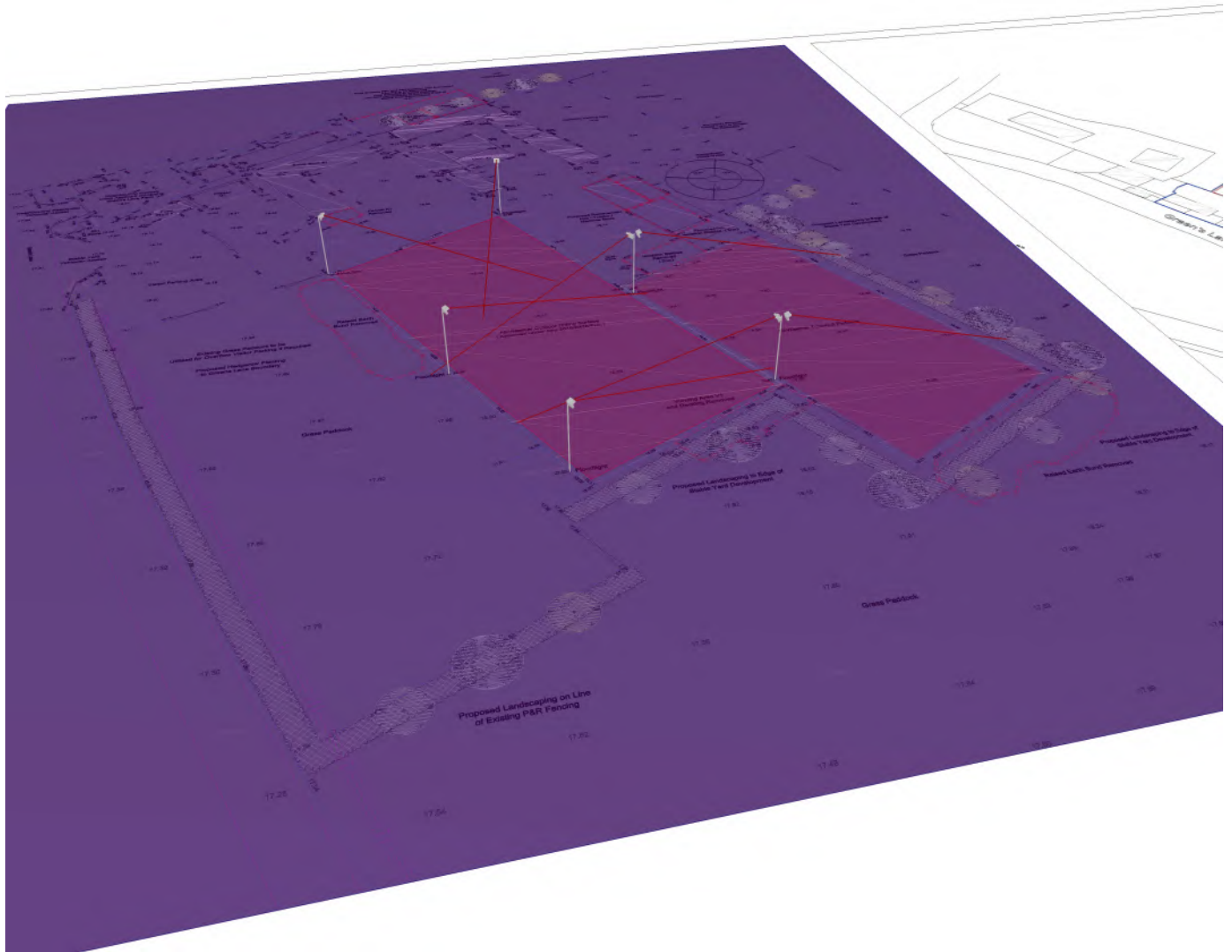
1.1.1 Floor plan



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1.1 Description, Exterior

1.1.2 3D view, View 1

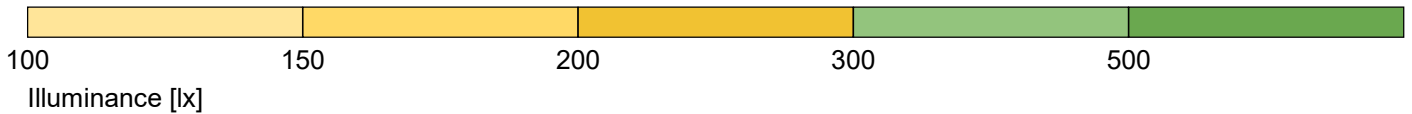
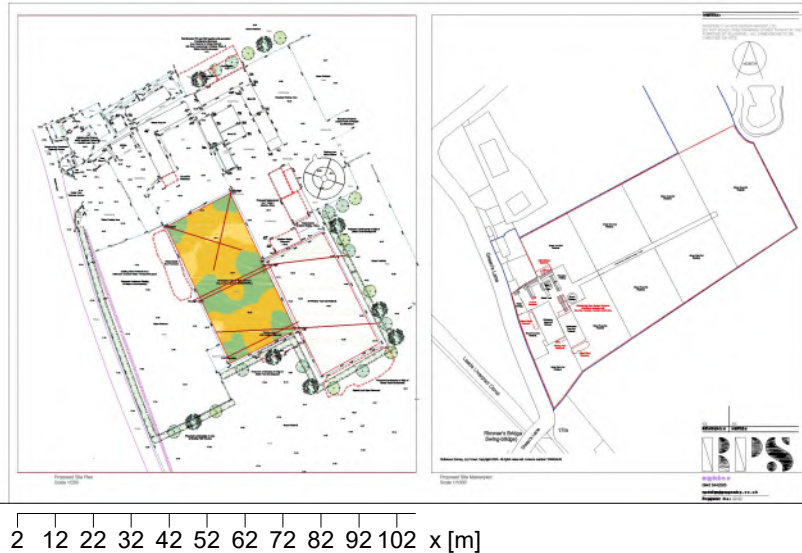


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1 Exterior

1.2 Summary, Exterior

1.2.1 Result overview, All-Weather Outdoor Riding Surface



General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.09 m
Maintenance factor	0.85

Total luminous flux	680400 lm
Total power	5040 W
Total power per area (12621.12 m ²)	0.40 W/m ²

Illuminance

Average illuminance	\bar{E}_m	287 lx
Minimum illuminance	E_{min}	139 lx
Maximum illuminance	E_{max}	546 lx
Uniformity U_o	E_{min}/\bar{E}_m	1:2.07 (0.48)
Diversity U_d	E_{min}/E_{max}	1:3.94 (0.25)

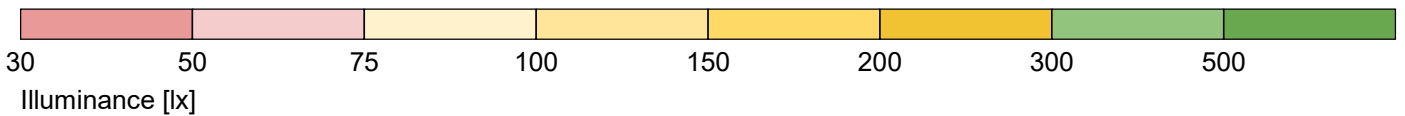
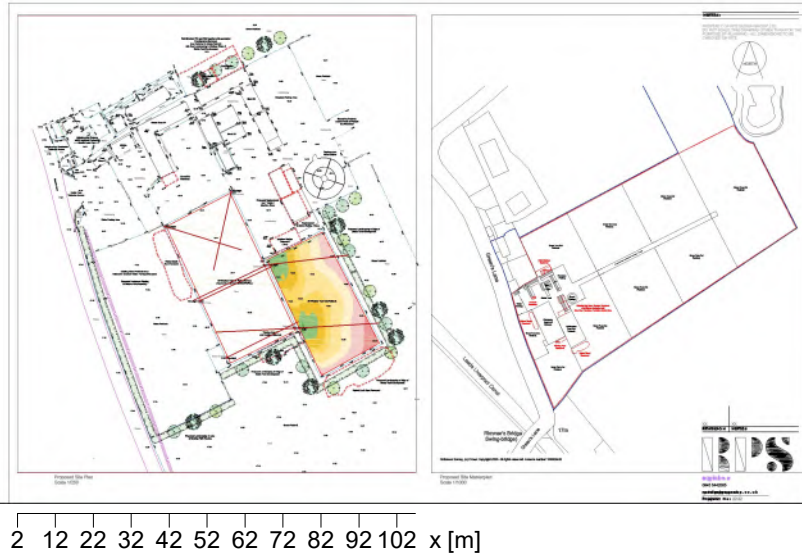
Type No. Make

1	8 x	Order No.	:
		Luminaire name	: QSPORT2-630CW/AS
		Equipment	: 1 x LED 630 W / 85050 lm

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1.2 Summary, Exterior

1.2.2 Result overview, All-Weather Turn-Out Paddock



General


Calculation algorithm used	Average indirect fraction
Height of evaluation surface	0.00 m
Height (phot. centre) [m]:	6.09 m
Maintenance factor	0.85

Total luminous flux	680400 lm
Total power	5040 W
Total power per area (12621.12 m ²)	0.40 W/m ²

Illuminance

Average illuminance	\bar{E}_m	153 lx
Minimum illuminance	E_{min}	38 lx
Maximum illuminance	E_{max}	513 lx
Uniformity U_o	E_{min}/\bar{E}_m	1:4.08 (0.25)
Diversity U_d	E_{min}/E_{max}	1:13.7 (0.07)

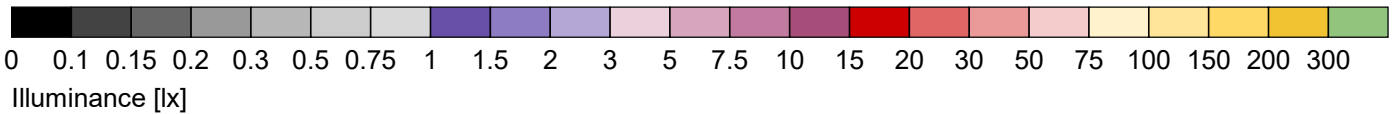
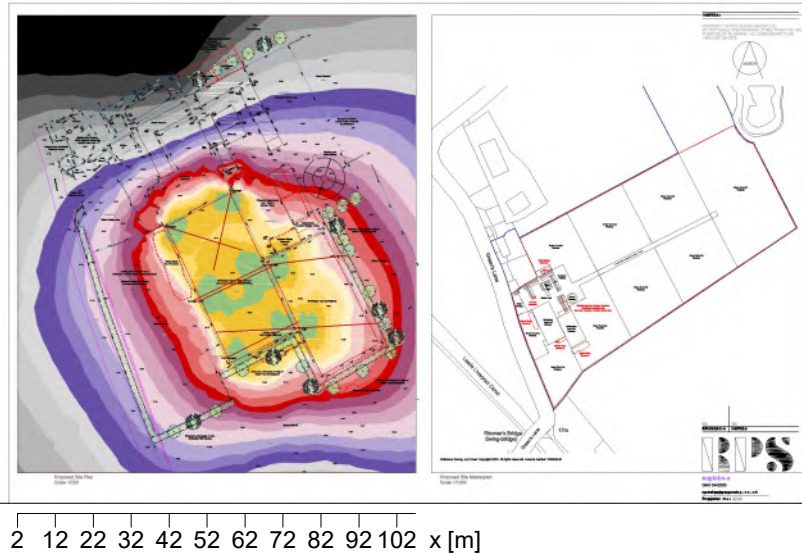
Type No. Make

1	8 x	Order No.	:
		Luminaire name	: QSPORT2-630CW/AS
		Equipment	: 1 x LED 630 W / 85050 lm

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1.2 Summary, Exterior

1.2.3 Result overview, Evaluation area 1



General


Calculation algorithm used	Average indirect fraction
Height (phot. centre)	6.09 m
Maintenance factor	0.85
Total luminous flux	680400.00 lm
Total power	5040.0 W
Total power per area (12621.13 m ²)	0.40 W/m ² (1.02 W/m ² /100lx)

Evaluation area 1

Reference plane 1.1

	Horizontal
\bar{E}_m	39 lx
E_{min}	0 lx
$E_{min}/\bar{E}_m (U_0)$	0.00
$E_{min}/E_{max} (U_d)$	0.00
Position	0.00 m

Type No. Make

1	8 x	Order No.	:
		Luminaire name	: QSPORT2-630CW/AS
		Equipment	: 1 x LED 630 W / 85050 lm

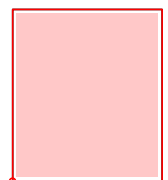
1 Exterior

1.3 Calculation results, Exterior

1.3.1 Table, Reference plane 1.1 (E)

[m]	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
110	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	1	1	1	1	1	1	1	1	1
100	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)	1	1	1	1	1	1	1	1	1	1
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	1	1	1	2	2	2	2	2	2	2	2	1
90	(0)	(0)	(0)	(0)	(0)	1	1	2	3	3	3	3	3	3	3	3	3	2	2
	(0)	(0)	1	1	1	1	2	4	10	9	9	7	6	6	5	5	4	3	3
80	(0)	1	1	1	2	4	7	22	32	21	18	15	12	11	10	8	5	3	3
	1	1	1	2	4	9	24	109	226	404	167	37	29	25	18	12	7	5	5
70	1	1	2	3	6	21	84	335	228	205	163	71	78	52	31	17	10	6	6
	1	1	2	3	7	16	178	258	202	219	204	217	167	82	42	24	14	9	9
60	1	1	2	4	8	19	55	149	254	276	422	[470]	225	95	59	35	20	11	11
	1	1	2	4	7	14	36	85	410	268	344	309	190	146	92	52	26	13	13
50	1	1	2	3	5	10	23	39	365	314	292	284	227	249	118	59	28	14	14
	1	1	2	3	4	7	13	27	63	213	256	295	413	304	108	56	28	14	14
40	1	1	1	2	3	5	9	19	31	305	298	226	156	166	97	52	26	13	13
	1	1	1	2	3	4	7	13	27	96	186	116	57	42	46	31	19	11	11
30	1	1	1	1	2	3	5	8	14	19	33	29	23	19	16	15	11	8	8
	(0)	1	1	1	2	2	4	5	7	8	9	10	7	7	7	6	6	5	5
20	(0)	(0)	1	1	1	2	2	3	3	3	3	3	2	2	3	3	3	3	3
	(0)	(0)	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	2
10	(0)	(0)	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	2
	(0)	(0)	1	1	1	1	2	2	2	2	1	1	1	1	1	1	1	1	2
			10	20	30	40	50	60	70	80	90	100							

Height reference plane : 0.00 m
 Average illuminance \bar{E}_m : 39 lx
 Minimum illuminance E_{min} : 0 lx
 Maximum illuminance E_{max} : 470 lx
 Uniformity U_o E_{min}/\bar{E}_m : 1 : 962.07 (0.00)
 Diversity U_d E_{min}/E_{max} : 1 : 11599.01 (0.00)

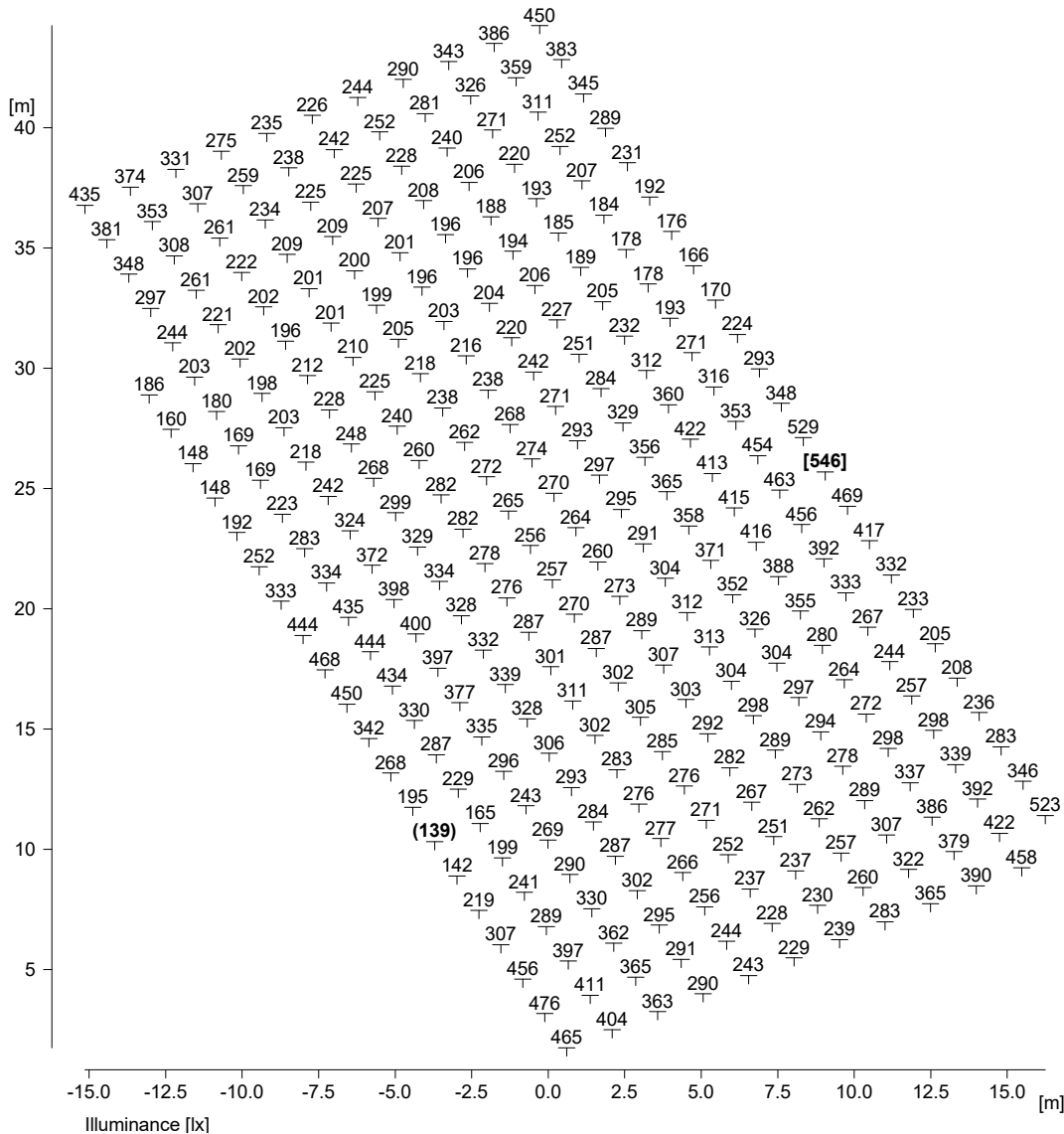


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1.3 Calculation results, Exterior

1.3.2 Table, All-Weather Outdoor Riding Surface (E)



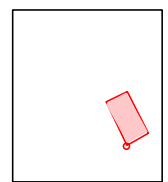
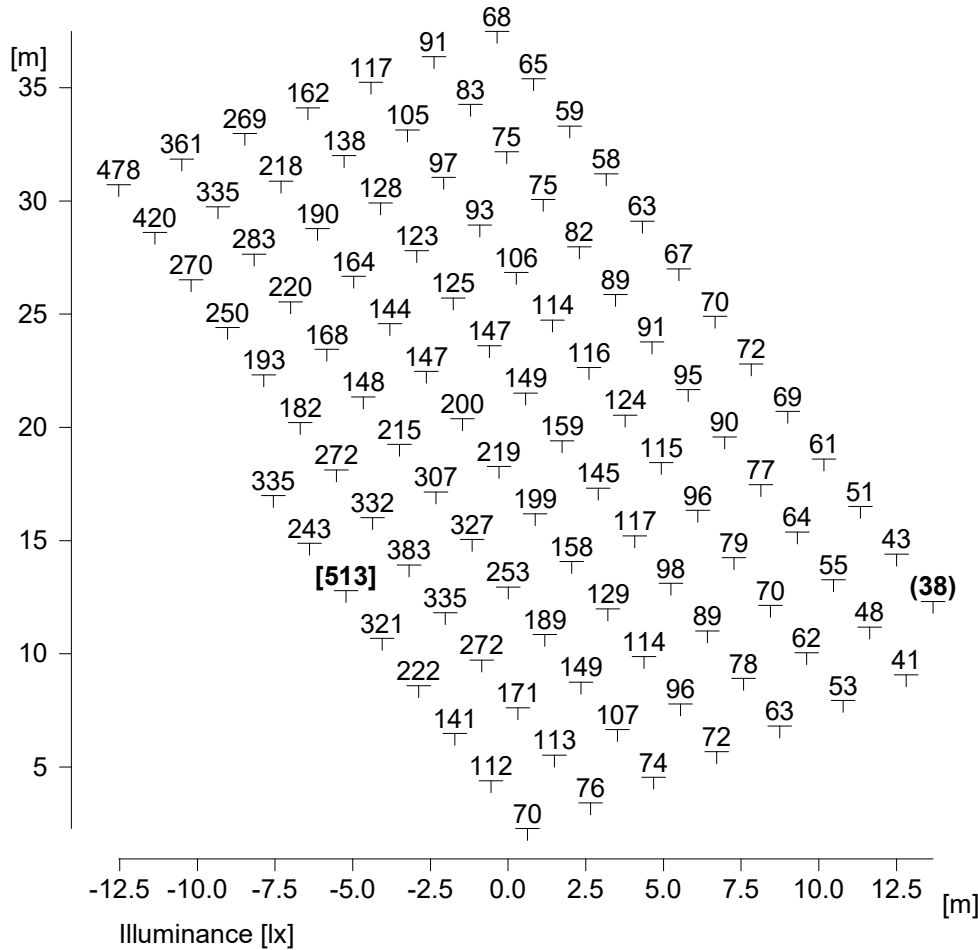
Height reference plane		: 0.00 m
Average illuminance	\bar{E}_m	: 287 lx
Minimum illuminance	E_{min}	: 139 lx
Maximum illuminance	E_{max}	: 546 lx
Uniformity U_o	E_{min}/\bar{E}_m	: 1 : 2.07 (0.48)
Diversity U_d	E_{min}/E_{max}	: 1 : 3.94 (0.25)

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1.3 Calculation results, Exterior

1.3.3 Table, All-Weather Turn-Out Paddock (E)

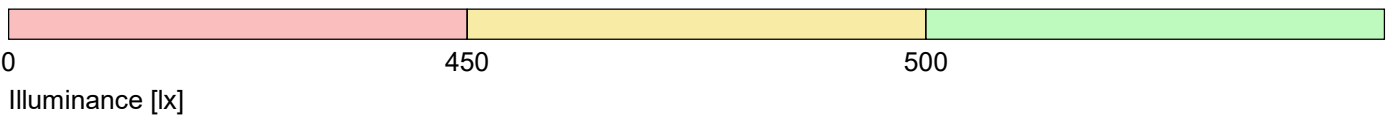
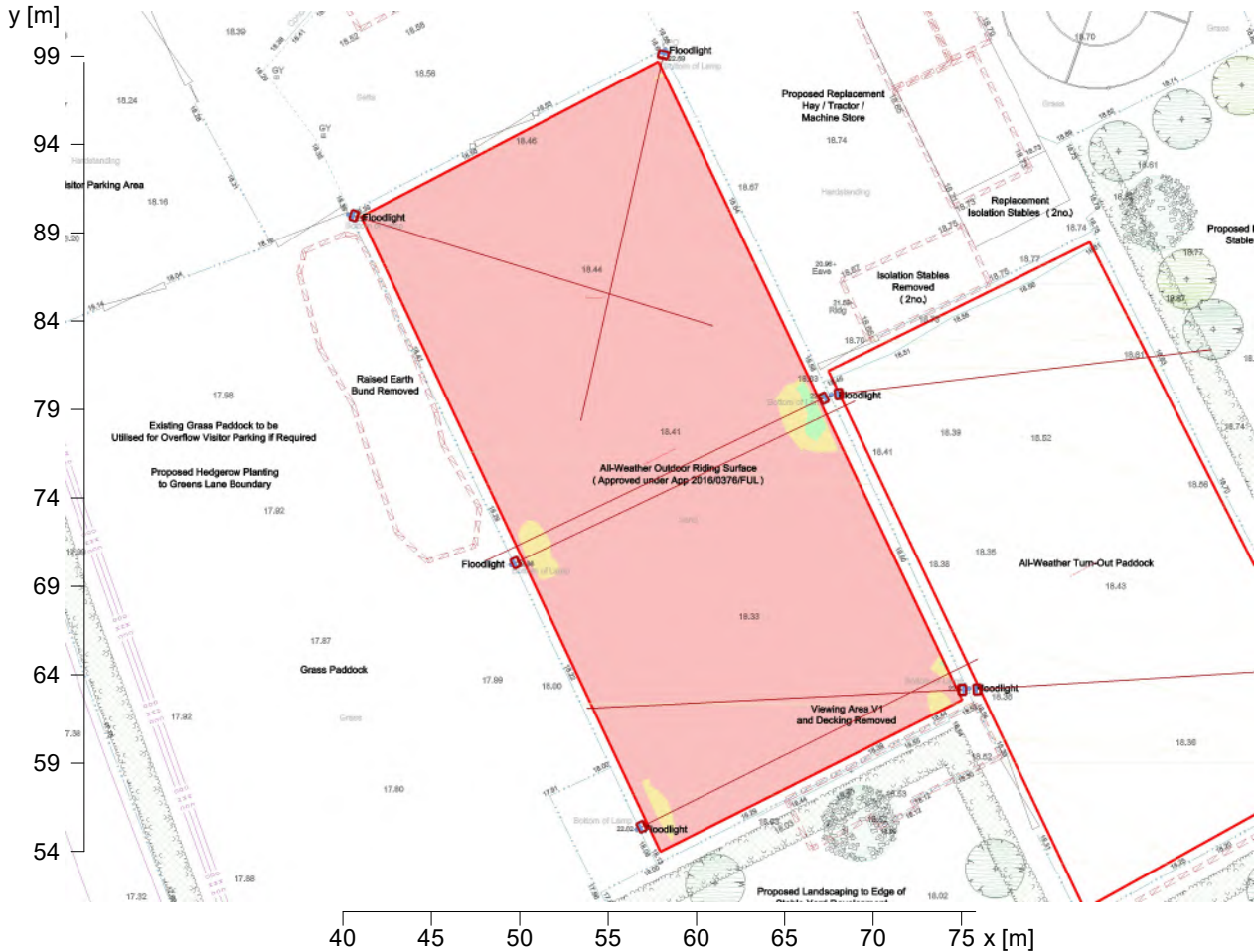


Height reference plane		: 0.00 m
Average illuminance	\bar{E}_m	: 153 lx
Minimum illuminance	E_{min}	: 38 lx
Maximum illuminance	E_{max}	: 513 lx
Uniformity U_0	E_{min}/\bar{E}_m	: 1 : 4.08 (0.25)
Diversity U_d	E_{min}/E_{max}	: 1 : 13.66 (0.07)

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1.3 Calculation results, Exterior

1.3.4 Boundary line, All-Weather Outdoor Riding Surface (E)

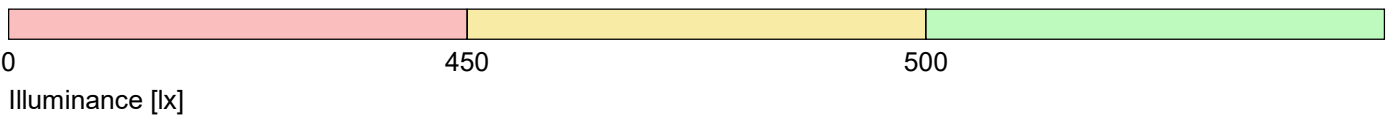
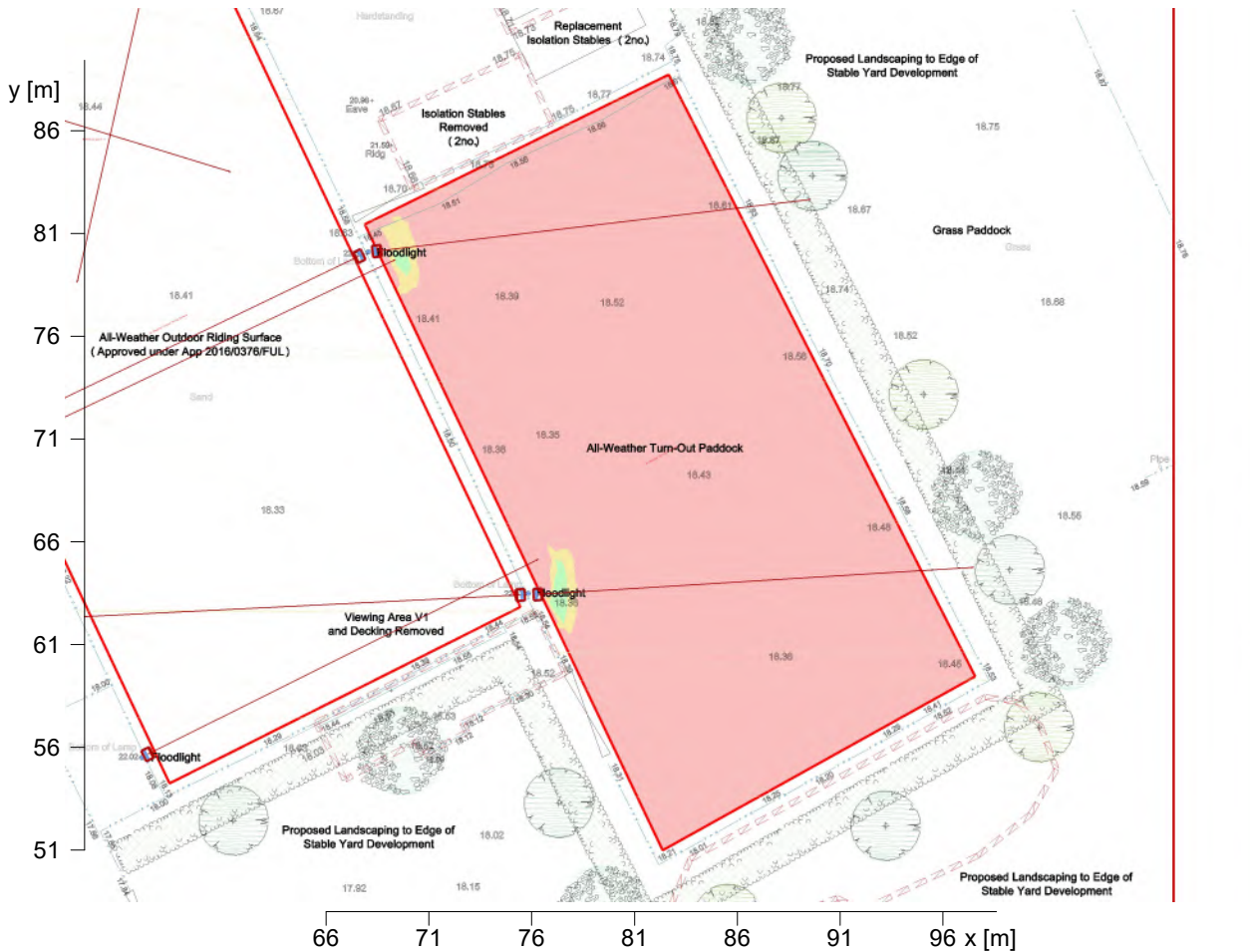


Height reference plane		: 0.00 m
Average illuminance	\bar{E}_m	: 287 lx
Minimum illuminance	E_{min}	: 139 lx
Maximum illuminance	E_{max}	: 546 lx
Uniformity U_0	E_{min}/\bar{E}_m	: 1 : 2.07 (0.48)
Diversity U_d	E_{min}/E_{max}	: 1 : 3.94 (0.25)

Object : Lighting Calculation
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1.3 Calculation results, Exterior

1.3.5 Boundary line, All-Weather Turn-Out Paddock (E)



Height reference plane		: 0.00 m
Average illuminance	\bar{E}_m	: 153 lx
Minimum illuminance	E_{min}	: 38 lx
Maximum illuminance	E_{max}	: 513 lx
Uniformity U_0	E_{min}/\bar{E}_m	: 1 : 4.08 (0.25)
Diversity U_d	E_{min}/E_{max}	: 1 : 13.66 (0.07)

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1.3 Calculation results, Exterior

1.3.6 3D pseudo colours, View 1 (E)

