COTHAM SCHOOL NEW SPORT FLOOD LIGHTING
EXTERNAL LIGHTING ASSESSMENT
Rev P3

04/09/2025

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INTRODUCTION

The purpose of this document is to show the external lighting strategy and the impact the lighting will have on the external environment.

The types and locations of the lighting and the subsequent illuminance levels that are being provided by these luminaires across the development will be illustrated.

INTRODUCTION

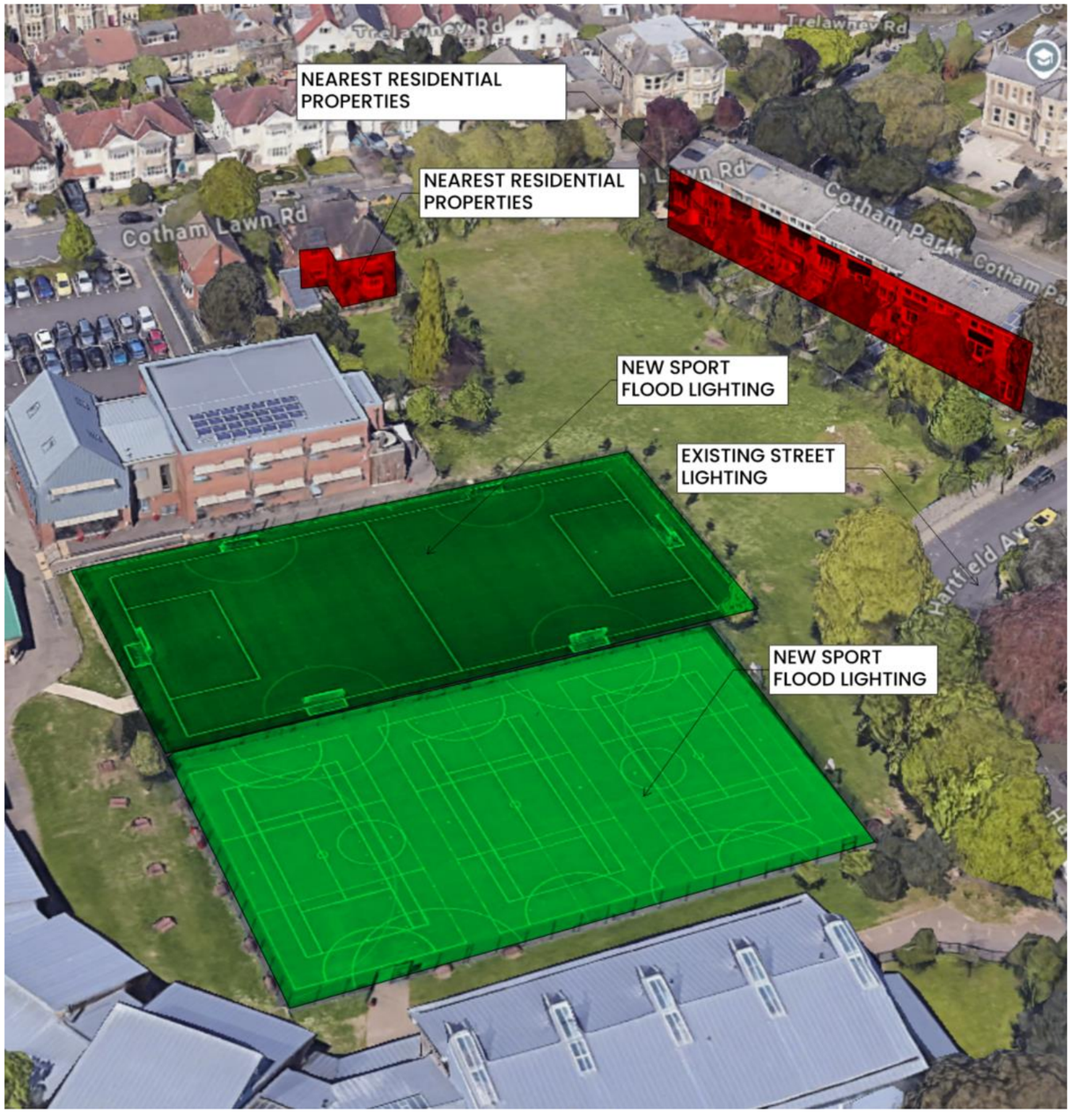
The site is Cotham School, in the urban area of Bristol. The site is in urban location and would fall under an E3 Environmental zone.

The project involves erection of new sport flood lighting to the existing sport pitches.

Well designed and considered external lighting can enhance the night-time environment, making spaces feel safer and more secure whilst additionally controlling obtrusive light.

Artificial lighting can also have a significant impact on ecology, and this needs to be considered when designing external lighting schemes.

The included design depicts how and where external lighting will be installed and how it will be controlled so that it does not cause nuisance to the neighboring residential properties.



SITE REVIEW

The ILP Guidance Note 1 (reduction of obtrusive light) distinguishes various levels of environmental zones.

This site would fall into E3 Suburban zone and has as such been assessed accordingly.

The limiting criteria are indicated on the tables from ILP Guide.

Limitation of illumination on surrounding premises

Light intrusion / nuisance

Table 3 (CIE 150 table 2): Maximum values of vertical illuminance on premises

Light technical parameter	Application conditions	Environmental zone				
		E0	E1	E2	E3	E4
Illuminance in the vertical plane (E_v)	Pre-curfew	n/a	2 lx	5 lx	10 lx	25 lx
	Post-curfew	n/a	<0.1 lx*	1 lx	2 lx	5 lx

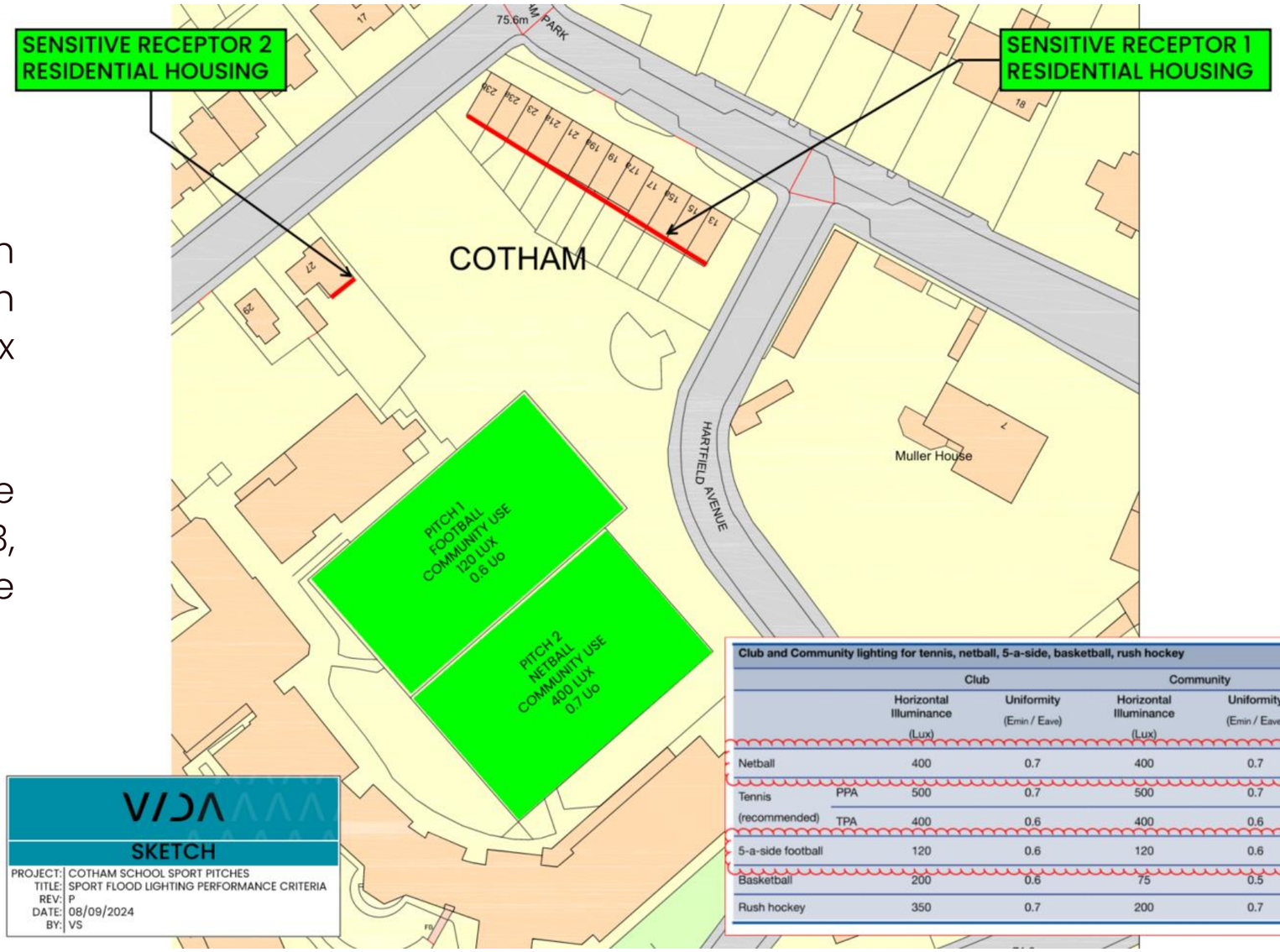
Zone	Surrounding	Lighting environment	Examples
E0	Protected	Dark (SQM 20.5+)	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Natural	Dark (SQM 20 to 20.5)	Relatively uninhabited rural areas, National Parks, Areas of Outstanding Natural Beauty, IDA buffer zones etc.
E2	Rural	Low district brightness (SQM ~15 to 20)	Sparsely inhabited rural areas, village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Well inhabited rural and urban settlements, small town centres of suburban locations
E4	Urban	High district brightness	Town / City centres with high levels of night-time activity

DESIGN CRITERIA

The football pitch (AW) has been designed using Kingfisher Amnis Match 450W 5000K fittings, achieving 288 lux with a uniformity of 0.53.

The netball MUGA court has been designed using Kingfisher Amnis Match 665W 5000K fittings, achieving 455 lux with a uniformity of 0.67.

Intrusive light calculations at the residential properties have been run at E3, and all results are within acceptable limits.



Club and Community lighting for tennis, netball, 5-a-side, basketball, rush hockey

		Club		Community	
		Horizontal Illuminance (Lux)	Uniformity (Emin / Eave)	Horizontal Illuminance (Lux)	Uniformity (Emin / Eave)
Netball		400	0.7	400	0.7
Tennis (recommended)	PPA	500	0.7	500	0.7
	TPA	400	0.6	400	0.6
5-a-side football		120	0.6	120	0.6
Basketball		200	0.6	75	0.5
Rush hockey		350	0.7	200	0.7

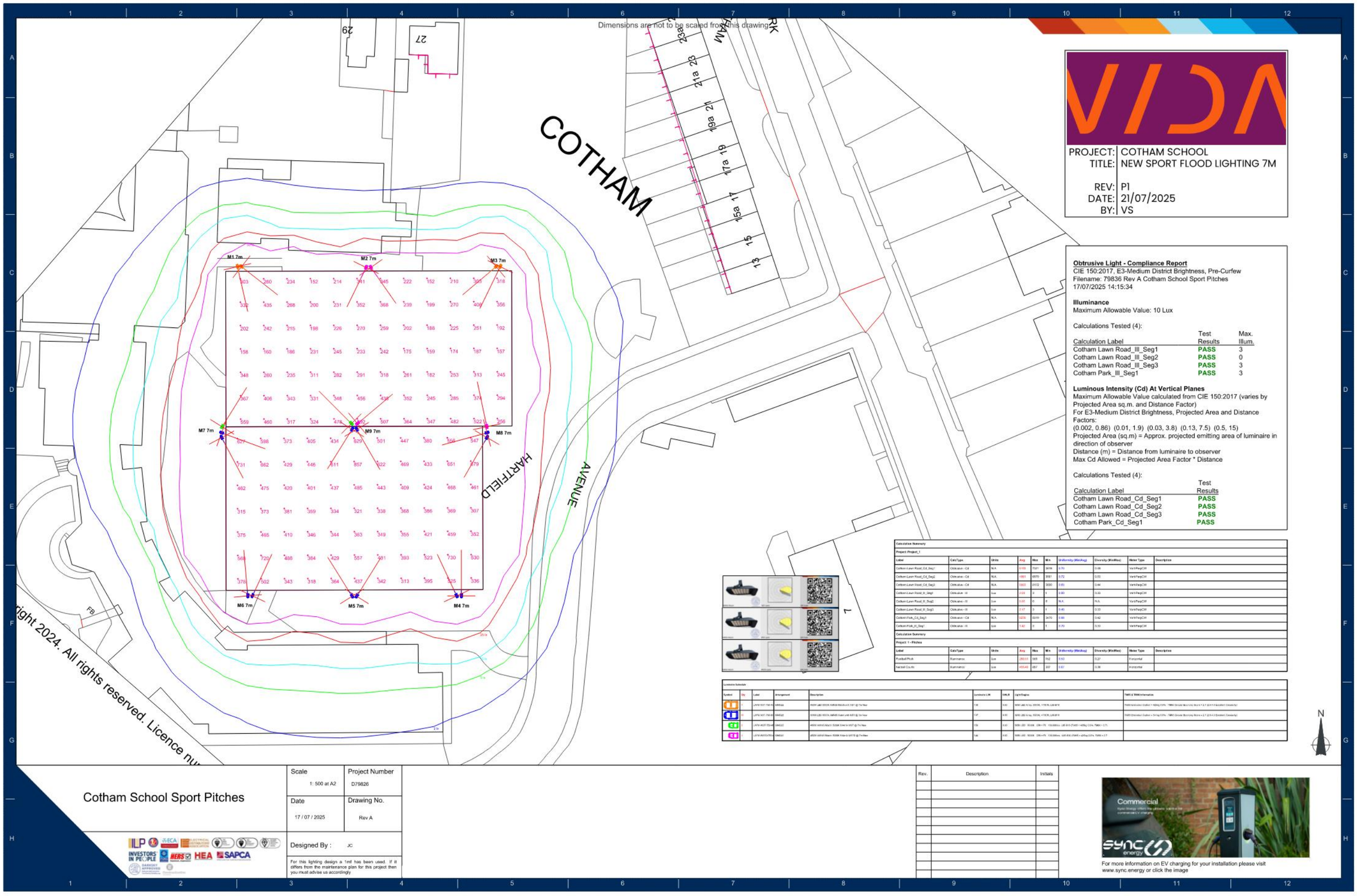
PROPOSED LUMINAIRES

The following typical luminaires with downward and focused only illumination have been selected to eliminate the impact on adjacent environment and specifically on the residential properties.

The critical for this project is to reduce the light spill as much as possible.

Symbol	Qty	Label	Arrangement	Description	Luminaire L/W	UWLR	Light Engine
	4	LAFM-NST-750-45	SINGLE	450W LED 5000K AMNIS Match with NST @ 7m New	138	0.00	5050 LED Array, 5000K, >70CRI, L85-B10
	12	LAFM-NST-750-66	SINGLE	665W LED 5000K AMNIS Match with NST @ 7m New	137	0.00	5050 LED Array, 5000K, >70CRI, L85-B10
	2	LAFM-WST-750-45	SINGLE	450W AMNIS Match·5000K·914mA·WST @ 7m New	150	0.00	5050 LED · 5000K · CRI>=70 · 100,000hrs ·L85-B10 (TM65 = 425kg CO^2e, TM66 = 2.7)
	4	LAFM-WSTD-750-4	SINGLE	450W AMNIS Match·5000K·914mA·WSTD @ 7m New	144	0.00	5050 LED · 5000K · CRI>=70 · 100,000hrs · L85-B10 (TM65 = 425kg CO^2e, TM66 = 2.7

RESULTS – LAYOUT DRAWING



RESULTS – DETAILED TABULAR FORMAT

Calculation Summary									
Project: Project_1									
Label	**CalcType**	**Units**	**Avg**	**Max**	**Min**	**Uniformity (Min/Avg)**	**Diversity (Min/Max)**	**Meter Type**	**Description**
Cotham Lawn Road_Cd_Seg1	Obtrusive - Cd	N.A.	5183	7321	3619	0.70	0.49	Vert-PerpCW	
Cotham Lawn Road_Cd_Seg2	Obtrusive - Cd	N.A.	4861	6570	3501	0.72	0.53	Vert-PerpCW	
Cotham Lawn Road_Cd_Seg3	Obtrusive - Cd	N.A.	5563	8172	3630	0.65	0.44	Vert-PerpCW	
Cotham Lawn Road_Ill_Seg1	Obtrusive - Ill	Lux	2.00	3	1	0.50	0.33	Vert-PerpCW	
Cotham Lawn Road_Ill_Seg2	Obtrusive - Ill	Lux	0.00	0	0	N.A.	N.A.	Vert-PerpCW	
Cotham Lawn Road_Ill_Seg3	Obtrusive - Ill	Lux	2.17	3	1	0.46	0.33	Vert-PerpCW	
Cotham Park_Cd_Seg1	Obtrusive - Cd	N.A.	5235	8319	3470	0.66	0.42	Vert-PerpCW	
Cotham Park_Ill_Seg1	Obtrusive - Ill	Lux	1.42	3	1	0.70	0.33	Vert-PerpCW	
Calculation Summary									
Project: 1 - Pitches									
Label	**CalcType**	**Units**	**Avg**	**Max**	**Min**	**Uniformity (Min/Avg)**	**Diversity (Min/Max)**	**Meter Type**	**Description**
Football Pitch	Illuminance	Lux	288.51	559	152	0.53	0.27	Horizontal	
Netball Courts	Illuminance	Lux	455.43	857	307	0.67	0.36	Horizontal	

RESULTS – TABULAR FORMAT SUMMARY

The summarised results clearly show that the illumination levels at the neighboring properties are significantly below the required and ILP authorised illumination levels.

Obtrusive Light - Compliance Report
CIE 150:2017, E3-Medium District Brightness, Pre-Curfew
Filename: 79836 Rev A Cotham School Sport Pitches
17/07/2025 14:15:34

Illuminance
Maximum Allowable Value: 10 Lux

Calculations Tested (4):

Calculation Label	Test Results	Max. Illum.
Cotham Lawn Road_Ill_Seg1	**PASS**	3
Cotham Lawn Road_Ill_Seg2	**PASS**	0
Cotham Lawn Road_Ill_Seg3	**PASS**	3
Cotham Park_Ill_Seg1	**PASS**	3

Luminous Intensity (Cd) At Vertical Planes
Maximum Allowable Value calculated from CIE 150:2017 (varies by Projected Area sq.m. and Distance Factor)
For E3-Medium District Brightness, Projected Area and Distance Factors:
(0.002, 0.86) (0.01, 1.9) (0.03, 3.8) (0.13, 7.5) (0.5, 15)
Projected Area (sq.m) = Approx. projected emitting area of luminaire in direction of observer
Distance (m) = Distance from luminaire to observer
Max Cd Allowed = Projected Area Factor * Distance

Calculations Tested (4):

Calculation Label	Test Results
Cotham Lawn Road_Cd_Seg1	**PASS**
Cotham Lawn Road_Cd_Seg2	**PASS**
Cotham Lawn Road_Cd_Seg3	**PASS**
Cotham Park_Cd_Seg1	**PASS**

CONCLUSION

As indicated on the preceding pages, the proposed lighting installation has been carefully designed and modelled to minimise the impact on the adjacent neighbourhood properties.

The sport pitch lighting design has been developed to meet the performance standards prescribed by Sport England's guidance documents and the criteria outlined in the lighting impact assessment report. The design was assessed against the ILP Guidance Note 1, specifically for the reduction of obtrusive light.

The lighting impact assessment report details the limiting factors stipulated by the ILP guide and assesses the most sensitive receptors in the adjacent residential development.

The ILP guide sets limiting vertical illuminance levels of 10 lux pre-curfew and 2 lux post-curfew. Our design results show a maximum level of 3 lux pre-curfew, which is well below the 10 lux requirement. The floodlighting will not be used post-curfew, resulting in a 0 lux level. The report also demonstrates that all other limiting factors have been assessed.

From the results that have been provided, it can be seen that the proposed selection of fittings and the proposed layout achieve very good lighting illumination on the sports pitches with no nuisance to the neighbouring properties. In conclusion, this lighting scheme fully meets all planning requirements without causing any limitations or nuisance to neighbouring residents.

The stipulated limiting values for obtrusive lighting have been comfortably met.

The overall lighting scheme is appropriate for a development of this type and the surrounding environment.

Thank you

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