



Environmental Lighting Impact Assessment Report

Rochdale Padel Club

Project number: SHD2310

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1. INTRODUCTION

1.1 General

- 1.1.1 This report has been prepared by SHD Lighting Consultancy Ltd on behalf of Rochdale Padel Club to appease planning conditions for the proposed floodlighting system used to illuminate six padel courts, during the hours of darkness (hereafter referred to as the *application site*).
- 1.1.2 SHD Lighting Consultancy Ltd has prepared this assessment report to the best of our knowledge using the information provided by Rochdale Padel Club.
- 1.1.3 The report assesses the potential effects of obtrusive light that could arise from the introduction of the padel court floodlighting system at the application site.
- 1.1.4 This lighting assessment report has been carried out by a competent person governed by the Institution of Lighting Professionals.
- 1.1.5 SHD Lighting Consultancy are an established lighting consultancy specialising in outdoor lighting design and lighting impact studies.
- 1.1.6 The design team has over thirty years of lighting design and installation knowledge, practical experience and professional qualifications to undertake lighting design calculations and environmental lighting impact assessment reports.
- 1.1.7 SHD Lighting Consultancy Ltd accepts no responsibility or liability for:
 - The consequence of this documentation being used for any purpose or project other than that for which it was commissioned.
 - The issue of this document to any third party with whom approval for use has not been granted.

1.2 Scope of Works

- 1.2.1 The scope of work to be undertaken includes:
 - Identification and assessment of receptors and their sensitivity.
 - Identification of the required and anticipated lighting provisions at the application site.
- 1.2.2 This report reviews the potential effects of the proposed padel court lighting and reviews the method of lighting the padel courts, while limiting potentially obtrusive effects to receptors that may have a negative response to a change in their lighting condition.
- 1.2.3 The principal objective of this lighting assessment report is to identify the effects of proposed outdoor lighting and the associated obtrusive light on potential identified sensitive receptors and propose suitable mitigation measures, if required.

2. LEGISLATION, PLANNING, AND POLICY GUIDANCE

2.1 International Guidance

The most appropriate international standards for outdoor lighting that relate to the application site are:

CIE 150: Guide on the limitations of the effects of obtrusive light from outdoor lighting installations

- 2.1.1 CIE 150, last updated in 2003. It is a technical document created by the Commission Internationale de l'Éclairage (CIE), which is an international organisation that sets standards and provides guidelines related to lighting, colour, and vision.
- 2.1.2 The purpose of CIE 150 is to provide guidance and recommendations on how to minimise the negative impacts of outdoor lighting installations, specifically focusing on obtrusive light.
- 2.1.3 Obtrusive light refers to light that spills or shines where it is not intended, causing visual discomfort, glare, or other adverse effects. This can include light trespass onto neighbouring properties, skyglow that affects astronomical observations, and other forms of light pollution.
- 2.1.4 The guide addresses various aspects related to outdoor lighting, such as fixture design, aiming, and control mechanisms, to mitigate the potential negative consequences of light pollution.
- 2.1.5 It aims to help lighting designers, planners, and decision-makers in designing and implementing outdoor lighting installations that are not only effective but also environmentally responsible and considerate of the surrounding community.
- 2.1.6 By following the recommendations outlined in CIE 150, stakeholders can work towards creating lighting designs that minimise light pollution and its impact on the environment, human health, and astronomical observations.

CIE 126: Guidelines for Minimising Sky Glow

- 2.1.7 CIE 126, last updated in 1997, is a technical document created by the Commission Internationale de l'Éclairage (CIE), an international organisation that sets standards and provides guidance on lighting, colour, and vision.
- 2.1.8 The purpose of CIE 126 is to provide guidelines specifically focused on reducing the phenomenon known as 'sky glow'
- 2.1.9 Skyglow refers to the brightening of the night sky over populated areas due to the scattering of artificial light by particles and molecules in the atmosphere.
- 2.1.10 This effect can lead to a loss of visibility of stars and celestial objects, impacting astronomical observations and the overall quality of the night sky.
- 2.1.11 CIE 126 offers practical recommendations and strategies to minimise sky glow resulting from outdoor lighting installations.
- 2.1.12 It addresses factors such as the design and positioning of luminaires, the choice of lighting technologies, and proper lighting controls to limit the upward-directed light that contributes to sky glow.
- 2.1.13 These guidelines are relevant for the UK and other regions concerned with preserving natural nighttime conditions, reducing light pollution, and supporting astronomical observations.

2.2 National Guidance

2.2.1 The most appropriate national standards for outdoor lighting relating to the application site are:

Clean Neighbourhoods and Environmental Act

2.2.2 Light pollution was introduced within the Clean Neighbourhoods and Environment Act (2005) as a form of statutory nuisance under the Environmental Protection Act (the 'EPA', 1990), which was amended in 2006 to include the following nuisance definition:

"Artificial light emitted from premises to be prejudicial to health or nuisance"

2.2.3 Although light was described as having the potential to cause a statutory nuisance, no prescriptive limits or rules were set for impact assessment purposes.

2.2.4 While not specifically requiring external lighting schemes to be submitted for approval, it does suggest that planning authorities have the right to request such information as part of the approval process.

National Planning Policy Framework

2.2.5 The National Planning Policy Framework (NPPF) was first published in March 2012 and recently revised in February 2025.

2.2.6 The National Planning Policy Framework is a key document in the planning system of England that guides local authorities and other stakeholders on planning policies and decision-making.

2.2.7 It sets out the government's planning policies for sustainable development, including housing, the environment, and economic growth.

2.2.8 Planning policies and decisions must ensure that the application site is suitable for its specific location, with a comprehensive consideration of the potential effects, including cumulative impacts, of pollution on various factors such as public health, living conditions, and the natural environment.

2.2.9 This includes evaluating how pollutants such as light, air, noise, or water contamination could affect the well-being of residents, workers, and visitors in the area, as well as flora, fauna, and ecological systems.

2.2.10 The assessment should account for the potential sensitivity of the development site or its surrounding area to these impacts, considering any existing environmental constraints, protected areas, or features of cultural or historical significance.

2.2.11 Understanding and addressing these factors, the planning process can help mitigate adverse effects and promote sustainable development that is in harmony with its surroundings.

2.3 Relevant Lighting Standards

- 2.3.1 The most appropriate industry recognised standards for outdoor lighting that relate to the application site are:

The Exterior Environment: Lighting Guide 6

- 2.3.2 The Exterior Environment: Lighting Guide 6, last updated in 2016, is a comprehensive publication by The Chartered Institution of Building Services Engineers (CIBSE), an organisation in the UK that offers guidance and standards for building services and environmental engineering.
- 2.3.3 This guide focuses on providing in-depth recommendations and best practices for outdoor lighting design and implementation. It covers various aspects of lighting in exterior spaces such as streets, public areas, parks, and building exteriors.
- 2.3.4 The guide offers guidance on creating effective and sustainable lighting solutions that enhance safety, security, aesthetics, and functionality in outdoor environments while also considering energy efficiency and minimising light pollution.
- 2.3.5 Lighting Guide 6 is a valuable resource for lighting designers, engineers, architects, and other professionals involved in outdoor lighting projects.
- 2.3.6 It provides practical insights, technical information, and design considerations to ensure that outdoor lighting installations are well-designed, visually appealing, and environmentally responsible.

Public Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments

- 2.3.7 Public Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments, last updated in 2013, is a publication by The Institution of Lighting Professionals (ILP), an organisation based in the UK that promotes excellence in lighting.
- 2.3.8 This guide serves as a comprehensive resource for professionals involved in designing and implementing outdoor lighting projects.
- 2.3.9 Its primary focus is to guide in assessing and mitigating the potential environmental impacts of outdoor lighting installations.
- 2.3.10 The guide addresses various aspects related to lighting effects on the environment, including issues such as light pollution, sky glow, glare, and other obtrusive light-related concerns.
- 2.3.11 Key elements covered in the guide include methodologies for conducting environmental lighting impact assessments, techniques for modelling and predicting lighting effects, and recommendations for designing lighting schemes that minimise negative impacts while achieving their intended goals.
- 2.3.12 The guide considers factors like visual comfort, energy efficiency, and the preservation of natural darkness.
- 2.3.13 Public Lighting Guide 04 is a valuable tool for lighting professionals, local authorities, planners, and other stakeholders who seek to create outdoor lighting installations that are both visually effective and environmentally responsible.
- 2.3.14 It helps ensure that lighting projects contribute positively to the built environment while considering their impact on the natural surroundings and quality of life.

Guidance Notes for the Reduction of Obtrusive Light; GN01/21

- 2.3.15 Guidance Notes for the Reduction of Obtrusive Light, published by The Institution of Lighting Professionals, last updated in 2021, provides practical guidelines to minimise the negative impacts of outdoor lighting installations on the environment and neighbouring areas.
- 2.3.16 These notes offer advice on how to design, install, and manage lighting systems to mitigate issues such as light pollution, glare, and light trespass.
- 2.3.17 The guidance focuses on ensuring that lighting is effective and efficient while also being considerate of the surrounding community and environment.
- 2.3.18 GN01/21 recommend that the immediate environment be classified systematically as shown in **Table 2.1**.
- 2.3.19 GN01/21 then recommends limiting obtrusive light according to the environmental zone in which the lighting would be situated.
- 2.3.20 The stringency depends on the capacity to absorb lighting effects, with zone E0 requiring the strictest level of control and E4 the lowest.

ENVIRONMENTAL ZONE CLASSIFICATION AND PARAMETERS			
Zone	Surrounding	Lighting Environment	Example
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty
E2	Rural	Low district brightness	Village or relatively dark outer suburban location
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town or City centres with high levels of nighttime activity

Table 2.1: Environmental zone classification

Extract from Guidance Notes for the Reduction of Obtrusive Light; GN01/21

Obtrusive Light Limitation for Outdoor Lighting Installations

- 2.3.21 For each environmental zone shown in **Table 2.1**, recommended obtrusive light limits for exterior lighting installations have also been determined as shown in **Table 2.2**
- 2.3.22 Obtrusive light or light pollution is any light that strays to areas other than where it is intended and can include light intrusion (spill light) into neighbouring properties, upward light (which can create sky glow), and visual source intensity (glare).
- 2.3.23 The ILP Guidance Notes for the Reduction of Obtrusive Light (ILP GN01/21) provide guidelines and threshold values applicable to each Environmental Zone.
- 2.3.24 **Table 2.2** provides guidance for obtrusive light limitations for exterior lighting installations.

OBTRUSIVE LIGHT LIMITATIONS FOR EXTERIOR LIGHTING INSTALLATIONS						
Zone	Sky Glow ULR % (i)	Light intrusion into windows Ev, measured in Lux (ii)		Luminaire intensity I, measured in kilo candelas (iii)		Building luminance L, (cd/m ²) (iv)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	Pre-curfew
E0	0	0	0	0	0	0
E1	0	2	0 (1*)	2.5	0	0
E2	2.5	5	1	7.5	0.5	5
E3	5.0	10	2	10	1	10
E4	15	25	5	25	2.5	25

Table 2.2: Obtrusive light limitations

Extract from Guidance Notes for the Reduction of Obtrusive Light; GN01/21

- (i) ULR (Upward Light Ratio) is the maximum permitted percentage of luminaire flux that goes directly into the sky.
- (ii) Ev is vertical illuminance in Lux measured flat on the glazing centrally at each window
- (iii) I is Light Intensity in Candelas.
- (iv) L is Luminance in candela per square metre.

Curfew = the time after which stricter requirements (for the control of obtrusive light) will apply, subject to the conditions of the local planning authority.

- Permitted only from public road lighting installations

2.4 British Standards

2.4.1 The most applicable British Standards for lighting that relate to the padel courts are:

BS EN 12193: 2018 Light and lighting. Sports lighting

2.4.2 The document is a British and European Standard that specifies the requirements for lighting systems used in sports facilities.

2.4.3 It provides guidelines on the design, installation, and performance of artificial lighting to ensure optimal visibility and safety for both participants and spectators.

2.4.4 The standard covers indoor and outdoor sports venues, including arenas, stadiums, and smaller recreational facilities.

2.4.5 Its primary objective is to establish consistent and reliable lighting conditions that promote fair play, minimise visual discomfort, and enhance the overall experience for players, officials, and audiences.

3. LIGHT POLLUTION

3.1.1 Poorly designed lighting can contribute to the following obtrusive light components:

- Obtrusive light (sometimes referred to as light pollution) refers to any light emitted in a direction in which it is not required or wanted and, as such, is detrimental to other users.
- Nuisance/intrusion, the spilling of light beyond the area or property being lit. Light nuisance can include intrusion into windows of neighbouring properties, but it can also cause issues to habitats and areas of high biodiversity interest.
- Sky glow, this is the glow that is visible around urban areas, resulting from the scattering of artificial light from reflected surfaces and badly directed light sources illuminating air molecules and other particles.

A major effect of sky glow at night is to reduce contrast in the sky. This is the most pervasive form of light pollution and can affect areas many miles from the original light source.

- Glare, the uncomfortable brightness of a light source when viewed against a contrasting darker background.

Glare forms a veil of luminance from poorly controlled and directed lighting that reduces contrast and visibility.

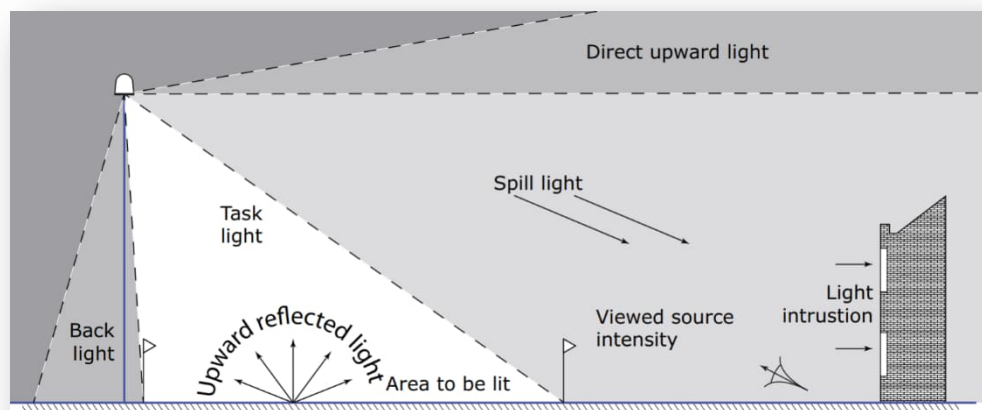


Figure 3.1: Different types of obtrusive light

Extract from Guidance Notes for the Reduction of Obtrusive Light; GN01/21

3.2 Light Design Consideration

- 3.2.1 Light levels, both as designed and installed, have the potential to create areas which have a noticeable difference in brightness.
- 3.2.2 A new lighting installation in an area that has not been lit or is significantly brighter than the surrounding area may affect both adjacent receptors in the form of light spill or glare, and those over a larger area by contributing to sky glow through over-lighting.

3.3 Light Colour

- 3.3.1 Artificial light can be described as having a 'colour' temperature which can range from >6500k, which contains high levels of blue light, down to 2200k, which is considered very warm white light.
- 3.3.2 Light colour has the potential to alter an individual's perception of their environment concerning colour and clarity, as the human eye responds best to whiter light with higher quantities of ultraviolet wavelengths.



Figure 3.2: Example of artificial light colour temperature

3.4 Mitigation

- 3.4.1 Following the guidelines outlined in ILP GN01/21, it is recommended that when carrying out the lighting design calculations, the designer must ensure that luminaires are directed downward, with a tilt angle set at 0° in relation to the horizontal plane.

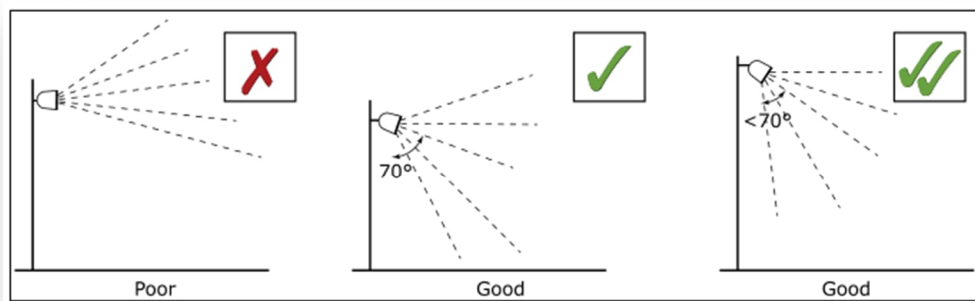


Figure 3.3: Luminaire aiming angles

Extract from Guidance Notes for the Reduction of Obtrusive Light; GN01/21

- 3.4.2 This arrangement is designed to mitigate the potential for glare from each LED luminaire.
- 3.4.3 Any deviation from the specified tilt angle will result in inaccuracies in the provided lighting calculations and Isolux line drawings.

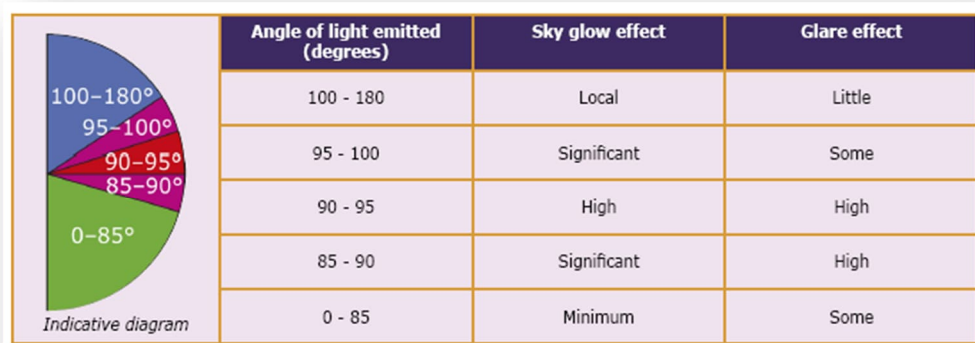


Figure 3.4: The effect on the ability to view the night sky at various angles

Extract from Guidance Notes for the Reduction of Obtrusive Light; GN01/21

4. BASELINE CONDITIONS

4.1 Site Overview

- 4.1.1 Rochdale Padel Club is located adjacent to Rochdale Cricket, Lacrosse & Squash Club, accessed from Bridgefold Road, Rochdale, Greater Manchester, OL11 5BX.
- 4.1.2 The application site lies in a mixed urban/suburban context: it is connected to existing private sports facilities and infrastructure, with neighbouring residential properties.
- 4.1.3 The site is within the administrative boundary of Rochdale Borough, and is part of an area already used for sports and leisure (cricket, lacrosse, squash), therefore benefiting from existing infrastructure and likely similar hours of activity.



Figure 4.1: The application site outline

Extracted from '25009_Rochdale Padel Club'

- 4.1.4 Information in this report will assess the impact of artificial lighting, which consists of floodlighting units mounted around the edge of each of the six proposed padel courts.
- 4.1.5 No other existing or proposed outdoor lighting was considered in any part of this assessment report or any of the lighting calculations or conclusions.

5. LIGHTING STRATEGY

5.1 Lighting Brief

- 5.1.1 The lighting strategy aims to ensure that lighting is fit for purpose and compliant with the recommendations of ILP GN01/21 when used during the hours of darkness, whilst minimising the potential for obtrusive light.
- 5.1.2 Lighting performance details outlined in this section of the document are to be considered in conjunction with the following key documents:
- SHD2310-SHD-HLG-ROCH-CA-EO-Lighting Calculation-R0
 - SHD2310-SHD-HLG-ROCH-DR-EO-Lighting Spil Drawing-R0
 - RMBC 30-02-2500929-01 Construction of 6 Padel tennis courts
 - 25009_Rochdale Padel Club
 - LTA-padel-court-guidance

5.2 Planning Considerations

- 5.2.1 Rochdale Padel Club provided SHD with details of a planning application review document, which stated the following.

1.	A full lighting design, calculations, and detailed layout - providing details of lanterns, angle of lanterns, maintenance factors, mounting heights, exact locations of lanterns etc.
2.	Confirmation of lighting standards the private area has been lit to (BS5489, CIBSE etc.)
3.	Calculations showing compliance with ILE guidelines (GN01) for the control of intrusive lighting to Environmental Zone E3
4.	Lux plots showing light spill onto surrounding areas to include 10, 5 and 1 lux levels
5.	Source Intensity of lanterns should be considered for the proposed installation to ensure compliance with the requirements of GN01.
6.	All lighting calculations showing light spill and obtrusive light should be for worst case scenario, i.e., when the installation is first operational.
7.	If any complaints are received, the Maintaining Body should consider the fitting of shields to the lanterns in line with the Institute of Lighting Professionals (ILP) "Guidance notes for the reduction of obtrusive light" - Environmental Zones

Figure 5.1: Extracted from application reference 25/00929/FUL

- 5.2.2 There were no ecological reports, flight corridor path drawings, dark buffer zones, or other areas of specific ecological interest to be considered.
- 5.2.3 Therefore, this lighting impact assessment will demonstrate compliance with Guidance Notes for the Reduction of Obtrusive Light; GN01/21 (2021) as published by The Institution of Lighting Professionals (ILP), whilst ensuring the padel courts are lit appropriately in accordance with LTA and BS 12193 guidelines.

5.3 Lighting Criteria

5.3.1 The padel court lighting is installed in the area as shown below:

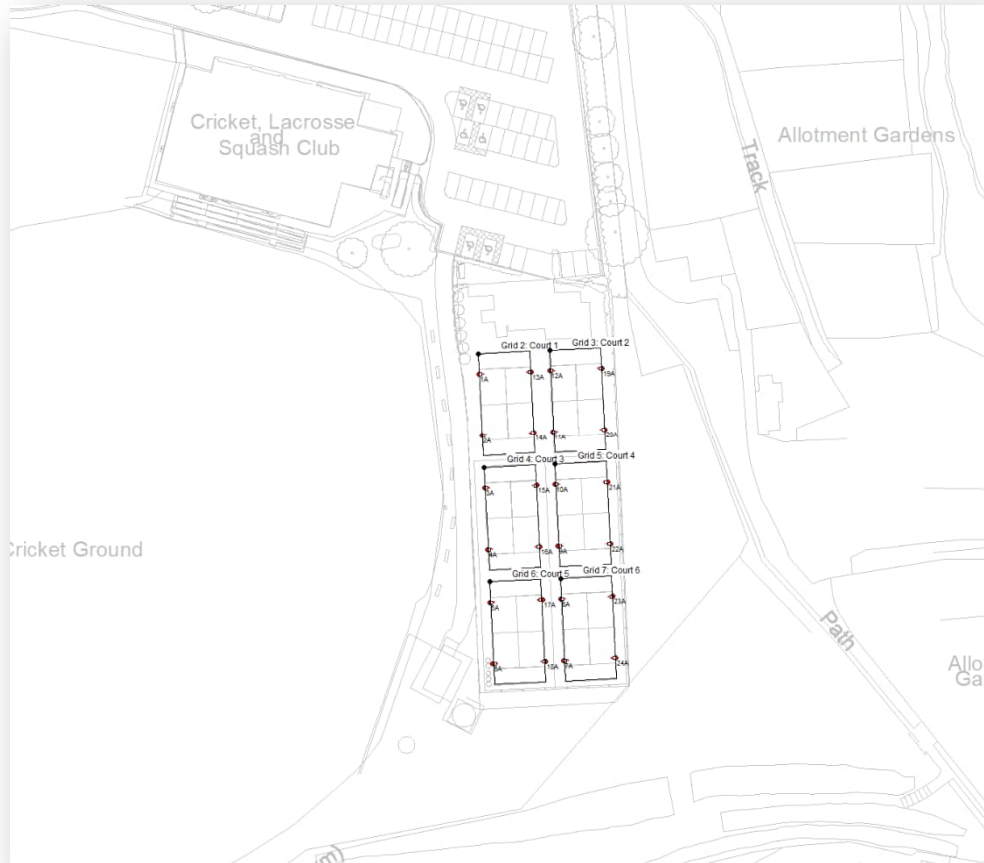


Figure 5.1: Padel court locations

5.3.2 **Figure 5.1** shows the application site, which consists of six padel courts, 35m to the southeast of the main pavilion building.

5.3.3 Each padel court will be lit using four 6m lighting columns, each with an inward-facing LED floodlighting unit, installed at 0° tilt horizontal from ground level.

5.4 Lighting Levels

- 5.4.1 The Lawn Tennis Association (LTA) published a datasheet that details the minimum requirements of lighting levels and lighting uniformity for outdoor padel courts.

LTA Padel Datasheet

- 5.4.2 The LTA Padel Court Datasheet is a comprehensive guide designed to assist venues in the UK with the planning, construction, and maintenance of padel courts in line with Lawn Tennis Association (LTA) standards.
- 5.4.3 It provides technical specifications for court dimensions, construction materials, and drainage systems to ensure quality, safety, and compliance with UK standards.
- 5.4.4 The datasheet provides guidance on any non-intrusive floodlighting systems to meet minimum lux levels for recreational and competitive use, while minimising light spill and complying with local planning regulations.

SELECTION OF LIGHTING LEVELS		
Level of Competition	Minimum illumination at ground level	
	Light level (lux)	Minimum uniformity (Emin/Eav)
National and International Competition	500	0.70
Regional competition, school, and recreational use	300	0.50

Table 5.1: Selection of lighting class

Extract from LTA Padel Court datasheet

- 5.4.5 It is assumed that each of the padel courts shall be used for recreational use
- 5.4.6 Therefore, the padel court shall be illuminated with an average light level of 300 lux across the whole playing surface at ground level.
- 5.4.7 The padel court surface shall also achieve lighting uniformity of no less than 0.50 (50%), which is derived from the minimum light levels divided by the average lighting levels across the horizontal surface at ground level.
- 5.4.8 During the calculations, SHD also designed each padel court individually with a real world practical reduced maintenance factor, to ensure each surface is lit to LTA standards, outlined in **Table 5.1**.

5.5 Lighting Calculations and Modelling

- 5.5.1 Using location plans and a concept design report produced by The Padel Architects, SHD were able to produce lighting calculations, in accordance with LTA guidelines for light levels and uniformity.
- 5.5.2 SHD Lighting Consultancy does not assume responsibility for any lighting designs and strategies produced by anyone other than themselves.
- 5.5.3 The application site had the external lighting calculations for each of the six padel courts ted using industry-standard software, Lighting Reality and Dialux.
- 5.5.4 Lighting Reality and Dialux are a computer software calculation tool that employs photometric data files from manufacturers to replicate the lighting performance of selected light fixtures.
- 5.5.5 The light spill model does not consider physical obstructions and provides light spill details for the initial light output, therefore disregarding the maintenance factor used for ensuring the lighting design performs as required at the end of its life.
- 5.5.6 The calculations do not consider any blocking effect from landscaping features, foliage, trees, walls, barriers or canopies, thus presenting a 100% worse case scenario regarding light spill and sky glow.
- 5.5.7 Details within the concept report show four of the proposed padel courts to have canopies installed covering the padel courts; however, as this is a concept report, SHD disregarded any use of canopies, coverings or other structures, as the construction details may change, treating each padel court as an uncovered playing surface.
- 5.5.8 As such, the light spill diagram presents an intensified and most extreme scenario regarding the ground-level light spill, assuming the absence of light-restricting elements.
- 5.5.9 From these calculations, drawings illustrating the illuminance levels throughout the site and at the boundary have been produced so that the lighting scheme's impact can be assessed.
- 5.5.10 The average maintained illuminance levels (Eav) calculated results are shown in **Appendix B**, are shown to exceed 300 lux, due to the cumulative effect of all lighting operating simultaneously, each luminaire having a 1.00 maintenance factor.

5.6 Maintenance Factors

- 5.6.1 In lighting assessments, the concept of a maintenance factor is used to account for the reduction in light output over time due to factors like dirt, dust, and ageing of lamps or luminaires. A maintenance factor less than 1.00 indicates a decrease in light output over time.
- 5.6.2 However, ILP GN04, which is a guidance note published by the Institution of Lighting Professionals (ILP) in the UK, suggests assigning a maintenance factor of 1.00 to luminaires in certain cases.
- 5.6.3 This is typically done when you want to assess the lighting conditions in a scenario that assumes optimal maintenance.
- 5.6.4 In other words, it assumes that the luminaires are being cleaned, maintained, and replaced as necessary to maintain their initial performance throughout the assessment period.
- 5.6.5 Assigning a maintenance factor of 1.00 simplifies the assessment process by eliminating the need to calculate and account for maintenance-related losses.
- 5.6.6 It provides a best-case scenario where the luminaires' light output remains constant throughout the assessment period.
- 5.6.7 This approach is useful for comparing different lighting designs or technologies under the assumption of ideal maintenance practices.
- 5.6.8 However, in real-world applications, maintenance factors less than 1.00 would be used to more accurately reflect the actual degradation of light output over time due to practical maintenance challenges.

6. OUTDOOR LIGHTING REQUIREMENTS

6.1 Proposed Lighting Requirements

- 6.1.1 It is proposed that the external lighting shall be installed on 6m columns using LED luminaires, post top horizontally mounted at 0° tilt facing downwards. This will ensure any sky glow or potential light spill is kept to a minimum.
- 6.1.2 Lighting performance parameters for the proposed lighting are outlined in **Table 6.1**.

LUMINAIRE SPECIFICATION	
Location:	Six padel courts
Luminaire model ref:	EL NED 240 TC
Luminaire style:	Padel court LED floodlight
Mounting height:	6m from ground level
Mounting type:	Post top mounted facing inward
Luminaire tilt:	0°
Light source:	Cool White (5700k) LED
Lighting classification:	G3 (semi horizontal cut off)

Table 6.1: Padel court lighting performance parameters

6.2 Floodlighting Luminaire

- 6.2.1 The luminaires that are to illuminate the padel court surface are a professional-grade floodlighting unit that comprises a powder-coated aluminium body.



Figure 6.1: Example image of EL NED 240 TC LED floodlighting unit

- 6.2.2 The padel court lighting design has been completed using photometric data for the luminaires shown in **Table 6.1**, which use a light source with a 5700K colour temperature.
- 6.2.3 Light has a colour-correlated colour temperature, which describes the overall colour appearance of the light source in Kelvin degrees.
- 6.2.4 'Cooler' light sources will have a higher Kelvin temperature and 'warmer' light sources will have a lower Kelvin temperature.
- 6.2.5 It is recommended that >5000k is the preferred light source temperature used for commercial padel court installations.

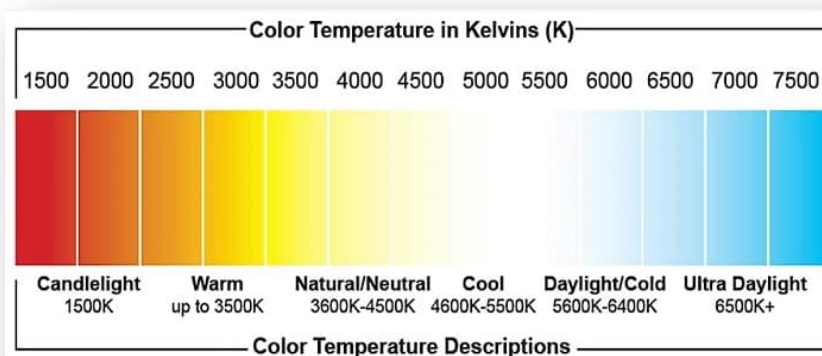


Figure 6.2: Example of light colour correlation temperatures

Padel Court Construction

- 6.2.6 Guidance provided by the Lawn Tennis Association describes the construction of covered padel courts, with each end of the padel court to have a transparent or solid panel enclosing part of the frame structure. This is generally taken to 3m above finished ground level, and in certain situations, extended further to fully enclose an elevation.
- 6.2.7 It should be noted that no blocking effect from the roof covering or any side and end walls has been considered during the obtrusive lighting calculations, therefore demonstrating a worst-case scenario.



Figure 6.3: Covered padel court examples (shown for illustrative purposes only)

7. SENSITIVE RECEPTORS

7.1 Surrounding Environment

- 7.1.1 The proposed padel courts, outlined in red in **Figure 7.1**, are located southeast of the pavilion building, located off Bridgefold Road, Rochdale.
- 7.1.2 To the southeast of floodlit padel courts, lies residential housing, approximately 60m from the nearest façade facing the padel courts, outlined in yellow in **Figure 7.1**
- 7.1.3 South of the padel courts is residential housing; however, these are separated by an established section of woodland, outlined in blue in **Figure 7.1**

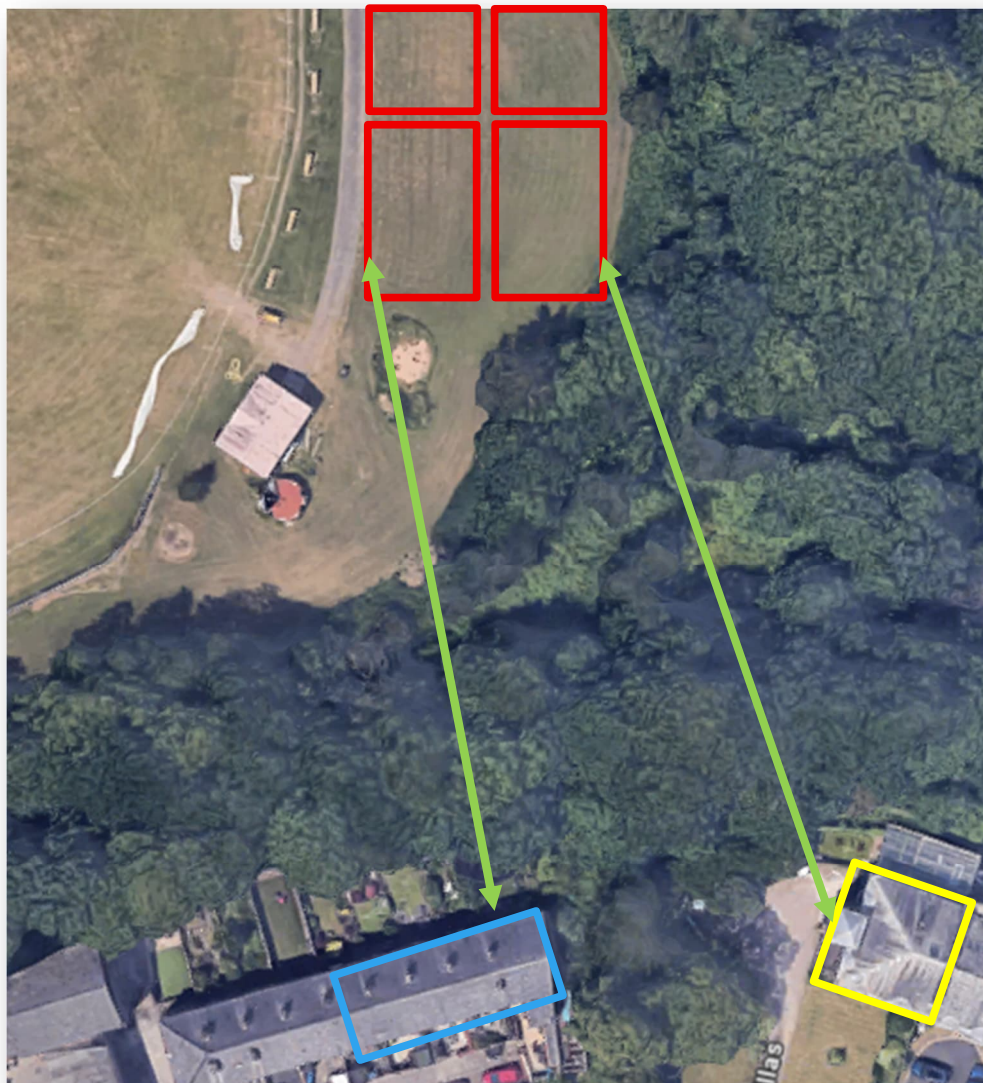


Figure 7.1: Aerial location plan

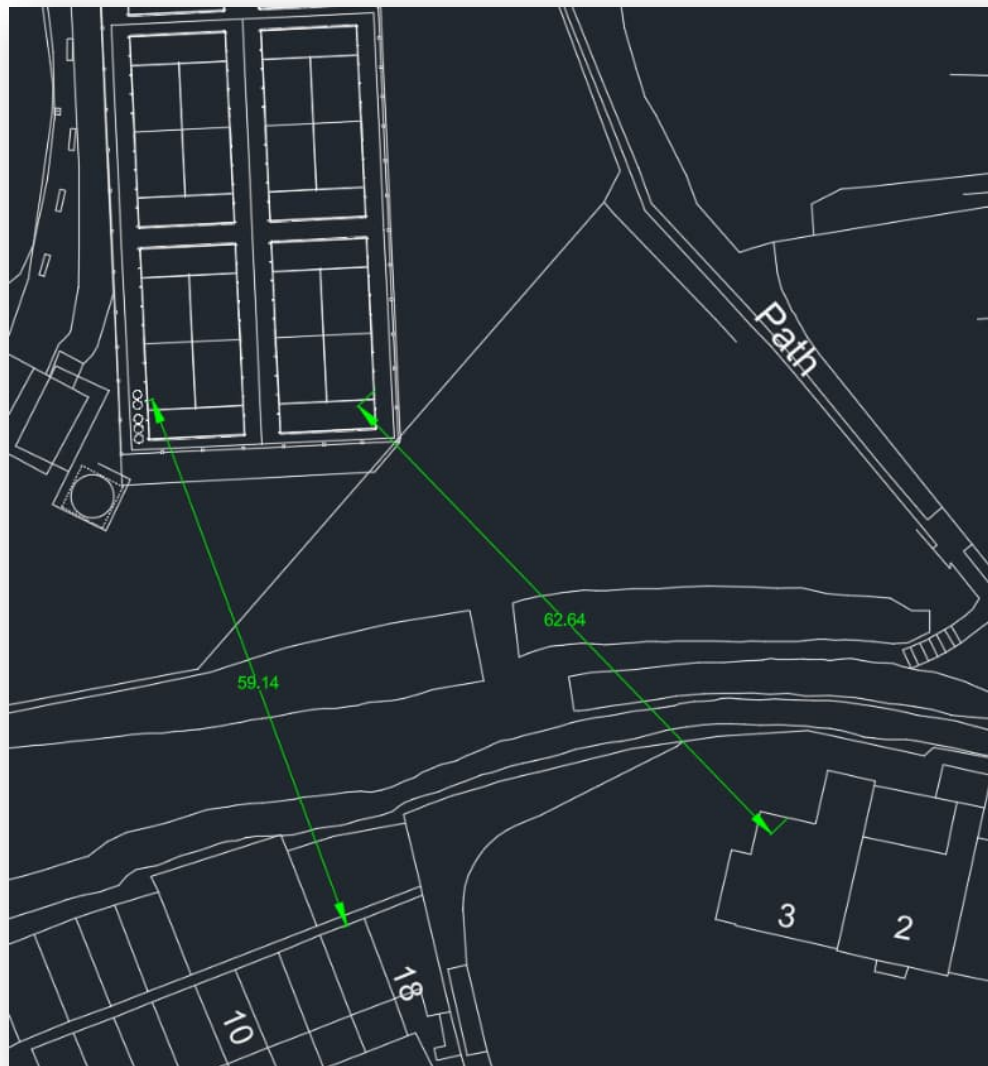


Figure 7.2: Residential housing locations

7.2 Vertical Calculation Grids

- 7.2.1 To ensure the levels of light spill on the identified sensitive receptors were acceptable, two vertical calculation grids were produced within the lighting calculation software.
- 7.2.2 Each vertical calculation grid measures 10m high from ground level and has a calculation point spacing of 1m x 1m.
- 7.2.3 Each of the 1m spaced calculation points measures the light shining onto a surface, to ensure compliance with the values provided in **Table 2.2**.
- 7.2.4 For an E3 environmental zone, there are two values of lux that are defined as post-curfew and pre-curfew.
- 7.2.5 Post curfew is considered to be after 22:00 until dawn, with pre curfew being dusk until 23:00.
- 7.2.6 No opening times were available during the time this report was conducted.
- 7.2.7 Therefore, post-curfew light levels have not been considered, as it is assumed the padel courts will not be used after 22:00.
- 7.2.8 The vertical calculation result table shown in **Figure 7.3** shows the average illumination (Eav) levels across the whole grid face and a maximum value (Emax) of lux, which is the calculated value of the light on one of the 1m spaced calculated grid points.
- 7.2.9 No blocking effects from hedgerows, trees, foliage, padel court canopies, walls, or fencing were included during the lighting calculations.
- 7.2.10 The light levels on the vertical surface would be lower than the calculated levels if there are any physical obstacles between the building façade and the padel court lighting units.
- 7.2.11 The calculated results also do not factor in the reduction in lumen output which will occur during the life span of the installation, as the calculations were carried out with a luminaire maintenance factor of 1.00 as described in **Section 5.6** of this assessment.

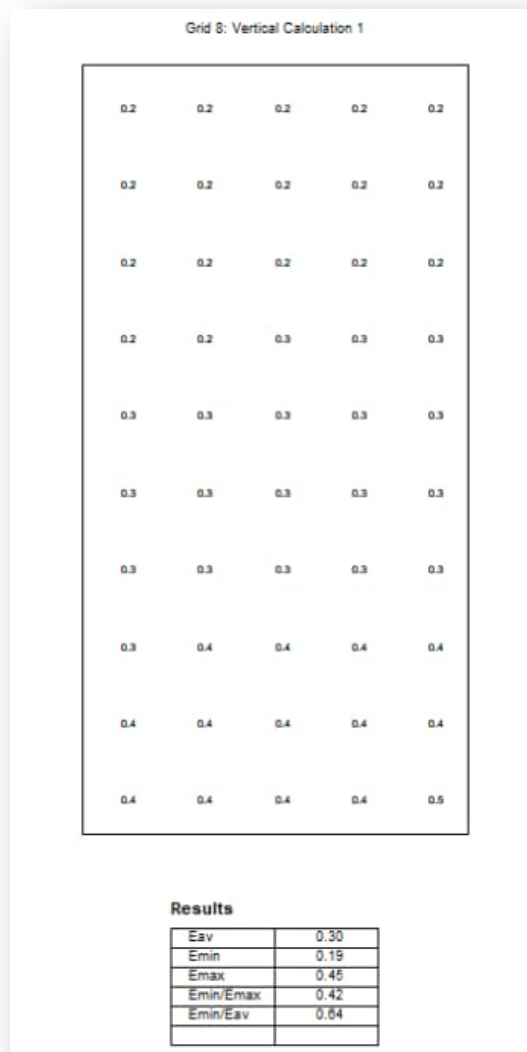


Figure 7.4: Vertical calculation grid 1 results

- 7.4.4 The maximum pre-curfew permissible value of lux onto the centre point of any window for an E3 environmental zone is 10.00 lux, as defined in **Table 2.2** of this assessment report.
- 7.4.5 The vertical calculation grid result table in **Figure 7.4** shows the maximum illuminance level (E_{max}) to be 0.45 lux, therefore complies with the values provided in **Table 2.2**
- 7.4.6 There are trees separating the padel courts and this sensitive receptor; the trees would have a blocking effect on light on the vertical surface; however, these have not been considered during the calculations.
- 7.4.7 The calculation grid results do not consider the reduction in lumen output which will occur during the life span of the installation and, therefore, are exaggerated, as reducing the maintenance factor to 0.90, which takes into consideration LED degradation, driver deterioration and lens grime, which could reduce the lux readings.

7.5 Vertical Calculation Grid 2

- 7.5.1 A vertical calculation grid shown in blue in **Figure 7.5** was created within Lighting Reality and has been drawn across the closest edge of the sensitive receptor, located south of the application site, which is the rear facade of residential housing located off Glencoe Place.



Figure 7.5: Sensitive receptor vertical calculation grid location shown in blue

- 7.5.2 The vertical grid has calculation points from ground level and measures 22m in length and 10m in height, to ensure any potential window positions have been considered.
- 7.5.3 The purpose of the calculation grid is to provide information on the maximum value of lux on the surface, to determine compliance with **Table 2.2**.

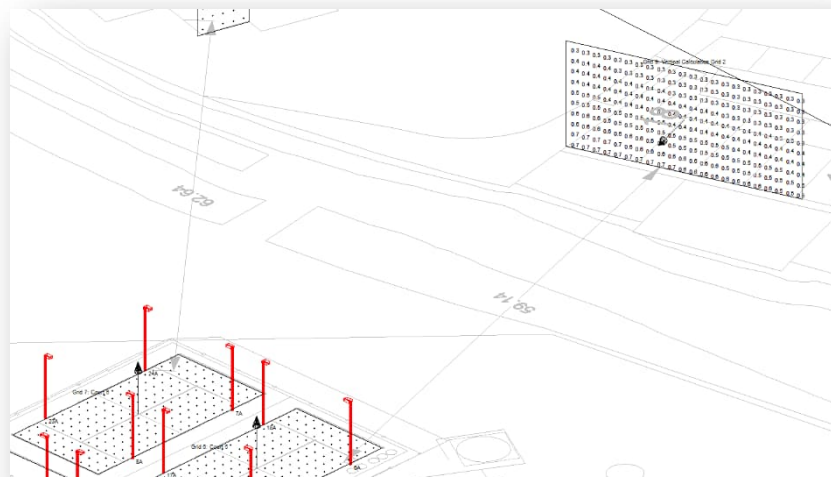


Figure 7.6: Sensitive receptor vertical calculation grid 2 location (3D view)



- 7.5.4 The maximum pre-curfew permissible value of lux onto the centre point of any window for an E3 environmental zone is 10.00 lux, as defined in **Table 2.2** of this assessment report.
- 7.5.5 The vertical calculation grid result table in **Figure 7.7** shows the maximum illuminance level (E_{max}) to be 0.74 lux, therefore, complies with the values provided in **Table 2.2**
- 7.5.6 There are trees separating the padel courts and this sensitive receptor; the trees would have a blocking effect on light on the vertical surface; however, these have not been considered during the calculations.
- 7.5.7 The calculation grid results do not consider the reduction in lumen output which will occur during the life span of the installation and, therefore, are exaggerated, as reducing the maintenance factor to 0.90, which takes into consideration LED degradation, driver deterioration and lens grime, which could reduce the lux readings.

7.6 Luminous Intensity

- 7.6.1 Guidance Notes for the Reduction of Obtrusive Light; GN01/21 (2021) as published by The Institution of Lighting Professionals (ILP) recognises that currently, software has yet to catch up with the requirements outlined in **Table 2.2**.
- 7.6.2 However, it is possible to use manual assessments, calculations and assessments to determine the luminous intensity via the inverse square law.
- 7.6.3 The distance from the closest sensitive receptor, in this case, the nearest façade of a residential house to the south, and the nearest floodlighting unit was measured as 60m.

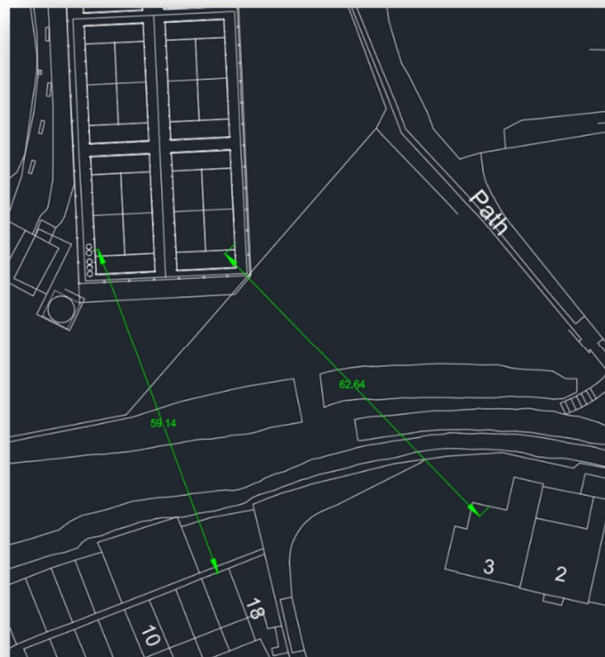


Figure 7.8: Measurement from the sensitive receptor to the closest padel court floodlight

- 7.6.4 The surface area of the padel court floodlights is greater than 0.5m², so the pre-curfew value needs to be less than 10000 cd/m² for an E3 environmental zone, taken from **Table 2.2** of this assessment report.
- 7.6.5 Using the inverse square law $E = I/d^2$, the luminous intensity can be calculated.

$$\text{Intensity} = E \text{ (maximum lux value)} * \text{distance}^2$$

$$I = 0.74 \text{ (Figure 7.7)} * 60^2$$

$$I = 0.74 * 3600$$

$$I = 2664 \text{ cd}$$

- 7.6.6 The calculated level of luminous intensity of 2664 cd is significantly lower than pre-curfew value 10000 cd/m², therefore is compliant **Table 2.2**.

7.7 Upward Light and Glare

- 7.7.1 The floodlighting luminaires have been designed to achieve the target lighting illuminance and uniformity at full cut-off, at 0° tilt.
- 7.7.2 As illustrated in **Table 2.2**, the ILP sky glow limitation for an area classified as environmental zone E3 is 5.00% R_{UL} .
- 7.7.3 The calculated upward light ratio of each of the floodlighting units is 0.00%, therefore complies with **Table 2.2** limits of less than 5.00% for an E3 environmental zone.

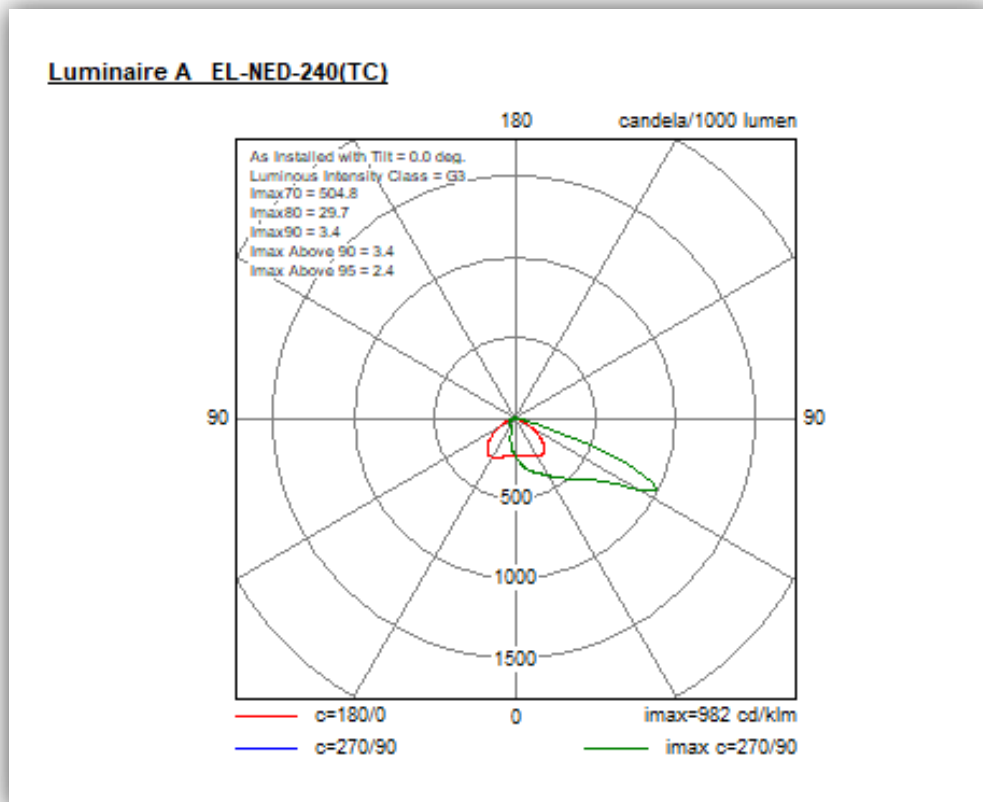


Figure 7.9: Polar diagram for EL NED 240 (TC) floodlight

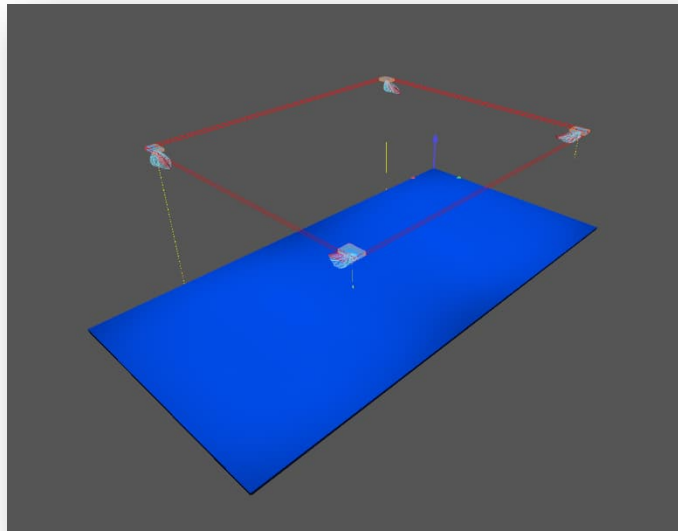


Figure 7.10: Luminaire 3D model, 6m from ground level and 0° tilt facing downward.

Site 1 (Obtrusive light scene)

Summary

General information on the obtrusive light calculation

Standard	CIE 150:2017
Zone	Environmental Zone E3
Period under review	Pre-curfew
Apply limits for	Sports facility lighting

General obtrusive light scene results

Symbol	Calculated	Threshold value	Check
R _{UL}	0.5 %	≤ 5.0 %	✓
R _{OLO}	99.5 %	–	
R _{ULO}	0.5 %	–	

Figure 7.11: Calculated upward light ratio (R_{UL})

- 7.7.4 The upward light ratio has been calculated as 0.50% which is below the 5.00% threshold for skyglow within an E3 Environmental Zone, in accordance with **Table 2.2**.

8. RECOMMENDATIONS

- 8.1.1 All external lighting, whether for the construction or operation phase, must comply with the recommended limitations given in the ILP guidance notes for an environmental zone E3 location.
- 8.1.2 The limits, set out in **Table 2.1**, prohibit excessive emission of upward light and help to minimise light spill and glare.
- 8.1.3 The use of horizontal cut-off luminaires installed at 0° tilt with flat glass lenses and internal optics is recommended to limit views of the lamp, control glare and direct light in a controlled pattern.
- 8.1.4 This will help to minimise potential glare, sky glow and light spill for all the proposed luminaires.
- 8.1.5 As the padel courts will not operate after 22:00, the levels of obtrusive light into windows and the percentage of sky glow are both satisfactory in accordance with pre-curfew values.

9. CONCLUSION

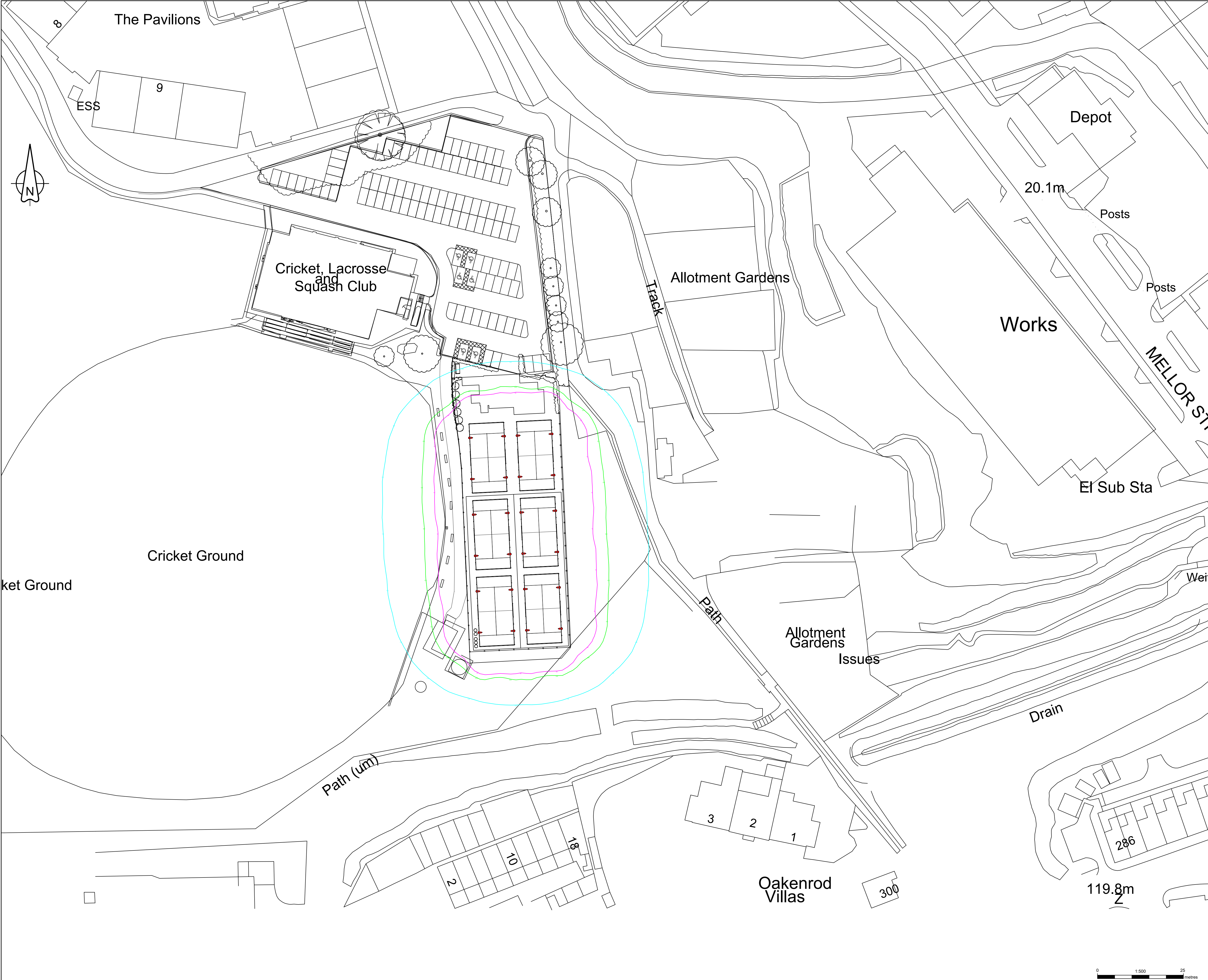
9.1 Design Commentary

- 9.1.1 As part of the lighting strategy, a review has been undertaken of the potential impact created by any proposed lighting concerning the application site.
- 9.1.2 Potentially significant effects from the padel court lighting on sensitive receptors have been managed to create a negligible night-time impact.
- 9.1.3 The lighting design strategy presented indicates that the potentially significant effects of the proposed lighting for the application site have been adequately managed, and all tested parameters are expected to meet recommended guidance benchmarks.
- 9.1.4 The lighting design strategy presented indicates the lighting installation can achieve the required minimum lighting levels and distribution to meet the applicable standards while causing negligible light trespass to the adjoining land and no impact to local sky glow.
- 9.1.5 The impact of the application site lighting is considered to be negligible with respect to sensitive receptors.
- 9.1.6 Any variation to the make, model, or lumen output of each luminaire, adjustment to the design tilt angle, location, or height of each floodlighting column will result in the provided lighting calculations, Isolux line drawings and content of this assessment report being incorrect.
- 9.1.7 The lighting strategy and assessment outline the lighting design criteria for the proposed lighting at the application site to ensure that the lighting is fit for purpose whilst maintaining sensitivity towards the environment.
- 9.1.8 Compliance with the lighting strategy will allow a safe and sensitive level of light for the people using the application site during the hours of darkness, whilst reducing the potential for obtrusive light and limiting this to a negligible level and in compliance with GN01/21 (2021) as published by The Institution of Lighting Professionals (ILP).
- 9.1.9 Isolux lines of 1.00, 0.40 and 0.20 lux have been shown on the light spill drawings in **Appendix A** and the lighting calculation report shown in **Appendix B**.
- 9.1.10 The light spill drawings have been produced with a luminaire maintenance factor of 1.00 as specified in the ILP publication, Public Lighting Guide 04 – Guidance on Undertaking an Environmental Assessment Report.
- 9.1.11 The Isolux lines shown in **Appendix A** represent a best case scenario, as all luminaires have been calculated with a maintenance factor of 1.00, whereas a reduced design maintenance factor of 0.90, which factors in lumen depreciation, lens degradation, and driver deterioration throughout the whole life of the lighting installation.
- 9.1.12 In summary, our expert assessment indicates that the lighting installation does not yield significant adverse effects on the immediate environment in terms of lighting and that all reasonable measures have been integrated into the design phase of this lighting scheme to minimise its impact on the environment.

10. APPENDIX A

10.1 Light Spill Drawing

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Luminaire Type:	Padel Court floodlight
Luminaire Reference:	EL-NED 240 (TC)
Mounting Type:	Post top mounted on 6m mast
Luminaire Tilt:	0°
Lumen Output:	37.20klm
Luminaire Wattage:	240w
Luminous Intensity:	G3

ISOLUX CONTOUR KEY (AT GROUND LEVEL):
1.00 Isolux contour line
5.00 Isolux contour line
10.0 Isolux contour line



EL-NED 240 (TC) LED floodlight



LOCATION PLAN: EASTING 388623 NORTHING 413292

The details provided on this drawing are subject to comments by all relevant approving authorities and/or any overseeing organisation.
No construction works shall take place until technical approval has been obtained by the approving authority and/or any overseeing organisation.
It is to be understood that these drawings and the information shown are preliminary only and shall not be used for construction.
This drawing should not be used for construction or procurement of materials in any way until technical approval is received.
Should the contractor commence work on site prior to obtaining technical approval, then it is entirely at their own risk and no liability shall be accepted by SHD Lighting Consultancy Ltd.

R0	INITIAL DESIGN FOR REVIEW AND COMMENT	16/10/2025	SRH
REV	DESCRIPTION	DATE	BY
SHD			
info@shdlighting.co.uk 07834 490 192 www.shdlighting.co.uk			
PROJECT:	ROCHDALE PADEL CLUB		
DRAWING:	LIGHT SPILL DRAWING		
CLIENT:	ROCHDALE PADEL CLUB		
DRAWING NUMBER:	SHD2310-SHD-HLG-ROCH-DR-ED-Light Spill Drawing-R0	DRAWN:	SRH
		CHECKED:	SRH
CONTRACT NUMBER:	SHEET 1 OF 1	APPROVED:	
		SCALE @ A1:	1:500
	SHD2310	DATE:	16/10/2025
		REVISION:	R0

PRELIMINARY DESIGN - NOT FOR CONSTRUCTION

11. APPENDIX B

11.1 Lighting Calculation Report

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DATE: 16 October 2025
DESIGNER: SHD Lighting Consultancy Limited
PROJECT No: SHD2310
PROJECT NAME: Rochdale Padel Club



It is assumed that the wall lighting luminaires are to be angled at 0° tilt to the horizontal plane and downward firing only.

Isolux contour lines shown represent a 'day one' worst-case scenario with a maintenance factor of 1.00, as this demonstrates the maximum lumen output not taking into consideration any LED degradation, driver deterioration or weather grime and lens dirt which will occur during the lifespan of the lighting installation.

Horizontal illuminance (contours indicate projected lux values at ground level, excluding the screening effect of fences, walls, buildings, trees, hedges, etc.)

Outdoor Lighting Report

PREPARED BY: SHD Lighting Consultancy Ltd
Contact: info@shdlighting.co.uk
Phone: 07834 490 192
Website: www.shdlighting.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: Whole Area	388512.10	413186.34	201.00	201.00	1.50	1.50
2	Grid 2: Court 1	388608.68	413317.82	20.00	10.00	1.00	1.00
3	Grid 3: Court 2	388622.65	413318.49	20.00	10.00	1.00	1.00
4	Grid 4: Court 3	388609.85	413295.47	20.00	10.00	1.00	1.00
5	Grid 5: Court 4	388623.67	413296.15	20.00	10.00	1.00	1.00
6	Grid 6: Court 5	388610.89	413273.17	20.00	10.00	1.00	1.00
7	Grid 7: Court 6	388624.77	413273.84	20.00	10.00	1.00	1.00
8	Grid 8: Vertical Calculati...	388675.17	413209.53	5.00	10.00	1.00	1.00
9	Grid 9: Vertical Calculati...	388640.77	413205.16	22.00	10.00	1.00	1.00

Luminaires

Luminaire A Data

Supplier	Padel Courts
Type	EL-NED-240(TC)
Lamp(s)	LED 5050
Lamp Flux (klm)	37.42
File Name	EL-NED-240(TC).IES
Maintenance Factor	1.00
Lum. Int. Class	G3
No. in Project	24

Layout

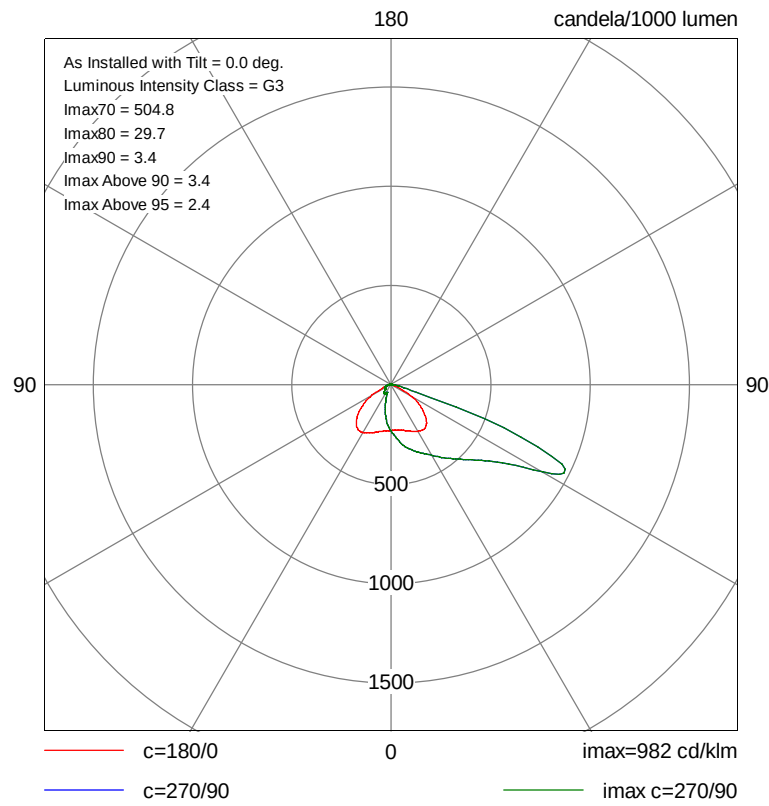
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	388608.82	413313.83	6.00	3.00	0.00	0.00	0.30			
2	A	388609.39	413301.84	6.00	3.00	0.00	0.00	0.30			
3	A	388609.90	413291.49	6.00	3.00	0.00	0.00	0.30			
4	A	388610.47	413279.50	6.00	3.00	0.00	0.00	0.30			
5	A	388610.97	413269.17	6.00	3.00	0.00	0.00	0.30			
6	A	388611.55	413257.17	6.00	3.00	0.00	0.00	0.30			
7	A	388625.38	413257.83	6.00	3.00	0.00	0.00	0.30			
8	A	388624.80	413269.82	6.00	3.00	0.00	0.00	0.30			
9	A	388624.30	413280.16	6.00	3.00	0.00	0.00	0.30			
10	A	388623.72	413292.14	6.00	3.00	0.00	0.00	0.30			
11	A	388623.22	413302.50	6.00	3.00	0.00	0.00	0.30			
12	A	388622.64	413314.50	6.00	3.00	0.00	0.00	0.30			

Layout Continued

ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
13	A	388619.04	413314.32	6.00	182.00	0.00	0.00	0.30			
14	A	388619.61	413302.33	6.00	182.00	0.00	0.00	0.30			
15	A	388620.12	413291.99	6.00	182.00	0.00	0.00	0.30			
16	A	388620.71	413280.00	6.00	182.00	0.00	0.00	0.30			
17	A	388621.20	413269.65	6.00	182.00	0.00	0.00	0.30			
18	A	388621.78	413257.68	6.00	182.00	0.00	0.00	0.30			
19	A	388632.87	413314.99	6.00	182.00	0.00	0.00	0.30			
20	A	388633.45	413303.00	6.00	182.00	0.00	0.00	0.30			
21	A	388633.95	413292.64	6.00	182.00	0.00	0.00	0.30			
22	A	388634.53	413280.65	6.00	182.00	0.00	0.00	0.30			
23	A	388635.03	413270.32	6.00	182.00	0.00	0.00	0.30			
24	A	388635.60	413258.33	6.00	182.00	0.00	0.00	0.30			

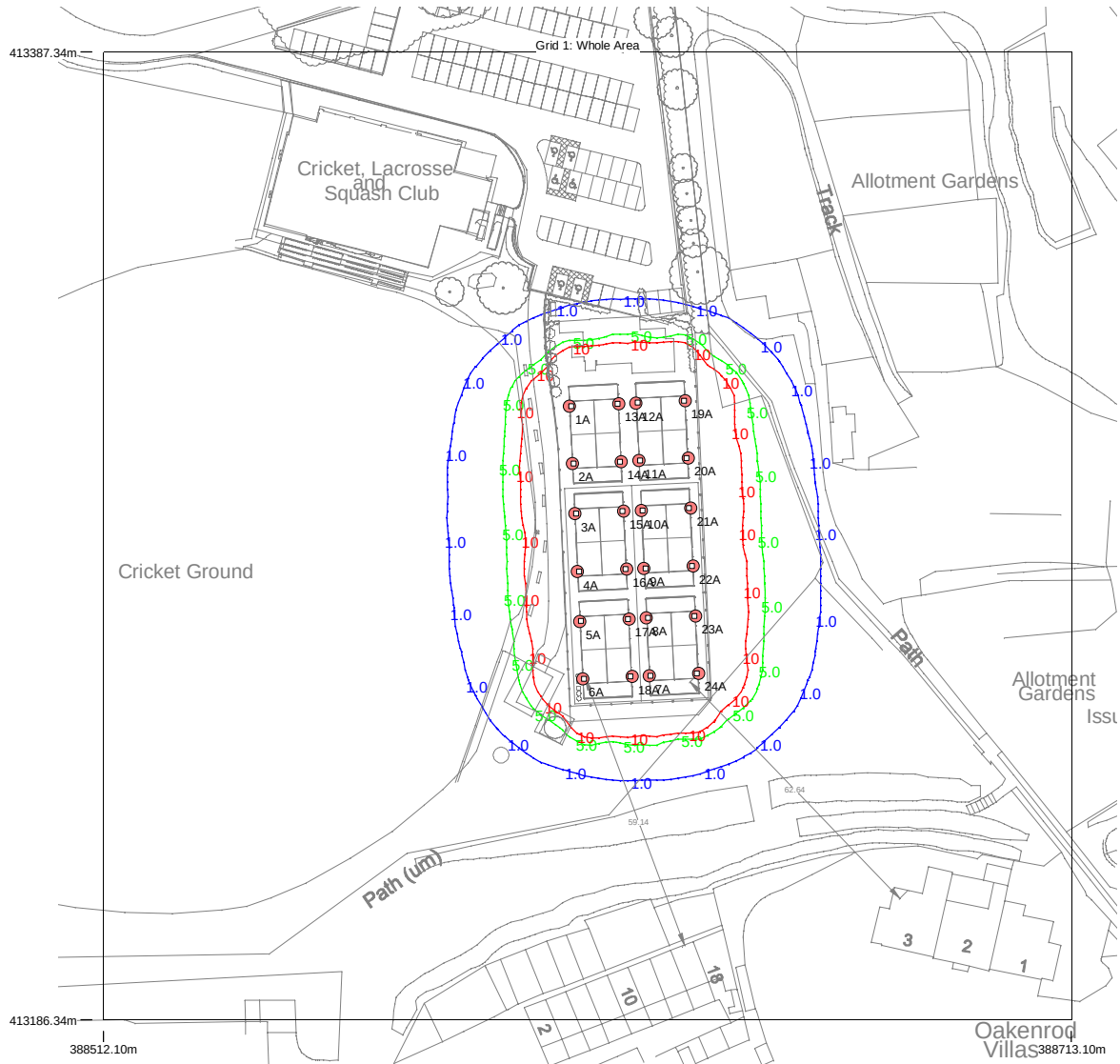
Polar Diagram

Luminaire A EL-NED-240(TC)



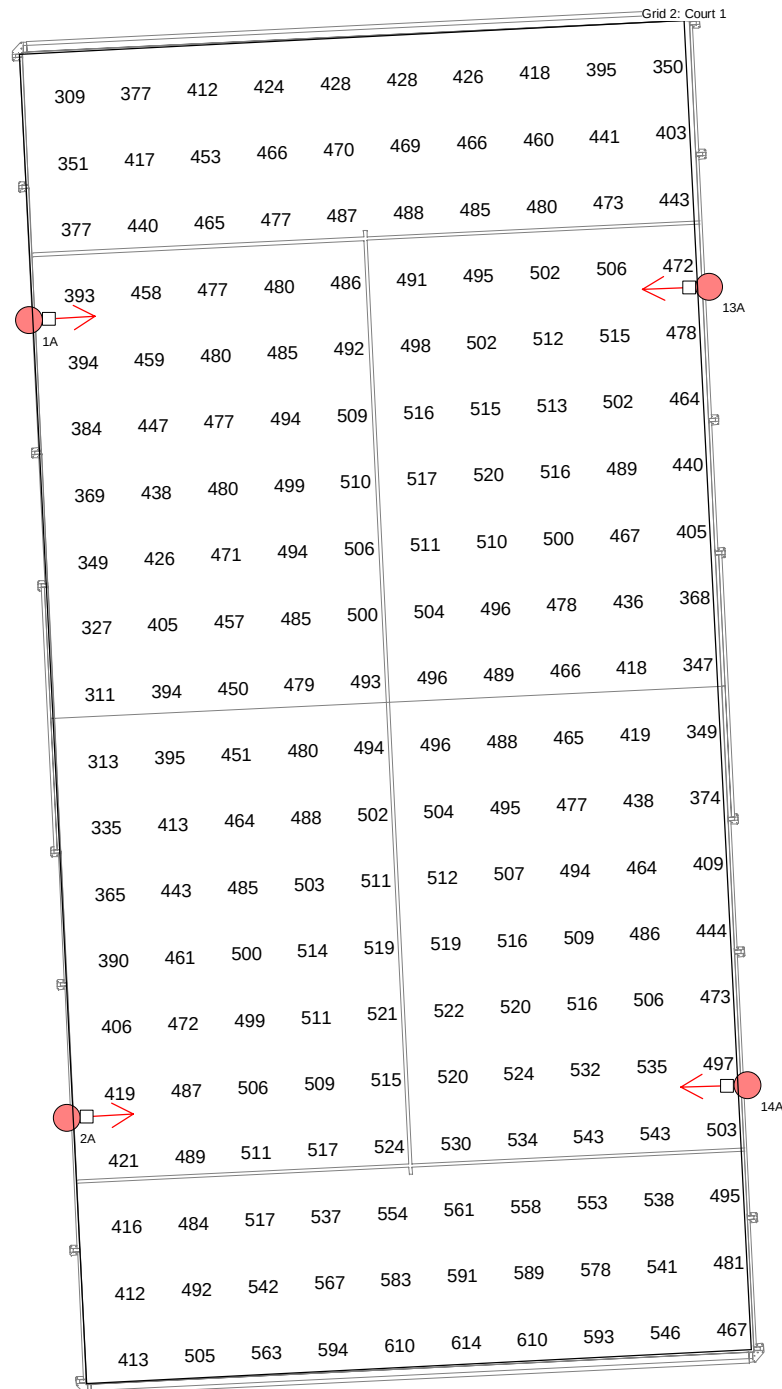
Horizontal Illuminance (lux)

Grid 1: Whole Area



Horizontal Illuminance (lux)

Grid 2: Court 1

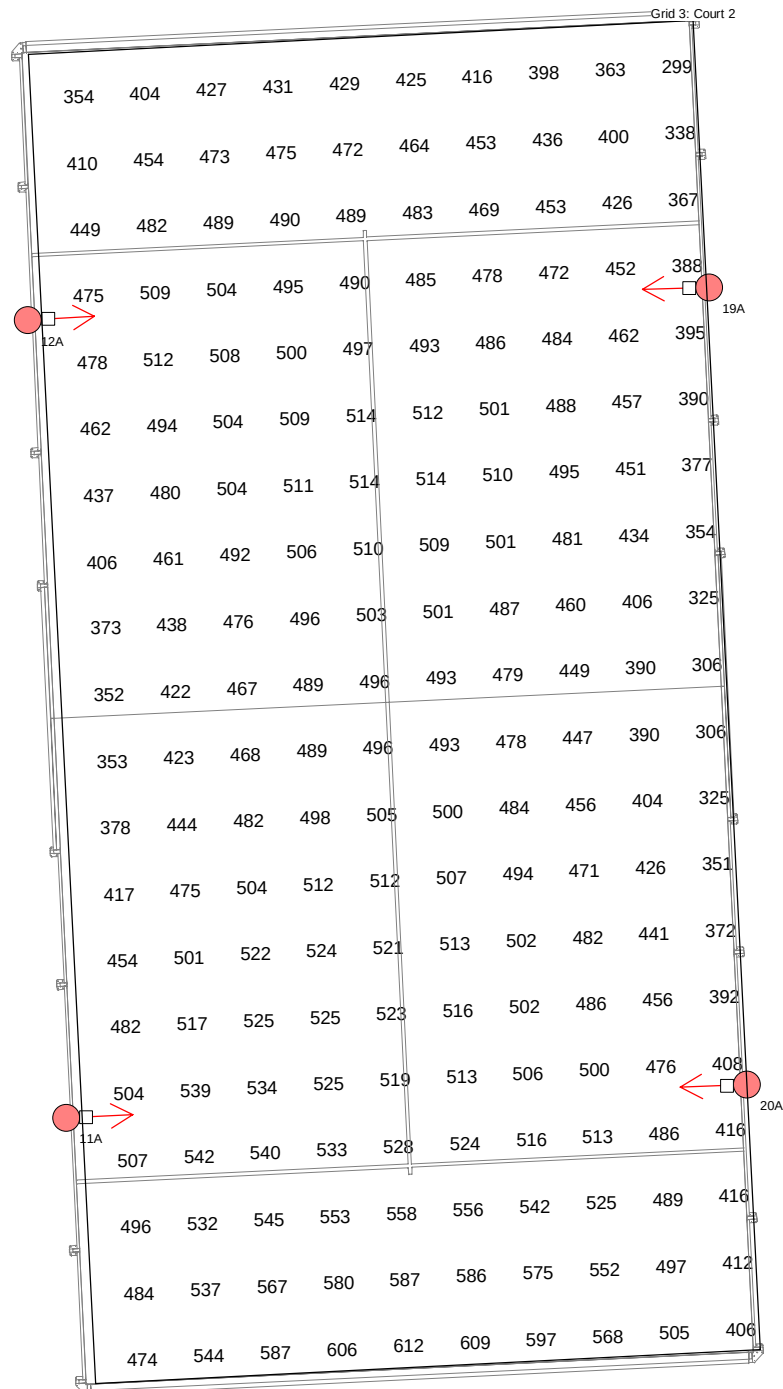


Results

Eav	475.97
Emin	309.33
Emax	614.31
Emin/Emax	0.50
Emin/Eav	0.65

Horizontal Illuminance (lux)

Grid 3: Court 2

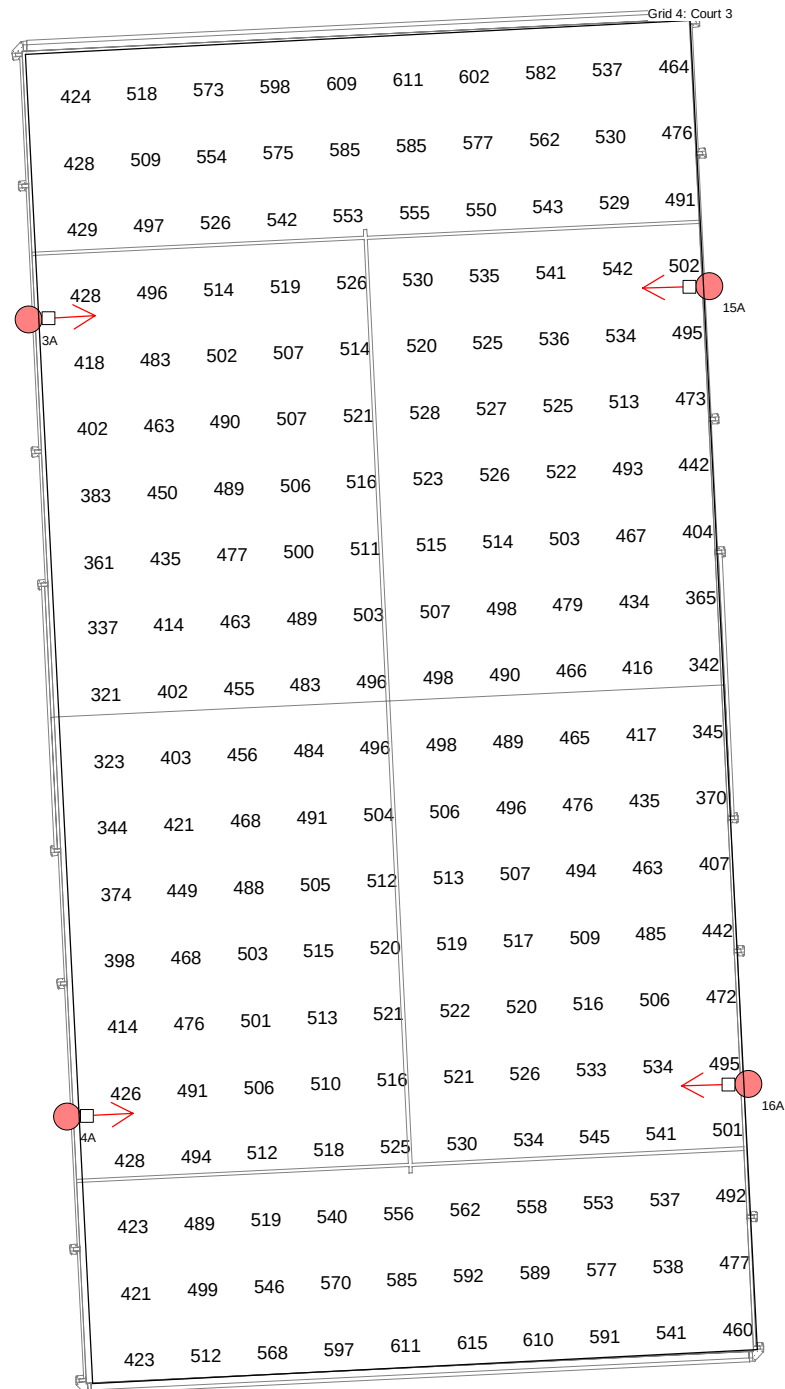


Results

Eav	475.22
Emin	299.12
Emax	612.23
Emin/Emax	0.49
Emin/Eav	0.63

Horizontal Illuminance (lux)

Grid 4: Court 3

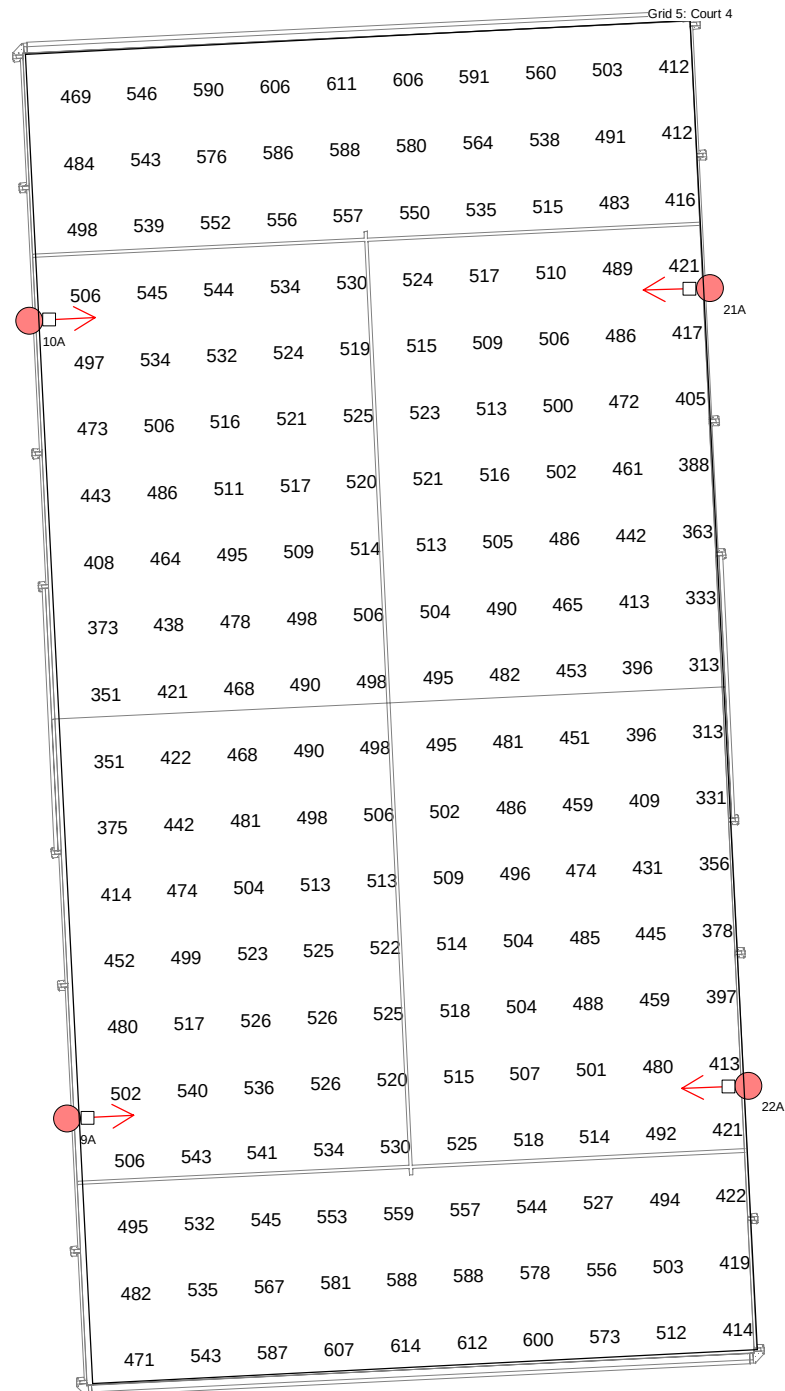


Results

Eav	496.98
Emin	321.32
Emax	614.90
Emin/Emax	0.52
Emin/Eav	0.65

Horizontal Illuminance (lux)

Grid 5: Court 4

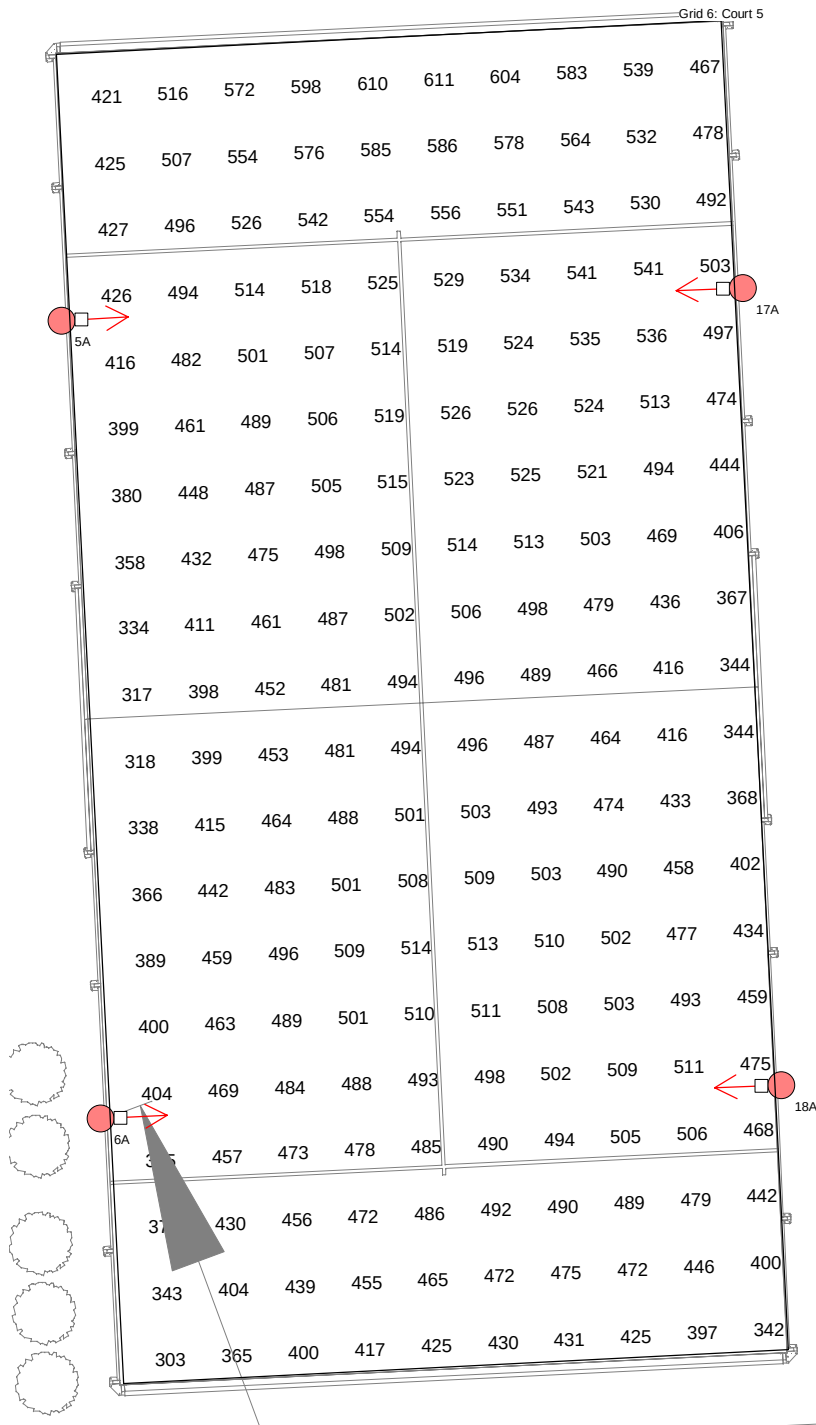


Results

Eav	496.25
Emin	313.25
Emax	614.17
Emin/Emax	0.51
Emin/Eav	0.63

Horizontal Illuminance (lux)

Grid 6: Court 5

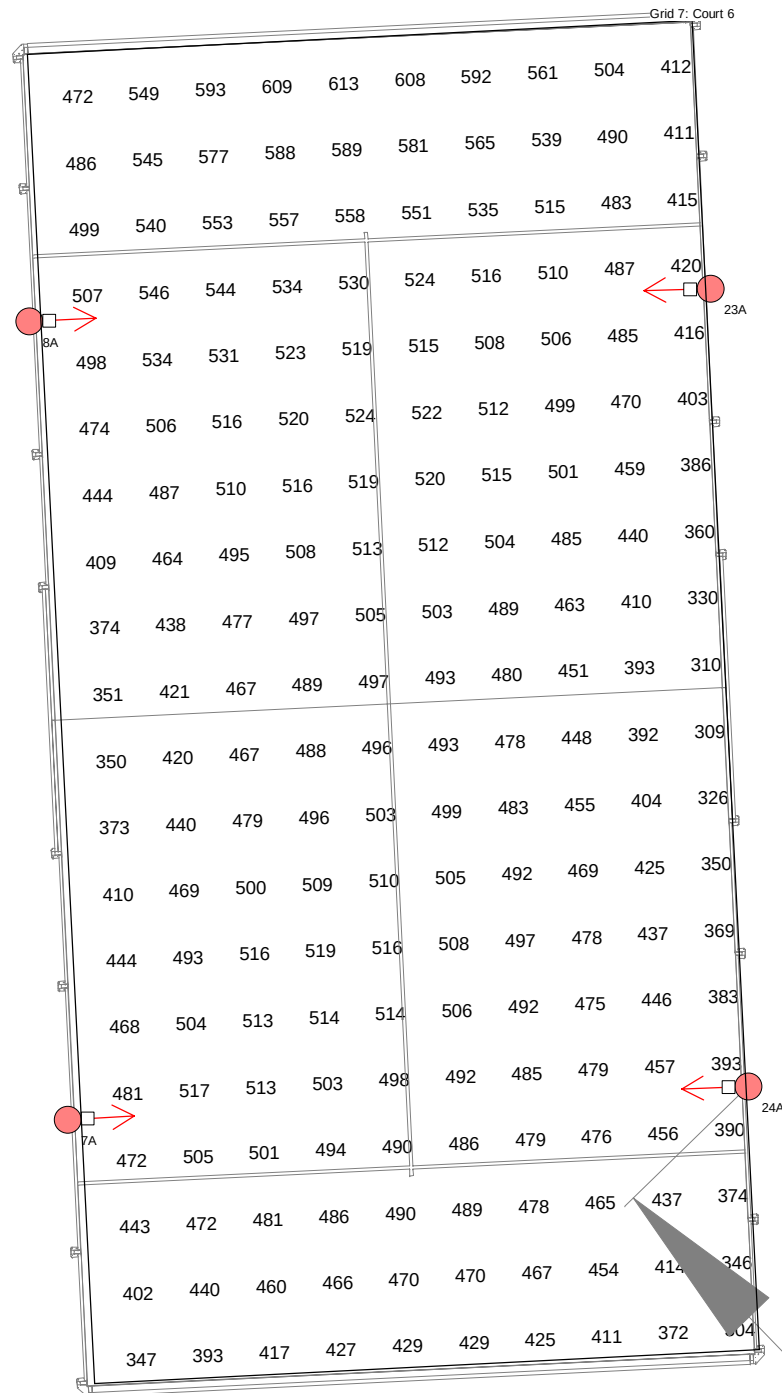


Results

Eav	475.98
Emin	302.97
Emax	611.43
Emin/Emax	0.50
Emin/Eav	0.64

Horizontal Illuminance (lux)

Grid 7: Court 6



Results

Eav	475.63
Emin	303.56
Emax	612.91
Emin/Emax	0.50
Emin/Eav	0.64

Illuminance (lux)

Grid 8: Vertical Calculation 1

0.2	0.2	0.2	0.2	0.2
0.2	0.2	0.2	0.2	0.2
0.2	0.2	0.2	0.2	0.2
0.2	0.2	0.3	0.3	0.3
0.3	0.3	0.3	0.3	0.3
0.3	0.3	0.3	0.3	0.3
0.3	0.3	0.3	0.3	0.3
0.3	0.4	0.4	0.4	0.4
0.4	0.4	0.4	0.4	0.4
0.4	0.4	0.4	0.4	0.5

Results

Eav	0.30
Emin	0.19
Emax	0.45
Emin/Emax	0.42
Emin/Eav	0.64

Illuminance (lux)

Grid 9: Vertical Calculation Grid 2

0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5
0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5

Results

Eav	0.44
Emin	0.26
Emax	0.74
Emin/Emax	0.36
Emin/Eav	0.60

12. APPENDIX C

12.1 Manufacturers Datasheets

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FEATURES

System Light Efficacy 150~155LPW.

Specific glare free lens design.

Minimal light spill outside the court.

Extremely high lighting uniformity

IP66 water proof.

Five Years Warranty

SPECIFICATIONS

PERFORMANCE

LED Chip	Lumileds 5050
Color Temperature	3000K 4000K, 5000K, 5700K
CRI	≥70
Lumen Maintenance	L70>150,000 Hours (Calculated Using Tm-21 Calculator)
Input Voltage	100-277 VAC (347/480 VAC Optional) Dimming Optional
Power Factor	0.95 Minimum
IP Rating	IP66

ENVIRONMENTAL

Operating	-40 to 60°C (-40 to 140°F)
Temperature Storing	-40 to 80°C (-40 to 176°F)
Temperature Humidity	15% to 95% RH

PHYSICAL

Fixture Material	Aluminum Alloy
------------------	----------------

WARRANTY	5 Years
-----------------	---------



SPECIFICATIONS

Picture	Part#	Power	Efficacy(IES)	Total Lumen	N.W	Product Dimensions
	EL-NED-240(TC)	240W	155LPW	37,200lm	7.9kg/17.4lbs	27"x16"x3.25" 684x408x82mm
	EL-NED-400(TC)	400W	155LPW	62,000lm	14.8kg/32.6lbs	27"x23.5"x3.25" 684x596x82mm
	EL-NED-600(TC)	600W	150LPW	90,000lm	18.3kg/40.3lbs	27"x31"x3.25" 684x784x82mm

Selection Guide for Court with 6 Poles	
Competition Level	600W cBright Edge Tennis Court Light
Club Level	400W cBright Edge Tennis Court Light
Recreational Level	240W cBright Edge Tennis Court Light

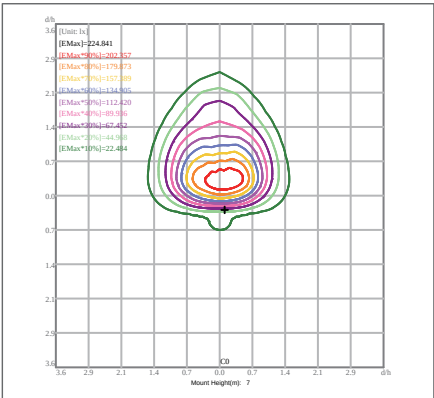
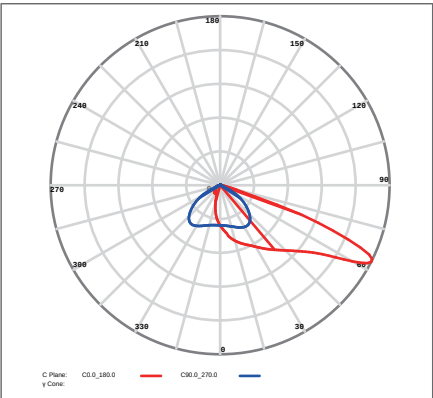


Mounting Brackets

Image	Applicable Power	Product Code	Product Description
	240W~600W	SP-SA	Direct Arm
	240W~600W	SP-SF	Slip Fitter



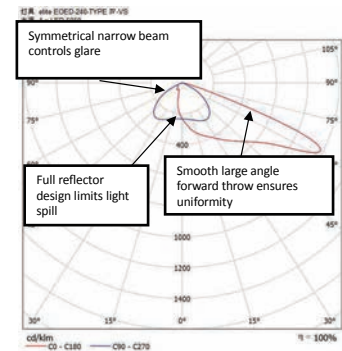
PHOTOMETRIC



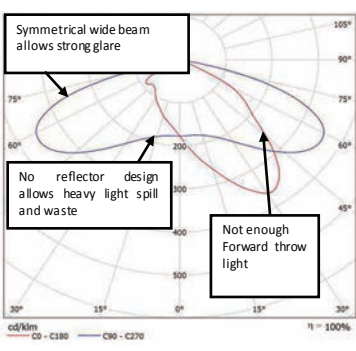
Glare Control & Light Uniformity Comparison

Glare free lens design ensures player's safety and comfortableness.

Photometrics of Edge Tennis Court Light



Photometrics of Regular LED Tennis Court Light



Specific photometric increases the uniformity while reducing the light spill outside the court.

Ordering Information

ITEM	WATTAGE	COLOR TEMP.	VOLTAGE	OPTICS	MOUNTING	CONTROL	FINISH
EL-NED	-240W -400W -600W	-30K -3000K 40K -4000K 50K -5000K 57K -5700K	UNV 100-277V HV 347V /480V	T4 30°x120°	S Slipfitter (Standard) A Arm Mount	01 Dimmable driver 02 Motion Sensor 03 Photocell 04 Remote Control	BR Bronze RAL8019 (Standard) GR Grey RAL4045 BK Black RAL9017 GN Green RAL6001
							Accessoreis 2 Feet Wire Lead



13. APPENDIX D

13.1 Lawn Tennis Association Datasheet

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EXTERNAL FLOODLIGHTING PRINCIPLES

Venues providing floodlit tennis have an enormous advantage over those without lighting:-

- On average venues with floodlights have 50% more members and improved retention levels.
- Able to attract and retain coaches and deliver coaching opportunities year round.
- Increased revenue through membership and pay and play.
- Between November and April when daylight is shorter, lighting outdoor courts adds 35% more playing time.

Facility	Hours per annum
Outdoor non floodlit court (allowance of 35% for bad weather)	2500
Outdoor Floodlit court (allowance of 35% for bad weather)	3500

LED FLOODLIGHTING

The UK sports floodlighting market has been largely transformed by the introduction of LED which have the following advantages over metal halide floodlighting:-

- 1) Sustainability (i.e. lower overall power requirement).
- 2) Long design life with lower maintenance requirement with no lamp replacement.
- 3) Superior control features allowing instant controls and the ability to dim fittings.

PLANNING CONSENT

All floodlighting schemes in the UK will require a formal planning consent to be granted by the Local Authority for their installation. Each Local Authority has a list of their local requirements for applications in addition to national requirements. For a planning application to be successful the design should be designed by specialist lighting designers, specialist tennis court lighting contractors or manufacturers who can use specialist software (such as AGI 32) to produce a lighting designs which demonstrate the required performance standards, have minimal impact on the local environment and meet the planning regulations.

It is important to make sure that before submitting a planning application the venue has all the relevant information, plan and elevation drawings and an accurate lighting. If information is not submitted correctly in the first instance then this could jeopardise the success of the planning application both at the time of submission and in the future.

DESIGN CONSIDERATIONS

To provide tennis venues with a range of options for floodlights, the LTA are working with contractors and suppliers to provide a range of design options that meet the current planning regulations and the Institute of Lighting Professional Guidance Notes. These solutions enable venues to design a scheme that is cost effective and has minimal impact on the local environment. The following information provides some general information on lighting design and configurations.

Height of Columns and Luminaires

- The choice of luminaire with the right optical distribution at the right mounting height is critical to minimising light spill and obtrusive light effects, while providing the right lighting performance for playing tennis.
- Luminaires should be installed with the front glazing installed at relatively low tilt angles of less than 35 degrees to the surface being lit. This is especially important where venues are located near neighbouring properties and if necessary the luminaire might be fitted with louvres and shields to minimise obtrusive light.
- Normally a tennis lighting system consists of a number of different types of luminaires with varying optical distributions and wattages mounted on several columns located at various points around the courts.
- Generally column heights range from 6m – 10m.
- The luminaire should provide high quality colour rendition with minimum glare, sky glow and spillage.

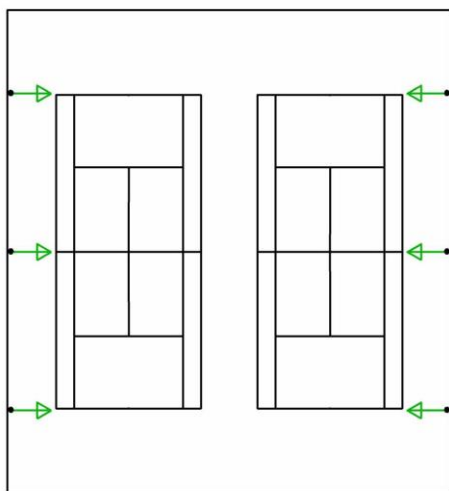
Performance

The lighting system must provide adequate lighting to enable tennis to be played safely. The LTA has developed standards alongside the International Tennis Federation. These standards are defined in **Appendix A**. Lighting consultants and contractors should be able to produce designs to meet this standard.

FLOODLIGHTING GENERIC LAYOUTS

Side Lit Scheme

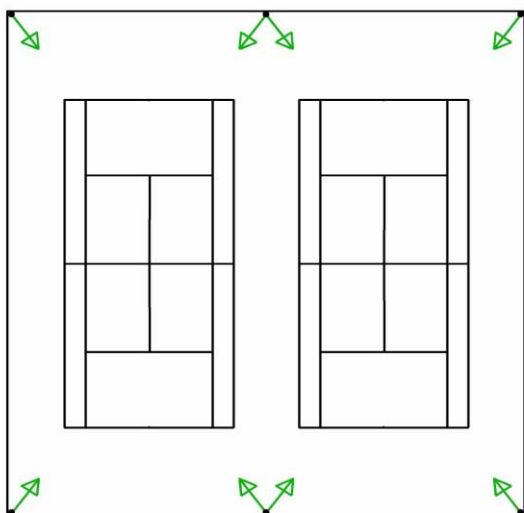
This is typically lit with 10m columns with high wattage fittings.



Advantages	Disadvantages
➤ Less glare within the court area. ➤ Less glare outside intended area. ➤ Good control of light spillage. ➤ With columns 8m high and above – high levels of uniformity. ➤ Multi court lighting in blocks of two only.	➤ Difficulties experienced where two or more courts are to be illuminated individually, unless a minimum of 6.1m is available to safely locate columns in-between courts at the baseline. ➤ Usually a minimum of three columns is required each side of each court, hence not as cost effective as other solutions when lighting courts individually.

Corner Lit Scheme

Corner lit layout - typically 10m with minimum column height 8m.

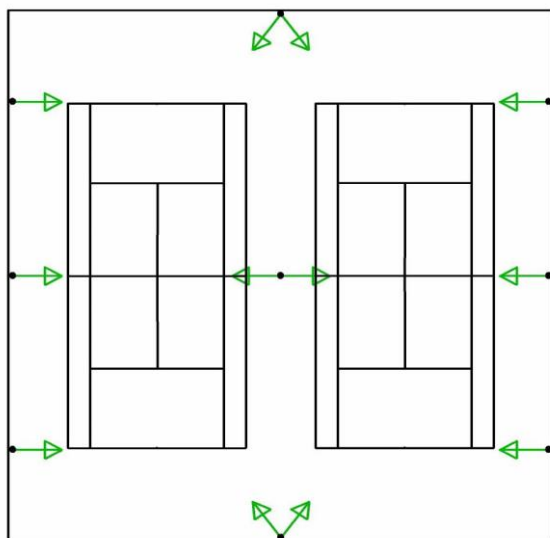


(Two courts lit & controlled individually from the corners of each court)

Advantages	Disadvantages
➤ More suitable for three or more courts, where individual court switching is required and limited room is available between courts. ➤ High level of illumination on surface of ball approaching player. ➤ High standards of uniformity. ➤ Least number of columns. ➤ Cost effective.	➤ Potential for glare. ➤ Careful selection of aiming angles required. ➤ Column height may be considered obtrusive in daylight. ➤ Column locations usually required outside the fence area.

Corner and Side Lit Scheme

Corner and side lit – typically from 6.7m or 8.0m



Advantages	Disadvantages
➤ Uses lowest column heights. ➤ Uses lower wattage fittings. ➤ More suitable for two or more courts, where limited room is available between courts. ➤ Good control of glare, sky glow and spillage.	➤ Large number of columns required to achieve minimum standards ➤ Larger number of fittings than the equivalent corner lit scheme. ➤ Can be more costly to install.

HOW MUCH WILL IT COST?

The overall feasibility of a floodlighting project will depend upon the standard required, the initial cost of the system, the hourly running costs and the cost of maintenance and eventual replacement. All these factors should therefore be given careful consideration, particularly as a more costly installation could also mean a more efficient (and therefore less expensive) system overall. The following costs are guideline costs and do not take account of any site specific issues particularly the provision of underground ducting or new power supplies. Please note that the prices do not include Fees, Contingencies or VAT.

Individual court	£17,000
Block of 2 courts	£30,000
Block of 3 courts	£42,000
Block of 4 courts	£48,000

POWER SUPPLY

One of the major issues involved in the design of a new floodlighting system is whether or not the existing power supply is adequate. There are a number of demands on the power supply to the site e.g. the clubhouse. The total of all existing loads will need to be checked to verify any spare capacity for the new floodlighting installation. Advice can be sought from a design consultant, electrical contractor or installer of the system. A club with up to 2 to 3 courts may be able to utilise the existing “domestic” single phase supply for floodlighting.

At sites with more than three floodlit courts the Network Power Supply Company will usually require a “commercial” three-phase power supply to be installed to ensure they can match the overall demands of all consumers by balancing the loads on the supply.

DUCTING & DRAW PITS

Cable Ducts are heavy duty purpose designed plastic tubes that provide power cables that provide power to the floodlights and drawpits are “manholes” that enable the cables to be installed and maintained. Together the cable ducts and drawpits form a containment system to facilitate the initial installation and or future replacement of the power cables serving each of the columns. Where possible ducting and drawpits should be kept outside of the court block or as a minimum be located outside of the playing area. This normally means that they are located in between courts.

HOW TO APPROACH YOUR PROJECT

If you are starting out on installing floodlights, it is inevitable you will have a lot of questions and it can be a daunting prospect. The steps should help in developing a floodlighting project.

1. It is recommended that venues engage a sports lighting consultant or a specialist tennis lighting contractor/manufacture to prepare a design that meets the performance criteria and has maximum chance of receiving planning permission. Careful consideration must be given if the lighting scheme is close to housing. If this is the case specialist lighting design input will be required to be able to provide the relevant information to the planning and environmental health officers.
2. Undertake a review of the site to establish if there is adequate power supply and the location of the supply in relation to the courts. Also identify any facilities or objects the floodlighting could impact. This could be things such as neighbouring properties, trees or any wildlife around the site.
3. Prepare the initial design brief and present this to the local community and planning authority to gain their views on the proposal. If possible the venue should refine the design to mitigate any objections.

4. Use the initial design to obtain a quote from a minimum of 3 tenderers. It is important to understand that the potential contractors can provide a scheme that meets the design brief and who are NICEIC or ECA registered or similarly approved. The LTA has a list of contractors that can produce a tennis court design and this can be found in **Appendix B**.
5. Once the contractor has been appointed then finalise the design and submit a planning application with all the relevant documentation. Please note that the lighting design will need to be supplemented with plan and elevation drawings.
6. Once planning permission has been gained make sure that any conditions are discharged before starting on site.
7. Install floodlights. Once complete, make sure they are tested to ensure the installation has been installed correctly.
8. Manage the project on site and drawdown funding. Once the project is complete obtain the operation and maintenance manuals from the contractor. These documents will provide information on how to operate the air hall and maintain it in the long term.

CONVERSION FROM METAL HALIDE LIGHTS TO LED

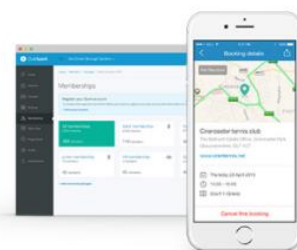
If converting from metal halide lights to LED then the following process should be adhered to:-

1. Make sure you have the existing planning consent and all the associated documents at the time of approval. Review if the existing lighting meets the consent and that all planning conditions have been discharged.
2. If the aim is to use the existing lighting columns. If they are over 20 years old, they will need to be structurally checked for strength.
3. If the location of the floodlights are in close proximity to houses (30m) then seek specialist design advice to design a new scheme that meets the existing planning conditions. It is essential that the design has fully dimensioned plans, supplemented by ordinance survey maps and datapacks which model vertical light trespass onto the properties.
4. If the new design can meet the existing planning consent then the venue should apply to the Local Authority for a non-material amendment to the existing planning consent.
5. If this is refused then the venue would have to make a new planning application.
6. Once consent has been approved then tender the project making sure that the new fittings can be installed on the existing columns if they are being used.
7. The typical cost for conversion is £7k to £8k per court.

OPERATIONAL CONSIDERATIONS

Adding floodlights to courts will most likely require a change to the way you manage your venue, court allocation and bookings. Although each venue is different below are areas to consider:-

- Before installing floodlights venue needs to understand how the floodlights will be operated. If the venue installs a gate access system. The LTA rally app can control the floodlights when a booking is made.
- Lighting controls
 - clubSpark SmartAccess system can control the lights
 - Direct Switching which can be located within a clubhouse
 - Tokens
- Need to balance the time allocated to the coaching programme, member and pay and play bookings.
- Think about your charging levels for members, non members and coaches.
- Running costs for LED lights are approx. £1 per hour per court, but is dependent on the configuration and type of lamp.
- The LTAs recommended sinking fund for floodlights is £600 per court per year to cover lamp and column replacement.



ClubSpark for LTA registered venues

Simple set up for booking, memberships and more.
Find out what ClubSpark can offer your venue.

APPENDIX A – PERFORMANCE STANDARDS

The LTA performance standards for artificial lighting within the prescribed areas of a tennis court are set out as follows:-

Standard	Maintained average illumination on P.P.A.	Maintained average illumination on T.P.A.	Uniformity within PPA Emin/Eav	Uniformity within TPA Emin/Eav
Recommended	500 Lux	400 Lux	0.7	0.6
Minimum	400 Lux	300 Lux	0.7	0.6

Principal Play Area (P.P.A.) - The area bounded by the doubles court lines.

Total Play Area (T.P.A.) - The PPA plus the run-back areas to a depth of 4.5M and the Side-runs to a width of 2.5M.

Uniformity ratio - The ratio of Minimum illuminance value to Average value within the prescribed area.

Initial Illuminance - The value of illuminance predicted at initial installation and /or after re-lamping and cleaning of reflectors.

Maintained Illuminance - The value of illuminance predicted after reduction in output to be experienced over the working life of the lamps.

NB. **Emin**= lowest recorded value within the prescribed area. **Eav** = Arithmetic average of all readings within the prescribed area.

The performance standards can be applied to an individual court operating on its own or block switching. Measurements or calculations within designs must be taken at playing surface level.

Calculation grids for lighting design modelling:-

A total of forty five (45 : 5 x 7) readings are required on the P.P.A.

A total of one hundred and fourteen (117 : 9 x 13) readings are required on the T.P.A.

A minimum maintenance factor to be employed within LED outdoor lighting designs to achieve the above levels of prescribed LTA performance shall be 0.9 i.e. 10% reduction in performance.

Please note some designs that are close to neighbouring properties have to have a maintenance factor of 1 to show the maximum effect on residential properties when lights are initially turned on.

Appendix B – Floodlighting Contractors

The following matrix of contractors have provided concept designs to the LTA and these have been reviewed to establish that the floodlighting systems can meet the performance standards. Each contractor offers a wide range of solutions and the design must be tailored to each site. The LTA is not responsible for the contractor's designs and does not approve contractors. It is recommended that each venue undertakes its own due diligence before engaging a contractor.

Contractor	6m – 8m high columns	8m – 10m and above column solution
Highlights Floodlighting Limited	X	X
Halliday Lighting Limited	X	X
Luminance Pro Lighting Systems Limited	X	X
Surface Lux Limited	X	X
Exclusive Leisure	X	X
LTL Contracts	X	X

Lighting schemes below 6m mounting height are normally very difficult to achieve adequate uniformity therefore they need to be designed by a specialist consultant.

14. APPENDIX E

14.1 Padel Court Concept Designs

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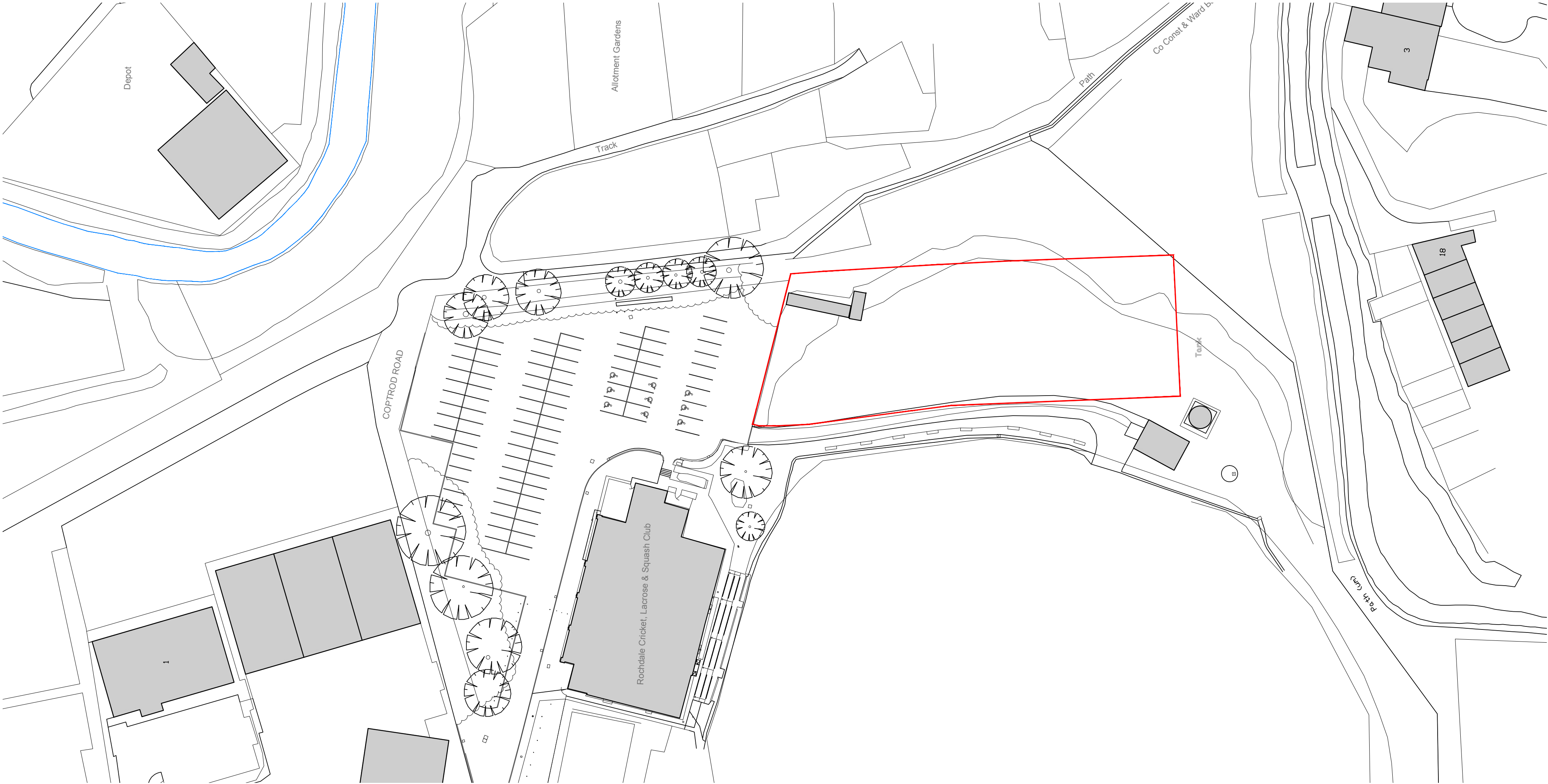
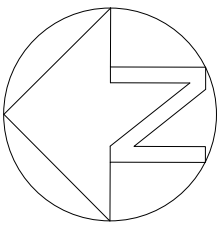
YOUR CONCEPT DESIGN

JORDAN INGOE
ROCHDALE PADEL CLUB
Bridgefold Road
Rochdale
OL11 5BX

July 2025

SITE LOCATION.

Rochdale Padel Club



SITE IMAGES.

Rochdale Padel Club



PRECEDENT IMAGES.

Rochdale Padel Club



Retail Pop-Up Container, Royal Wolf Australia



Dare Contentor Bar



Asahi Super Dry Bar, Randwick



Stack, Seaburn



Padel Pro, Dubai

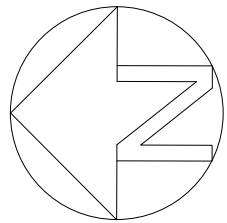


Virgin Active Padel Club, Cape Town



PROPOSED GROUND FLOOR PLAN.

Rochdale Padel Club



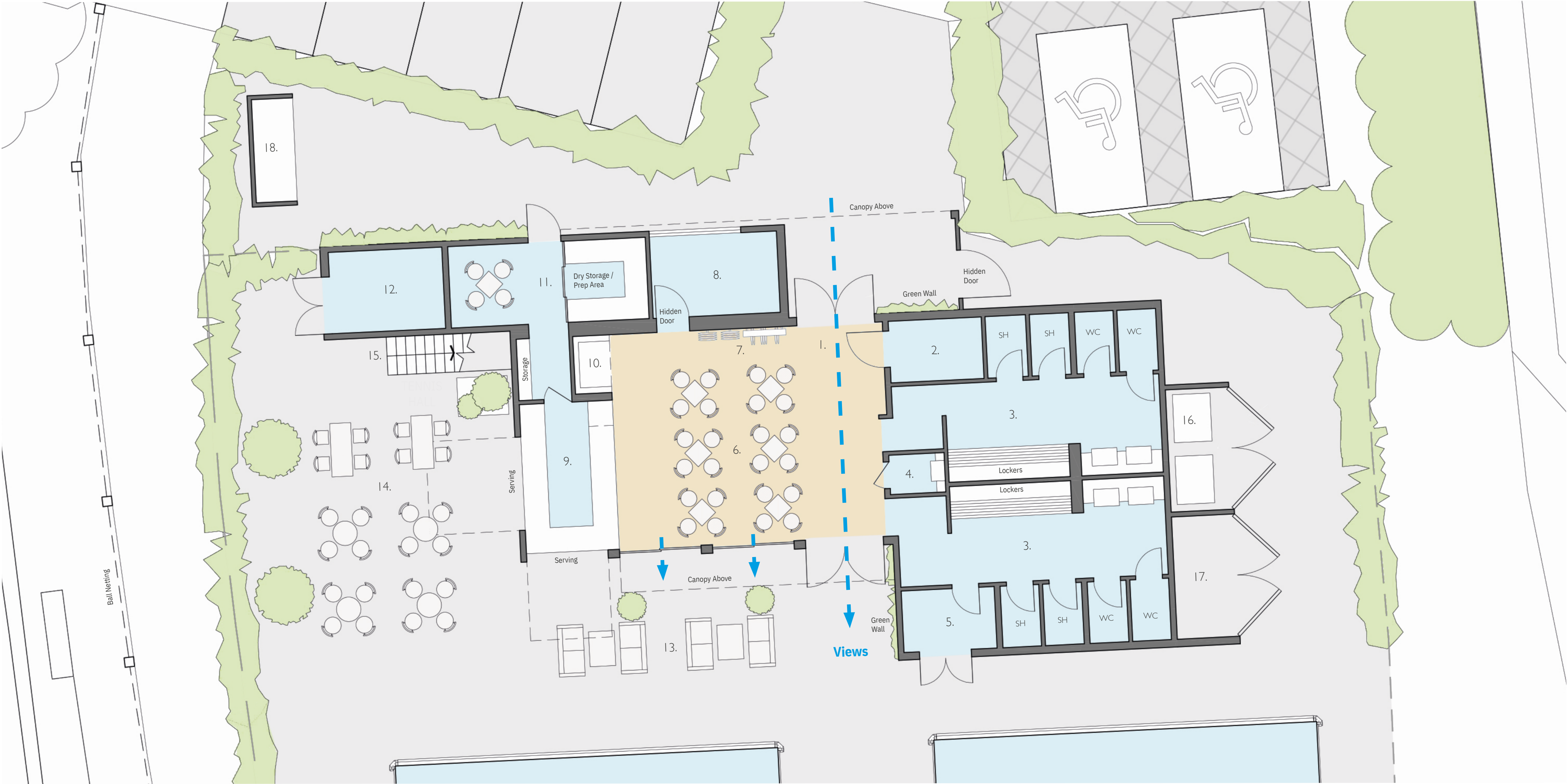
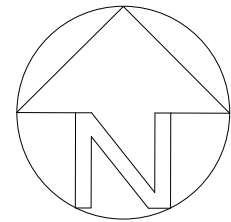
KEY:
01 - 06: Standard Courts

WALL HATCH KEY:
Existing Proposed



PROPOSED GROUND FLOOR PLAN SUPPORT ACCOMODATION.

Rochdale Padel Club



KEY:

- 1. Entrance
- 2. Disabled WC
- 3. Changing Rooms
- 4. Cleaners Cupboard
- 5. Plant Room
- 6. Café / Breakout Seating
- 7. Retail Wall
- 8. Office
- 9. Café / Reception
- 10. Fridge
- 11. Staff Room / Store
- 12. External Store
- 13. Informal External Seating Area
- 14. External Seating Area
- 15. Stair to Sun Terrace
- 16. Bin Store
- 17. Coaches Store
- 18. Cycle Store

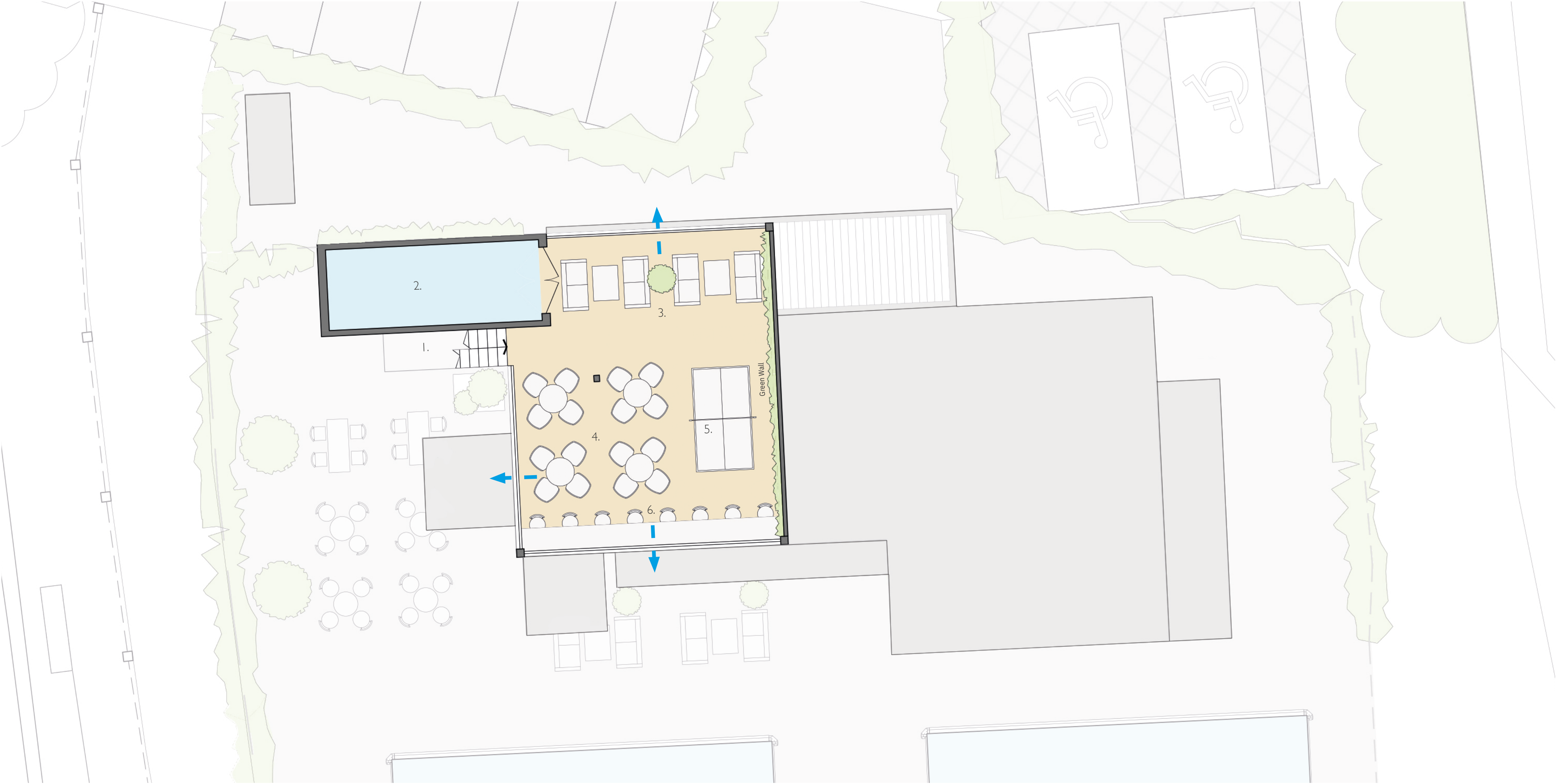
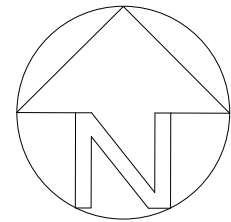
WALL HATCH KEY:

- Existing
- Proposed



PROPOSED SUN TERRACE PLAN SUPPORT ACCOMODATION.

Rochdale Padel Club



- KEY:**
- 1. Stair to Sun Terrace
 - 2. Storage for Furniture
 - 3. Informal Seating Area
 - 4. Seating Area
 - 5. Table Tennis
 - 6. Stool Seating Overlooking Courts

- WALL HATCH KEY:**
- Existing
 - Proposed



VISUAL 01.

Rochdale Padel Club



VISUAL 02.

Rochdale Padel Club



VISUAL 03.

Rochdale Padel Club



Courts in foreground removed for artistic purposes.
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VISUAL 04.

Rochdale Padel Club



Courts in foreground removed for artistic purposes.

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VISUAL 05.

Rochdale Padel Club



VISUAL 06.

Rochdale Padel Club



VISUAL 07.

Rochdale Padel Club



VISUAL 08.

Rochdale Padel Club



VISUAL 09.

Rochdale Padel Club



VISUAL 10.

Rochdale Padel Club



VISUAL 11.

Rochdale Padel Club



VISUAL 12.

Rochdale Padel Club



VISUAL 13.

Rochdale Padel Club



MATERIALS.



Fig. A



Fig. B



Fig. C

Fig. A. Corrugated Steel Container

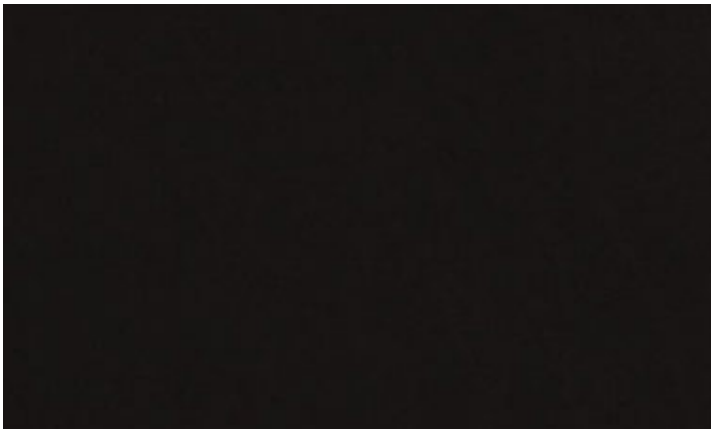
Fig. B. Timber cladding

Fig. C. Aluminium framed windows in matt black provide a sleek, modern aesthetic while offering strength, durability, and minimal maintenance.

Key colours



Sage Green



Matt Black



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STARTS WITH
GREAT DESIGN.**

**NOT ALL PADEL
CLUBS ARE
MADE EQUAL.**

**ELEVATING THE
FASTEST-GROWING
SPORT IN THE UK.**



**THE
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ARCHITECTS**

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