



Environmental Lighting Impact Assessment Report

Manchester Maccabi Community and Sports Club

Project number: SHD1351

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Contents

1. INTRODUCTION.....	1
1.1 General.....	1
2. LEGISLATION, PLANNING AND POLICY GUIDANCE	2
2.1 Legislative Background	2
2.2 National Planning Policy Framework.....	2
2.3 British and European Lighting Standards	2
2.4 Relevant Lighting Standards.....	3
2.5 Lawn Tennis Association datasheet for Padel Courts.....	5
3. ASSESSMENT METHODOLOGY	6
3.1 Environmental Zone Classification.....	6
3.2 Obtrusive Light Limitation for Outdoor Lighting Installations	7
3.3 Obtrusive Light.....	8
3.4 Potential Effects	9
4. BASELINE CONDITIONS	10
4.1 Site Overview	10
5. LIGHTING STRATEGY	11
5.1 Lighting Brief	11
5.2 Key Areas Requiring Lighting	11
5.3 Lighting Criteria	12
5.4 Lighting Calculations and Modelling.....	13
6. OUTDOOR LIGHTING REQUIREMENTS.....	14
6.1 Proposed Lighting Requirements.....	14
6.2 Lighting Levels	14
6.3 Padel Court Lighting.....	15
6.5 Padel Court Construction.....	17
7. SENSITIVE RECEPTORS.....	18
7.1 Obtrusive Light.....	18
7.2 South residential housing	19
7.3 North woodland	21
7.4 East residential housing	23
8. CONCLUSION.....	25
8.1 Indicative Light Spill.....	25
8.2 Upward Light and Glare.....	25
8.3 Mitigation	25
8.4 Design Commentary.....	26

9.	APPENDIX A	27
9.1	Light Spill Drawing.....	27
10.	APPENDIX B.....	28
10.1	Lighting Calculation Report.....	28
11.	APPENDIX C.....	29
11.1	Sensitive Receptors	29
12.	APPENDIX D.....	30
12.1	Regulations and References	30
13.	APPENDIX E.....	31
13.1	Manufacturers datasheets	31
14.	APPENDIX F	32
14.1	Lawn Tennis Association Datasheet.....	32
15.	APPENDIX G.....	33
15.1	Padel Court Lighting Design Example (Padel Tech).....	33

1. INTRODUCTION

1.1 General

- 1.1.1 This report has been prepared by SHD Lighting Consultancy Ltd on behalf of ILEX Project Management Ltd to support the planning application for the floodlighting system used to illuminate four padel courts and one pickle court during the hours of darkness (hereafter referred to as the application site).
- 1.1.2 The report has been prepared by SHD Lighting Consultancy Ltd to the best of our knowledge using information provided by ILEX Project Management Ltd.
- 1.1.3 The report assesses the potential effects of obtrusive light that could arise from outdoor artificial lighting at the application site.
- 1.1.4 The lighting design should be carried out by a competent person governed by the Institution of Lighting Professionals.
- 1.1.5 SHD Lighting Consultancy are a lighting consultancy who specialise in outdoor lighting design and lighting impact studies and have the knowledge, experience and professional qualifications to undertake lighting designs calculations and environmental lighting impact assessment reports.
- 1.1.6 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 agreed.
- 1.1.7 The principal objective is to identify the effects associated with obtrusive light on various sensitive receptors and propose suitable mitigation measures.
- 1.1.8 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).
- 1.1.9 The lighting impact assessment considers the maximum adverse scenario concerning the proposed artificial lighting, to assess the significance of the potential effects on identified receptors.

2. LEGISLATION, PLANNING AND POLICY GUIDANCE

2.1 Legislative Background

- 2.1.1 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 so as to be prejudicial to health or nuisance”

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

2.2 National Planning Policy Framework

- 2.2.1 The National Planning Policy Framework (NPPF), was first published in March 2012, updated in February 2019, and recently revised in July 2021.
- 2.2.2 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. It sets out the government's planning policies for sustainable development, including housing, the environment, and economic growth.
- 2.2.3 Planning policies and decisions should also ensure that the application site is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions, and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the application site.

2.3 British and European Lighting Standards

- 2.3.1 The most applicable British Standards for lighting that relate to the application site are:

BS EN 12193: 2018 Light and lighting. Sports lighting

- 2.3.2 This standard specifies lighting for those indoor and outdoor sports events most practiced in Europe. It provides lighting values for the design and control of sports lighting installations in terms of illuminances, uniformity, glare restriction and colour properties of the light sources.

2.4 Relevant Lighting Standards

2.4.1 The most applicable standards for outdoor lighting that relate to the application site are:

Lighting Guide 4: Sports Lighting as published by The Chartered Institution of Building Services Engineers (CIBSE)

2.4.2 Lighting Guide 4 provides information on lighting of sports areas and other planning and recreational areas.

Guidance Notes for the Reduction of Obtrusive Light; GN01/21 (2021) published by The Institution of Lighting Professionals (ILP)

2.4.3 Guidance Notes for the Reduction of Obtrusive Light published by The Institution of Lighting Professionals (ILP) provide practical guidelines to minimize the negative impacts of outdoor lighting installations on the environment and neighboring areas.

2.4.4 These notes offer advice on how to design, install, and manage lighting systems to mitigate issues such as light pollution, glare, and light trespass.

2.4.5 The guidance focuses on ensuring that lighting is effective and efficient while also being considerate of the surrounding community and environment.

2.4.6 This resource is valuable for lighting professionals, planners, and decision-makers seeking to create lighting installations that balance visibility needs with minimizing obtrusive light effects.

CIE 150: Guide on the limitations of the effects of obtrusive light from outdoor lighting installations (2003)

2.4.7 CIE 150: Guide on the limitations of the effects of obtrusive light from outdoor lighting installations (2003) is a technical document created by the Commission Internationale de l'Éclairage (CIE), also known as the International Commission on Illumination.

2.4.8 CIE is an international organisation that sets standards and provides guidelines related to lighting, color, and vision.

2.4.9 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.

2.4.10 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 neighboring properties, skyglow that affects astronomical observations, and other forms of light pollution.

2.4.11 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.

2.4.12 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.

2.4.13 By following the recommendations outlined in CIE 150, stakeholders can work towards creating lighting designs that minimize light pollution and its impact on the environment, human health, and astronomical observations.

CIE 126: Guidelines for Minimising Sky Glow (1997)

- 2.4.14 CIE 126: Guidelines for Minimising Sky Glow (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, color, and vision.
- 2.4.15 The purpose of CIE 126 is to provide guidelines specifically focused on reducing the phenomenon known as "sky glow."
- 2.4.16 Sky glow 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.
- 2.4.17 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.
- 2.4.18 CIE 126 offers practical recommendations and strategies to minimize sky glow resulting from outdoor lighting installations.
- 2.4.19 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.
- 2.4.20 These guidelines are relevant for the UK and other regions concerned with preserving natural nighttime conditions, reducing light pollution, and supporting astronomical observations.

The Exterior Environment: Lighting Guide 6 (2016) as published by The Chartered Institution of Building Services Engineers (CIBSE)

- 2.4.21 The Exterior Environment: Lighting Guide 6 (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.
- 2.4.22 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.
- 2.4.23 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.
- 2.4.24 Lighting Guide 6 is a valuable resource for lighting designers, engineers, architects, and other professionals involved in outdoor lighting projects.
- 2.4.25 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 (2013) as published by The Institution of Lighting Professionals (ILP)

- 2.4.26 Public Lighting Guide 04: Guidance on Undertaking Environmental Lighting Impact Assessments (2013) is a publication by The Institution of Lighting Professionals (ILP), an organisation based in the UK that focuses on promoting excellence in lighting.
- 2.4.27 This guide serves as a comprehensive resource for professionals involved in the design and implementation of outdoor lighting projects.
- 2.4.28 Its primary focus is to guide on assessing and mitigating the potential environmental impacts of outdoor lighting installations.
- 2.4.29 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.
- 2.4.30 Key elements covered in the guide include methodologies for conducting environmental lighting impact assessments, techniques for modeling and predicting lighting effects, and recommendations for designing lighting schemes that minimise negative impacts while achieving their intended goals.
- 2.4.31 The guide takes into account factors like visual comfort, energy efficiency, and the preservation of natural darkness.
- 2.4.32 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.
- 2.4.33 It helps ensure that lighting projects contribute positively to the built environment while considering their impact on the natural surroundings and quality of life.

2.5 Lawn Tennis Association datasheet for Padel Courts

- 2.5.1 This data sheet has been produced in order to provide information and guidance for venues considering the construction of a padel court, which includes recommendations for the levels of light and lighting uniformity levels that must be met.
- 2.5.2 There is limited information available for the illumination levels for pickle courts in the UK, therefore for the purpose of this assessment report, the same light levels and lighting uniformity levels for padel courts have been used.

3. ASSESSMENT METHODOLOGY

3.1 Environmental Zone Classification

- 3.1.1 All standards consulted are nationally recognised documents, (some internationally also) which deal with all design issues associated with external lighting.
- 3.1.2 CIE Standards, the CIBSE and the Society of Light & Lighting guidance documents, all apply a common Environmental Zoning system, which is summarised in Table 3.1 below.

ENVIRONMENTAL ZONE CLASSIFICATION AND PARAMETERS			
Zone	Surrounding	Lighting Environment	Example
E0	Protected	Dark	UNESCO Starlight reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	Nation 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	Tow or City centres with high levels of night time activity

Table 3.1

Notes:

1. Where an area to be lit lies on the boundary of two zones the obtrusive light limitation values used should be those applicable to the most rigorous zone.
2. Rural zones under protected designations should use a higher standard of policy.
3. Zone E0 must always be surrounded by an E1 Zone.
4. Zoning should be agreed with the local planning authority and due to local requirements a more stringent zone classification may be applied to protect special/specific areas.
5. SQM (Sky Quality Measurements) referenced by the International Dark-Sky Association (IDA), the criteria for E0 being revised in mid-2019 but not retrospective.
6. Astronomical observable dark skies will offer clearer views of the Milky Way and of other objects such as the Andromeda galaxy and the Orion Nebula.
7. Although values of SQM 20 to 20.5 may not offer clear views of astronomical dark sky objects such as the Milky Way, these skies will have their own relative intrinsic value in the UK.

- 3.1.3 Using Table 3.1 the application site would be classified as being in an environmental zone of **E3 Medium district brightness**

3.2 Obtrusive Light Limitation for Outdoor Lighting Installations

3.2.1 The ILP Guidance Notes for the Reduction of Obtrusive Light (ILP GN01/21) provide guidelines and threshold values applicable to each Environmental Zone, which are reproduced in Table 3.2 below.

OBTRUSIVE LIGHT LIMITATIONS FOR EXTERIOR LIGHTING INSTALLATIONS						
Zone	Sky Glow Upward Light Ratio % (i)	Light intrusion into windows, measured in Lux (ii)		Luminaire intensity, measured in kilo candelas (iii)		Building luminance, (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 3.2

Upward light ratio of the installation – maximum permitted percentage of luminaire flux for the total installation that goes directly into the sky

Vertical illuminance measured flat at the glazing at the centre of the window

Light intensity in kilo candelas

(iv) Luminance in candelas per square metre (cd/m²)

(*) From public road lighting installations only

3.3 Obtrusive Light

3.3.1 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. Sky glow is 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.

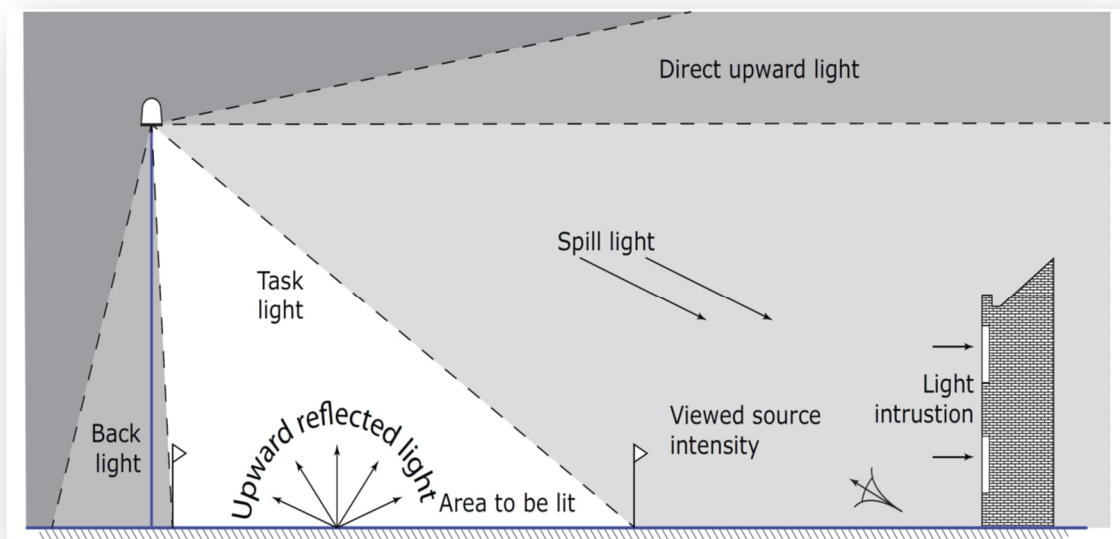


Figure 3.1: Extract from The Institution of Lighting Professionals: Guidance Note 01/21: Guidance notes for the reduction of obtrusive light (2021)

3.4 Potential Effects

- 3.4.1 Many potential effects of artificial lighting can be effectively managed through a well-considered lighting strategy, thoughtful design, and appropriate selection of lighting equipment. Such design work must be undertaken by a qualified and competent professional.
- 3.4.2 Poorly designed lighting often involves a sparse arrangement of luminaires attempting to illuminate a wide area.
- 3.4.3 Consequently, these luminaires are often tilted excessively to spread light over intended and unintended surfaces, leading to excess light spill and unwanted sky glow.
- 3.4.4 Minimising lighting impact is achievable by employing established methods of lighting control, mainly involving limiting light intensity and managing light spill.
- 3.4.5 Lighting should primarily ensure safety and security while avoiding light pollution beyond site boundaries.
- 3.4.6 For this lighting scheme, LED light sources are specified due to their low lumen output and high efficiency. All luminaires incorporate electronic drivers and control gear.
- 3.4.7 Combining electronic drivers with LED light sources creates an energy-efficient lighting system that reduces overall energy consumption and lessens the environmental strain on natural resources.
- 3.4.8 The proposed lighting design has integrated these established methods to ensure minimal overall impact and to uphold environmental considerations.

4. BASELINE CONDITIONS

4.1 Site Overview

- 4.1.1 The area for the application site is located in Prestwich, North Manchester accessed from Bury Old Road.
- 4.1.2 Bury Old Road is a residential area, populated with housing and the existing road network is illuminated with lighting columns owned and maintained by the Local Authority.



Figure 4.1: The application site outline

- 4.1.3 Information in this report will assess the impact on the introduction of artificial lighting which consists of floodlighting units mounted around the edge of four padel courts and one pickle court.
- 4.1.4 No other outdoor lighting was considered as part of this assessment report or any of the lighting calculations.

5. LIGHTING STRATEGY

5.1 Lighting Brief

5.1.1 The aim of the lighting strategy is 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:

- SHD1351-SHD-HLG-BURY-CA-EO-Lighting Calculation-R1
- SHD1351-SHD-HLG-BURY-DR-EO-Lighting Layout-R1
- 81-667-R2-1 Preliminary Ecological Appraisal - Manchester Maccabi Community and Sports Club

5.2 Key Areas Requiring Lighting

5.2.1 Lighting is required within the following areas:

- Four padel courts
- One pickle court

5.3 Lighting Criteria

5.3.1 Outdoor artificial lighting is to be provided for the following areas:

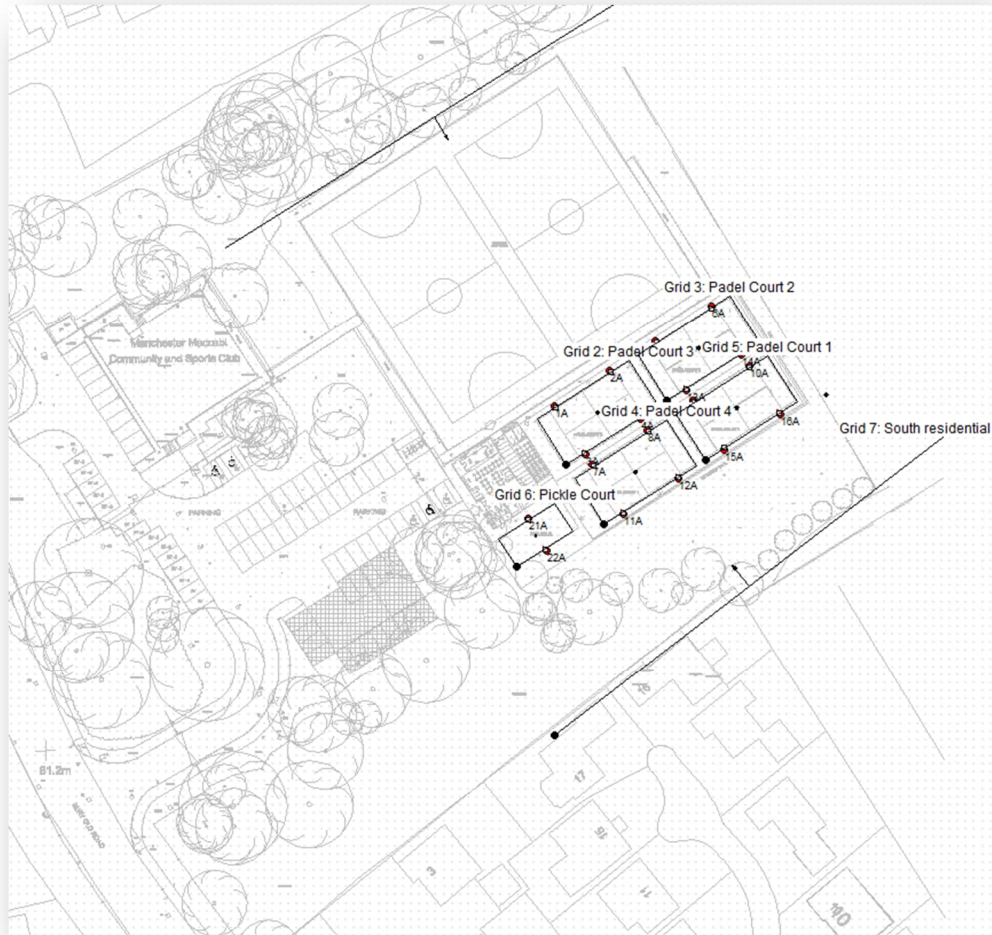


Figure 5.1: Padel courts and pickle court

5.3.2 Figure 5.1 shows the application site, which consists of four covered padel courts and one outdoor pickle court.

5.4 Lighting Calculations and Modelling

- 5.4.1 SHD Lighting Consultancy were provided with a location plan for the four padel courts, an example padel court lighting design completed by others.
- 5.4.2 SHD Lighting Consultancy do not accept design responsibility for any strategies prepared by others.
- 5.4.3 The site was modelled, replicating the design provided by others, using industry standard software Lighting Reality.
- 5.4.4 Lighting Reality is a computer software calculation package which utilises manufacturers photometric data files to simulate the lighting output of chosen light fittings.
- 5.4.5 It is to be noted that the lighting spill calculation report has been produced with a luminaire maintenance factor of 1.0 as specified in the ILP publication, Public Lighting Guide 04 – Guidance on undertaking an Environmental Assessment Report.
- 5.4.6 It defines a maintenance factor of 1.0 as being worst-case scenario as all the outdoor lighting will be performing at peak intensity.
- 5.4.7 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.
- 5.4.8 Considering this, the light spill diagram provides an exaggerated and absolute worst-case scenario with regards to the light spill at ground level, assuming no light limiting features are present.
- 5.4.9 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.
- 5.4.10 The calculation model (illustrated by illuminance levels and Isolux contour lines on a drawing) does not include any proposed or existing planting/ hedgerows/ trees on site, or in the surrounding area.

6. OUTDOOR LIGHTING REQUIREMENTS

6.1 Proposed Lighting Requirements

- 6.1.1 SHD Lighting Consultancy were provided with an example of a padel court lighting design completed by Padel Tech, which we replicated using Lighting Reality calculation software.
- 6.1.2 Each padel court comprises four 6m high fixed lighting masts, each with a single fixed floodlight.

6.2 Lighting Levels

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

SELECTION OF LIGHTING CLASS		
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 6.1: Extract from LTA padel court datasheet

- 6.2.2 Using the light output values from the Padel Tech lighting design document, It has been assumed that each padel court shall be used for recreational use
- 6.2.3 Therefore, each padel court shall be illuminated with an average light level of 300 lux across the whole playing surface at ground level.
- 6.2.4 Each 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.

6.3 Padel Court Lighting

- 6.3.1 Lighting of each padel court will be provided by four 6m high lighting masts, each with an LED floodlighting unit mounted at 0° tilt from the horizontal plane, each facing inwards towards the padel court playing surface.
- 6.3.2 This will ensure that the lighting levels provided are suitable for operational purposes, whilst ensuring the environmental surroundings are suitably mitigated against, in accordance with the guidance.
- 6.3.3 Luminaires will distribute light downwards only to reduce the potential for light to spill onto the windows of the surrounding buildings and prevent upward light towards the sky. Luminaires will not be mounted above 6.0m in height to ensure that light spill and direct upward light are mitigated.
- 6.3.4 Lighting performance parameters for the floodlighting are outlined in Table 6.2 below

LUMINAIRE SPECIFICATION	
Location:	Edge of each padel court facing inwards
Luminaire Manufacturer:	DACA Lighting
Luminaire model ref:	EL-NED 240 (TC) 240w 37.2klm
Luminaire style:	Floodlight
Mounting height:	6m from ground level
Mounting type:	Fixed mast brackets
Luminaire tilt:	0°
Light source:	240w LED 5000k (Cool white)
DESIGN PARAMETERS	
Lighting classification:	>300.00 lux >0.50 (50%) uniformity U ₀
Luminaire control:	To be determined by others

Table 6.2: Floodlighting performance parameters

6.4 Floodlighting Luminaire

- 6.4.1 The luminaires that are to illuminate each padel court surface are a professional grade floodlighting unit that comprises a powder coated aluminium body.
- 6.4.2 Each floodlight is to be post top mounted and will be precisely adjusted allowing for 0° tilt installation.



Figure 6.1: DACA Lighting LED floodlighting unit

- 6.4.3 There is a recommendation within '81-667-R2-1 Preliminary Ecological Appraisal - Manchester Maccabi Community and Sports Club' that any proposed external lighting should be 3000k.
- 6.4.4 The padel court lighting designs have been completed using photometric data for the luminaires shown in Table 6.2 which use a light source with a 5000k colour temperature.
- 6.4.5 Light has a colour correlated colour temperature which describes the overall colour appearance of the light source in Kelvin degrees.
- 6.4.6 'Cooler' light sources will have a higher Kelvin temperature and 'warmer' light sources will have a lower Kelvin temperature.
- 6.4.7 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

6.5 Padel Court Construction

- 6.5.1 Guidance provided by the Lawn Tennis Association describes the construction of covered padel courts with each end of the padel court to have a 4m high transparent or solid material and side walls of at least 3m in height.
- 6.5.2 It should be noted that no blocking effect from any side or 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 Obtrusive Light

- 7.1.1 There are residential dwellings south of the application site, with the closest being approximately 27m from the pickle court.
- 7.1.2 To ensure compliance with the permissible levels of light trespass onto windows, in accordance with values provided in Table 3.2 of this report, vertical calculation grids were placed across the closest façade of each residential property.
- 7.1.3 In addition to the residential housing to the south, woodland to the north, the rear of residential properties to the east, and woodland to the west were also included in the obtrusive lighting calculation vertical grids.
- 7.1.4 Each vertical calculation grid has a grid spacing of 1m x 1m and calculates the light shining onto a surface, to ensure compliance with the values provided in Table 3.2.
- 7.1.5 For an E3 Environmental Zone, there are two values of lux that are defined as post-curfew and pre-curfew.
- 7.1.6 Post curfew is considered to be after 23:00 until dawn, with Pre curfew being dusk until 23:00.
- 7.1.7 No information was provided during the time this assessment report was created on the proposed hours of operation for each of the padel courts.
- 7.1.8 Light intrusion into windows for an E3 Environmental Zone Pre-curfew has a maximum permissible level of 10.00 lux and post-curfew of 2.00 lux.
- 7.1.9 The vertical calculation result tables shown in Figures 7.1 to 7.8 show 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 at any of the 1m spaced calculated grid points.
- 7.1.10 No information was available on the precise location of any residential dwelling window placements, so general full façade calculation grids were carried out, which ensures that the full surface was included in the calculations.
- 7.1.11 No blocking effects from trees, foliage, walls, or fencing were included during the lighting calculations. The light levels on the vertical surfaces would be lower than the calculated levels if there are any physical obstacles between the building façade and the floodlighting system.
- 7.1.12 There are established trees between the edge of the application site and the closest residential dwelling, however, these are not included in the calculations to show a worst-case example of light trespass.
- 7.1.13 In addition to the residential housing to the south, woodland to the north and the rear of residential properties to the east were also included in the obtrusive lighting calculation vertical grids.

7.2 South residential housing

- 7.2.1 A vertical calculation has been drawn across the façade of the houses south of the application site measuring 90m in length and 10m in height.

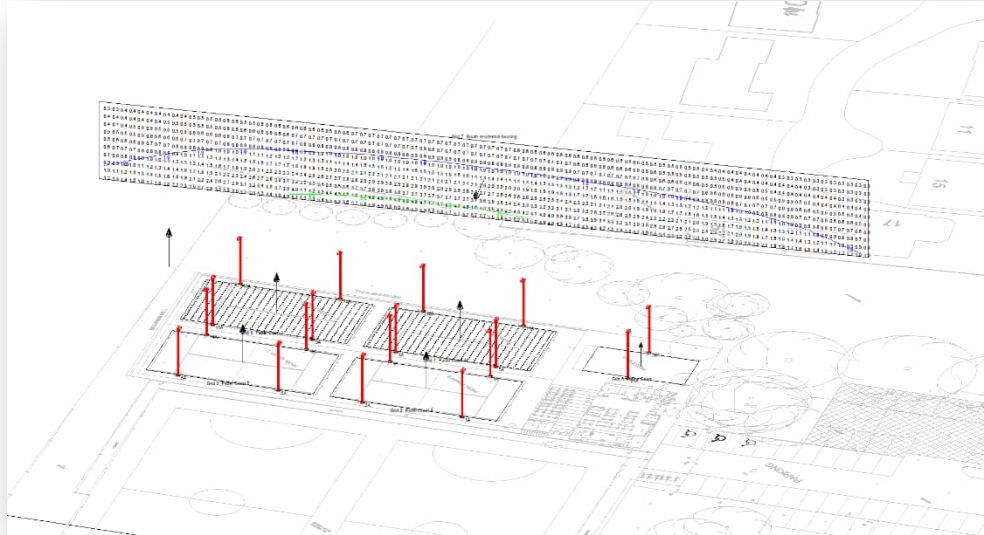


Figure 7.1: South residential housing vertical calculation grid position

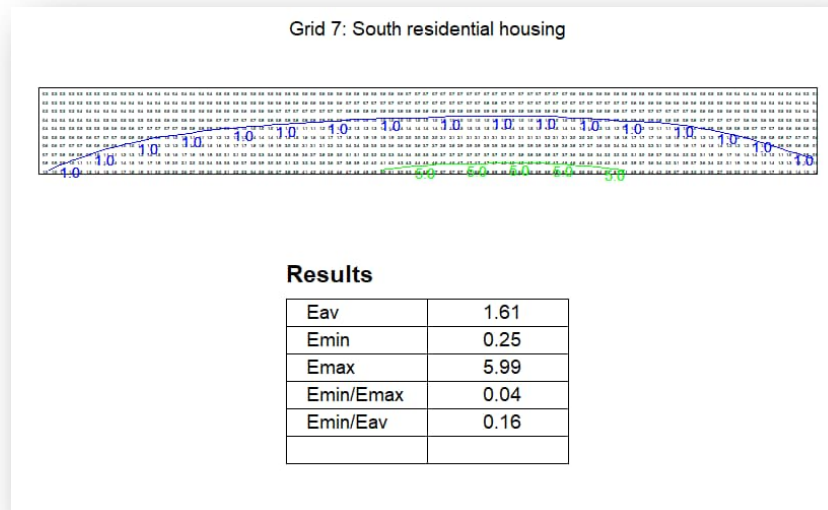


Figure 7.2: South residential housing vertical calculation grid results

- 7.2.2 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 3.2 of this assessment report.
- 7.2.3 The higher values of lux shown in green in Figure 7.2, are at ground level or 1m from ground level, with no blocking effects from trees, fencing or any other structures.
- 7.2.4 The vertical calculation grid result table in Figure 7.2, shows the maximum illuminance level (E_{max}) to be 5.99 lux, therefore complies with the values provided in Table 3.2
- 7.2.5 There are trees and fencing separating the padel courts and the closest residential dwelling, which would have a blocking effect on light on the vertical surface, however, these have not been considered during the calculations.

7.3 North woodland

- 7.3.1 A vertical calculation has been drawn across the nearest edge of woodland to the north of the application site measuring 90m in length and 10m in height.

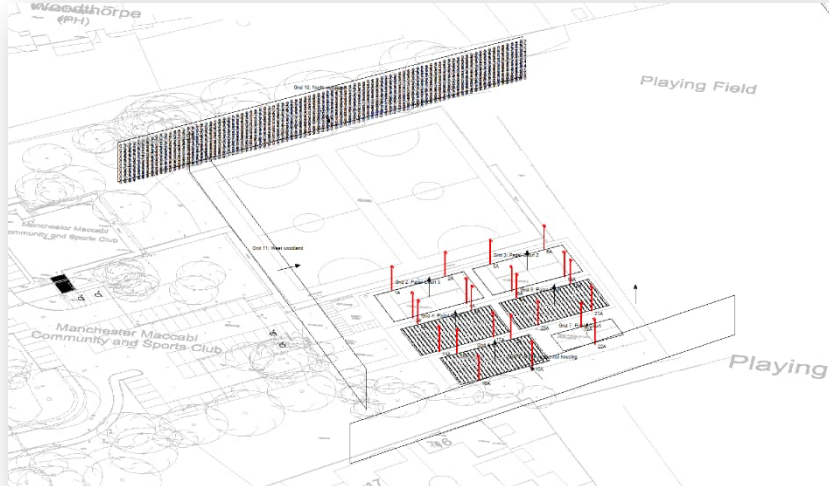


Figure 7.4: North woodland vertical calculation grid position

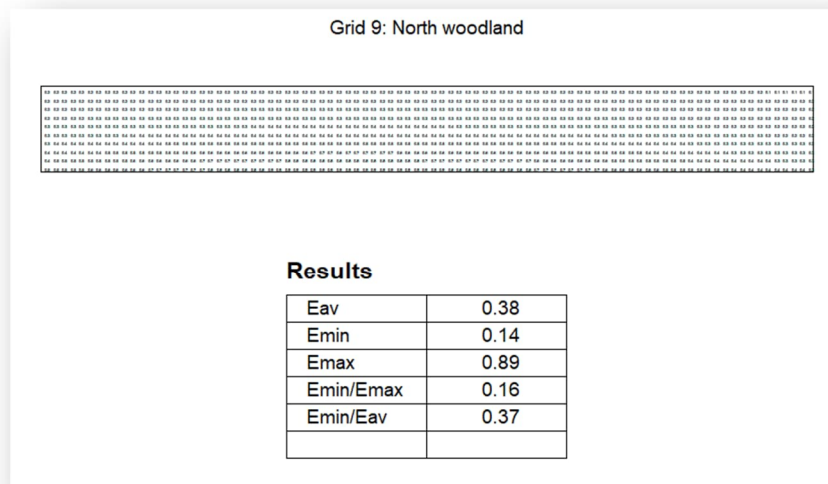


Figure 7.5: North woodland vertical calculation grid results

- 7.3.2 The vertical calculation grid result table in Figure 7.5, shows the maximum illuminance level (E_{max}) to be 0.89 lux.
- 7.3.3 There is existing fencing separating the padel courts and the woodland edge, which would have a blocking effect on light on the vertical surface, however, these have not been considered during the calculations.
- 7.3.4 No minimum levels of light spill onto the woodland edge were provided during the time this assessment was completed, however 1.00 lux is considered to be comparable to a moonlit night, so therefore 0.89 lux at 1.0 maintenance factor is negligible, reduces further when the maintenance factor is adjusted to 0.70, to only 0.62 lux.

7.4 East residential housing

- 7.4.1 A vertical calculation has been drawn across the façade of the houses east of the application site measuring 200m in length and 10m in height.

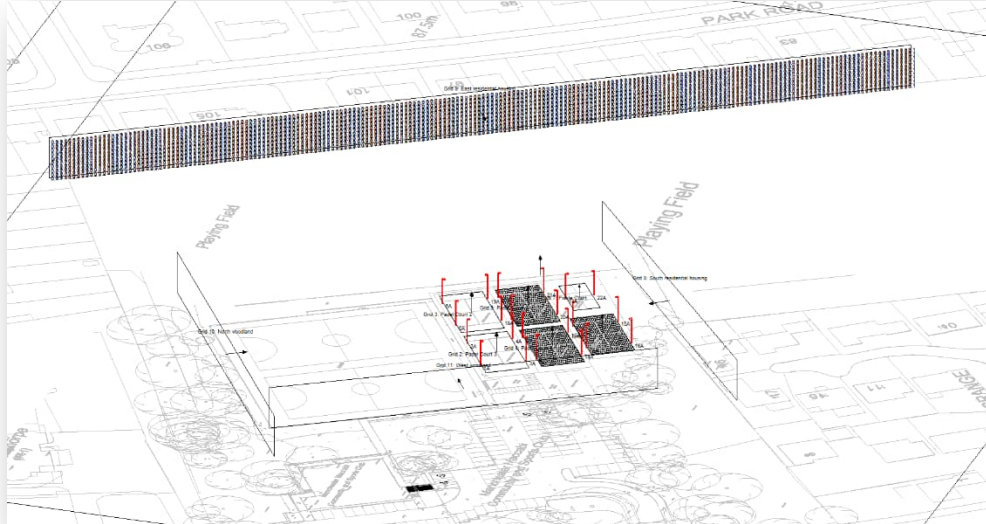


Figure 7.7: East residential housing vertical calculation grid position

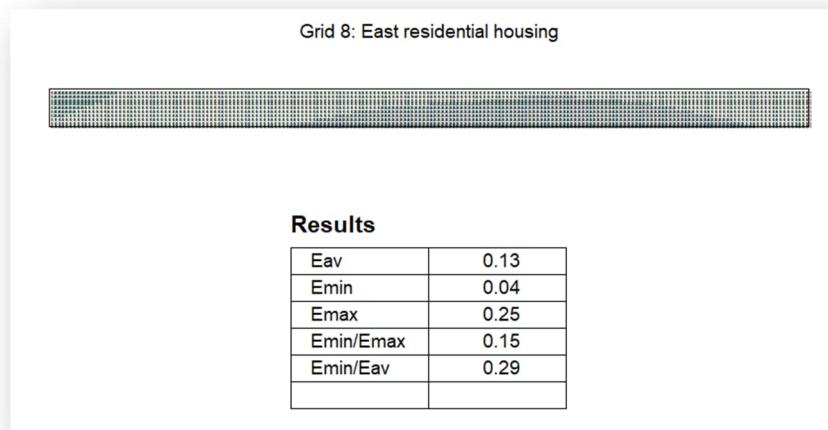


Figure 7.8: East residential housing vertical calculation grid results

- 7.4.2 The maximum permissible value of lux onto the centre point of any window for an E3 Environmental Zone is 10.00 lux, as defined in Table 3.2 of this assessment report.
- 7.4.3 The vertical calculation grid result table in Figure 7.8, shows the maximum illuminance level (E_{max}) to be 0.25 lux, therefore complies with the values provided in Table 3.2

8. CONCLUSION

8.1 Indicative Light Spill

- 8.1.1 The indicative light spill models included in **Appendix A** demonstrate the ability to provide lighting for the application site and to ensure that a sensitive lighting solution is installed.
- 8.1.2 The light spill diagrams closely demonstrate the tight restrictions in light spill that are essential for protecting the immediate surroundings of the application site.
- 8.1.3 As the models do not consider obstructions such as the buildings, any proposed fencing, landscaping features, or the topography, the Isolux contours presented in **Appendix A** represent the adverse scenario. Blocking effects of the site features including fencing, trees, and other foliage would further reduce the potential for light spill to affect the boundaries of the application site.
- 8.1.4 The proposed lighting uses luminaires that focus the light down onto the ground, reducing the likelihood of upward light and light spill, as the installation will achieve 0% Upward Light Ratio. The Isolux contours demonstrate the initial light output ultimately demonstrating the absolute worst-case scenario.
- 8.1.5 Desk top assessments on the proposed lighting installation indicate (with respect to identified sensitive receptors) that overall surrounding light pollution levels will not be significantly influenced by the proposed lighting.

8.2 Upward Light and Glare

- 8.2.1 Luminaires will be installed below 0° tilt and are professional grade luminaires, designed in accordance with industry specific luminaire design and photometric standards.
- 8.2.2 As such, they are all compliant with a minimum luminous intensity class of G3. Thus, ensuring that the Upward Light Ratio for the installation is lower than the maximum permitted value of 5% for E3 environmental Zones.

8.3 Mitigation

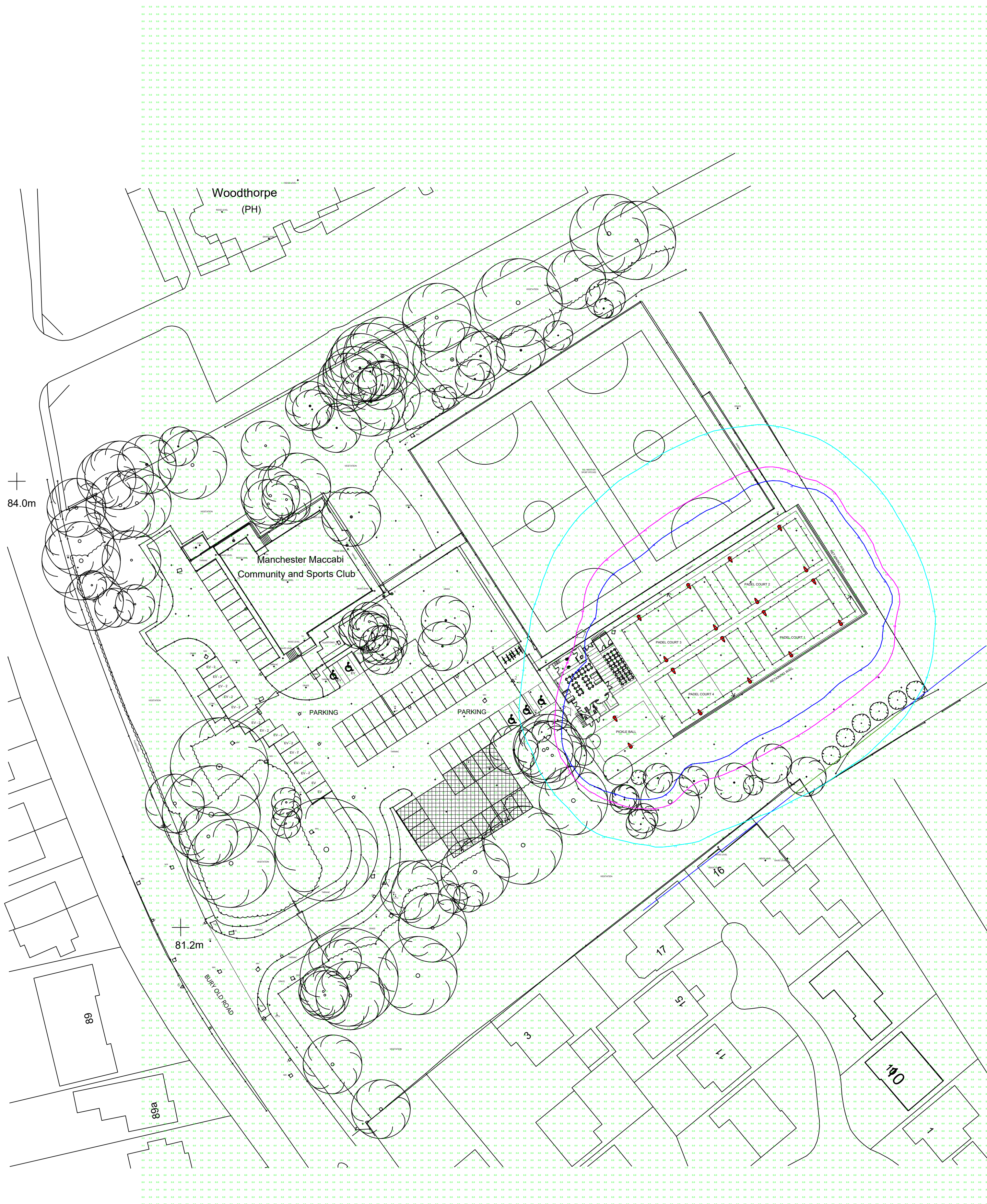
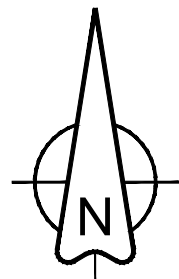
- 8.3.1 Any variation to the make, model, or lumen output of each luminaire, adjustment to the design tilt angle, location, or height of each floodlighting column will result in the provided lighting calculations, Isolux line drawings and content of this assessment report being incorrect.
- 8.3.2 In summary it is our considered opinion that the proposed lighting installation will not have any significant negative impact on the immediate environment with respect to lighting pollution and that all sensible steps have been taken within the design stage of this lighting scheme to keep the impact to the environment to a minimum.

8.4 Design Commentary

- 8.4.1 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. This is achieved through compliance with relevant British Standards and lighting industry guidance.
- 8.4.2 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) and GN08/23 (2023) as published by The Institution of Lighting Professionals (ILP).
- 8.4.3 Isolux lines of 1.0, 5.0 and 10.0 lux have been shown on the light spill drawings in **Appendix A** and the lighting calculation report shown in **Appendix B**.
- 8.4.4 The light spill drawings have been produced with a luminaire maintenance factor of 1.0 as specified in the ILP publication, Public Lighting Guide 04 – Guidance on undertaking an Environmental Assessment Report.
- 8.4.5 The Isolux lines shown in **Appendix A** represent a worst-case scenario as all luminaires have been calculated with a maintenance factor of 1.0, whereas a reduced design maintenance factor of 0.70 which factors lumen depreciation, lens degradation, and driver deterioration throughout the whole life of the lighting installation.
- 8.4.6 As padel courts 1 to 4 will be covered, the effect of obtrusive lighting will be reduced and it should be understood that no coverings have been included in the lighting calculations as the coverings can be removed if needed, so the isolux contour spill lines represent a worse case example of light spill.

9. APPENDIX A**9.1 Light Spill Drawing**

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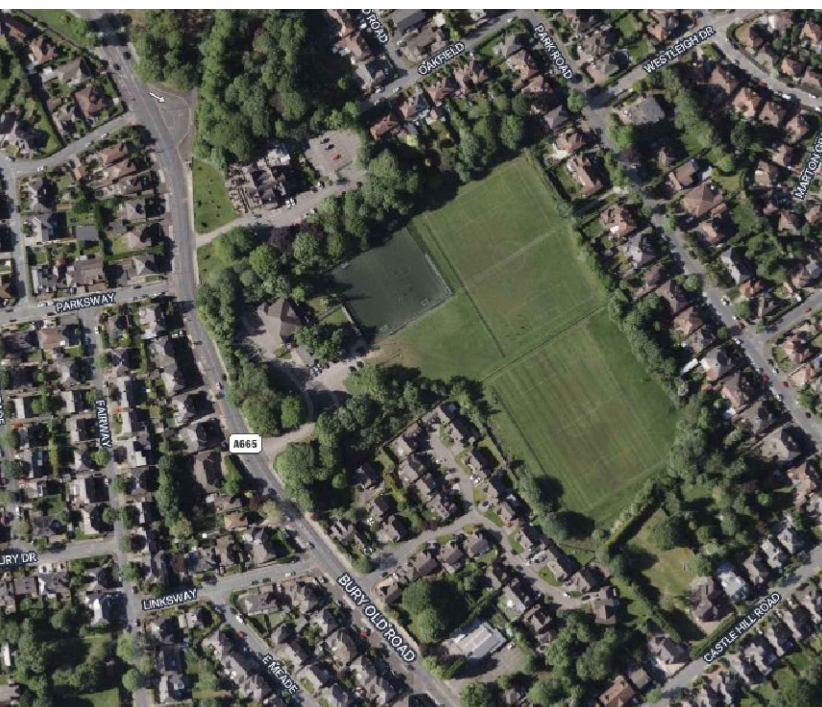
Luminaire Type:	Padel Court floodlight
Luminaire Reference:	EL-NED 240 (TC)
Mounting Type:	Post top mounted on 6m mast
Luminaire Tilt:	0°
Lumen Output:	37.20klm
Luminaire Wattage:	240w
Luminous Intensity:	G3

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

LIGHT LEVEL (AT GROUND LEVEL)	
	Lux value



DACA Lighting LED floodlight



Location plan: Easting 382778 Northing 402938

The details provided on this drawing are subject to comments by all the relevant approving authorities or overseeing organisation. No construction works shall take place until technical approval has been obtained by the approving authority or overseeing organisation. It is to be understood that these drawings and the information shown are preliminary only and shall not be used for construction. 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.

R1	REVISED SITE PLAN RECEIVED 06/03/2024	07/03/2024	SRH
R0	INITIAL DESIGN FOR REVIEW AND COMMENT	21/02/2024	SRH
REV	DESCRIPTION	DATE	BY

SHD

info@shdlighting.co.uk 07834 490 192 www.shdlighting.co.uk

SCHEME:	MANCHESTER MACCABI SPORTS CLUB		
DRAWING:	PADEL COURT LIGHT SPILL DESIGN		
CLIENT:	ILEX PROJECT MANAGEMENT LTD		
DRAWING NUMBER:	SHD1351-SHD-HLG-BURY-DR-ED-Lighting Layout R1	DRAWN:	SRH
	SHEET 1 OF 1	CHECKED:	SRH
CONTRACT NUMBER:	SHD1351	APPROVED:	
	DATE: 21/02/2024	REVISION:	R1
PRELIMINARY DESIGN - NOT FOR CONSTRUCTION			

10. APPENDIX B

10.1 Lighting Calculation Report

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DATE: 7 March 2024
DESIGNER: SHD Lighting Consultancy Ltd
PROJECT No: SHD1351
PROJECT NAME: Manchester Maccabi Community and Sports Club



Floodlighting unit photometric file and installation parameters taken from information provided by ILEX Project Management Ltd and designs provided by Padel Tech

Each 20m x10m padel court is illuminated using 4 x 6m floodlight masts, each mast has a 240w 37.42klm LED floodlight mounted at 0° tilt to the horizontal plane.

Floodlighting unit maintenance factor shown as 1.0 as per ILP PLG04, which represents a day one installation worse case scenario and does not factor lens grime, LED lumen deterioration or driver degradation.

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	382657.31	402820.56	304.00	246.00	1.50	1.50
2	Grid 2: Padel Court 3	382761.66	402930.70	20.00	10.00	1.00	1.00
3	Grid 3: Padel Court 2	382780.16	402942.58	20.00	10.00	1.00	1.00
4	Grid 4: Padel Court 4	382768.60	402919.83	20.00	10.00	1.00	1.00
5	Grid 5: Padel Court 1	382787.19	402931.60	20.00	10.00	1.00	1.00
6	Grid 6: Pickle Court	382752.61	402911.92	12.00	6.00	1.00	1.00
7	Grid 7: South residential ...	382759.57	402880.83	90.02	10.00	1.00	1.00
8	Grid 8: East residential h...	382931.23	402895.52	200.00	10.00	1.00	1.00
9	Grid 9: North woodland	382775.56	403018.44	90.00	10.00	1.00	1.00

Luminaires

Luminaire A Data

Supplier	
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	18

Layout

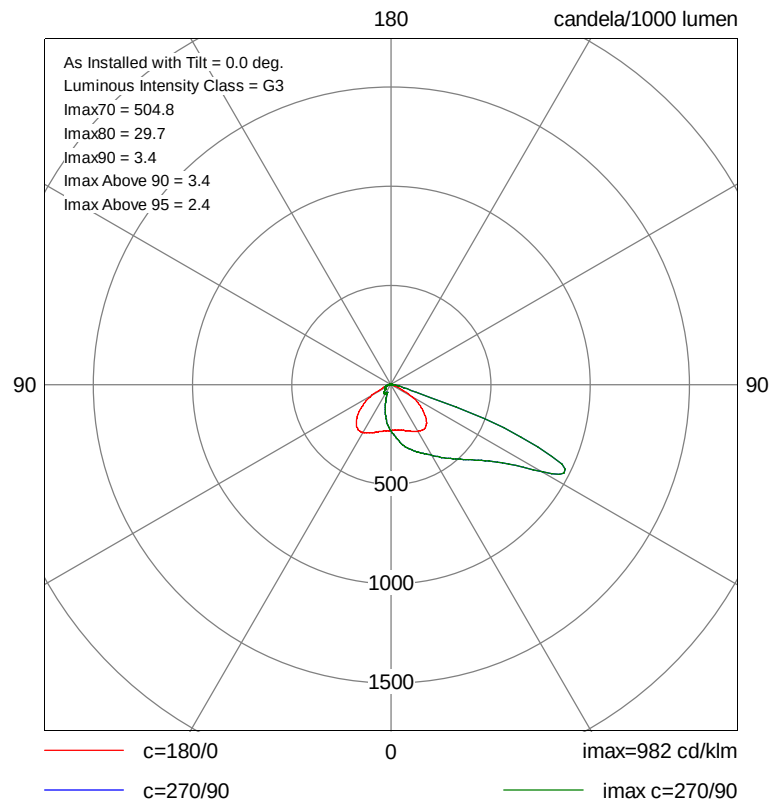
ID	Type	X	Y	Height	Angle	Tilt	Cant	Out-reach	Target X	Target Y	Target Z
1	A	382759.52	402941.53	6.00	301.00	0.00	0.00	0.30			
2	A	382769.61	402947.97	6.00	304.00	0.00	0.00	0.30			
3	A	382765.19	402932.56	6.00	122.00	0.00	0.00	0.30			
4	A	382775.31	402939.05	6.00	123.00	0.00	0.00	0.30			
5	A	382778.06	402953.43	6.00	304.00	0.00	0.00	0.30			
6	A	382788.20	402959.88	6.00	300.00	0.00	0.00	0.30			
7	A	382766.46	402930.68	6.00	304.00	0.00	0.00	0.30			
8	A	382776.55	402937.14	6.00	304.00	0.00	0.00	0.30			
9	A	382785.02	402942.48	6.00	304.00	0.00	0.00	0.30			
10	A	382795.14	402948.91	6.00	304.00	0.00	0.00	0.30			
11	A	382772.17	402921.73	6.00	122.00	0.00	0.00	0.30			
12	A	382782.26	402928.21	6.00	122.00	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	382783.75	402944.45	6.00	122.00	0.00	0.00	0.30			
14	A	382793.76	402950.91	6.00	124.00	0.00	0.00	0.30			
15	A	382790.70	402933.55	6.00	122.00	0.00	0.00	0.30			
16	A	382800.84	402939.99	6.00	122.00	0.00	0.00	0.30			
21	A	382754.58	402920.93	6.00	304.00	0.00	0.00	0.30			
22	A	382757.93	402914.92	6.00	124.00	0.00	0.00	0.30			

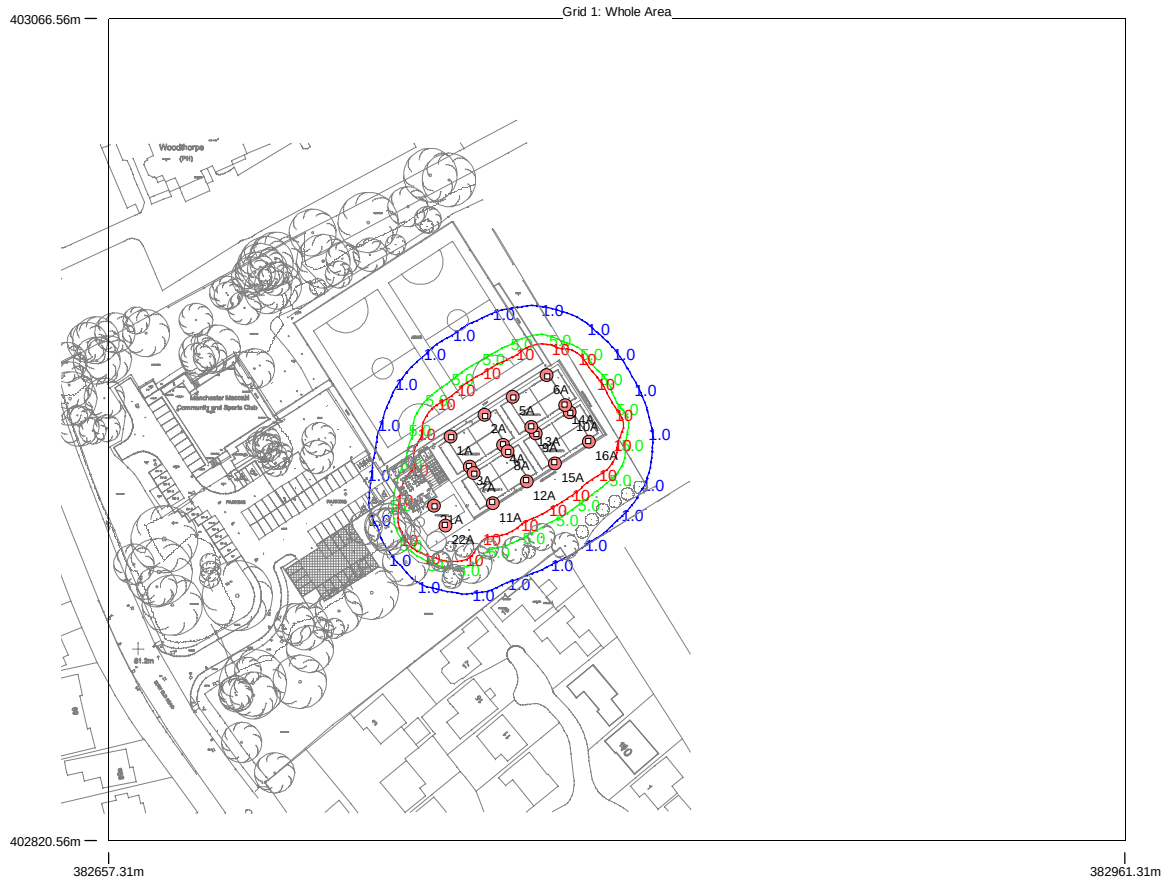
Polar Diagram

Luminaire A EL-NED-240(TC)



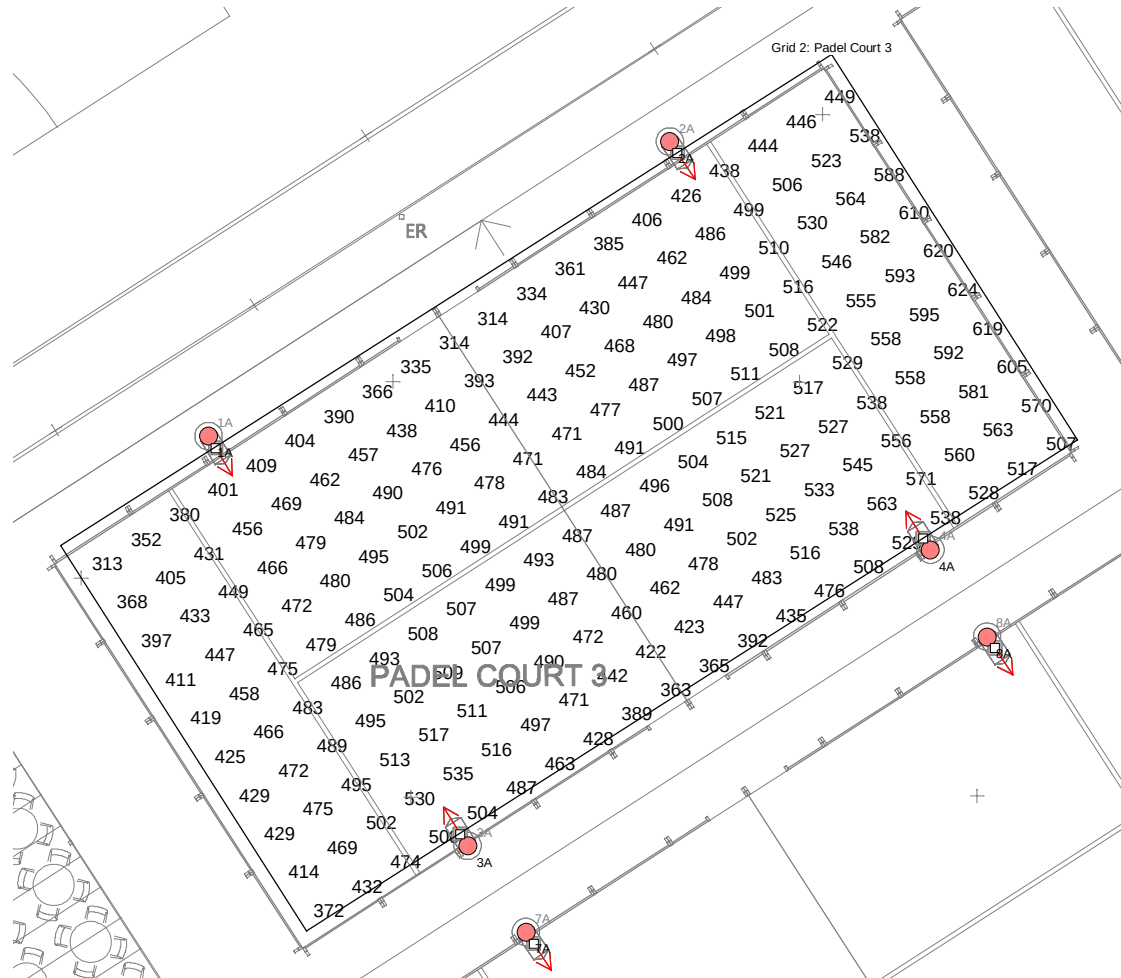
Horizontal Illuminance (lux)

Grid 1: Whole Area



Horizontal Illuminance (lux)

Grid 2: Padel Court 3



Results

Eav	480.48
Emin	313.11
Emax	623.97
Emin/Emax	0.50
Emin/Eav	0.65

Horizontal Illuminance (lux)

Grid 3: Padel Court 2

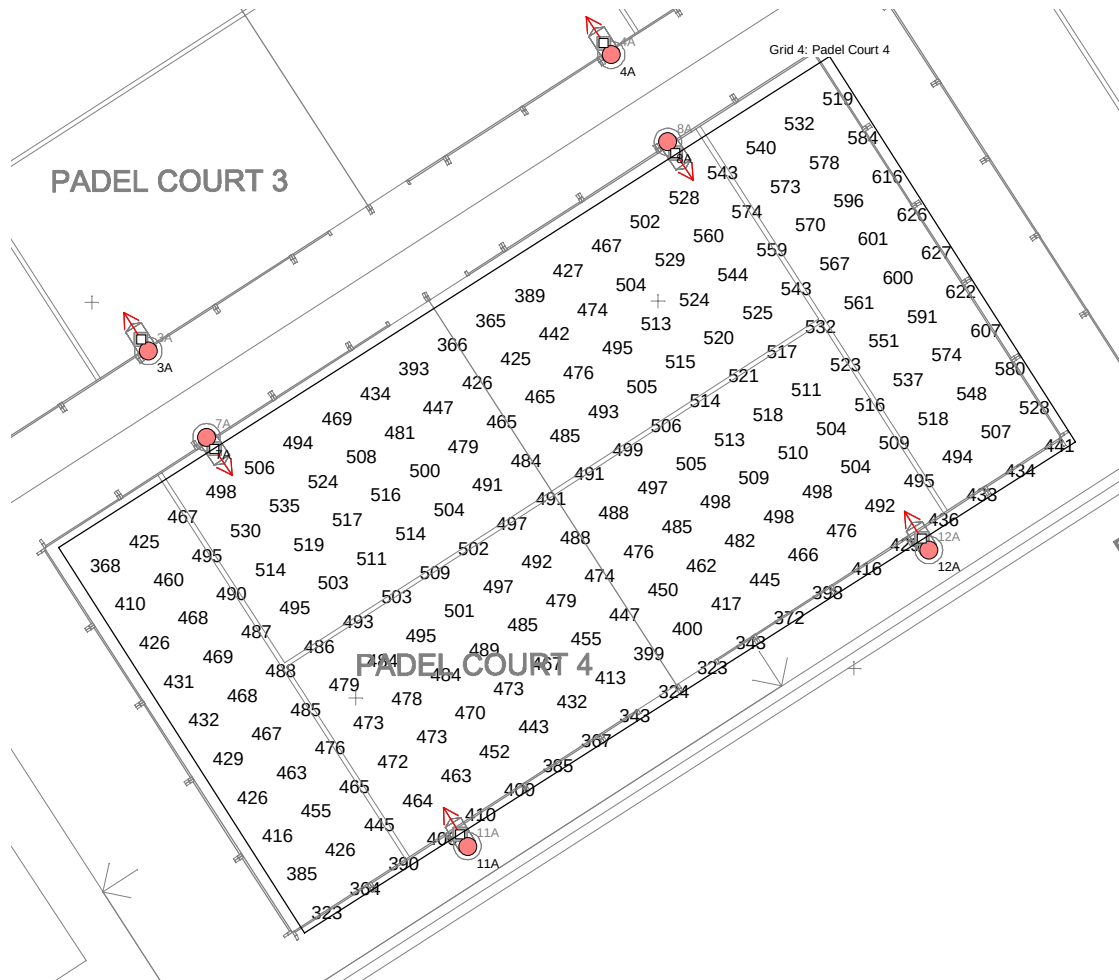


Results

Eav	485.62
Emin	309.05
Emax	627.78
Emin/Emax	0.49
Emin/Eav	0.64

Horizontal Illuminance (lux)

Grid 4: Padel Court 4

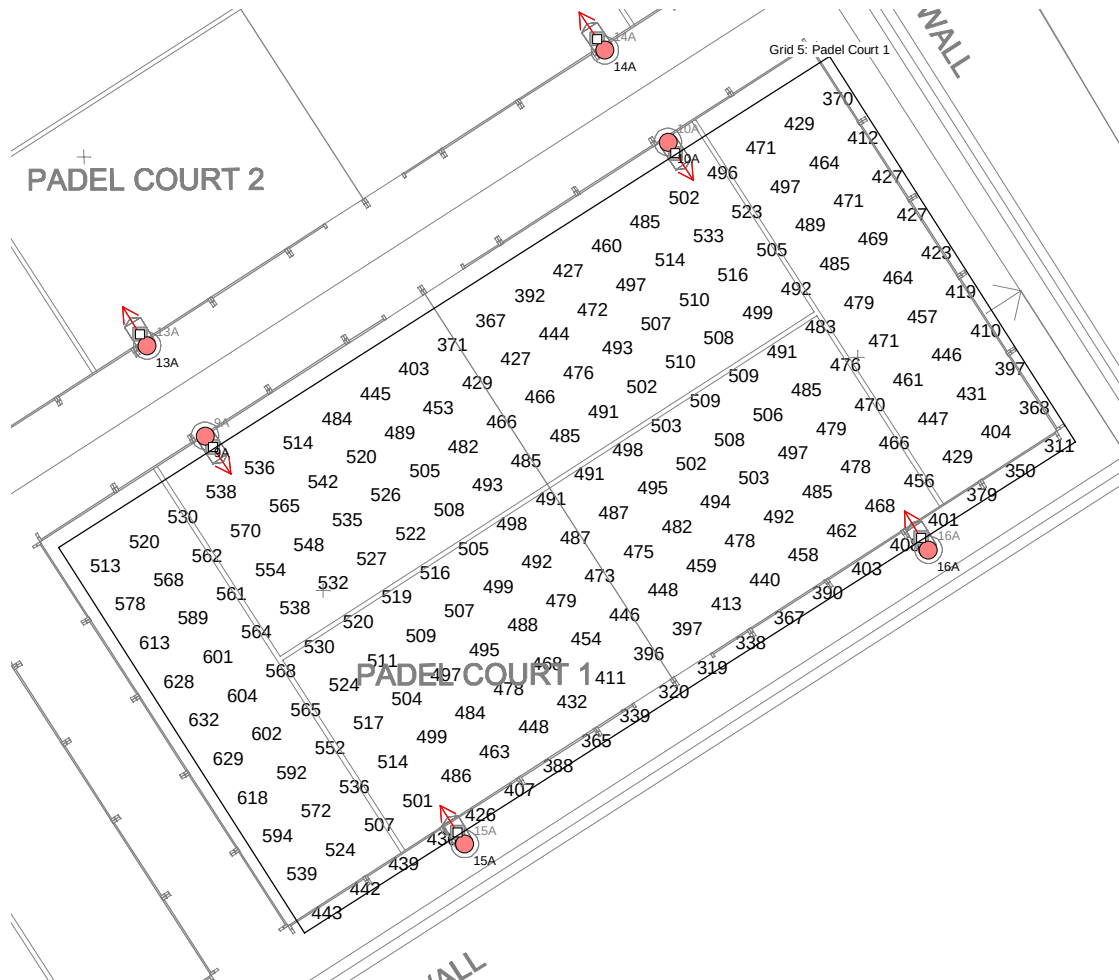


Results

Eav	482.72
Emin	322.70
Emax	626.78
Emin/Emax	0.51
Emin/Eav	0.67

Horizontal Illuminance (lux)

Grid 5: Padel Court 1

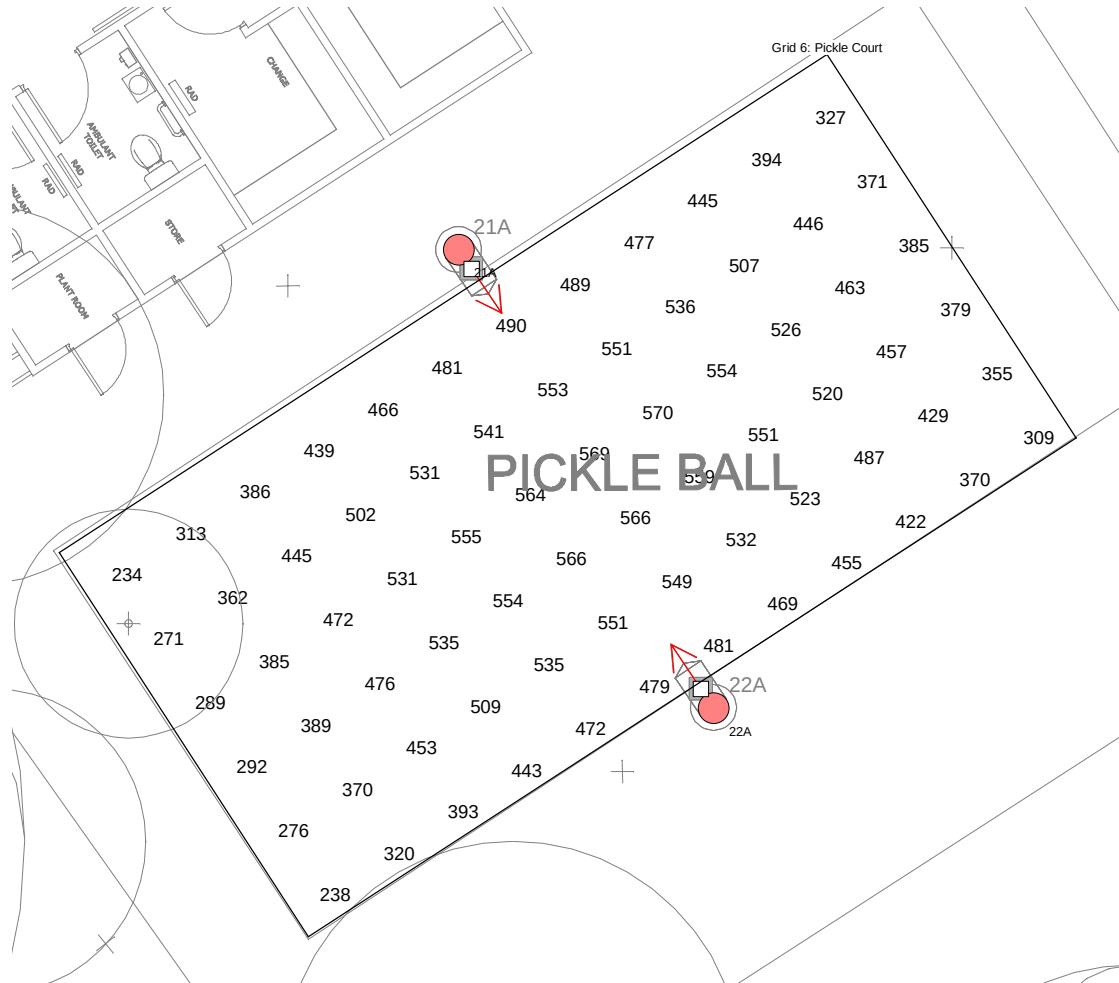


Results

Eav	482.07
Emin	311.47
Emax	632.38
Emin/Emax	0.49
Emin/Eav	0.65

Horizontal Illuminance (lux)

Grid 6: Pickle Court

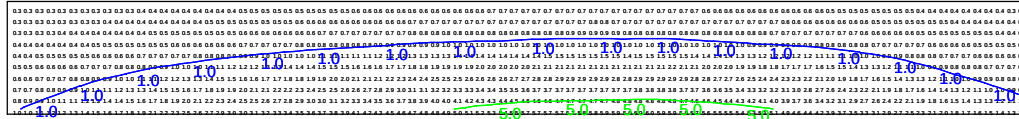


Results

Eav	453.94
Emin	234.28
Emax	569.97
Emin/Emax	0.41
Emin/Eav	0.52

Illuminance (lux)

Grid 7: South residential housing



Results

Eav	1.61
Emin	0.25
Emax	5.99
Emin/Emax	0.04
Emin/Eav	0.16

Illuminance (lux)

Grid 8: East residential housing



Results

Eav	0.13
Emin	0.04
Emax	0.25
Emin/Emax	0.15
Emin/Eav	0.29

Illuminance (lux)

Grid 9: North woodland

[illegible]

Results

Eav	0.38
Emin	0.14
Emax	0.89
Emin/Emax	0.16
Emin/Eav	0.37

11. APPENDIX C

11.1 Sensitive Receptors



Figure 11.0: Sensitive receptors (Aerial view)

SENSITIVE RECEPTORS	
DESCRIPTION	COLOUR
Application Site	Blue
South Residential Dwelling	Red
North Woodland	Green
East Residential Dwellings	Yellow

Table 11.0: Sensitive receptors

12. APPENDIX D

12.1 Regulations and References

The National Planning Policy Framework (NPPF), 2021

Clean Neighbourhoods and Environment Act, 2005

The Environmental Protection Act, 1990

The Exterior Environment - Lighting Guide 6, 2016: Chartered Institution of Building Services Engineers (CIBSE)

Public Lighting Guide 04 Guidance on Undertaking Environmental Lighting Impact Assessments, 2013. Institution of Lighting Professionals (ILP)

CIE 126: Guidelines for Minimising Sky Glow, 1997

CIE 150: Guide on the limitations of the effects of obtrusive light from outdoor lighting installations, 2003

The Exterior Environment - Lighting Guide 6, 2016: Chartered Institution of Building Services Engineers (CIBSE)

Institution of Lighting Professionals: Competency Requirements for Lighting Design Staff, 2007

Guidance Notes for the Reduction of Obtrusive Light; GN01/21 (2021) as published by The Institution of Lighting Professionals (ILP)

Bat Conservation Trust Lighting Guidance; GN08/23 (2023) as published by The Institution of Lighting Professionals (ILP)

ILP and CIBSE document 'Lighting the Environment - A Guide to good urban lighting'

13. APPENDIX E

13.1 Manufacturers datasheets

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Tennis Light

240W / 400W / 600W LED E-Lite

FEATURES

- System Light Efficacy 150~155LPW.
- Specific glare free lens design.
- Minimal light spill outside the court.
- Extremely high lighting uniformity
- IP66 water proof.
- No warm-up time.

TYPICAL APPLICATIONS

- Tennis court lighting

SPECIFICATIONS

PERFORMANCE

LED Chip	Philips Lumileds
Color Temperature	5000K
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 Temperature	-40 to 60°C (-40 to 140°F)
Storing Temperature	-40 to 80°C (-40 to 176°F)
Humidity	15% to 95% RH

PHYSICAL

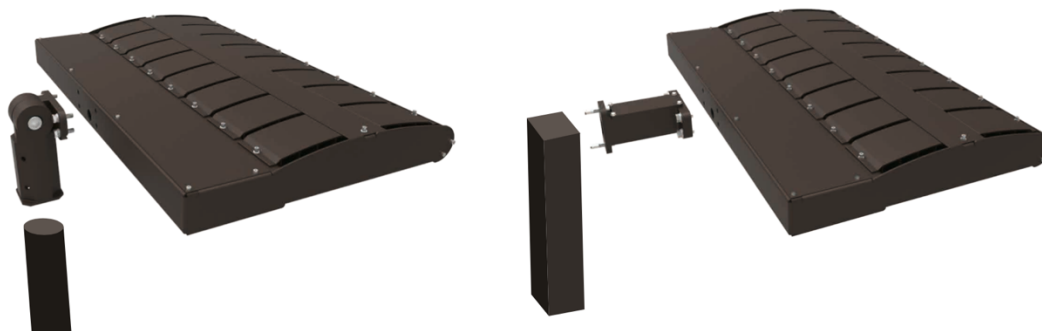
Fixture Material	Aluminum Alloy
------------------	----------------

■ Specifications

Picture	Part#	Power	Efficacy(IES)	Total Lumen	N.W	Product Dimensions
	EL-NED-240(TC)	240W	155LPW	37,200lm	7.9kg/17.4lbs	684x408x82mm 26.9x16.1x3.2in
	EL-NED-400(TC)	400W	155LPW	62,000lm	14.8kg/32.6lbs	684x596x82mm 26.9x23.5x3.2in
	EL-NED-600(TC)	600W	150LPW	90,000lm	18.3kg/40.3lbs	684x784x82mm 26.9x30.9x3.2in

■ Mounting Options & Accessories

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



14. APPENDIX F

14.1 Lawn Tennis Association Datasheet

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15. APPENDIX G

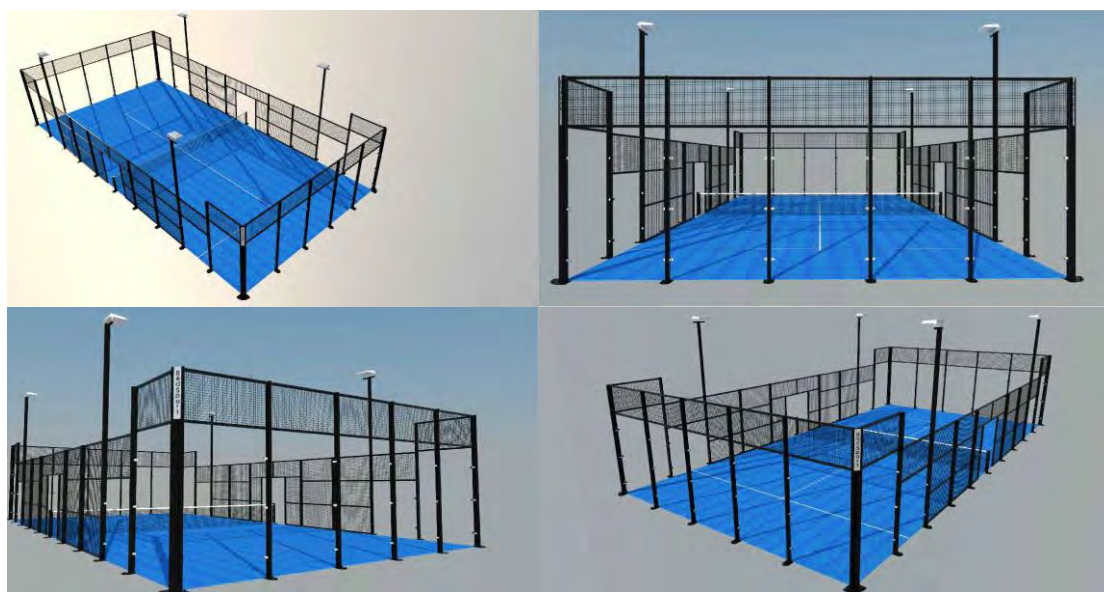
15.1 Padel Court Lighting Design Example (Padel Tech)

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LTA PADEL COURT DATA SHEET



LTA PADEL COURT DATASHEET



GENERAL

This data sheet has been produced in order to provide information and guidance for venues considering the construction of a padel court.

DEFINITION

A padel court is defined as area 20m long x 10m wide enclosed above ground with a combination of glass and weld mesh rebound wall and fence panels supported of steel posts fixed to a concrete foundation with a synthetic turf play surface.

PLANNING CONSENT

The construction of a padel court whether totally new on a green field site or over an existing tennis court constitutes development and therefore requires formal planning consent to be issued by the relevant Local Authority.

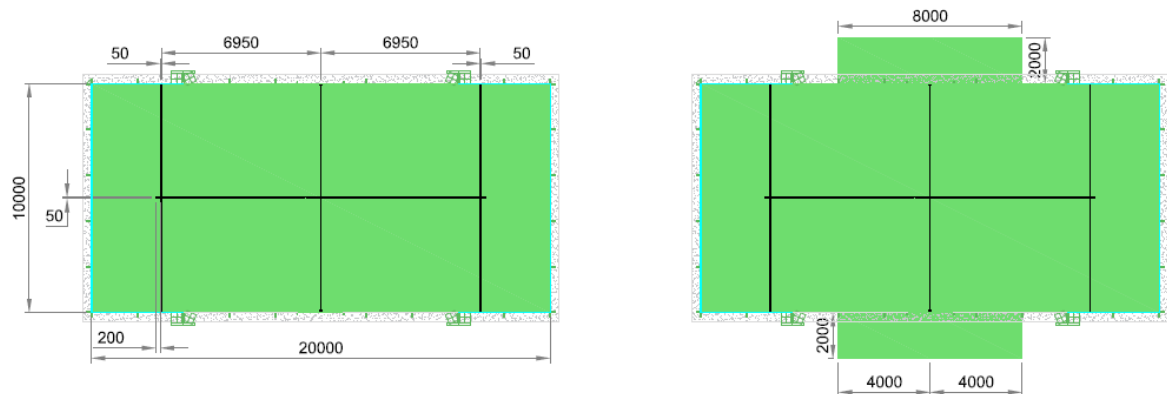
All new glass wall or mesh fencing 3.0m and 4.0m in height requires planning consent together with any proposed floodlighting posts and fittings. The site developer will be responsible for obtaining planning consent and this will be excluded from most contractors' quotations.

Careful consideration of the location of proposed padel courts should be given in relation to the impact of noise on adjacent residential properties.

KEY DIMENSIONS

The padel court internal playing area is 20m x 10m wide and is marked with two service lines and a centre line that crosses over the service line by 10cm as indicated on the right left hand diagram

The out of court area is indicated on the diagram.



The clear unobstructed height above the playing area is a minimum of 6.0m in order to accommodate floodlights attached to the structure, with a recommendation of 8.0m for new build facilities.

For out-of-court play each side of the court must have 2 central access points (one to each side). There may not be any obstacles outside the court within an area of no less than 2 metres wide (3.0m for competition purposes) and 4 metres long on either side of the court and a minimum of 4.0 metres high

SURROUNDING ENCLOSURE AND REBOUND WALLS

All padel courts have the requirement for the inclusion of rebound ends (with fencing above). At the ends of the court a total height of 4.0m metres is required. The first 3.0m, from playing surface level, can comprise any transparent or solid material (glass, bricks, etc.) which does not affect ball bounce, and the upper 1.0m is metal fence (metal weld mesh).

The transition between adjacent mesh and glass internal surfaces should be flush and neither surface should protrude further than the other as irregular ball rebound will result.

In the U.K. most padel court ends comprise toughened glass rebound panels with a weld mesh section over but could comprise other materials such as rendered blockwork for the first 3.0m

There are two variations of padel side walls as identified by the International Padel Federation (IFP) described as Variant 1 and Variant 2. The difference between the two variants are the overall height of the surround fence / rebound walls with all the fencing/ rebound walls to Variant 2 being 4.00m high.



IFP Regulation allows two variations on the lateral/side enclosures:

Variant 1 – The majority court of installation within the UK

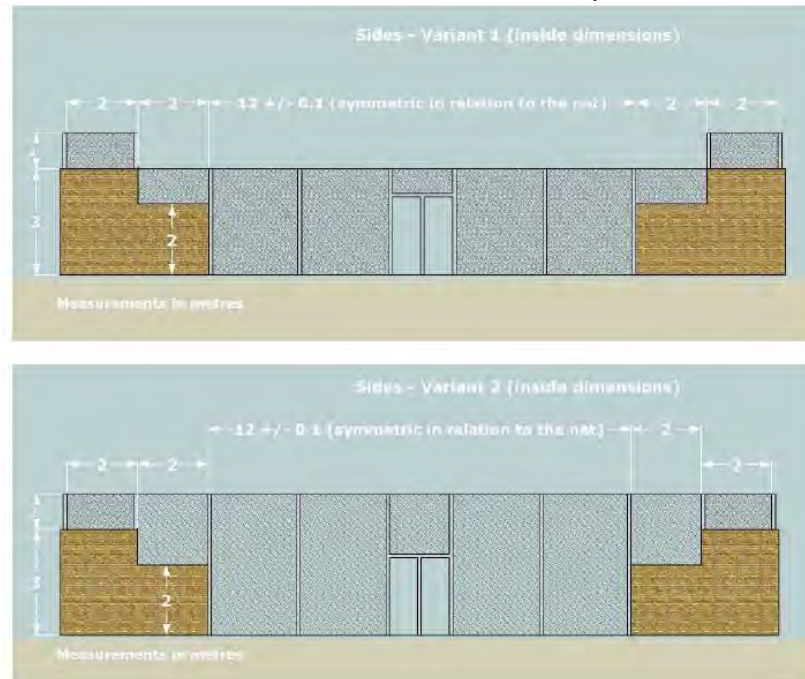
Made up of stepped wall areas at both ends, the first step 3m high x 2m long and the second step 2 m high x 2 m long. Areas of metallic fencing complete the enclosure of up to 3 metres in the centre 16 m and up to 4 metres at both ends. A crystal court variant allows side glass walls to be 3m high for 4m returns.

Variant 2

Is the same as variant 1 but with a 4m overall height.

In the UK the majority of padel courts constructed to date are Variant 1 using a combination of glass rebound and metal weld mesh panels.

The diagram below illustrates the difference between the 2 systems.



Glass rebound panels may comprise either 10mm or 12mm toughened glass. 12mm glass provides a more solid structure and is preferred by players for superior rebound characteristics and should be a minimum specification for UK installations. Glass rebound panels shall incorporate counter sunk fixings to avoid affecting ball bounce and all shall be individually kite marked to the European Standard. Consideration should be given to glass manifestation on the bottom of the court and at a height of between 850mm and 1000mm for health and safety. If further information is required then please refer to Part K of the building regulations.



Glass and weld mesh panels are supported by steel posts or framed steel panels with base plates for fixing to the concrete ring beam.



Toughened (or tempered) glass panels are used as the glass is specially treated so it will break into small blunt pieces under pressure making it much safer than shards of normal glass. The above photograph indicates a 'panoramic' padel court with framed end wall with no intermediate supporting steel posts.

The weld mesh sections of the surround walls should be made up of rhomboids or squares simply twisted or soldered with voids (diagonally measured) no less than 5 cm and no larger than 7.08 cm. Recommended thickness of the steel wire is between 1.6 mm and 3 mm. With a maximum of 4 mm and a tension which allows the ball to bounce off it. The outward facing mesh must be horizontal.

The side elevations will incorporate a central opening for player access on one or both sides, or where the out of court play area (8.00m x 2.00m overall) is to be incorporated for higher levels of play.

Openings for access may be single or double arrangement. Access opening dimensions must be as follows:-

- 1) One lateral access per side the opening must be a minimum of 1.05m x 2.00m and a maximum of 2.00m x 2.20m;
- 2) Two lateral accesses per side the openings must be a minimum of 0.72 x 2.00 m and a maximum of 1.00 x 2.20 m.

Provision shall be made for the incorporation of hinged sections of mesh to permit wide sport wheelchairs or wider opening dimensions.

SUB-BASE CONSTRUCTION & DRAINAGE

In continental Europe padel courts are generally constructed with an insitu concrete slab onto which the synthetic turf surface is laid (as the photograph below indicates). This type of concrete slab constructed is generally non porous and would be generally considered un-suitable for the UK climate where high levels of rainfall can be anticipated on a regular basis leading to reduced utilisation.



As such in the UK padel court sub-base construction should comprise a suitable free draining non frost susceptible aggregate sub-base average 250mm depth with 65mm depth of porous asphalt installed above in two separate layers.

Padel court sub-base construction can be installed with a maximum single or dual plane gradient of 1:100. Alternatively the padel court may be constructed to a level gradient with a suitable fall established to the formation level.

Padel courts may also be constructed with a crowned net line with opposing falls of 1:100 to the end walls. But this would not be envisaged with porous sub-base construction.

An internal surface water drainpipe should be incorporate with an outfall through the perimeter ring beam to the outfall position.

Where constructing a padel court over an existing tennis court, then careful consideration of the existing gradients, surface tolerance of the existing surface and the accurate of position of the new padel court is required. The upper surface of the ring beam should be established at a level above the highest point of the existing surfacing.

As such the installation contractor will have to make any allowance for shuttering of the concrete where higher than the general court area. As such a detailed survey of the existing tennis court and sub-base construction required prior to proceeding with the project.

The finished tolerance of a padel court synthetic surfacing shall be 6mm under a 3metre straight edge.

CONCRETE PERIMETER RING BEAM

The supporting posts and/or framed panels are fixed with base plates and holding down bolts to a perimeter reinforced concrete ring beam. The upper surface of the ring beam will finish at the same level as the underlying court sub-base construction.

Generally installation contractors and manufacturers will propose a rectangular reinforced concrete ring beam of limited dimensions off which to fix the surrounding above ground structure on the basis of reduced cost. Reinforced concrete ring beams of small dimension may be subject to failure at some point in the future due to the overturning force of local wind loads and the alike.



The L.T.A. would recommend that in every instance that the reinforced concrete ring beam is designed by a structural engineer (with a suitable cross section profile) with due consideration of the wind loads for the locality of the site and any other relevant loads (spectators). This design must be backed by the structural engineers' professional indemnity insurance.

The padel court structure should in turn be designed with suitable reinforcing incorporated to exceed the expected wind load calculated in the ring beam design. The structure should be bolted to the foundation using suitable anchors to fix the structure to the foundation in line with the structural engineer's calculations.

If a venue employs a contractor for both design and construction (or where this is implied) then the contractor should also carry their own professional indemnity insurance in relation to the design of the perimeter ring beam.

Courts that are secured to a concrete foundation are considered temporary or event courts. These installations should be avoided over winter months and should be checked regularly for movement. These event style courts are unsuitable for permanent outdoor installation.

Padel court manufacturer's warranties do not usually cover structural failure of the perimeter enclosure only failure of the individual components in terms of wear and corrosion. The LTA would recommend that a 10 year warranty is established for all installations.

Maximum wind loadings applicable to the surrounding enclosure supporting steelwork shall be stated by the padel court manufacturer.

Measures to prevent corrosion should be used to increase the life span of the court. The application of hot dip galvanising of steelwork components can lead to poor aesthetics and warping of mesh panels. So this is not commonly adopted by manufacturers.

In the UK we have much higher corrosion rates than in Continental Europe and in some zones this can be considered severe. Therefore no ungalvanized steel courts should be installed in the UK with pre galvanised steelwork with subsequent zinc electro plating after fabrication or the use non ferrous metal being considered suitable.

In addition further coating using epoxy basecoat or other similar product should be adopted in moderate corrosion areas with hot dip galvanising and basecoat being used in severe areas.

NET

The net must be 10 metres long and 0.88 high at the centre, rising to 0.92 metres at the ends, with a maximum tolerance of 0.005 metres.

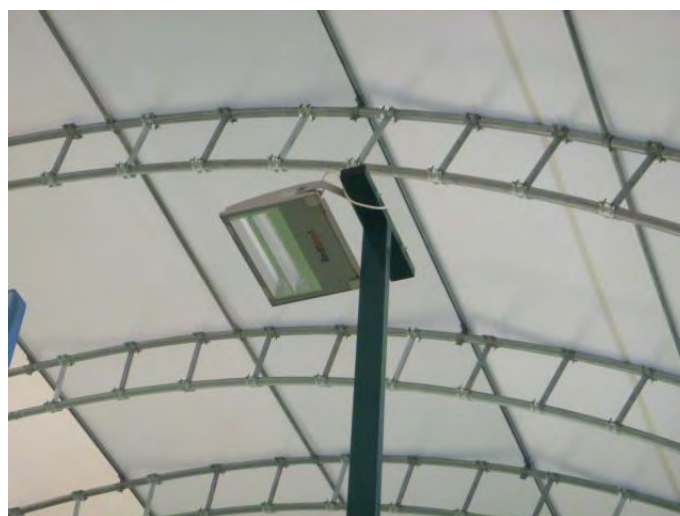
The net is suspended by a metal cable with a maximum diameter of 0.01 metres; the ends are attached to two lateral posts with a maximum height of 1.05 metres. Or a part of the court structure which allows the correct suspension and tension.

SYNTHETIC SURFACING

The padel court playing surface should comprise a single tone sand-dressed synthetic surface (either fibrillating or monofilament tufts) manufactured in accordance UNE 41958 IN. Sports surfaces with and comply with the following performance criteria of the International Padel Federation:-

Impact Absorption (Force reduction)	$RF \geq 20\%$	Artificial grass
Friction	$0,4 \leq \mu \leq 0,8$	Artificial grass
Vertical bounce of the ball	$\geq 80\%$	Artificial grass Synthetic surfaces
Sand refill	$SiO_2 \geq 96\%$ $CaO \leq 3\%$ Rounded edges Granulometry: 80% weight $\varnothing 16\text{ mm}-1.25\text{ mm}$ Visible fibre length 2mm-3mm	Artificial grass

FLOODLIGHTING



Padel courts can be floodlit by two methods.

Method 1 involves the use of integrated or extended fence posts as part of the surrounding fence enclosure with a top bracket to mount either one or two low wattage light fittings. The extended fence posts usually being inset by 4.0m from the back of the court into the side elevations.

Method 2 involves the use of stand alone floodlight columns outside of the padel court enclosure to mount floodlight fittings.

The choice between the two methods depends on the number of padel courts to be lit and the complexities of the site i.e. are there houses in close proximity which may require superior fittings to control lux level spillage and reduce potential glare.

All light fittings are required to be manufactured to British and European standards with the associated CE marking. The padel court may be delivered as a 'package kit' from the manufacturer and therefore all the electrical components shall be detailed with a suitable lighting design prior to placing any order for the works.

All light fittings shall be installed to create a minimum 6m high clear space above the padel court playing area.

Padel court lighting designs will be produced using dedicated software by competent persons (consultants or manufacturers) with relevant experience in this regard. Planning requirements may require schemes to be developed by consultants rather than manufacturers where specific criteria may be stipulated to allow compliance with regulations

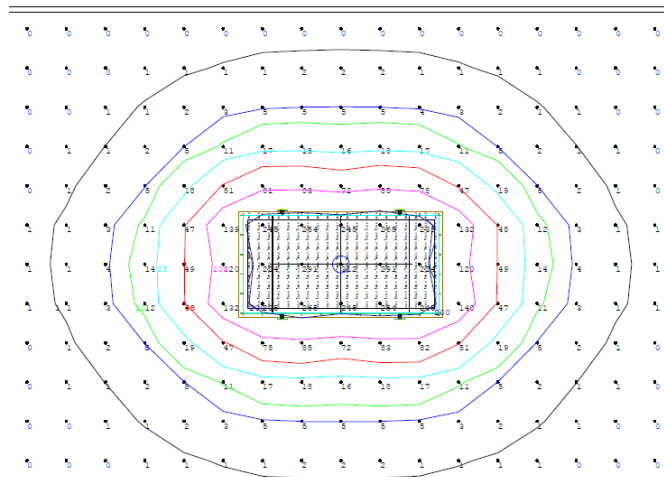
Minimum Lighting performance standards for padel courts are defined as follows:-

Outdoor courts: -	Minimum illumination at ground level (Z=0)
National and International Competition	500 lux (E av) with 0.7 uniformity
Regional competition, school & recreational use Indoor courts	300 lux (E av) with 0.5 uniformity
Indoor courts: -	Minimum Performance at ground level (Z=0)
National and International competition	500 lux (E av) with 0.7 uniformity
Regional competition, school & recreational use Indoor courts	300 lux (E av) with 0.5 uniformity

In the UK with outdoor tennis courts being usually lit to a standard higher than the minimum stated above then Clubs should undertake playing testing of floodlit padel courts to establish suitability for their scheme or may wish to adopt a higher standard.

While the minimum levels are stated above a 10% over performance should be taken into consideration when undertaking the initial design i.e. (0.9 maintenance factor).

Lighting designs shall use a sufficiently small calculation grid spacing (i.e. 1.0m x 1.0m as indicated below or lesser dimension) over the playing area centred on the net line position of the court which will remove the potential for any 'dark or over lit' patchy areas to be within the overall playing area.



This is particularly important with low cost low wattage LED fittings which are commonly employed with a symmetrical (rather than asymmetric) optical distribution for lighting general areas and are not sport specific products. Lighting designs provided by manufacturers should fully reveal the tilt angles of the fittings in order to provide key information to Client concerning potential glare issues to adjacent property owners.

As play occurs off the ends and side walls then additional vertical calculations can be also be requested and provided where considered essential by Clients.

If there is a future requirement for an outdoor court to be potentially covered at some stage in the future then the indoor minimum standard should be adopted in the first instance or provision made within the switchgear, ducting and cabling arrangement for the future upgrade.

Where padel courts are to be incorporated into existing floodlit areas then consideration should be made to maximise the existing provision in relation to the current positions of any floodlight columns, fittings and any potential conflict with underground service cabling.

COVERED FACILITIES



A range of structures are available which comprise steel portal frames sitting outside the fence / rebound wall elevations of the padel enclosure with single or double skin membrane with or without full or partial drop down walls.

Solid poly carbonate roof covering canopies are also available which offer the potential for natural light to pass onto the padel court. All steel supporting components for canopies in the UK should be hot dip galvanised for maximum longevity.

All canopies for installation in the UK should be hot dip galvanised for maximum product longevity and be designed by a structural engineer in order to permit submission to Building Control.

Consideration of the overall minimum height is necessary together with the positions of all the supporting columns so as not interfere with play or the out of court area where incorporated.

Canopy roof and wall membranes should have a minimum design life of 15 years.



KEY PROJECT CHECKLIST

Key considerations before proceeding with a padel court project:-

1. Location for proposed padel court considered appropriate in relation to noise and disturbance to neighbours;
2. Position of padel court and surrounds suitable for player access (including wheelchair users) and maintenance ;
3. Out of court play area considered – to be adopted or not ;
4. Future or current requirement for padel court to be covered ;
5. Planning consent for the proposed scheme applied for and granted ;
6. Padel Court Variant to be adopted and height of glass to side walls (All 3m high or two panels one 3m high and one 2m high with stepped down arrangement) ;
7. All metalwork components to be suitable protected against corrosion and warranted as such ;
8. Ring Beam designed by structural engineer for the locality with PI insurance ;
9. 12mm kitemark glass to be installed ;
10. Access arrangement for the court (size one side or both sides) ;
11. Lighting design to confirm minimum performance criteria of 300 lux with 0.7 uniformity and 0.9 maintenance factor. Minimum mounting height 6m.
12. Court Surface – Monofilament
13. Confirmation of the source of supply of the padel court i.e. fabricator / manufacturer to be established with certificate of origin to be supplied on completion of installation.