



Client: Georgians Tennis Club

External Lighting Impact Assessment for the Development at
The Georgians Tennis Club, Crouch End, London, N8 8JJ

February 2026

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London, N8 8JJ

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1 Background and Scope of Appraisal

1.1 Study Objectives

EPS has been commissioned by Georgians Tennis Club to assess the potential effects of installing a canopy above three of the padel courts at The Georgians Tennis Club, Crouch End, London, N8 8JJ. An external lighting assessment for the full lighting scheme was previously undertaken by Herrington Consulting (part of EPS)¹ in July 2024, which was approved by London Borough of Haringey with Ref HGY/2024/1839 and has since been implemented on site. Given that the lighting has been installed based on the July 2024 assessment report, this should be read in conjunction with this December 2025 revision proposing three additional canopies.

The key objectives of the assessment are to:

- re-assesses the approved and installed lighting with the proposed canopy included; and
- confirm that the lighting scheme remains fully compliant.

1.2 Site Location

The site is situated in the area of Crouch End in North London, and is located within the administrative boundaries of the London Borough of Haringey. The

location of the site is shown in Figure 1.1 and the site plan included in Appendix A.1 gives a more detailed reference to the site location and layout.

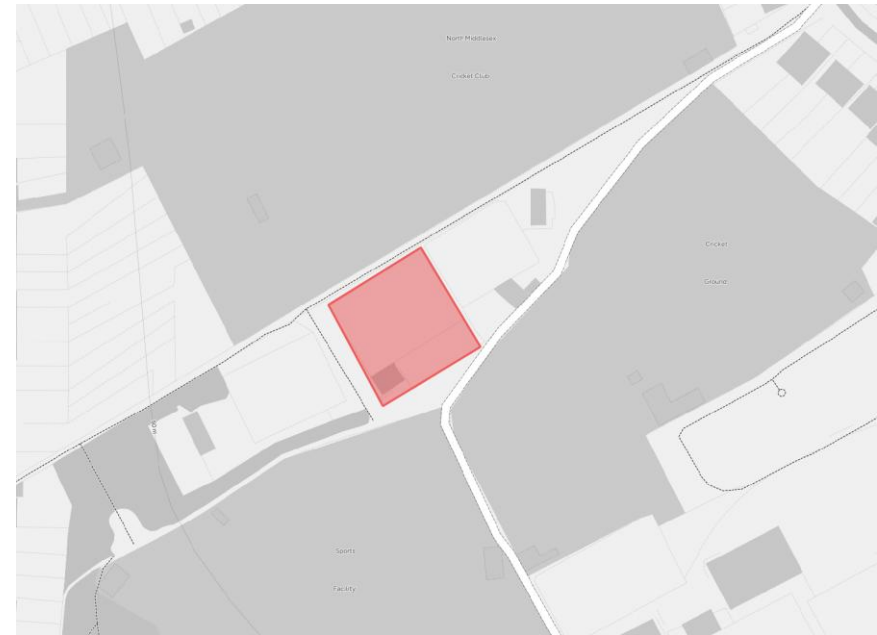


Figure 1.1 - Location map (contains Ordnance Survey data © Crown copyright and database rights 2025)

1.3 The Development

The proposed development comprises the installation of a canopy over three padel courts. Drawings of the proposed scheme are included in Appendix A.1.

¹ Herrington Consulting has been fully merged into EPS on 1st October 2025

2 Policy and Guidance

2.1 Legislation

Clean Neighbourhoods and Environment Act (2005)

The legislation governing light pollution is the Clean Neighbourhoods and Environment Act (2005). It applies to “artificial light emitted from premises so as to be prejudicial to health or a nuisance.” Section 102 – Statutory Nuisance: Lighting defines the premises to which this act applies and to those which are exempt.

2.2 National Planning Policy

National Planning Policy Framework (December 2024, as amended February 2025)

Paragraph 198 on ‘Conserving and enhancing the natural environment’ states that “Planning policies and decisions should also ensure that new development 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 development. In doing so they should: c) limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.”

2.3 Regional Planning Policy

The London Plan – The Spatial Development Strategy for Greater London (March 2021)

Policy S5 under ‘Sports and recreation facilities’ states that “Development proposals for sports and recreation facilities should: B) 3) support the provision of sports lighting within reasonable hours, where there is an identified need for sports facilities, and lighting is required to increase their potential usage, unless the lighting gives rise to demonstrable harm to the local community or biodiversity.

Paragraph 5.5.7 continues to state that “Lighting can be important for the accessibility of outdoor sports facilities and can help to improve their use. The form of lighting required will depend on the facilities and its use, but efforts should be made to minimise the impact on the surrounding areas, and not to cause a demonstrable harm to the local community or biodiversity. The hours of use of lighting should be agreed early in the process.”

2.4 Local Planning Policy

Development Management DPD – The London Borough of Haringey (July 2017)

Policy DM1 under ‘Privacy and amenity’ states that “D) Development proposals must ensure a high standard of privacy and amenity for the development’s users and neighbours. The Council will support proposals that: c) Address issues of vibration, noise, fumes, odour, light pollution and microclimatic conditions likely to arise from the use and activities of the development.”

Policy DM23 under ‘Environmental Protection’ states that “F) Development proposals that include external lighting must mitigate potential adverse impacts from such lighting. Where appropriate, proposals will be required to submit details demonstrating that external lighting is: a) Appropriate for its purpose in its setting; b) Designed to minimise and provide protection from glare and light spillage,

particular to sensitive receptors such as residential properties and natural habitats, including watercourses.”

2.5 Best Practice Guidance

The following guidance documents have been referenced whilst undertaking this assessment:

- The Institute of Lighting Professionals (ILP formally the ILE), Guidance Note 01/21 – The Reduction of Obtrusive Light
- ILP Guidance Note 08/23 – Bats and Artificial Lighting in the UK
- The Society of Light and Lighting (SLL) Lighting Handbook
- South Downs National Park Dark Skies Technical Advice Note (April 2018).
- Lighting guide 4 – Sports Lighting SLL

3 Assessment Methodology

3.1 Method of Baseline Data Collation

A desktop review of the development site and surrounding area has been undertaken to identify potential sensitive receptors. The following data has been used to inform this study:

- OS Mastermap mapping
- Defra MAGIC online mapping resource (Multi-Agency Geographic Information for the Countryside)
- London Borough of Haringey Public Rights of Way (PROW) mapping
- Aerial photography (Google Maps and Bing)

For exterior lighting control, it is recommended practice from the ILP for development areas outside of National Parks and designated Dark Skies to be classified as one of five environmental zones using the information summarised in Table 3.1.

The site is situated in the area of Crouch End; it could not be described as being 'rural', i.e. it is not sparsely inhabited. Wood Vale, which runs to the west of the site, does have intermittent streetlighting, and the existing sports facilities nearby has associated external lighting units. Therefore, the Environmental Zone classification for setting baseline conditions has been taken as **E3 (Suburban)**.

The purpose of this assessment is to confirm that the inclusion of the canopy structure, together with the recessed lighting to the temporary shed (modelled on a worst-case scenario), does not result in any additional obtrusive lighting effects when assessed against the performance criteria set out in ILP GN01:21 for an Environmental Zone E3.

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

Table 3.1 – ILP Environmental Zone Classification

3.2 Numerical Modelling

The impact of the proposed scheme has been numerically modelled using the ReluxCAD and Relux software application - version 2025.1.6.0. This is a high-performance application for simulating artificial light and allows potential light spill to be accurately predicted.

A typical view of the 3D model used for the analysis is shown in Figure 3.1

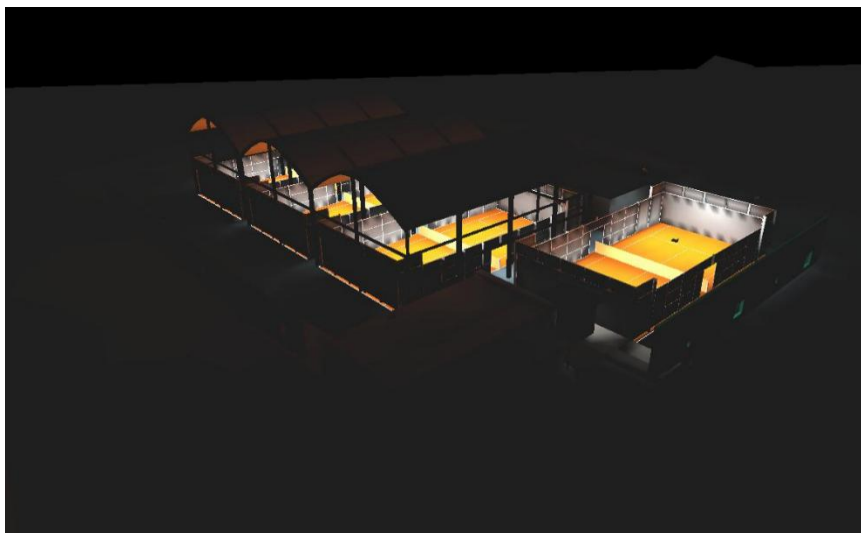


Figure 3.1 – Image from Relux 3D model showing the proposed development and neighbouring buildings

3.3 Lighting Assessments Requirements

The ILP Environmental Zone classification determines the obtrusive light limitations for exterior lighting installations for each particular zone. The key objectives are to:

- Limit values for the vertical illuminance on the windows of neighbouring dwellings;
- Limit values for the light source intensity in a potentially obtrusive direction such as towards a house or garden;
- Limit values on the luminance of floodlit buildings;

- Limit values on the upward light ratio from the installation, in order to reduce upward light that causes sky glow.

The specification of the limits for each ILP Environmental Zone are reproduced in Table 3.2.

Environmental Zone	Upward light output ratio (%)	Vertical illuminance on windows (lx)		Luminaire intensity (cd)		Average building luminance pre-curfew (cd/m ²)
		Pre-curfew	Post-curfew	Pre-curfew	Post-curfew	
E0	0	0	0	0	0	<0.1
E1	0	2	0 (1*)	2,500	0	<0.1
E2	2.5	5	1	7,500	500	5.0
E3	5	10	2	10,000	1,000	10.0
E4	15	25	5	25,000	2,500	25.0

Table 3.2 – ILP Environmental Zone limitations

* Permitted only from Public road lighting installations

3.4 Assessment Techniques

As discussed above, the ILP guidance sets out a number of recommended maximum values of light parameters for the control of obtrusive light, based on the corresponding Environmental Zone classification identified in Table 3.1. The different light parameters and the respective threshold values are detailed in Table 3.2. The techniques applied within the numerical model to calculate each of the four specific light parameters defined in Table 3.2 have been detailed below:

Upward Light Ratio (ULR)

The Upward Light Ratio (ULR) parameter, commonly referred to as 'Sky Glow', measures the fraction of light propagated directly to the sky. This can occur from both natural and artificial light sources, however, is usually as a result of upward directed or incompletely shielded sources. By comparing the illuminance recorded at a reference plane above the site with the total luminous flux of the lighting scheme, the ULR is calculated. Since the calculated value is a ratio, this is expressed as a percentage of change.

Vertical Illuminance on Windows

The vertical illuminance parameter is a measurement of the amount of light that falls on a hypothetical vertical surface. This parameter is measured in lux, a unit that quantifies the intensity of light as perceived by the average observer. In the context of external lighting, the vertical illuminance can be measured on surrounding neighbouring windows, to represent the potential light trespassing that these could experience as a result of a nearby proposed lighting scheme.

Where sensitive windows have been identified, these have been assessed using a sensor. When all the sensitive windows are located on a 'single' façade, these are assessed using a single sensor covering the whole elevation. This captures all the windows on all floors and as a result the (worst case) maximum illuminance is reported. When the façade is staggered, (thereby positioning some windows closer or further away from the proposed development), the potential for a difference in glare and light spill is higher. Therefore, separate sensors are used to ensure that the assessment accurately captures these effects, rather than relying on a single measurement point that may underestimate the impact.

Luminaire Intensity

Luminaire intensity is measured as the intensity of light in a specified direction, from any given luminaire when viewed from a neighbouring house or garden. This is calculated within the numerical model using 'luminous intensity' measurement points, which are usually positioned at the centre of neighbouring windows and record the intensity of light at this point from all of the luminaires in the model. Luminous intensity is measured in candela (cd).

It is important to understand that providing there are no luminaires aimed directly at any of the sensitive receptors, a value of 0 cd will be achieved and the impact will be considered to be **negligible**.

Average Building Luminance

This criterion seeks to ensure that any floodlighting directly aimed at lighting the building façade is limited to the ILP threshold value.

The luminance (brightness) of a façade or structure is dependent on the reflectance value of its surface and/or colour, as well as the light output of the floodlight. In circumstances where the lighting scheme is not utilising floodlights to illuminate the building façade itself, a value of 0 cd/m² will be achieved and the impact will be considered to be **negligible**.

In addition to the the four specific light parameters discussed above, the ILP also details recommendations with respect to ecology, specifically bats, within the ILP Bats and Artificial Lighting at Night Guidance Note 08/23. The techniques applied within the numerical model to calculate the potential adverse impact on ecological receptors are outlined below:

Illuminance (Ecology)

As previously described, the vertical illuminance parameter is a measurement of the amount of light that falls on a hypothetical vertical surface. This parameter quantifies the intensity of light as perceived by an average observer. Similarly, illuminance can be measured along the horizontal plane using the horizontal illuminance parameter. These two parameters can be applied in an ecological context, where the vertical and horizontal illuminance are measured along vegetation and other features that can host protected species, enabling the calculation of any potential light spill.

Where sensitive ecological receptors have been identified, the numerical model includes sensors to measure the vertical and horizontal illuminance along these sensitive receptors. Vertical sensors are placed at a height that matches the sensitive receptor to allow the illuminance along the bat flight paths and bat roosts to be calculated in full. Horizontal sensors are placed at ground level covering the area beneath the sensitive receptor.

Glare Rating

Whilst the ILP has no explicit guidance on assessing visual amenity and glare to motorists, these have been taken into account in the assessment based on the following principles and industry standards:

The test that is applied within the Relux model is the CIE Glare Rating (GR). In 1994, the CIE developed a glare evaluation method for outdoor sports lighting and area lighting applications. This system allows the physiological glare that is generated directly by the luminaires in an outdoor lighting system to be determined using 'GR observers' within the model. These are deployed at the observation points within the model.

The numerical model allows the insertion of measurement points at key locations along a road so that the luminous intensity can be recorded. The assessment of glare to road users considers the glare rating at a road based on the modelling outputs. The calculated value is compared against the glare rating (GR) values as defined by the CIE publication 'CIE 129-1998: Guide for Lighting Exterior Work Areas'. The CIE Glare Rating descriptors are detailed in Table 3.3.

CIE Glare Rating (GR)	Descriptor
60+	Represents a level of glare that is noticeable and has the potential to present a hazard to road users
50 – 60	Represents a level of glare that is 'just admissible' to road users in normal traffic conditions.
≤ 45	Represents the recommended maximum glare rating value to road users in normal traffic conditions.

Table 3.3 – CIE Glare Rating (GR) Descriptors

3.5 Calculation Assumptions

As with any numerical analysis, it is necessary to make assumptions with regards to some of the environmental constraints to the model and the baseline parameter used in simulating the lighting conditions. For this study, the following assumptions have been made:

- All background lighting is ignored, i.e. off-site streetlighting and other lighting sources are not included in the model. This ensures that the impacts of the installed lighting scheme are isolated from the background lighting.

- Trees and vegetation are not included in the model. This represents the worst-case scenario in terms of the assessment of off-site impacts.
- When assessing PIR operated luminaires, these have been modelled as being permanently turned on.
- Specification and levels of illuminance are based on what is likely to occur on 'day 1' of operation.

Note - In installations that involve lighting poles, towers or columns, the luminaires will often be viewed against the night sky. The contrast between the background sky and the bright surface areas of the luminaires can be considerable. In such installations the curfew levels set for each environmental zone shall be applied, with the exception that such installations within an E4 zone will be designed to suit the curfew requirements of an E3 zone.

4 Identification of Sensitive Receptors

4.1 Existing Baseline Lighting Conditions

The site is an established lawn tennis club comprising four tennis courts and four paddle courts. The four padel Courts are currently fitted with externally mounted lighting that was approved and installed under the previously consented 2024 lighting scheme (Ref: HGY/2024/1839). The three padel courts subject to this new canopy proposal (P2-P4) are shown in Figure 4.1.

The wider site context and baseline lighting environment remain unchanged from those assessed within the External Lighting Impact Assessment prepared by Herrington Consulting in July 2024, which was approved by the Local Planning Authority. Accordingly, this assessment should be read alongside the approved 2024 report to identify specific installed lighting specifications as this focuses specifically on the inclusion of the proposed canopies and the limited additional lighting associated with the temporary shed.

To the northeast is a residential property at the end of Shepherds Lane. No verified information is available regarding any external lighting at this dwelling.

The existing lighting on site operates in accordance with the approved design parameters and forms the baseline condition for this assessment.



Figure 4.1 – Existing site plan showing the three padel courts P2-P4 that will be covered by the canopy

4.2 Residential Sensitive Receptors (Windows)

The existing residential sensitive receptors have been identified and are shown in Table 4.1 below.

Sensitive Receptor	Orientation of Window Elevation
169A Shepherds Lane	South

Table 4.1 – Sensitive receptors (windows)

To evaluate any potential light trespass associated with the proposed canopies and the existing lighting installation, sensors have been placed on the elevations of surrounding buildings that face the site. The positions of these sensors are shown in red in Figure 4.1.

4.3 Impact on Visual Amenity

Visual amenity encompasses the aesthetic quality and visual comfort of an environment, particularly in relation to how lighting affects the appearance and usability of spaces. Lighting that spills over into unintended areas can disrupt the natural environment and degrade the night sky.

Impacts on visual amenity can be mitigated through the choice of a lighting scheme aimed at minimising light pollution. Section 5 provides details of how the lighting scheme has been adapted to minimise the impact to visual amenity for this specific site.

4.4 Ecological Sensitive Receptors (Wildlife)

The identified ecological sensitive receptors are closely linked to the findings in the latest Updated Bat Roost Potential Tree and Building Inspection Survey by Sylvatica Ecology Ltd (August 2025).

The survey identifies that Tree T1 has the potential to support bats, classified as PRF-M (Moderate Roost Potential). As a result, this feature has been treated as a sensitive ecological receptor for the purposes of this lighting assessment.

To assess potential light spill effects on this feature, a vertical illuminance sensor has been positioned directly in front of Tree T1. The sensor has been set at a height of 4 m, representing a conservative assessment height to capture potential light spill affecting bat roosting and commuting activity.

The sensor location is shown in red in Figure 4.1.

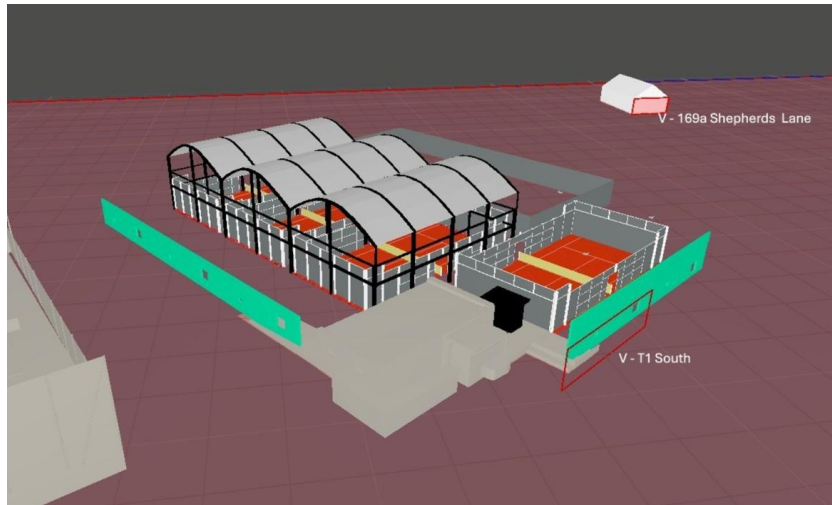


Figure 4.1 – Site Plan showing sensors marked in red.

4.5 Visual Impact on Wider Surroundings

The proposed development does not introduce any new externally visible luminaires to the padle courts. The installed lighting arrangement remains unchanged from the previous assessment undertaken in 2024.

5 Proposed Lighting Scheme

5.1 Performance Criteria

Development proposals located in the E3 Suburban Environmental Zone are required to meet the specific ILP Guidance criteria. These are defined as follows:

- Upward light ratio (fraction of light going directly to the sky) = 5%
- Maximum illuminance at windows = 10.0 lux pre-curfew and 2.0 lux post-curfew
- Maximum source (luminaire) intensity when viewed from a neighbouring house or garden = 10,000 cd pre-curfew and 1,000 cd post-curfew
- Average luminance of a floodlit building = 10.0 cd/m²

The following sports specific criteria has been used to guide the lighting scheme, ensuring an adequate level of horizontal illuminance for its intended application on site:

- 200 lux is required on the horizontal plane of the padel court, and;
- The output of the floodlights should reach 16,000 lumens each, to ensure optimal visibility to users.

5.2 Scheme Description

The external lighting scheme serving the padel courts remains unchanged from that previously assessed and approved. No alterations have been made to the

number, type, location, orientation or output of the existing court lighting. Therefore the supporting report produced in July 2024 should be read in conjunction with this report if further details are required.

The only additional lighting considered within this assessment comprises three temporary recessed luminaires installed within the underside of the temporary shed overhang, located to the southern part of the site. Given the temporary nature of this structure, these fittings have been included within the assessment as a highly conservative worst-case scenario, in order to capture any potential cumulative light spill arising from all artificial light sources on site.

The additional luminaires assessed are as follows:

3 × Microzip Comfort Tonda recessed downlights

- Luminous flux: 240 lumens per fitting
- Colour temperature: 2700 K
- Installation: Ceiling-mounted within shed overhang
- Light distribution: Fully downward-directed

These fittings have been specifically selected to minimise potential effects on nearby bat roost features, including Tree T1, through low output, warm colour temperature and controlled light distribution.

5.3 Strategy for Minimising the Impact of the Lighting Scheme

The lighting strategy for the site has been developed to minimise obtrusive light, glare and sky glow, whilst maintaining safe and functional lighting levels for its intended use.

The installed lighting scheme incorporates full cut-off luminaires that are directed away from identified sensitive receptors.

The proposed development does not alter this strategy. The addition of canopies does not introduce any upward light, glare or additional spill beyond that already assessed and approved.

5.4 Lighting Control

The lighting control for the temporary shed will be focused on adjusting the light levels based on the time of day and automatically turning off the lighting when it is not needed.

The lighting control switches will be clearly labelled with practical names which reflect the required operation, making them operationally simply, to encourage users to operate the system at maximum efficiency levels.

5.5 Lamp Colour Temperature

The lamp colour temperature required to light an area changes with the time of day. It is generally accepted that 4000° Kelvin lamps are appropriate during the day. However, 4000° Kelvin lamps at night can appear stark and will make a development stand out in the landscape compared with a warmer colour temperature lamp.

The proposal for the temporary shed is to use warm colour lamps for the external spaces, as low as 2700° Kelvin.

5.6 Materials and reflectances

Different surfaces will reflect incoming incident light at various levels, depending on their material and properties. Lighting which arrives at highly reflective surfaces has the potential to be reflected back up into the night sky or other sensitive receptor. Therefore, surface properties for the ground and materials for the canopies have been taken into account in the numerical modelling and calculations. Material properties have been considered as follows:

Surface property	Reflectance Values
Canopy - Opal Fabric 60 (white)	60%
Ground	20%

Table 5.1 – Material reflectance values

6 Assessment of the Impact of the Lighting Scheme

6.1 Review of Compliance

Based on the target criteria set out in Section 5 of this report, the impact of the lighting scheme on the identified sensitive receptors considers the lighting scheme as installed, together with the proposed fabric canopies over Courts P2–P4 alongside the addition of three recessed downlights located within the temporary shed. No other changes to the approved external lighting arrangement are proposed.

Numerical modelling has been undertaken to calculate potential light spill to surrounding horizontal and vertical planes, using a worst-case scenario which assumes the maximum luminaire output, simultaneous operation of all lights and a white canopy reflectance of 60%.

The assessment demonstrates that the lighting scheme with the addition of the canopies and the 3 recessed lightings for the temporary shed complies with the relevant ILP performance criteria, as discussed below.

The performance criteria for development proposals located in the E3 Environmental Zone are discussed in turn below.

6.2 Sky Glow

Upward light ratio – This criterion seeks to limit the fraction of light going directly to the sky to 5%. Through the exclusive use of full cut-off luminaires, the 5% ratio will be achieved.

The results from this analysis show the percentage that is measured above the site is 0%. This is well below the 5% threshold for an E3 Environmental Zone. The proposed canopy has helped to reduce the sky glow from 0.4% (as assessed in July 2024) down to 0%. Therefore, it can be concluded that the impact of the proposed development on sky glow will be **negligible**.

6.3 Residential Sensitive Receptors (Windows)

Maximum illuminance at windows – This criterion seeks to limit the illuminance to 10 lux pre-curfew and 2.0 lux post-curfew.

The specific sensitive receptor is identified in Table 6.1 below, along with the maximum illuminance values calculated within the numerical model.

Sensitive Receptor	Maximum illuminance at windows (Lux)
169A Shepherds Lane South elevation	0.03

Table 6.1 – Vertical illuminance values to sensitive receptors

From Table 6.1 it can be seen that the maximum illuminance, measured at any of the neighbouring properties is 0.03 lux. This is below both the pre-curfew and post-curfew thresholds and therefore it can be concluded that the illumination to the neighbouring windows will be **negligible**.

Maximum source (luminaire) intensity - This criterion seeks to limit the intensity of light from any given luminaire when viewed from a neighbouring house or garden. The pre-curfew threshold is 10,000 cd and post-curfew threshold is 1,000 cd.

Sensitive Receptor	Maximum Source Intensity (kcd)
169A Shepherds Lane South elevation	0.002

Table 6.2 – Maximum Source Intensity

From Table 6.2 it can be seen that the maximum source intensity is recorded as being 0.002 kcd (2 cd). This is well below both the pre-curfew and post-curfew thresholds and therefore it can be concluded that the illumination to the neighbouring windows will be **negligible**.

Providing there are no luminaires aimed directly at any of the sensitive receptors, this requirement will be met.

Summary of Compliance – Sensitive receptors (windows)

From the performance criteria discussed above, it can be seen that based on the indicative lighting scheme that is proposed and based on the lighting scheme constraints set out in Section 5, the development proposals will meet the policy requirements for the E3 Environmental Zone.

6.4 Visual Amenity on Wider Surroundings

As discussed in Section 4.5, the proposed development comprises the installation of a canopy over Courts P2-P4 and the introduction of three recessed downlights within the temporary shed on the southern side of the site.

These luminaires are ceiling recessed fittings, fully downward directed, and are screened by the structure itself. As a result, there is no direct visibility of the light

source from surrounding receptors, including neighbouring residential properties or public viewpoints.

The canopy structure further contributes to containing light within the court area, reducing the potential for light spill or visible glow beyond the site boundary. Accordingly, the proposed development does not result in any additional effects on visual amenity when compared with the installed lighting scheme.

6.5 Ecological Receptors

As discussed in Section 4.4, the identified sensitive receptors (ecology) are based on the findings in the ecological report.

Reference to the ILP Guidance Note 08/23 - Bats and artificial lighting in the UK document states that, an appropriate level of illumination in a buffer, or sensitive zone would be below 0.2 lux on the horizontal plane and below 0.4 lux on the vertical plane.

However, the ILP Guidance Note acknowledges that '*especially for vertical calculation planes, very low levels of light (<0.5 lux) may occur even at considerable distances from the source if there is little intervening attenuation. It is therefore very difficult to demonstrate 'complete darkness' or a 'complete absence of illumination' on vertical planes where some form of lighting is proposed on site.*'. Therefore, based on the recommendations from the ILP Guidance Note 08/23, a 0.5 lux threshold value has been applied as the criteria for protected wildlife species assessed within this study.

The numerical model includes sensors to measure the vertical illuminance at T1. A vertical sensor has been placed at 4m high allowing for the illuminance along

the bat flight paths and bat roosts to be calculated. The vertical sensors have been marked in Figure 4.1.

The detailed output from this sensor is included within appendix A.3 to this report and a summary can be seen in Table 6.3.

Sensitive Receptor	Maximum illuminance (Lux)
Vertical	
T1 - South	0.36

Table 6.3 – Maximum illuminance values to sensitive ecological receptors

When considering the illumination levels calculated along the sensitive receptors, it can be seen that the maximum level of illumination will be 0.36 lux. Therefore, it can be concluded that the illumination levels on vertical axis are below the ILP thresholds.

The effect of obtrusive light from the proposed development on the sensitive ecological receptors is therefore considered to be **negligible**.

In addition, the assessment takes account of the existing mitigation measures approved as part of the 2024 scheme, including planted boundary screening adjacent to sensitive ecological features. These measures contribute to limiting light spill toward surrounding vegetation and potential bat foraging or roosting habitats.

6.6 Operating hours

The operating hours for the padel courts and associated lighting have previously been approved by the Local Planning Authority as part of planning permission HGY/2024/1839. Condition 4 states:

“The floodlighting hereby approved shall not operate (be switched on providing artificial light) outside the hours of 7am and 10pm, and the courts shall be fitted with their own individual automated time switches.”

Given that the lighting levels assessed within this report are demonstrated to be compliant with the relevant ILP guidance for the applicable environmental zone, the approved operating hours do not materially influence the conclusions of this assessment.

7 Conclusion

This External Lighting Impact Assessment has evaluated the potential effects of the proposed development at The Georgians Tennis Club, Crouch End, London, N8 8JJ, comprising the installation of canopies over Courts P2-P4 and the temporary inclusion of three recessed downlights within the temporary shed, on surrounding sensitive receptors. These include nearby residential properties, identified ecological features, and wider visual amenity.

The results demonstrate that the maximum calculated illuminance levels at ecological receptor, at Tree T1, remain below the applicable thresholds set out in ILP Guidance Note 08/23, with a maximum vertical illuminance of 0.36 lux. No increase in light spill, glare, sky glow or visual effects has been identified when compared with the previously approved lighting scheme.

The assessment also confirms that the proposed development complies with the relevant performance criteria set out within ILP GN01:21 – Guidance on the Reduction of Obtrusive Light, for the applicable Environmental Zone E3, and aligns with the findings and recommendations of the supporting ecological reports. The approved operating hours, restricted to between 07:00 and 22:00, further limit the potential for adverse effects.

In summary, it can be concluded that the proposed canopies and associated temporary recessed lighting will not result in any increase in obtrusive light or adverse effects on sensitive receptors compared to the July 2024 assessment report. The external lighting scheme, as assessed, remains acceptable and

compliant with relevant guidance and policy, and no additional mitigation measures are required beyond those already approved.

A. Appendices

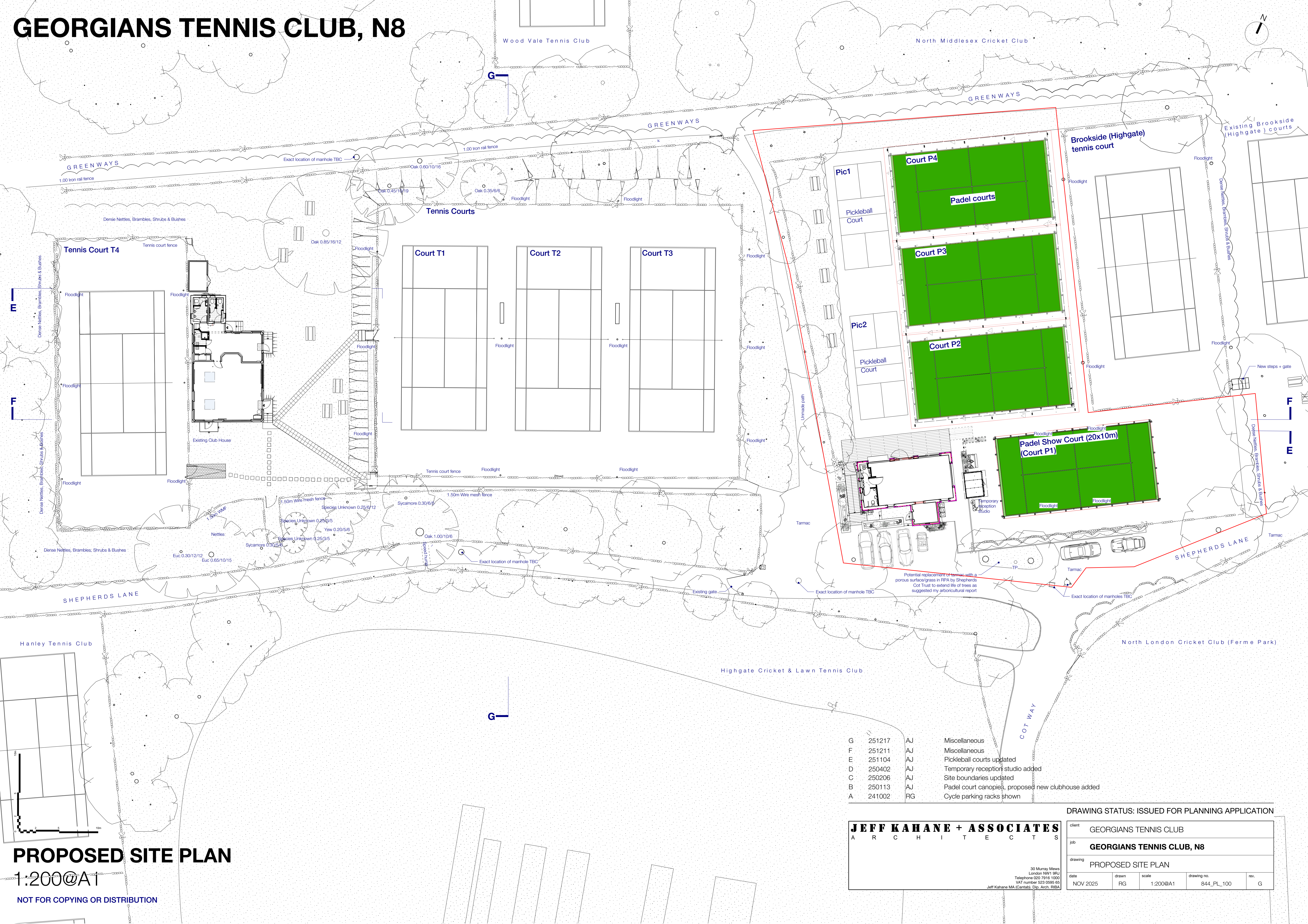
Appendix A.1 – Scheme Drawings

Appendix A.2 – Graphical Model Outputs

Appendix A.3 – Relux Calculations

Appendix A.1 – Scheme Drawings

GEORGIANS TENNIS CLUB, N8



PROPOSED SITE PLAN

1:200@A1

NOT FOR COPYING OR DISTRIBUTION

G	251217	AJ	Miscellaneous
F	251211	AJ	Miscellaneous
E	251104	AJ	Pickleball courts updated
D	250402	AJ	Temporary reception studio added
C	250206	AJ	Site boundaries updated
B	250113	AJ	Padel court canopies, proposed new clubhouse added
A	241002	RG	Cycle parking racks shown

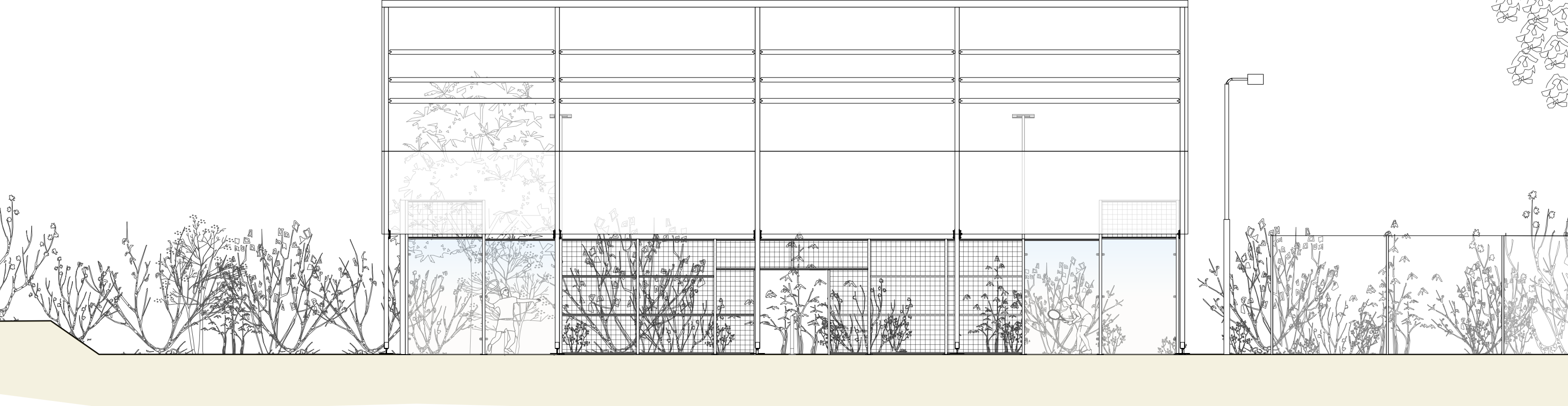
JEFF KAHANE + ASSOCIATES
ARCHITECTS

30 Murray Mews
London NW1 9RJ
Telephone 020 7916 1000
VAT number 523 0595 65
Jeff Kahane MA (Cantab), Dip. Arch., RIBA

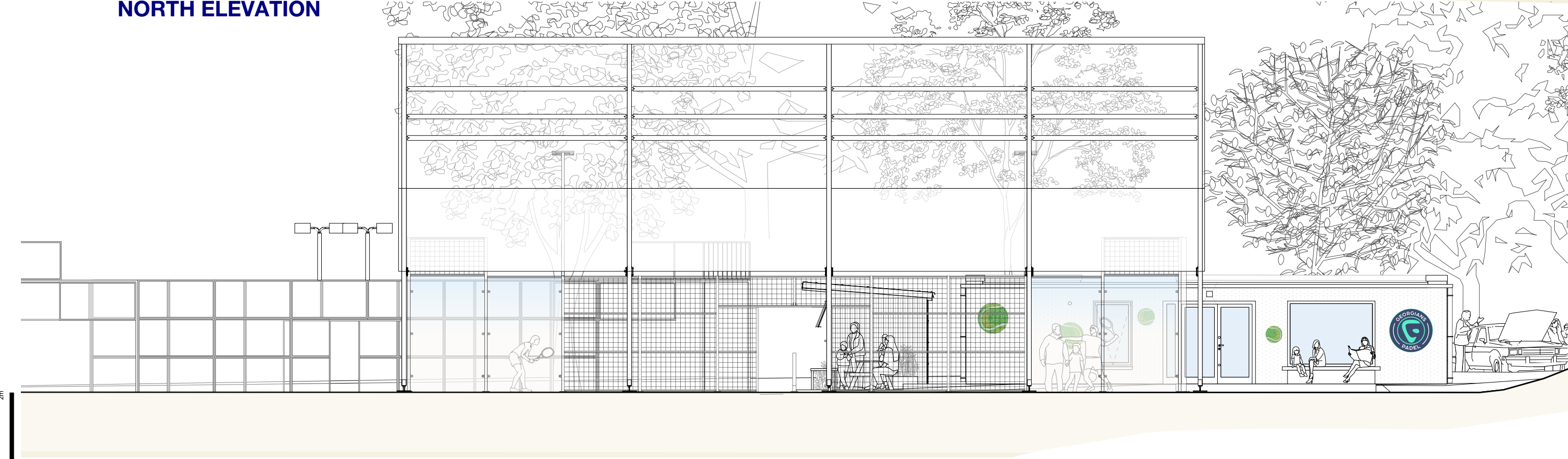
DRAWING STATUS: ISSUED FOR PLANNING APPLICATION

client	GEORGIANS TENNIS CLUB				
job	GEORGIANS TENNIS CLUB, N8				
drawing	PROPOSED SITE PLAN				
date	drawn	scale	drawing no.	rev.	
NOV 2025	RG	1:200@A1	844_PL_100	G	

GEORGIANS TENNIS CLUB, N8



NORTH ELEVATION



SOUTH ELEVATION

PROPOSED NORTH+SOUTH ELEVATIONS-PADEL
1:100@A3

B	251217	AJ	Miscellaneous
A	250113	AJ	Heights of canopies updated

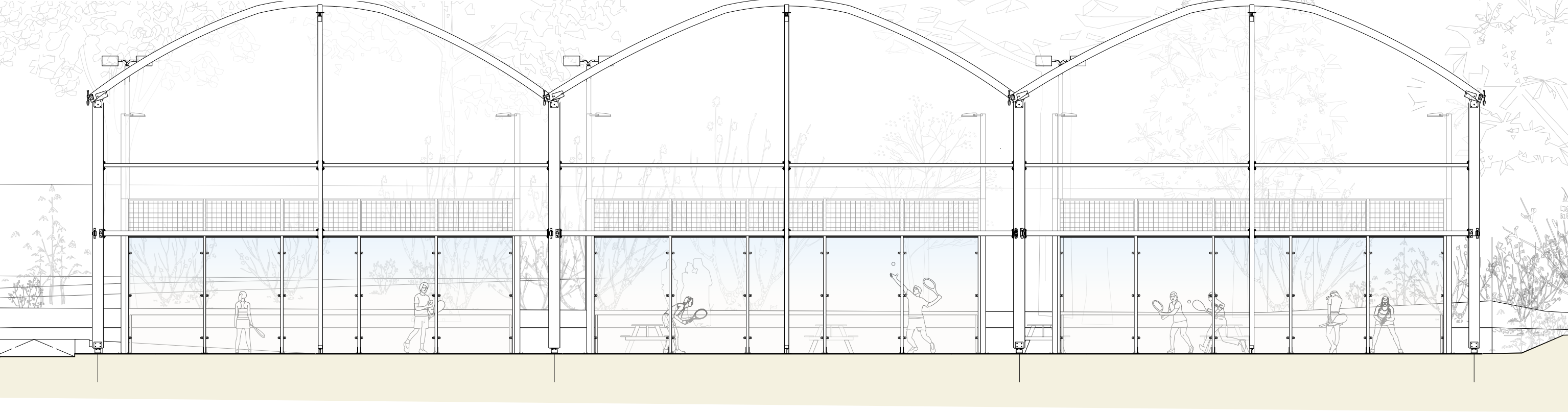
DRAWING STATUS: ISSUED FOR PLANNING APPLICATION

JEFF KAHANE + ASSOCIATES
ARCHITECTS

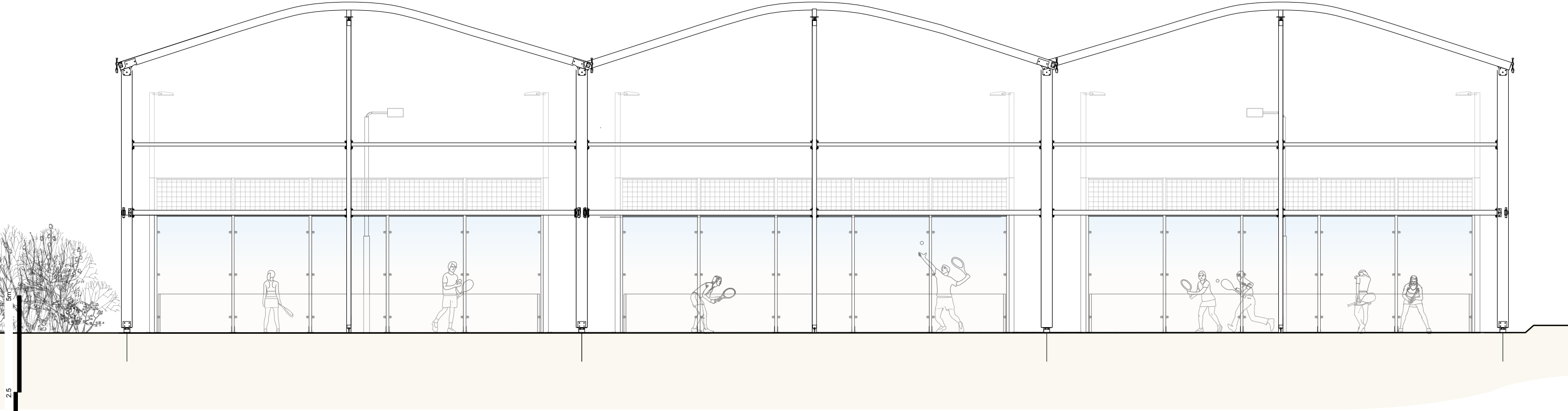
30 Murray Mews
London NW11 9RJ
Telephone 020 7916 1000
VAT number 523 0595 65
Jeff Kahane MA (Cantab), Dip. Arch. RIBA

client	GEORGIANS TENNIS CLUB			
job	GEORGIANS TENNIS CLUB, N8			
drawing	PROPOSED NORTH+SOUTH ELEVATIONS-PADEL			
date	NOV 2025	drawn	RG	scale
				1:100@A3
			drawing no.	rev.
			844_PL_320	B

GEORGIANS TENNIS CLUB, N8



EAST ELEVATION



WEST ELEVATION

PROPOSED EAST+WEST ELEVATIONS-PADEL
1:100@A3

B 251217 AJ Miscellaneous
A 250113 AJ Heights of canopies updated

DRAWING STATUS: ISSUED FOR PLANNING APPLICATION

JEFF KAHANE + ASSOCIATES
A R C H I T E C T S

30 Murray Mews
London NW11 9RJ
Telephone 020 7916 1000
VAT number 523 0595 65
Jeff Kahane MA (Cantab), Dip. Arch. RIBA

client	GEORGIANS TENNIS CLUB				
job	GEORGIANS TENNIS CLUB, N8				
drawing	PROPOSED EAST+WEST ELEVATIONS-PADEL				
date	drawn	scale	drawing no.	rev.	
NOV 2025	RG	1:100@A3	844_PL_321	B	

Appendix A.2 – Graphical Model Outputs



Greenways

Temporary
Shed

Shepherds Lane

Cot Way



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Key

- Proposed Buildings
- Surrounding Buildings

CLIENT

Bayshield Limited

PROJECT

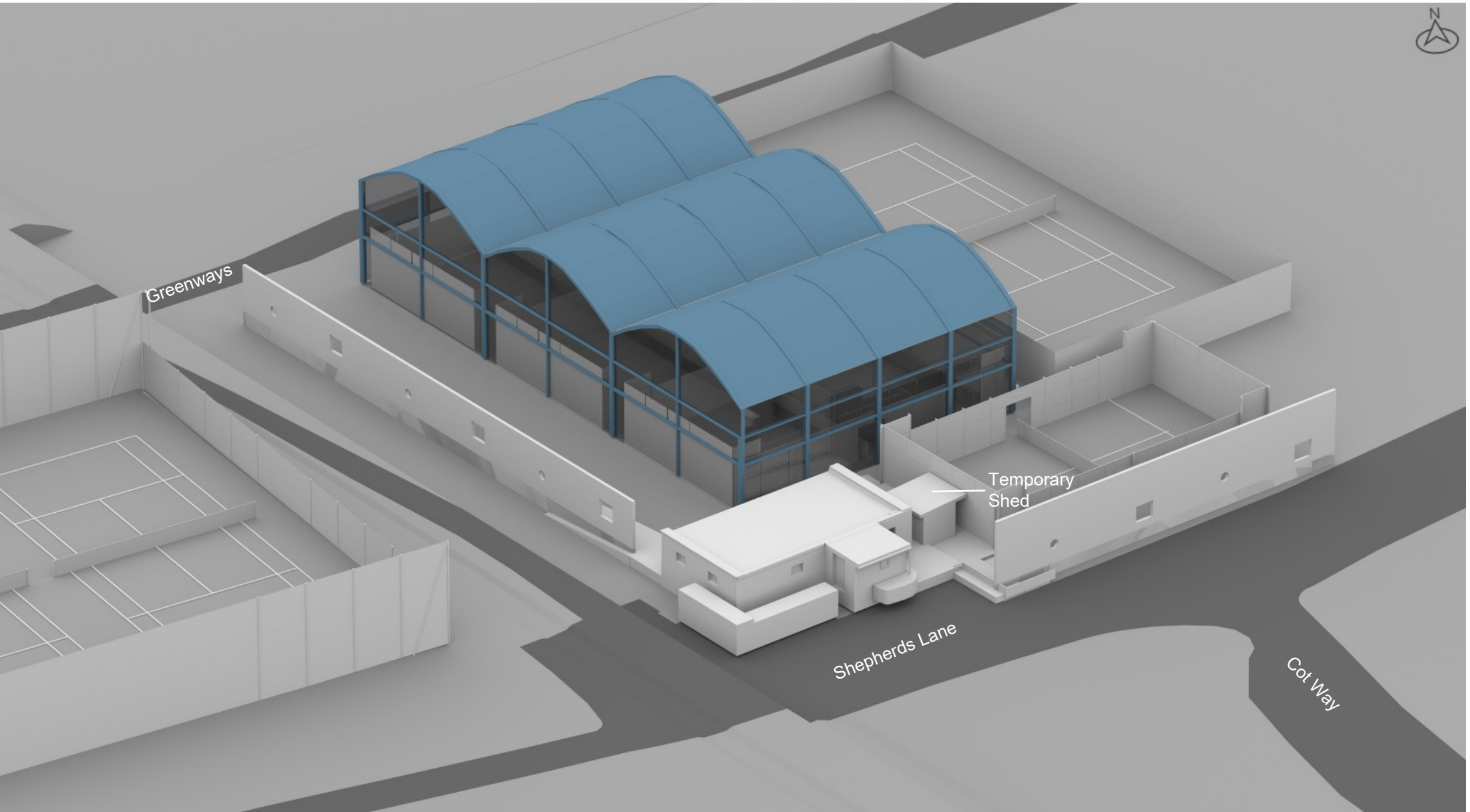
The Georgians Teniss Club, Crouch End, London

DESCRIPTION	REVISION	DATE
First issue	00	12/12/2025

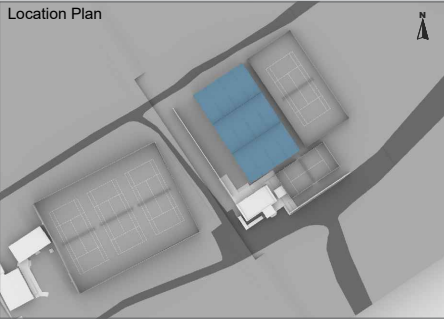
SCALE	PROJ REF.	ANALYST	DRAWN BY
NTS	4007	VK	LR

DWG REF.
Proposed Plan View

DWG No.
01

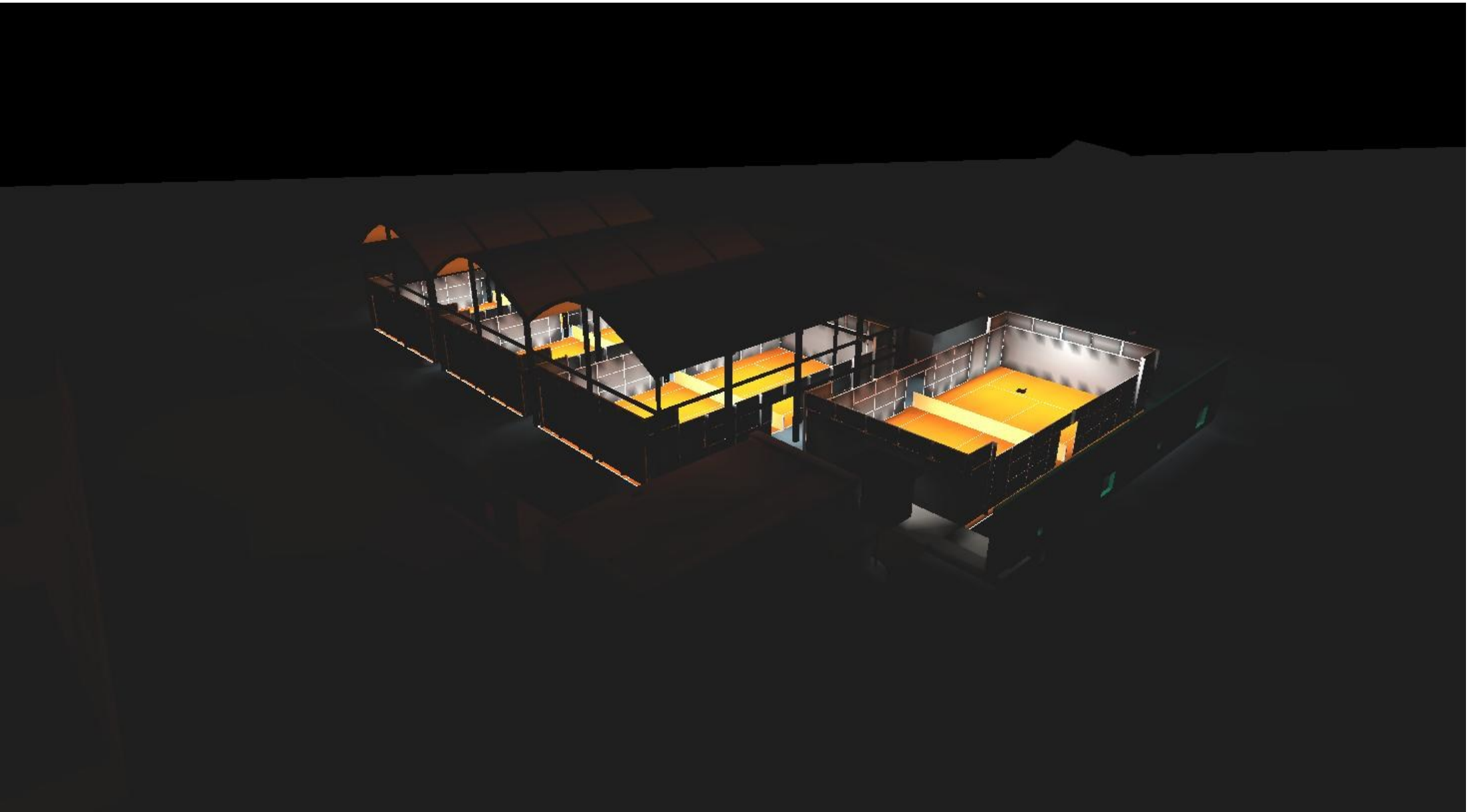


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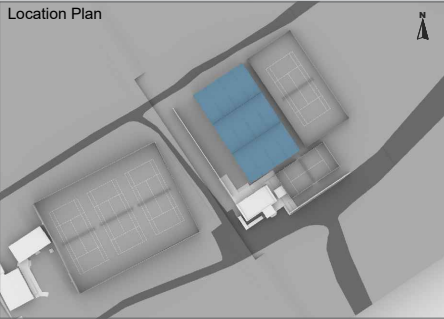


Key	
	Proposed Buildings
	Surrounding Buildings

CLIENT			Bayshield Limited
PROJECT			The Georgians Teniss Club, Crouch End, London
DESCRIPTION	REVISION	DATE	
First issue	00	12/12/2025	
SCALE	PROJ REF.	ANALYST	DRAWN BY
NTS	4007	VK	LR
DWG REF.		DWG No.	
Proposed 3D View		02	

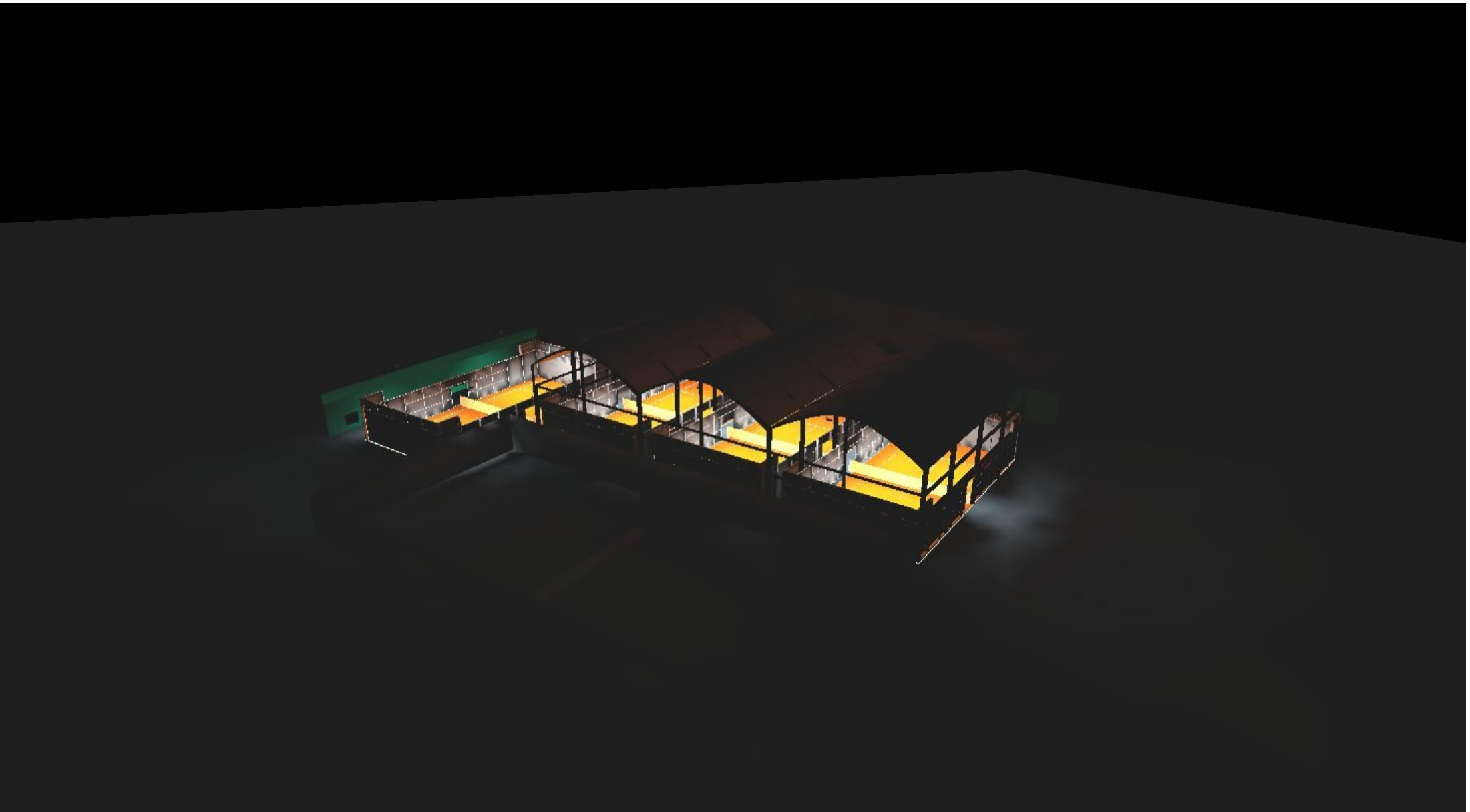


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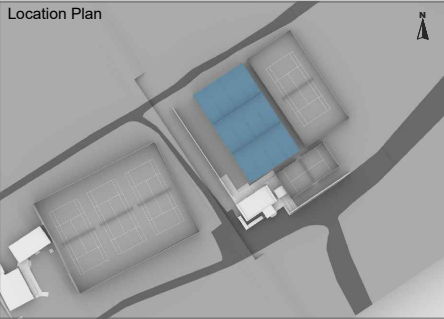


Key

CLIENT			
Bayshield Limited			
PROJECT			
The Georgians Teniss Club, Crouch End, London			
DESCRIPTION	REVISION	DATE	
First issue	00	12/12/2025	
SCALE	PROJ REF.	ANALYST	DRAWN BY
NTS	4007	VK	LR
DWG REF.	DWG No.		
Luminance Distribution	03		

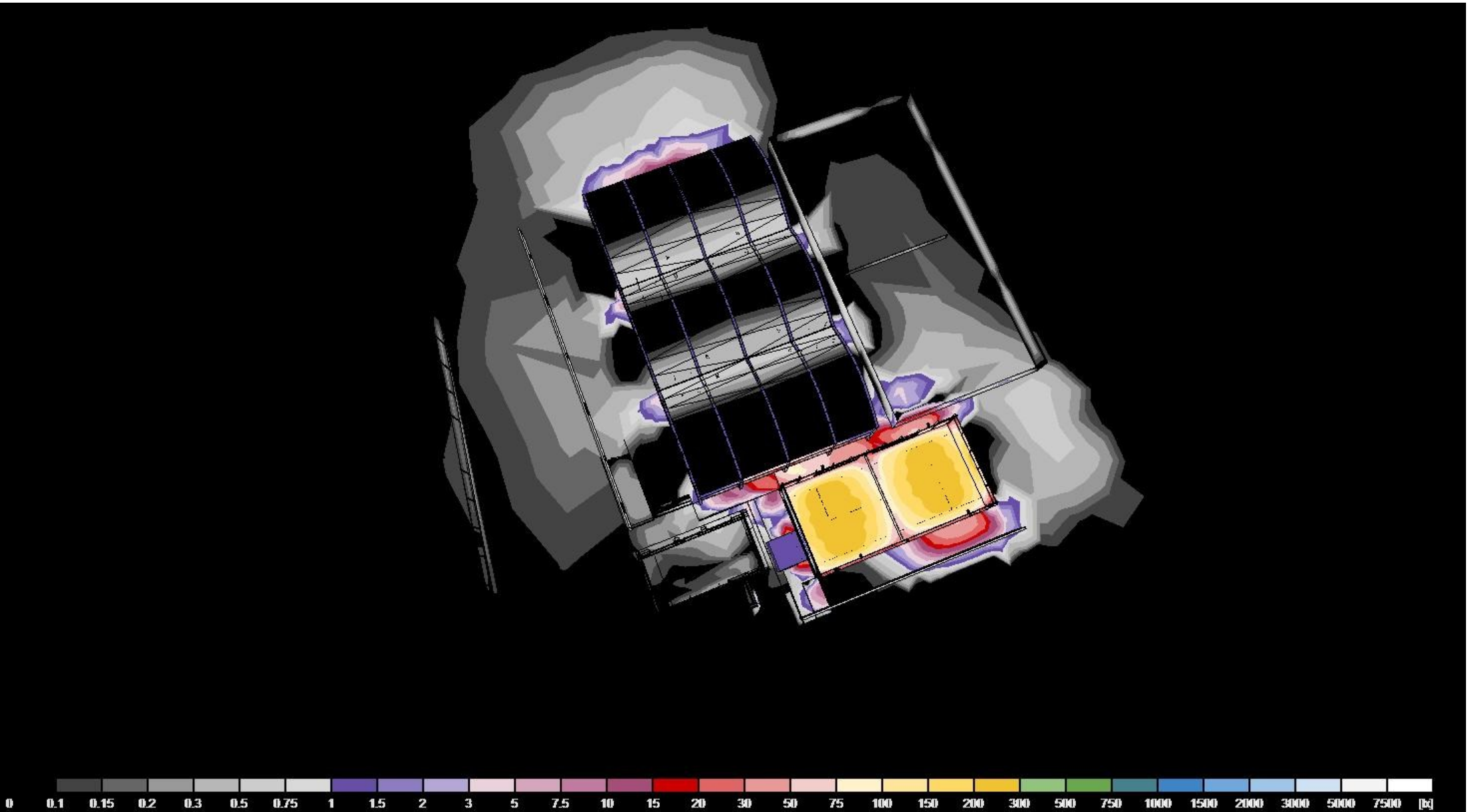


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Key

		CLIENT	
		Bayshield Limited	
		PROJECT	
		The Georgians Teniss Club, Crouch End, London	
SCALE	PROJ REF.	ANALYST	DRAWN BY
NTS	4007	VK	LR
DWG REF.	DWG No.		
Luminance Distribution	04		
DESCRIPTION		REVISION	DATE
First issue		00	12/12/2025

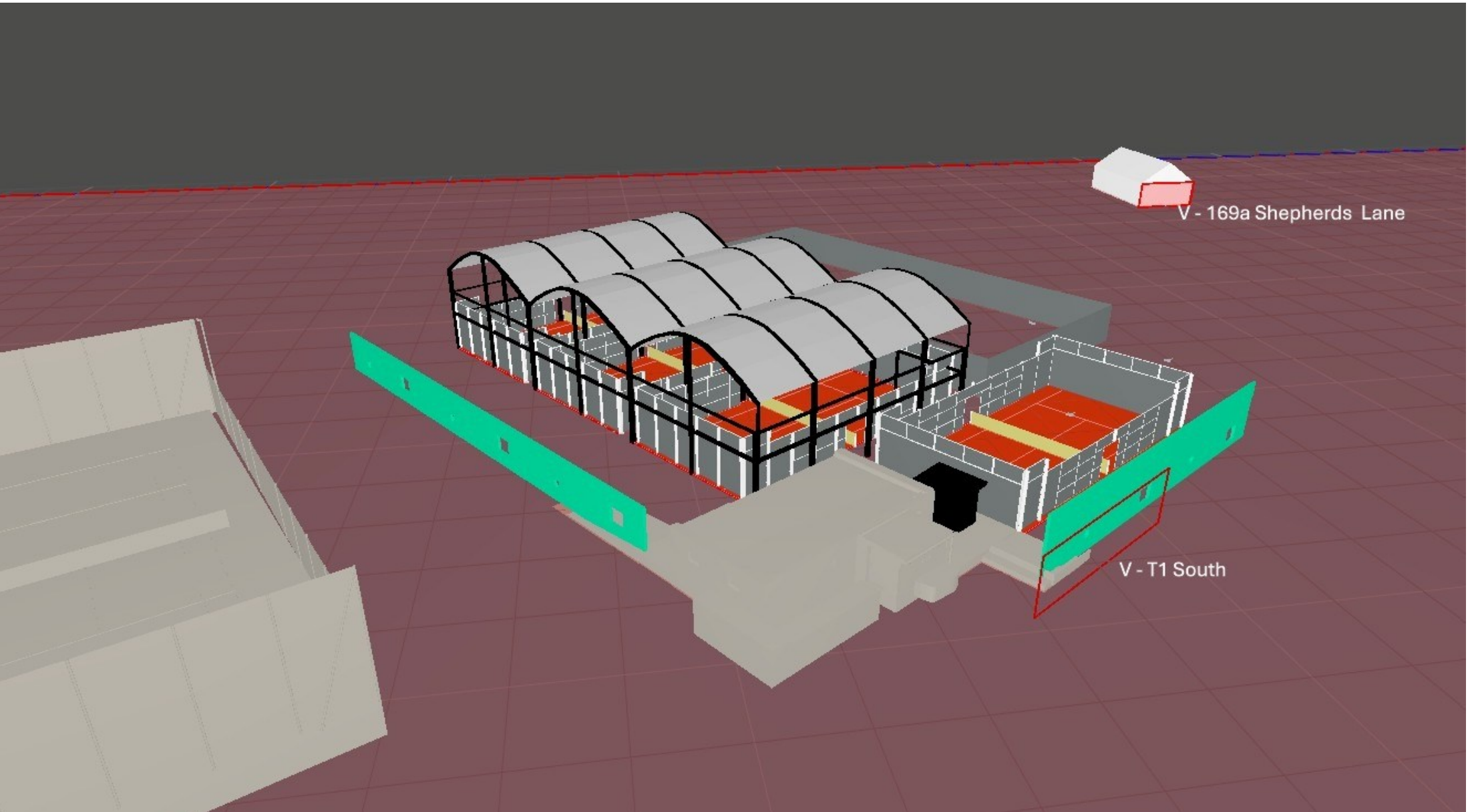


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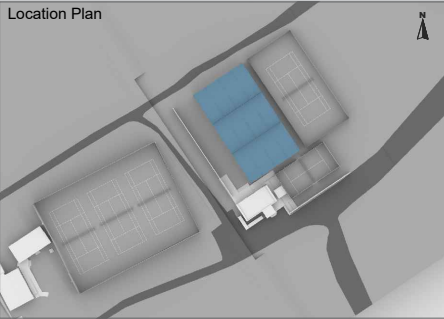


Key

CLIENT				Bayshield Limited
PROJECT				The Georgians Teniss Club, Crouch End, London
DESCRIPTION	REVISION	ANALYST	DATE	
First issue	00		12/12/2025	
SCALE	PROJ REF.	ANALYST	DRAWN BY	
NTS	4007	VK	LR	
DWG REF.	Pseudo Contours			DWG No.
				05



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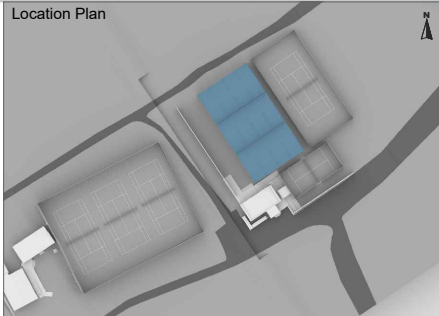
Key

Sensor Area

CLIENT			
Bayshield Limited			
PROJECT			
The Georgians Teniss Club, Crouch End, London			
DESCRIPTION	REVISION	DATE	
First issue	00	12/12/2025	
SCALE	PROJ REF.	ANALYST	DRAWN BY
NTS	4007	VK	LR
DWG REF.	DWG No.		
Sensors Location	06		



Location Plan



Key

— Lux 0.15	— Lux 10
— Lux 0.2	— Lux 15
— Lux 0.3	— Lux 20
— Lux 0.5	— Lux 30
— Lux 1	— Lux 50
— Lux 1.5	— Lux 75
— Lux 2	— Lux 100
— Lux 3	— Lux 150
— Lux 5	— Lux 200
— Lux 7.5	— Lux 300

CLIENT

Bayshield Limited

PROJECT

The Georgians Teniss Club, Crouch End, London

DESCRIPTION	REVISION	DATE
First issue	00	12/12/2025

SCALE	PROJ REF.	ANALYST	DRAWN BY
NTS	4007	VK	LR

DWG REF.
3D Model - Horizontal ISOLux contours

DWG No.
07



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0.58

0.75

0.5

0.35

0.3

0.25

0.2

0.15

0.29 0.34 0.36 0.34 0.33 0.33 0.33 0.35 0.31 0.28 0.24 0.21 0.18 0.16

0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02	0.02	0.02	0.02	0.02





Key

	16	GWP2183NB	Smart [PRO] 2.0 - 1M Class II	1xLED 165 W
	3	S.5515H.19	MICROZIP COMFORT TONDA DOWNLIGHT	1xLED 3.8 W

Note: Floodlights GWP2183NB - Approved scheme 2024 (HGY/2024/1839)



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CLIENT
Bayshield Limited
PROJECT
The Georgians Tennis Club, Crouch End, London
DESCRIPTION REVISION DATE
First issue 00 12/12/2025

SCALE PROJ. REF. ANALYST DRAWN BY
NTS 4007 VK LR
DWG REF. DWG. No.
Luminaries Location 09

Appendix A.3 – Relux Calculations

Installation : Georgians Tennis Club

Project number : 4007

Customer :

Processed by : VK

Date : 12.12.2025

The following values are based on precise calculations performed on calibrated lamps and luminaires, and their configurations, whereby gradual, unavoidable deviations can occur in practice. All guarantee claims are excluded for the specified data.

This exclusion of liability applies irrespective of the legal grounds for both damages and consequential damages suffered by users and third parties.

Object :
Installation : Georgians Tennis Club
Project number : 4007
Date : 12.12.2025



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1.2 SIMES, MICROZIP COMFORT TONDA DOWNLIGHT (S.5515H.19)	
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Object :
Installation : Georgians Tennis Club
Project number : 4007
Date : 12.12.2025

RELUX®

1 Luminaire data

1.1 GEWISS, Smart [PRO] 2.0 - 1M Class II (GWP2183NB)

1.1.1 Data sheet

Manufacturer: GEWISS

GEWISS

GWP2183NB projector Smart [PRO] 2.0 - 1M Class II

SMART[PRO] 2.0 is a medium power, LED floodlight for indoor and outdoor areas and sport fields.

It can be installed at wall, ceiling or on ground by a steel bracket.

EN AB 46100 die-cast aluminium body with integrated heat sink, painted with polyester powder

Metal core PCB with CSP LED. Reflector made in metallized HT PC or in anodised and polished aluminium.

Painted galvanized steel bracket with goniometric scale.

4mm tempered glass, anti-aging silicone gaskets, External screws in stainless steel A2.

Anti-condensation device. IP68 electrical connection for 1.5mm² wires. Insulation class 1. Integrated Driver.

Designed to withstand overvoltages of up to 5KV (DM) e 10KV (CM), and temperature from -30°C to +50°C, and offers protection from water and dust penetration of up to level IP66 and from shocks and impacts of up to level IK08.

Luminaire data

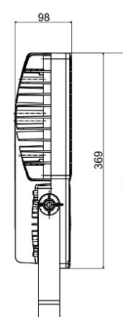
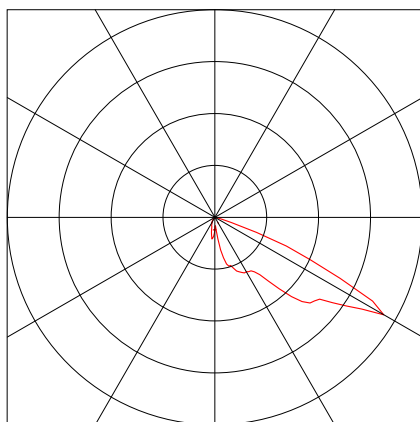
Absolute Photometry

Luminaire efficacy : 98.79 lm/W
Classification : A30 ↓ 100.0% ↑ 0.0%
CIE Flux Codes : 30 73 100 100 100
UGR 4H 8H : 44.5 / 33.4
Control gear : Electronic ballast
Power : 165 W
Luminous flux : 16309.8 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 3000
Colour reproduction : 80

Dimensions : 260 mm x 370 mm x 100 mm



Object :
Installation : Georgians Tennis Club
Project number : 4007
Date : 12.12.2025

RELUX®

1 Luminaire data

1.2 SIMES, MICROZIP COMFORT TONDA DOWNLIGHT (S.5515H.19)

1.2.1 Data sheet

Manufacturer: SIMES

SIMES
luce per l'architettura

S.5515H.19 recessed luminaire MICROZIP COMFORT TONDA DOWNLIGHT

Version available on request without price surcharge.

CEILING RECESSED MOUNTED
MICROZIP LED DOWNLIGHT ROUND COMFORT
S.5515H
1 module LED 2700K 220-240Vac ON-OFF

Rated module luminous flux:: 240lm
Rated luminaire luminous flux: : 143lm
Rated module power: : 2.2W
Rated luminaire power: : 3.8W
Luminaire efficacy: : 38lm/W
Voltage (AC): : 220-240Vac
Frequency (AC): : 50/60Hz
Voltage (DC): : 176-264Vdc
Dimmable: : NOT DIMMABLE (ON-OFF)
Electrical insulation class: : I
Protection class IP: : IP65
Mechanical resistance: : IK09
CE ENEC

SPECIAL VERSION ON REQUEST: this Luminaires can be supplied with a surcharge in class III (without power supply). Requires working remote power supply in constant current at 700mA $V_{fmin}=2.7Vdc$ $V_{fmax}=3.2Vdc$.
Example SIMES compatible power supplies (check the complete list of the drivers on the catalogue):
Art. S.2438 POWER SUPPLY 230V/250mA-700mA 20W o 230Vac/24Vdc 16W 240Hz DALI DIMMABLE IN BOX IP67
Art. S.3426 POWER SUPPLY DALI MULTI-POWER 230V/250mA-700mA o 230V/24V 16W 240Hz IP20

NB: Use 1 Power Supply for each Luminaires

LUMINAIRE TYPE

False ceiling-recessed down-light fitting. Recessing depth 95 mm. IP rating IP 65

MATERIAL CHARACTERISTICS

"Copper Free" Aluminium die cast housing in EN AB-44100 with high resistance against corrosion. Stone wash surface treatment prior to painting process. 2 mm thick front trim in Stainless Steel - Grade AISI 316L with 2,5-3% molybdenum content. A4 grade Stainless Steel screws with 2,5-3% molybdenum content which increases the resistance against corrosion. Pre treated Silicone Gaskets. Painting Process : 3 Step Process

1) Surface treatment with BONDERITE. A heavy metal free chemical surface treatment containing ceramic nano particles giving a cohesive, inorganic and highly dense protective coating. 2) PRE POLYMERIZATION a process of introducing an epoxy primer with excellent characteristics to the paint which also offers very high resistance to oxidation due to its Zinc content. 3) POLYMERIZATION a process with the application of polyester powder with high resistance against UV rays and harsh weather conditions. Resistance test protection for Marine applications for 1200h. Mechanical resistance IK 09

LIGHTING PERFORMANCE

Sophisticated optical systems able to considerably reduce glare thanks to the retracted position of the LED. The HI-GRADE lathed anodized reflector is composed of 99,98% pure anodized aluminium with a bright polish finish. Toughened semiacid-etched glass 8mm thick. Lamp adjustable $\pm 15^\circ$ position. LOR --

Object :
Installation : Georgians Tennis Club
Project number : 4007
Date : 12.12.2025

RELUX®

1 Luminaire data

1.2 SIMES, MICROZIP COMFORT TONDA DOWNLIGHT (S.5515H.19)

1.2.1 Data sheet

INSTALLATION AND MAINTENANCE

The luminaires are fixed to the falseceiling by a heavy-duty bracket system, adjustable from inside the luminaire. WIRING

Luminaire hard wired with 0.5m H05RN-F cable. Isolation: CLASS I . Available colours: Stainless steel (cod.19). Weight: 0.5457 Kg Glow Wire test: 850Å°C

LED module included

This luminaire contains built-in LED modules. In case of damage or malfunction please contact the manufacturer to receive additional instructions on how to replace and relative spare parts to order. The LED modules cannot be handled in the luminaire by the end user. This product contains a light source of energy efficiency class (EPREL - European Product Registry for Energy Labelling): F.

LED modules are engineered accordingly to the existing regulations of Lumen Maintenance (LM80) and Technical Memorandum (TM21), where uniformity and quality of the light is 70,000 hours referred to L80 B10 Ta 25 Å° C (50,000 hours referable to L80 B10 Ta 40Å°C). Lifespan of the luminaire min. 70.000 hours Ta 25Å°C, min. 50,000 hours at 40Å°C. Performance Ambient temperature Tq 25Å°C. Operating ambient temperature range is from -20Å°C to +50Å°C. Storage temperature range from -20Å°C to +60Å°C.

ELECTRONIC EQUIPMENT SENSITIVE TO OVERVOLTAGE. We recommend installing surge protection devices "SPD" in the electrical system. Protection devices prevent the intensity of these phenomena's, protecting the appliances from the risk of being damaged and extending the lifespan. Outdoor luminaires are subject to all types of permanent, temporary, or transient electrical disturbances. Such disturbances can create permanent damage or failure affecting its performance and durability. The surge protection device (supplied by SIMES) is utilized to limit the destructive effect of these phenomena. We suggest that each luminaire must be connected to one protection device at not more than 10m away. For correct coordination of the protections, a surge protection device must also be provided inside the electrical panel of the system (the selection of this device must be carried out from the electrical designer and is not supplied by SIMES).

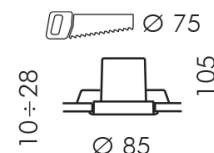
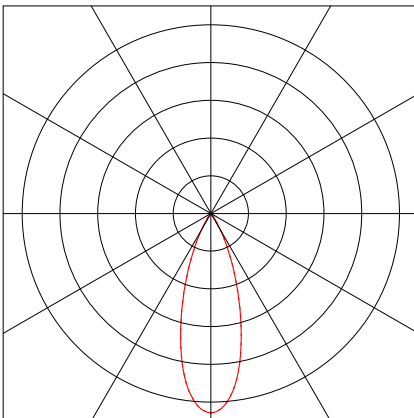
Luminaire data

Absolute Photometry
Luminaire efficacy : 37.63 lm/W
Classification : A80 ↓ 100.0% ↑ 0.0%
CIE Flux Codes : 98 100 100 100 100
UGR 4H 8H : <10.0 / <10.0
Control gear : Electronic ballast
Power : 3.8 W
Luminous flux : 143 lm

Equipped with

Quantity : 1
Designation : LED
Colour : 2700K

Dimensions : Ø85 mm x 0.0 mm



Object :
Installation : Georgians Tennis Club
Project number : 4007
Date : 12.12.2025

RELUX®

2 Exterior 1

2.1 Description, Exterior 1

2.1.1 Luminaire data/Room elements

Product data:

Type No.\Make

1 16 x  **GEWISS**
Order No. : GWP2183NB
Luminaire name : Smart [PRO] 2.0 - 1M Class II
Equipment : 1 x LED 165 W / 16300 lm

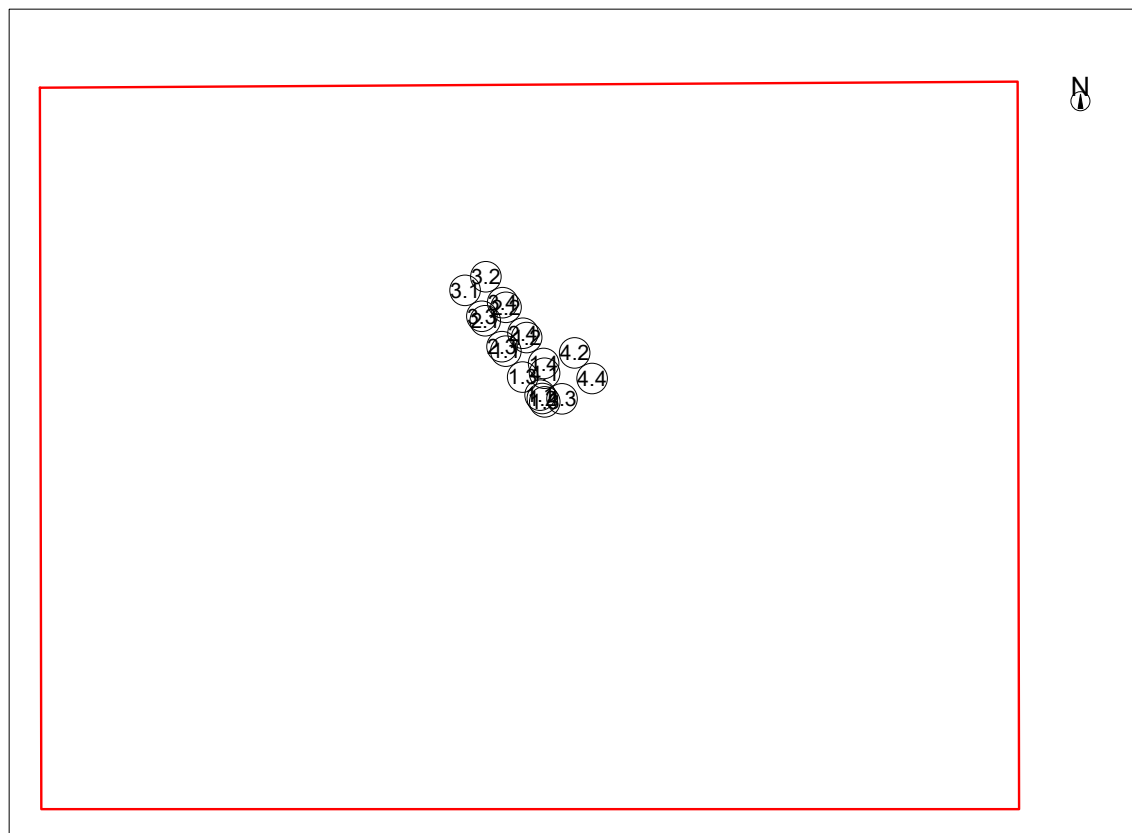
2 3 x  **SIMES**
Order No. : S.5515H.19
Luminaire name : MICROZIP COMFORT TONDA DOWNLIGHT
Equipment : 1 x LED 3.8 W / 143 lm

2 Exterior 1

2.1 Description, Exterior 1

2.1.1 Luminaire data/Room elements

Floor with luminaire and sensor positions:



No.	Centre point			Rotation angle			Target coordinates		
	X [m]	Y [m]	Z [m]	Z [°]	C0 [°]	C90 [°]	Xa [m]	Ya [m]	Za [m]
SIMES MICROZIP COMFORT TONDA DOWNLIGHT S.5515H.19									
1.1	163.51	137.06	2.43	0.00	0.00	0.00	163.51	137.06	0.00
1.2	164.29	135.93	2.43	0.00	0.00	0.00	164.29	135.93	0.00
1.3	165.08	134.81	2.43	0.00	0.00	0.00	165.08	134.81	0.00

GEWISS Smart [PRO] 2.0 - 1M Class II GWP2183NB	Position			za	Rotation	
	x[m]	y[m]	z[m]		xa	ya
1	152.25	151.58	6.00	303.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	157.93	142.85	0.00	303.0°	0.0°	0.0°
2	159.12	156.05	6.00	123.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	164.80	147.31	0.00	303.0°	0.0°	0.0°
3	157.80	143.03	6.00	303.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	152.13	151.77	0.00	123.0°	0.0°	0.0°

Object :
 Installation : Georgians Tennis Club
 Project number : 4007
 Date : 12.12.2025



2 Exterior 1

2.1 Description, Exterior 1

2.1.1 Luminaire data/Room elements

4	164.68	147.50	6.00	123.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	159.00	156.24	0.00	123.0°	0.0°	0.0°
1	145.43	161.57	6.00	303.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	151.11	152.83	0.00	303.0°	0.0°	0.0°
2	152.31	166.04	6.00	123.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	157.99	157.30	0.00	303.0°	0.0°	0.0°
3	150.99	153.02	6.00	303.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	145.31	161.75	0.00	123.0°	0.0°	0.0°
4	157.87	157.49	6.00	123.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	152.19	166.22	0.00	123.0°	0.0°	0.0°
1	138.77	171.63	6.00	303.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	144.45	162.89	0.00	303.0°	0.0°	0.0°
2	145.64	176.10	6.00	123.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	151.32	167.36	0.00	303.0°	0.0°	0.0°
3	144.33	163.08	6.00	303.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	138.65	171.82	0.00	123.0°	0.0°	0.0°
4	151.20	167.55	6.00	123.0°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	145.52	176.28	0.00	123.0°	0.0°	0.0°
1	165.02	144.27	6.00	304.1°	0.0°	1.8°
with		aiming point			rotation	
1GWP2183NB	170.47	136.23	0.00	304.1°	0.0°	1.8°
2	174.96	150.99	6.00	124.1°	0.0°	0.0°
with		aiming point			rotation	
1GWP2183NB	180.22	143.23	0.00	304.1°	0.0°	2.8°
3	170.74	135.82	6.00	304.1°	0.0°	-4.3°
with		aiming point			rotation	
1GWP2183NB	165.80	143.12	0.00	124.1°	0.0°	4.3°
4	180.68	142.55	6.00	124.1°	0.0°	1.8°
with		aiming point			rotation	
1GWP2183NB	175.23	150.60	0.00	124.1°	0.0°	1.8°

Object :
 Installation : Georgians Tennis Club
 Project number : 4007
 Date : 12.12.2025



2 Exterior 1

2.1 Description, Exterior 1

2.1.1 Luminaire data/Room elements

Measuring surface

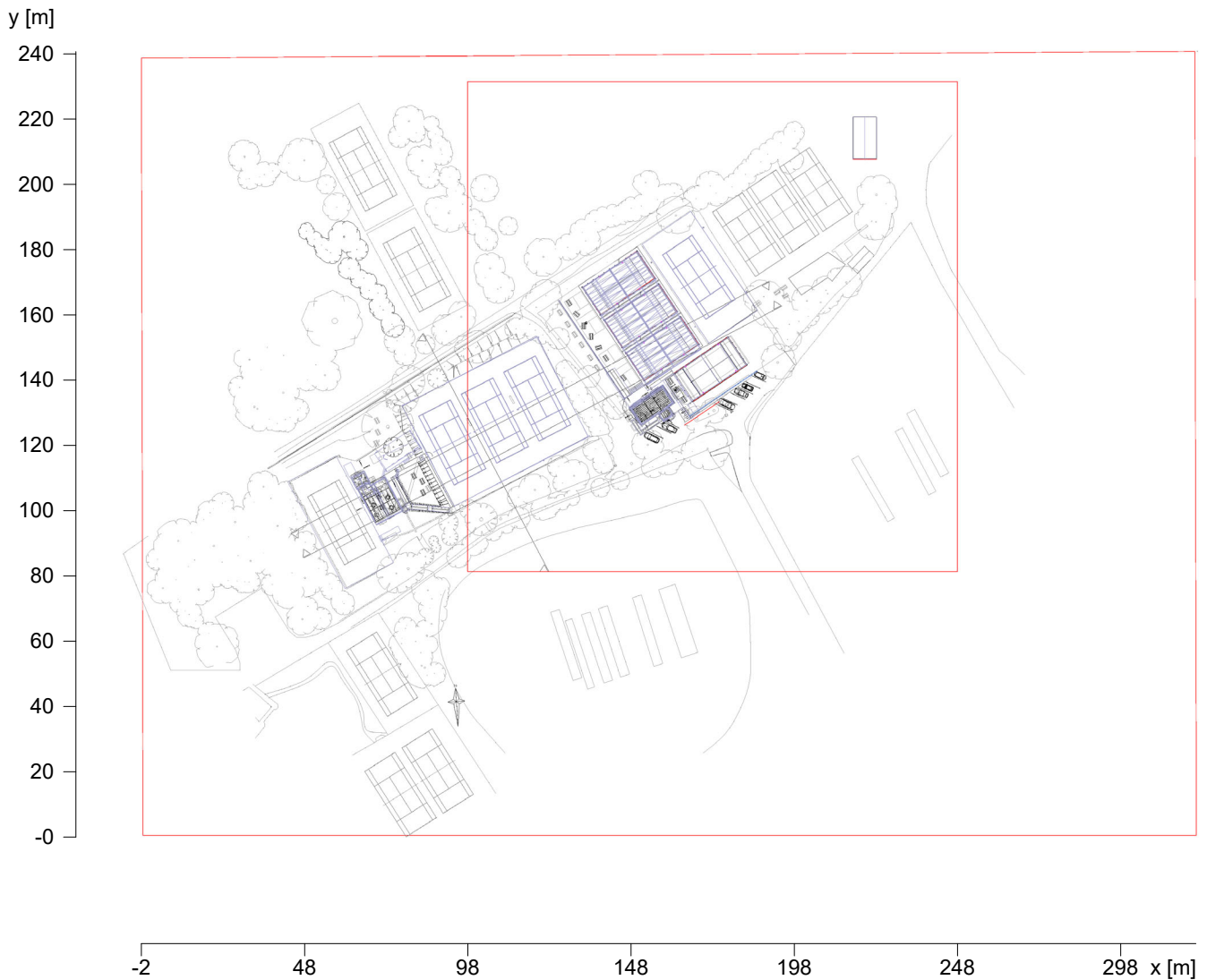
No.	xm[m]	ym[m]	zm[m]	Length	Width	z axis	Rotation angle	
							L axis	Q axis
Ref. plane 1.1	-1.50	238.50	0.00	323.01	240.68	270.12	0.00	0.00
Sports ground 1.1	0.00	0.00	0.00	22.19	19.44	0.00	0.00	0.00
Sports ground 1.2	0.00	0.00	0.00	22.25	19.41	0.00	0.00	0.00
Sports ground 1.3	0.00	0.00	0.00	22.32	19.50	0.00	0.00	0.00
Sports ground 1.4	0.00	0.00	0.00	22.52	19.94	0.00	0.00	0.00
V - T1_South								
M 5	175.45	133.26	0.00	10.72	7.24	0.00	90.00	-145.94
V - 169a Shepherds Lane								
M 6	216.36	207.49	0.00	7.27	0.00	0.00	90.00	-0.00
ULR								
M 7	248.37	81.25	200.00	150.00	150.00	0.00	0.00	180.00

Others

No.	xm[m]	ym[m]	zm[m]	Length	Width	z axis	Rotation angle		rho[%]
							L axis	Q axis	
A 1	166.30	128.67	3.00	20.89	14.07	33.80	0.00	0.00	56

2.1 Description, Exterior 1

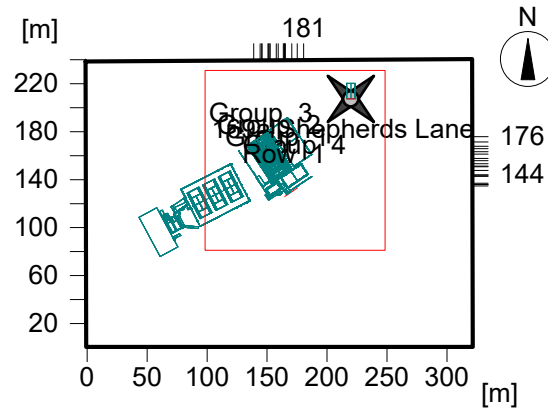
2.1.2 Floor plan



2 Exterior 1

2.2 Calculation results, Exterior 1

2.2.1 Luminous intensity - 169a Shepherds Lane



Measuring point for luminous intensity: 169a Shepherds Lane

Position : x = 219.92 m, y = 207.36 m, z = 1.50 m

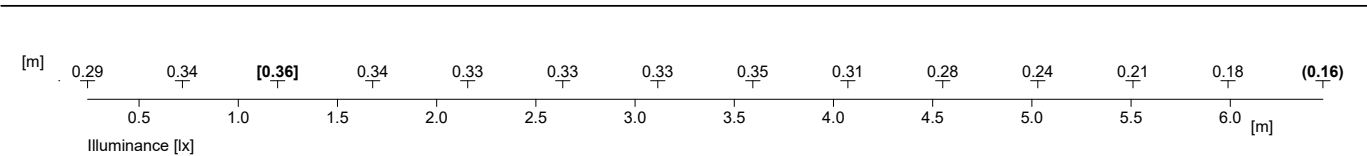
No.	Luminaire	Position			Lumin. intensity
		x[m]	y[m]	z[m]	
1	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	175.15	150.71	5.82	0.002
2	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	164.49	147.78	5.82	0.002
3	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	145.83	175.81	5.82	0.002
4	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	157.68	157.77	5.82	0.002
5	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	152.49	165.75	5.82	0.002
6	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	157.62	143.32	5.82	0.002
7	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	151.02	167.83	5.82	0.002
8	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	138.95	171.34	5.82	0.002
9	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	150.81	153.30	5.82	0.002
10	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	145.62	161.28	5.82	0.002
11	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	152.43	151.30	5.82	0.002
12	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	180.49	142.83	5.81	0.002
13	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	170.56	136.09	5.79	0.001
14	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	159.31	155.77	5.82	0.000
15	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	165.21	143.99	5.81	0.000
16	MICROZIP COMFORT TONDA DOWNLIGHT, S.5515H.19	163.51	137.06	2.43	0.000
17	MICROZIP COMFORT TONDA DOWNLIGHT, S.5515H.19	164.29	135.93	2.43	0.000
18	MICROZIP COMFORT TONDA DOWNLIGHT, S.5515H.19	165.08	134.81	2.43	0.000
19	Smart [PRO] 2.0 - 1M Class II, GWP2183NB	144.14	163.36	5.82	0.000



2 Exterior 1

2.3 Calculation results, Exterior 1

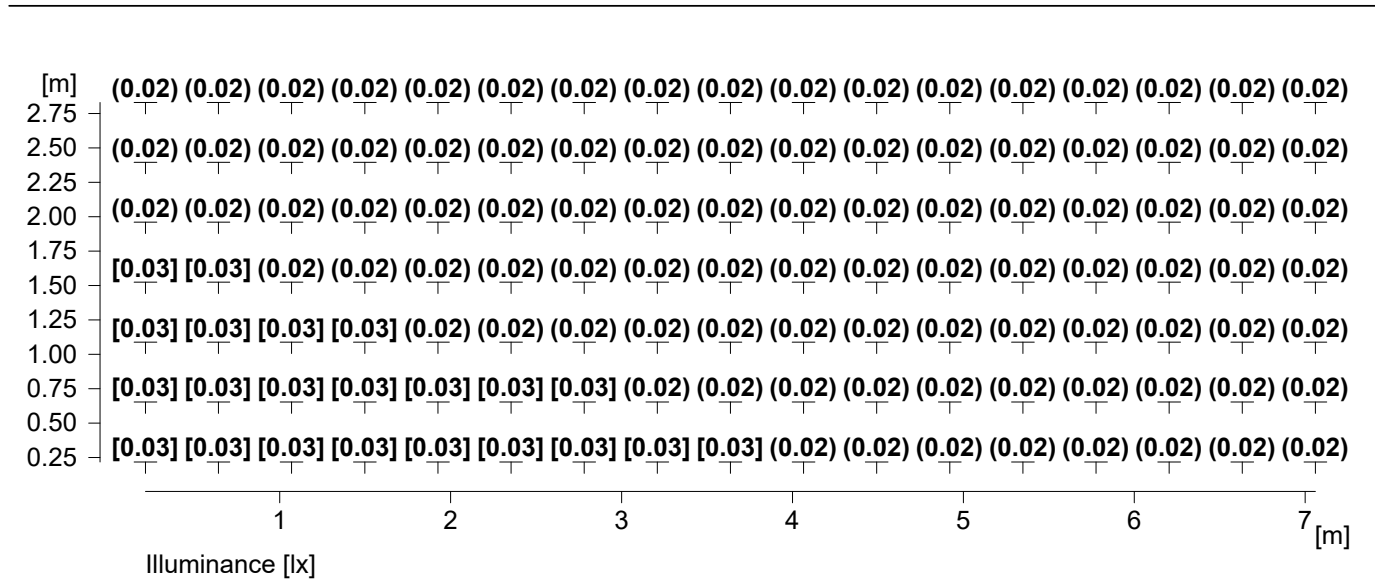
2.3.1 Table, V - T1_South (E)



Average illuminance	E_m	: 0.29 lx
Minimum illuminance	E_{min}	: 0.16 lx
Maximum illuminance	E_{max}	: 0.36 lx
Uniformity U_o	E_{min}/E_m	: 1 : 1.84 (0.54)
Diversity U_d	E_{min}/E_{max}	: 1 : 2.32 (0.43)

2.3 Calculation results, Exterior 1

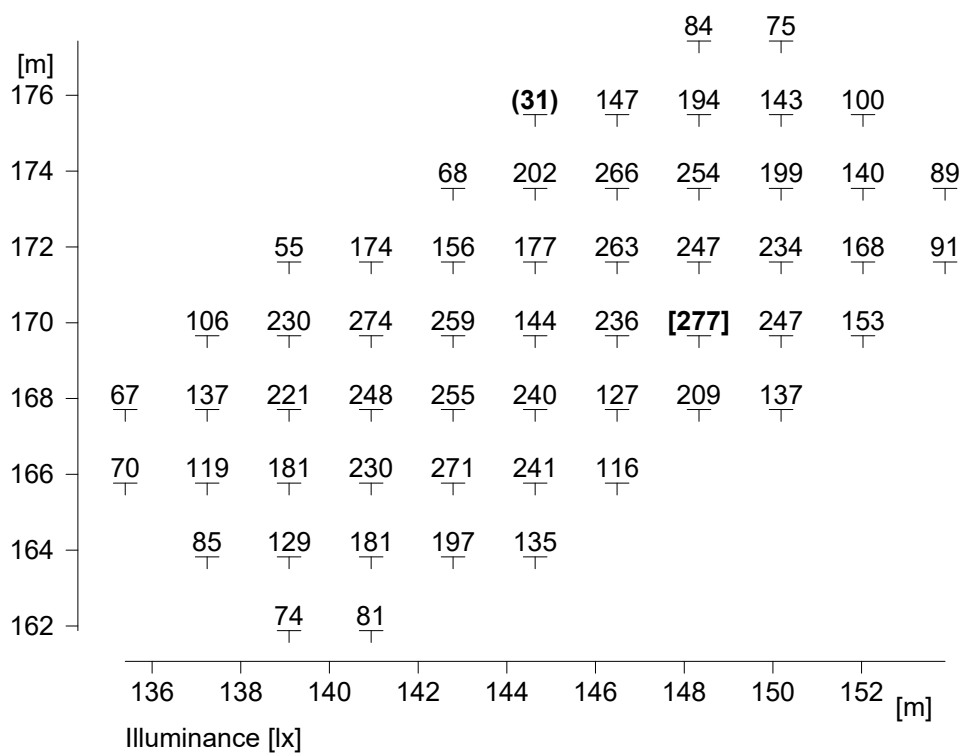
2.3.2 Table, V - 169a Shepherds Lane (E)



Average illuminance	E_m	: 0.02 lx
Minimum illuminance	E_{min}	: 0.02 lx
Maximum illuminance	E_{max}	: 0.03 lx
Uniformity U_o	E_{min}/E_m	: 1 : 1.25 (0.80)
Diversity U_d	E_{min}/E_{max}	: 1 : 1.58 (0.63)

2.3 Calculation results, Exterior 1

2.3.3 Table, Sports ground 1 (E)

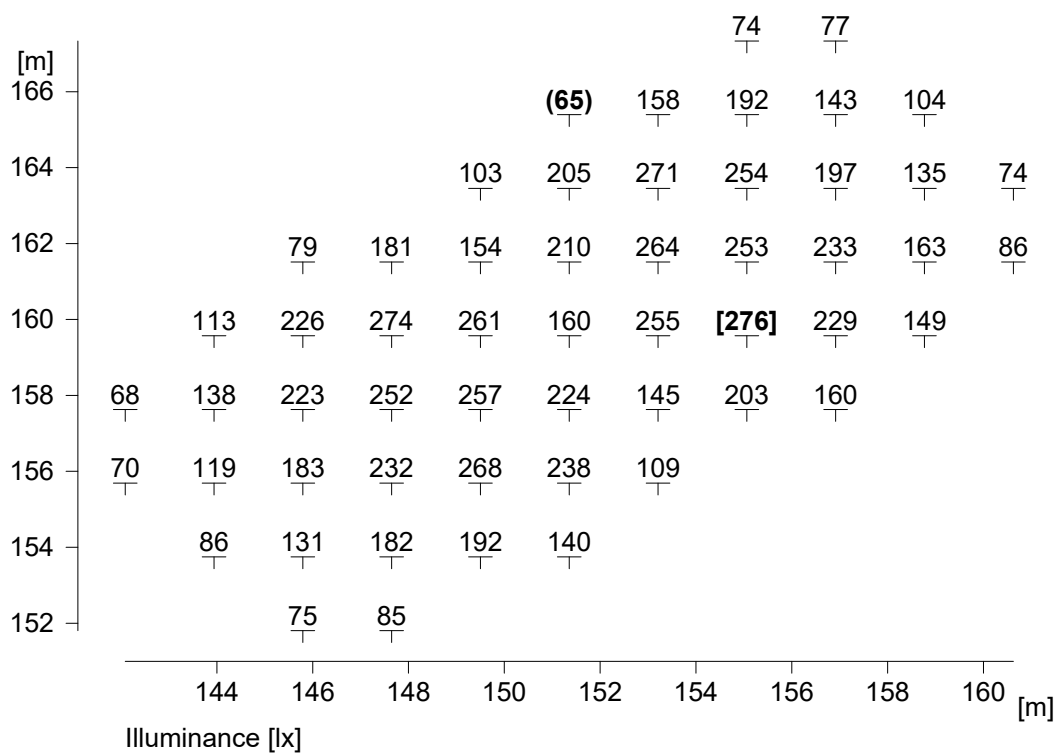


Average illuminance
 Minimum illuminance
 Maximum illuminance
 Uniformity U_0
 Diversity U_d

E_m : 168 lx
 E_{min} : 31 lx
 E_{max} : 277 lx
 E_{min}/E_m : 1 : 5.39 (0.19)
 E_{min}/E_{max} : 1 : 8.89 (0.11)

2.3 Calculation results, Exterior 1

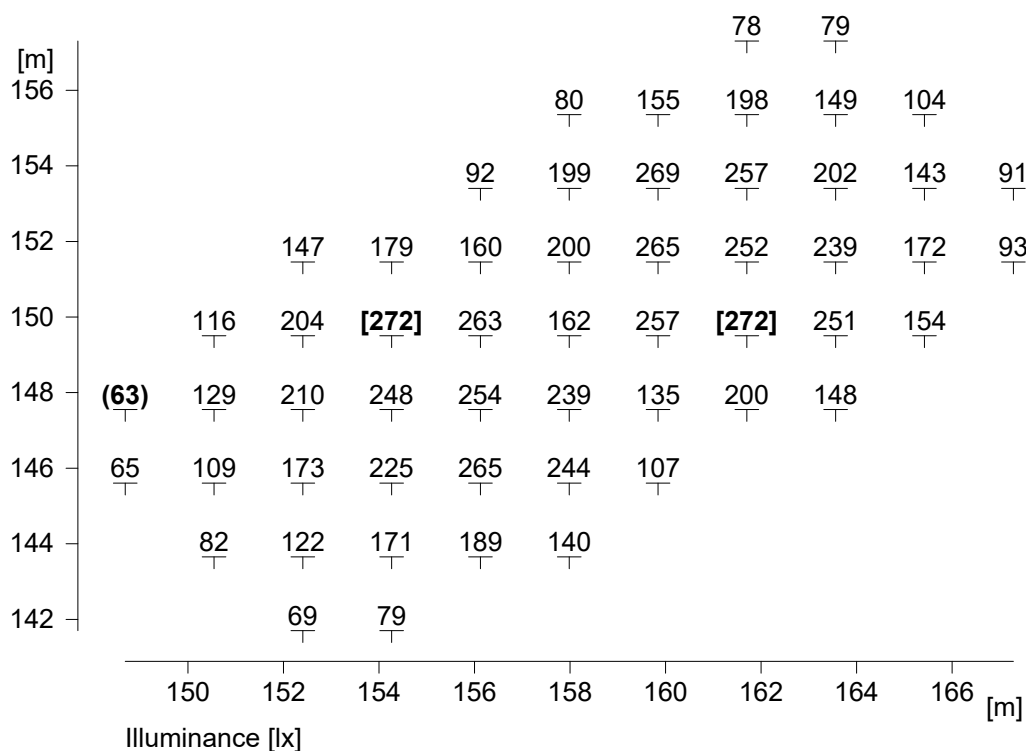
2.3.4 Table, Sports ground 2 (E)



Average illuminance	E_m	: 171 lx
Minimum illuminance	E_{min}	: 65 lx
Maximum illuminance	E_{max}	: 276 lx
Uniformity U_o	E_{min}/E_m	: 1 : 2.62 (0.38)
Diversity U_d	E_{min}/E_{max}	: 1 : 4.23 (0.24)

2.3 Calculation results, Exterior 1

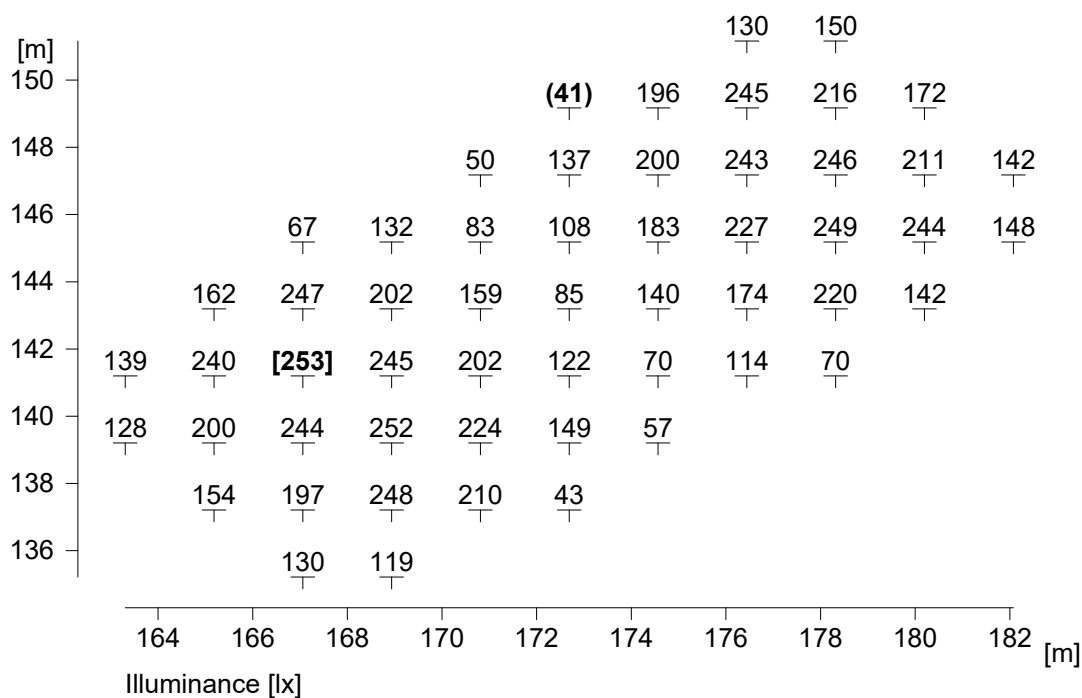
2.3.5 Table, Sports ground 3 (E)



Average illuminance	E_m	: 171 lx
Minimum illuminance	E_{min}	: 63 lx
Maximum illuminance	E_{max}	: 272 lx
Uniformity U_o	E_{min}/E_m	: 1 : 2.74 (0.37)
Diversity U_d	E_{min}/E_{max}	: 1 : 4.35 (0.23)

2.3 Calculation results, Exterior 1

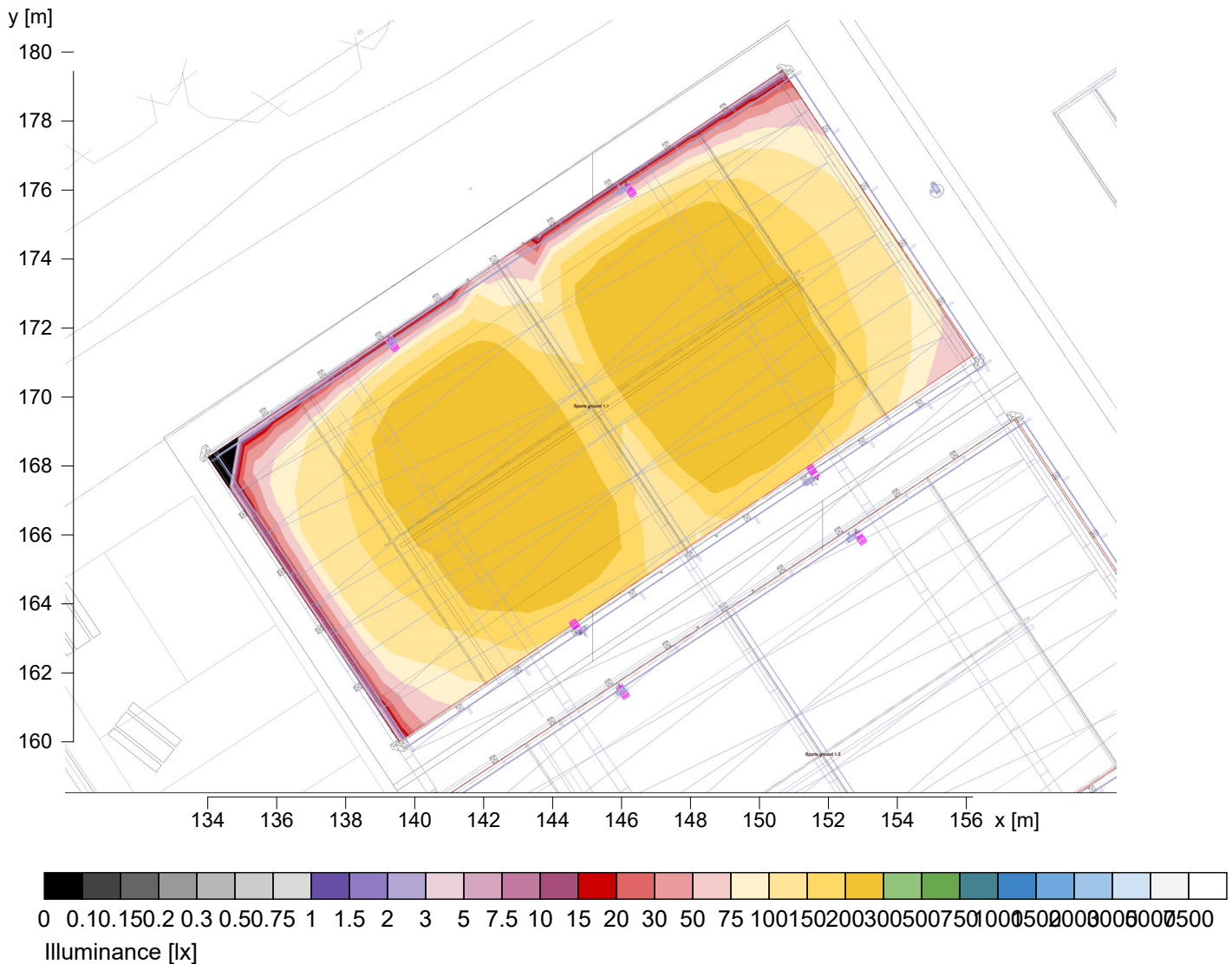
2.3.6 Table, Sports ground 4 (E)



Average illuminance	E_m	: 167 lx
Minimum illuminance	E_{min}	: 41 lx
Maximum illuminance	E_{max}	: 253 lx
Uniformity U_o	E_{min}/E_m	: 1 : 4.04 (0.25)
Diversity U_d	E_{min}/E_{max}	: 1 : 6.13 (0.16)

2.3 Calculation results, Exterior 1

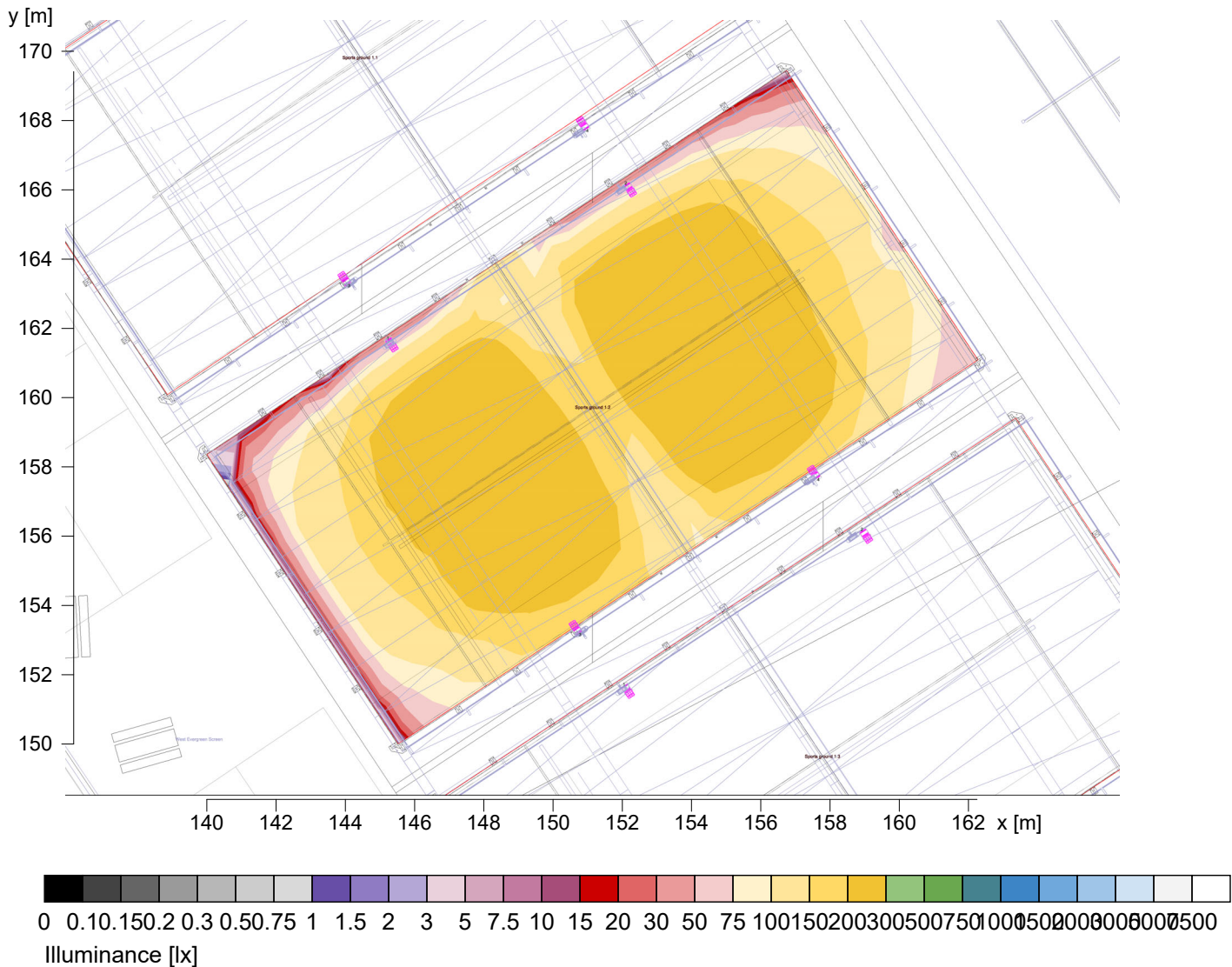
2.3.7 Pseudo colours, Sports ground 1.1 (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 154 lx
Minimum illuminance	E_{min}	: 0 lx
Maximum illuminance	E_{max}	: 287 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: ---
Diversity U_d	E_{min}/E_{max}	: ---

2.3 Calculation results, Exterior 1

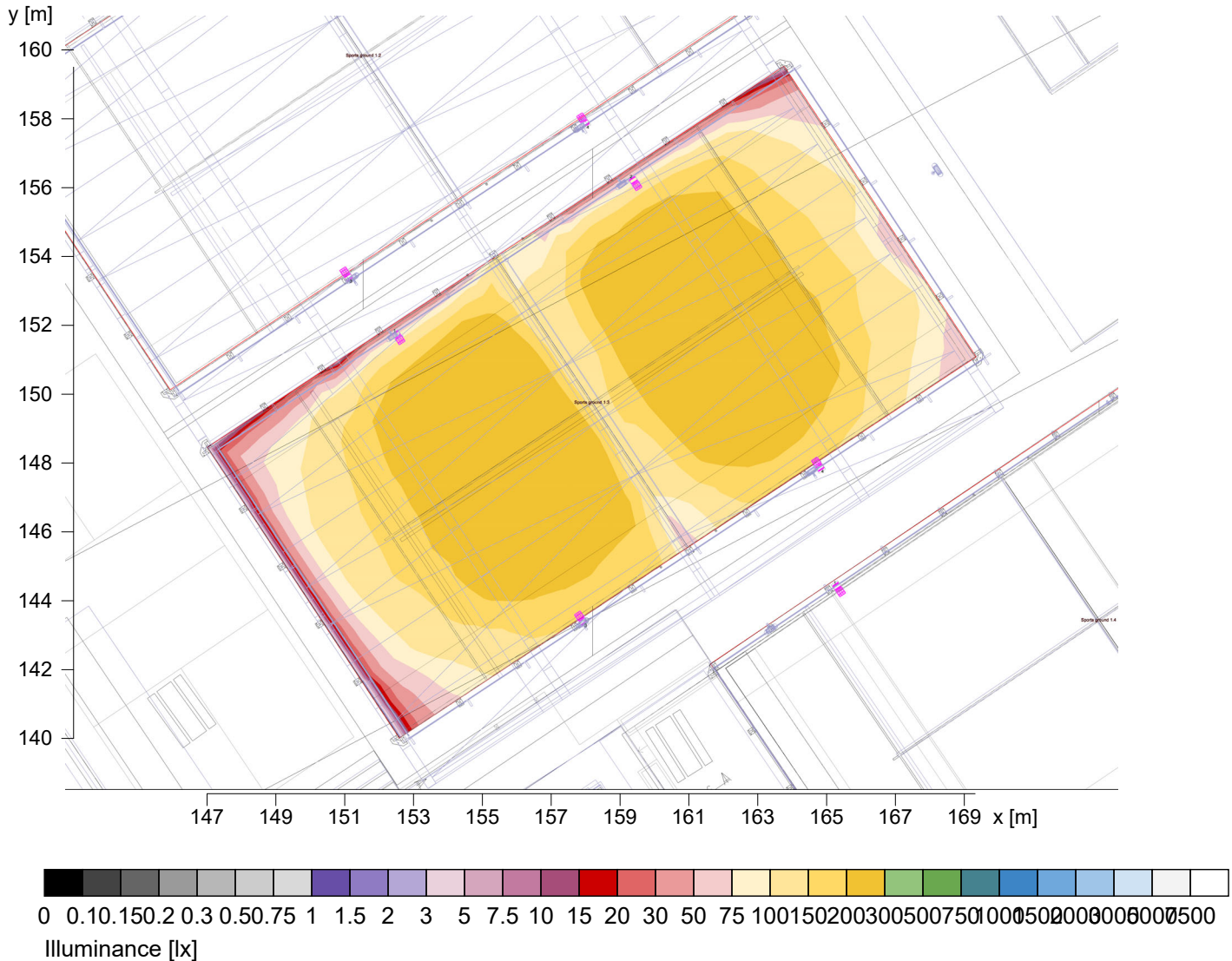
2.3.8 Pseudo colours, Sports ground 1.2 (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 157 lx
Minimum illuminance	E_{min}	: 0 lx
Maximum illuminance	E_{max}	: 289 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: ---
Diversity U_d	E_{min}/E_{max}	: ---

2.3 Calculation results, Exterior 1

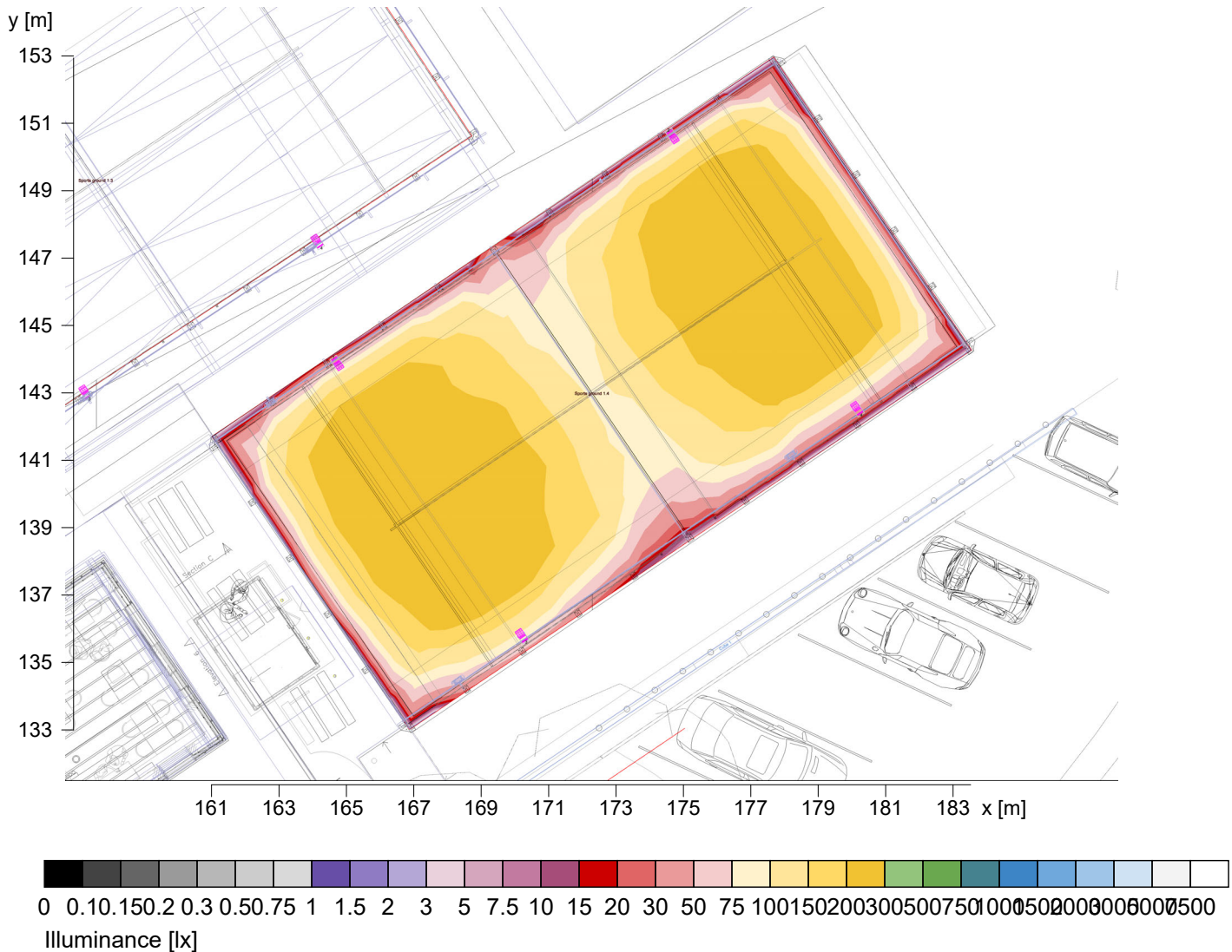
2.3.9 Pseudo colours, Sports ground 1.3 (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 143 lx
Minimum illuminance	E_{min}	: 0 lx
Maximum illuminance	E_{max}	: 281 lx
Uniformity U_o	$E_{min}/\bar{E}_m$	: 1 : 22626.86 (0.00)
Diversity U_d	E_{min}/E_{max}	: 1 : 44354.02 (0.00)

2.3 Calculation results, Exterior 1

2.3.10 Pseudo colours, Sports ground 1.4 (E)



Height reference plane		: 0.00 m
Average illuminance	$\bar{E}_m$	: 113 lx
Minimum illuminance	E_{min}	: 0 lx
Maximum illuminance	E_{max}	: 259 lx
Uniformity U_0	$E_{min}/\bar{E}_m$	: ---
Diversity U_d	E_{min}/E_{max}	: ---