

JD Sports HQ, Bury

EXTERNAL LIGHTING STRATEGY

P02

31th May 2022

DOCUMENT CONTROL

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Project Name	JD Sports HQ, Bury	Job Number
Report Name	External Lighting Strategy	1022986

Document Revision History

Revision	Issue Date	Purpose of issue / description of revision
DRAFT	16/05/2022	For Information
P01	27/05/2022	S4 – Issued for Stage Approval

Document Validation (latest issue)

Revision	Issue Date	Purpose of issue / description of revision / version			
		S4 – Issued for Stage Approval			
			Prepared by	Checked by	Verified by
		Initials	KC	LS	MT
P02	31/05/2022	Signature	KC	 Checked BY l.skelton DATE 31/5/2022	 Verified BY m.tweedale DATE 31/5/2022

INTRODUCTION

This report has been prepared for the JD Sports HQ project to outline the initial proposed external lighting strategy for the landscape development. The report provides a number of key design strategies for areas throughout the site. The principles are to enhance the landscape and public realm design and provide safety lighting for visitors whilst protecting the night sky and ecology to the surrounding areas.

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1	Introduction
2	Design criteria
3	Design Strategy

1.0 INTRODUCTION

1.0 INTRODUCTION

1.1 LANDSCAPE LIGHTING DESIGN

A landscape lighting design is required for the JD Sports in Bury. The scheme consists of different elements. Main element to the Phase one is the Creche building.

The design will follow and complement the architects and landscape architects designs whilst actively reducing light pollution from the site to benefit dark skies and local ecology.

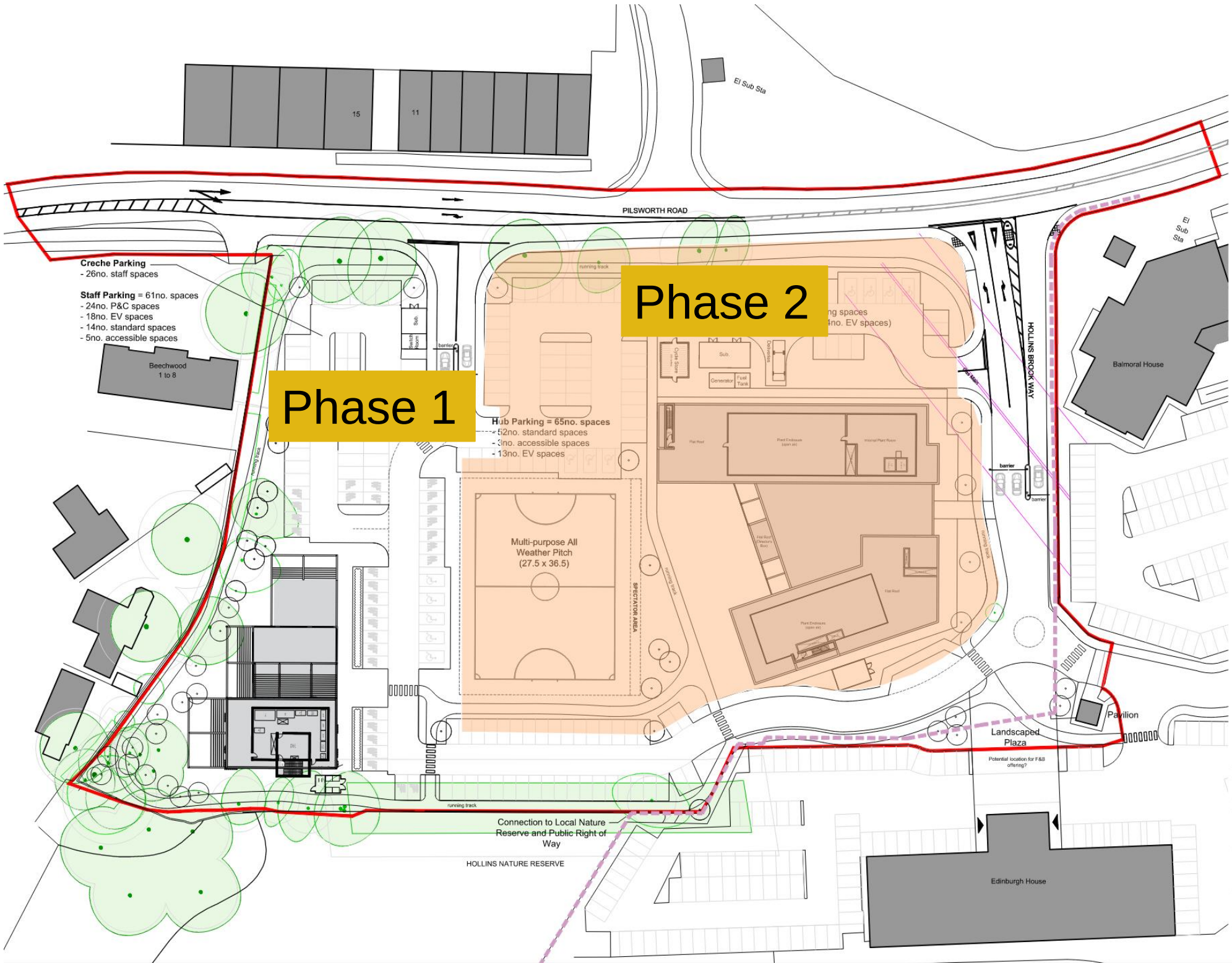
Phase 2 of the site will be in the centre.

1.2 SCOPE OF WORKS

A lighting assessment has been undertaken by Cundall Light4 as part of the planning application for the proposed JD Sports HQ site in Bury.

This report is intended to support the planning application for the proposed development. The objective of the study is to provide an assessment of the impact that the new lighting design might have on the existing site and surrounding sensitive receptors, including neighbouring residential units and ecological areas.

The risk of light spillage from the proposed operational lighting to neighbouring residential properties is unlikely and a more detailed Lux Level Plot can be found on drawing - JDHQ-CDL-ZZ-XX-DR-E-39001 which outline the full expected extend of any light pollution.



1.0 INTRODUCTION

1.3 DESKTOP BASELINE LIGHTING CONDITION

A desk-based assessment of the area has been undertaken in accordance with the relevant policies and guidance. The baseline pre-developed condition has been qualitatively assessed using available aerial imagery, photographs and VIIRS light pollution data (see imagery)

There are no site-based lux-level measurements for this assessment. A desktop assessment has been undertaken of the baseline condition, and the key receptors have also been established via this desktop assessment.

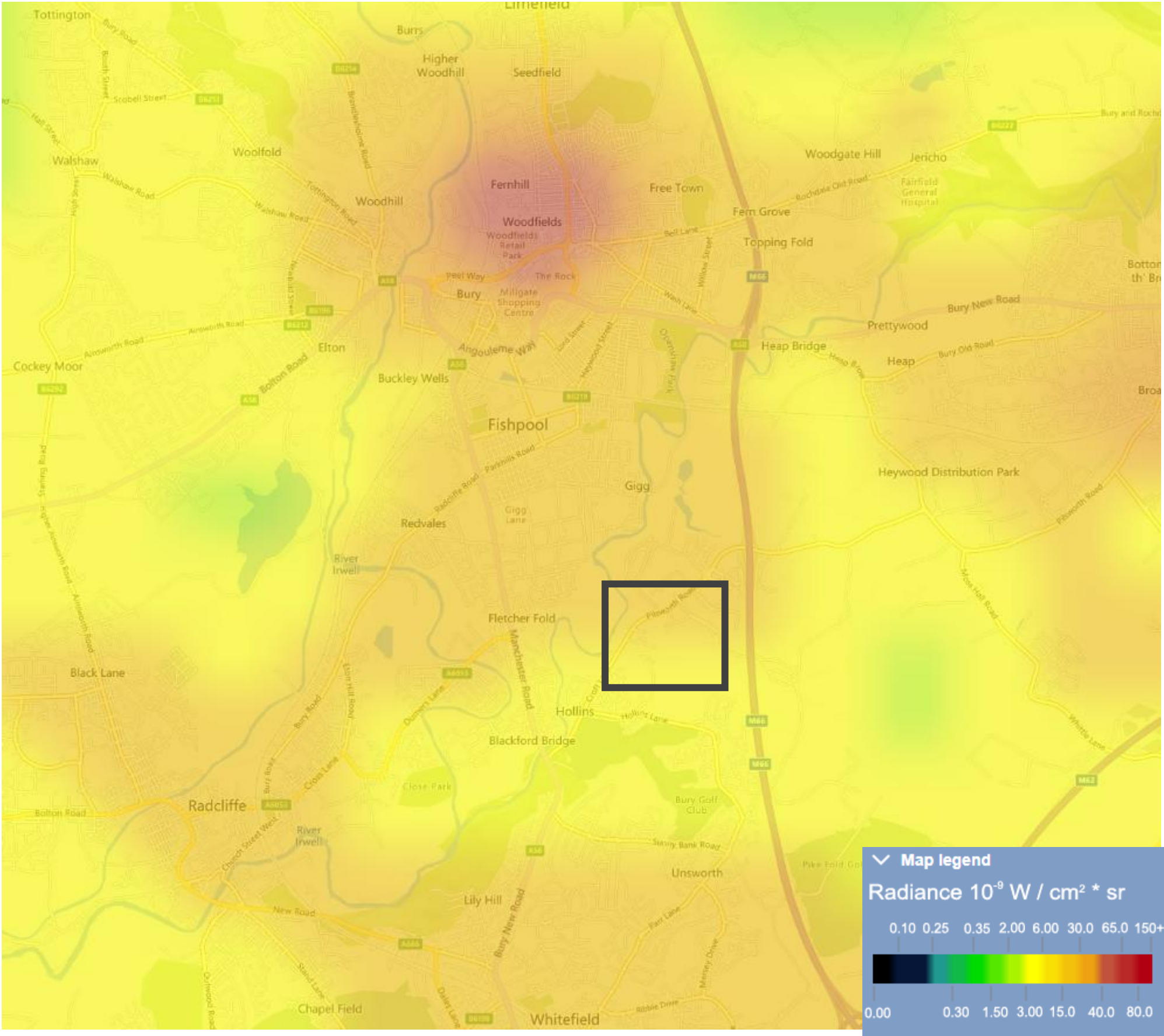
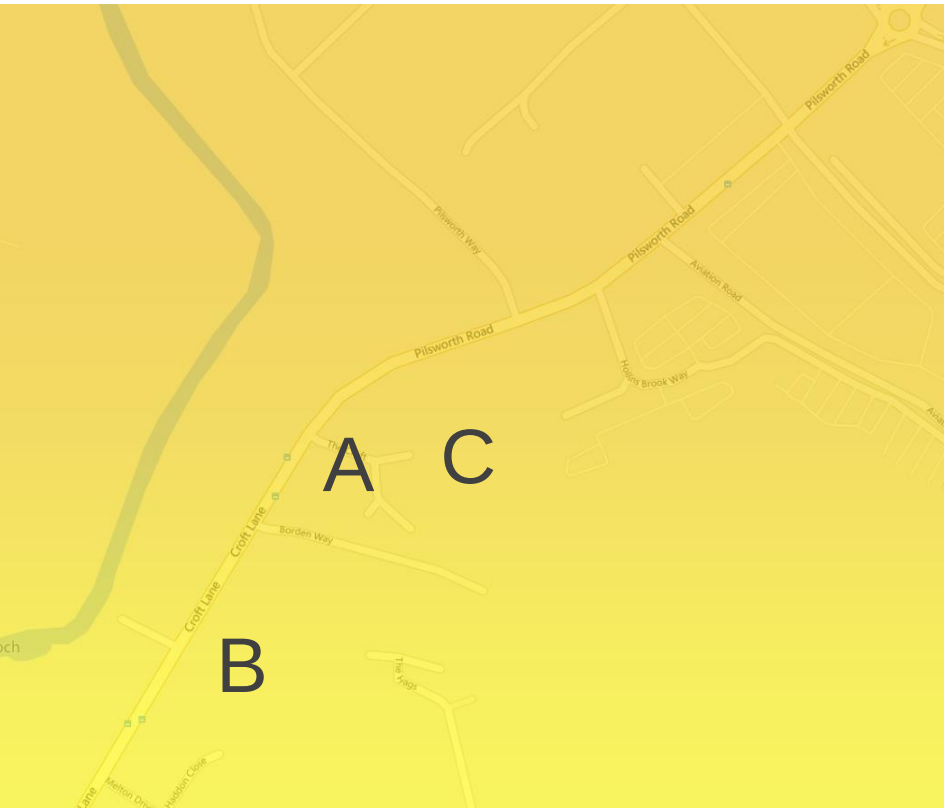
Key Receptors

A – Residential properties

B – Residential properties

C – Hollins Vale Local Nature Reserve

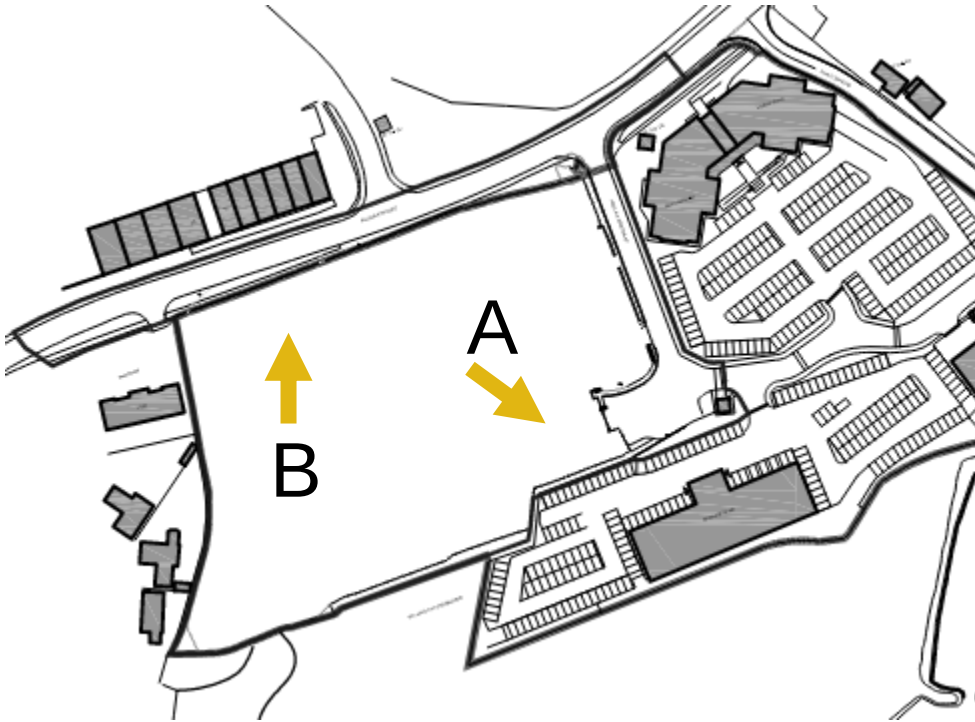
The impact of the proposed external lighting on the 3 Key receptors will form the basis of our assessment. – See appendix for further details.



1.0 INTRODUCTION

1.4 EXISTING LIGHTING

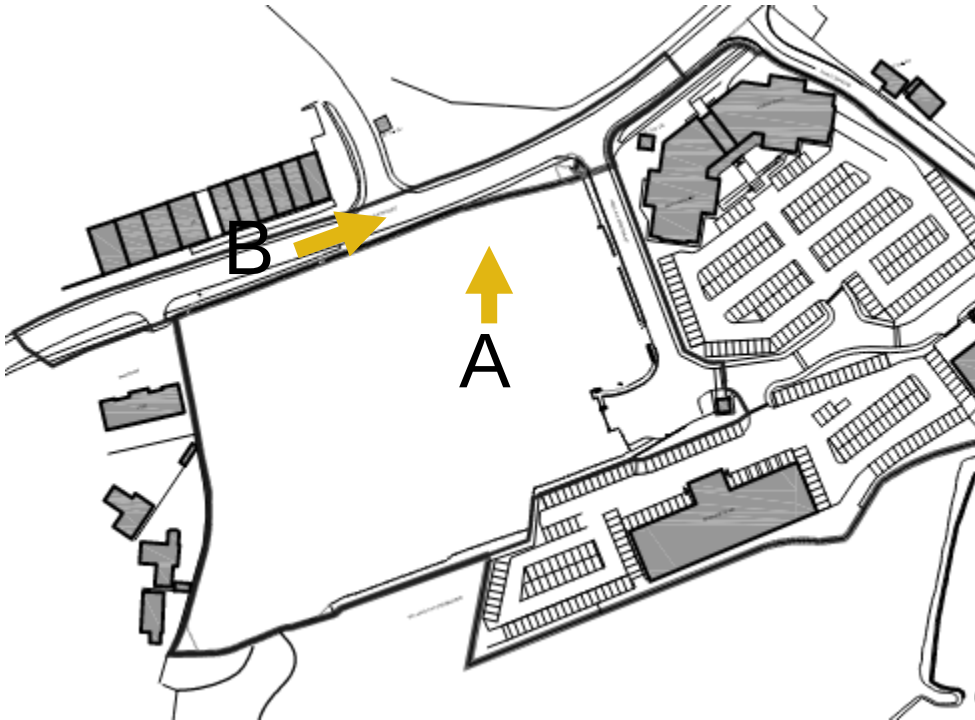
The below images represent an overview of the types of lighting found in and around the proposed development site. A description of their types and expected impact are described below.



1.0 INTRODUCTION

1.4 EXISTING LIGHTING

The existing lighting to Aviation Road has single-head street lighting ~8m columns. On Pilsworth Road, the columns are staggered on one side of the road and are spaced ~15-20m apart. The lighting appears to be LED and is typical of the types of street lighting found in and around the local area.



2.0 DESIGN CRITERIA

2.0 DESIGN CRITERIA

2.1 ENVIRONMENTAL ZONE

The JD campus site is located within Bury. The development has been assessed as an “E3 Environmental zone” as defined in the Institution of Lighting Professionals publication ‘Guidance Notes for Reduction of Light Pollution’ - see Table 1 below.

Category	Description	Examples
E0	Protected	Astronomical Observable dark skies, UNESCO starlight reserves, IDA dark sky places
E1	Intrinsically dark landscapes	National parks, areas of outstanding natural beauty etc.
E2	Low district brightness area	Rural, small village or relatively dark
E3	Medium district brightness area	Small town centers or urban locations
E4	High district brightness area	Town/city centers with high levels of night-time activity

Table 1 – Environmental Zones

Environmental zone	Light on properties (vertical) E _v (lux)		Luminaire intensity I (cd)		Upward light ULR (%)	Luminance (cd/m ²)	
	Pre-curfew	Post-curfew	Pre-curfew	Post-curfew		Building facade L _b	Signs L _s
E0	n/a	n/a	0	0	0	<0.1	<0.1
E1	2	<0.1	2,500	0	0	<0.1	50
E2	5	1	7,500	500	2.5	5	400
E3	10	2	10,000	1,000	5	10	800
E4	25	5	25,000	2,500	15	25	1,000

Table 2 – Environmental Zone Requirements

The exterior lighting shall be designed in accordance with current good practice Society of Lighting and Lighting (SLL) guidelines and the Institution of Lighting Professionals (ILP) Guidance Notes for the Reduction of Obtrusive Light.

To minimize the potential adverse effects of light pollution the following design principles will be applied during further design stages:

- Specification of luminaires with directional precision optics and with narrow light beam angles where appropriate to ensure light is focused only where illumination is required.
- Specification of optional accessories (cowls / baffles/ louvres) where necessary to prevent unwanted light spill.
- Specification of time-based lighting control to limit post-curfew light spill.

Institute of Lighting Professionals (ILP formally the ILE), Lighting Against Crime, A Guide for Crime Reduction Professionals (January 2011)

Secured by Design and the ILP produced a paper in 2011 conversing an understanding of external lighting and the recommended levels of illumination used to combat crime, the fear of crime and antisocial behaviour. Secured by Design is a police initiative to encourage the building industry to adopt crime prevention measures in the design of developments to assist in reducing the opportunity for crime and the fear of crime, creating a safer and more secure environment.

Institute of Lighting Professionals (ILP formally the ILE), PLG08 - Guidance on the Application of Adaptive Lighting within the Public Realm

PLG08 looks at approaches to consider when applying adaptive lighting levels to lit highways and public/private areas based upon the use of the area under consideration. This includes options such as:

- Trimming, turning the lighting on and off to suit local ambient lighting levels and performance requirements.
- Variable lighting levels where the task lighting is adjusted to suit the use of the area.
- Part night lighting where the lighting is turned off during defined hours.

2.0 DESIGN CRITERIA

2.2 ENVIRONMENTAL ZONE

CIBSE The Society of Light and Lighting (SLL), Lighting Guide 6: The exterior environment (January 2016)

LG6: The exterior environment; provides a holistic approach to the design of the exterior environment with respect to lighting. It sets out guidance for the application of lighting to all manner of external spaces including (but not limited to) landscapes, facades, amenities, together with information on luminaires and light sources.

CIBSE The Society of Light and Lighting (SLL), Lighting Guide 4: Sports Lighting (July 2013)

LG4: Sports Lighting; outlines example and opportunities for the lighting of 5-a-side football pitches. The lighting treatment of the external rooftop pitches, requires consideration with regards to potential light pollution.

BSI Standards Publication – BS EN 12464-2:2014. Light and Lighting – Lighting of workplaces. Part 1: Indoor workplaces

Table 5.1

Ref. no	Type of area, task or activity	Em lx	Uo	R GL	Ra	Specific requirements
5.1.1	Walkways exclusively for pedestrians	5	0.25	50	20	
5.1.2	Traffic areas for slowly moving vehicles (max. 10 km/h), e.g. bicycles, trucks and excavators	10	0.40	50	20	
5.1.3	Regular vehicle traffic (max. 40 km/h)	20	0.40	45	20	At shipyard s and in docks, RGL may be 50
5.1.4	Pedestrian passages, vehicle turning, loading and unloading points	50	0.40	50	20	
5.1.5	Cleaning and servicing	50	0.25	50	20	All relevant surfaces

The following table gives reference to the cycles parking areas around the complex.

Table 5.9

Ref. no	Type of area, task or activity	Em lx	Uo	R GL	Ra	Specific requirements
5.9.1	Light traffic, e.g. parking areas of shops, terraced and apartment houses; cycle parks	5	0.25	55	20	
5.9.2	Medium traffic, e.g. parking areas of department stores, office buildings, plants, sports and multipurpose building complexes	10	0.25	50	20	
5.9.3	Heavy traffic, e.g. parking areas of major shopping centres, major sports and multipurpose building complexes	20	0.25	50	20	

2.0 DESIGN CRITERIA

2.3 DARK SKIES

Artificial light at night has revolutionized the way we live and work outdoors, but it has come at a price. When used incorrectly, outdoor lighting can disrupt wildlife, impact human health, waste money and energy, contribute to climate change, and block our view of the universe. Light pollution is increasing worldwide at twice the rate of global population growth and virtually every species studied is impacted in some way by light pollution.

Access to darkness is important both visually and emotionally. However true darkness is hard to come by in a town or city. The towns and cities around the world have lost their stars and this in itself is wrong. We will be taking our responsibility for caring for the planet one step further and will be adopting the following the principles as determined by the International Dark Sky Association.

- 1 – Ensuring that every light serves a clear and necessary purpose.
- 2 – Ensuring that light only falls where it is intended/ needed.
- 3 – Ensuring that the amount of light is appropriate for the task.
- 4 – Providing connected active controls.
- 5 – Providing light sources that are warm in colour.

Although the ILP zone classification for the project is E3, with the proposed Phase 2 development and the acceleration on the subject of light pollution around the globe, it would be beneficial to design to meet E1 criteria in relation to 0% upward light spill.

The surface finishes of the architectural and landscape architectural designs will be considered as this has the potential to affect light pollution. We will work with the architect and landscape architect for this approach to ensure we achieve the required criteria.

Our commitment to light pollution means this project will be designed with Dark Skies in mind and light pollution will be heavily assessed in terms of all decisions to be made.



2.0 DESIGN CRITERIA

2.4 LEGISLATION & LOCAL PLANNING

The Planning (Clean Neighbourhoods and Environment) Act 2005

• The legislation governing light pollution is the Planning (Clean Neighbourhoods and Environment) Act 2005. It applies to “artificial light emitted from premises so as to be prejudicial to health or a nuisance”. The relevant section is 102..

•Section 102 defines the premises to which the act applies. Shopping centres, residential properties and offices are not exempt.

National Planning Policy Framework (July, 2021)

Section 15 of the NPPF is titled “Conserving and enhancing the natural environment” and paragraph 180 discusses the approach to minimising the impact of light pollution.

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;

c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;

d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

f) remediating and mitigating despoiled, degraded, derelict, contaminated and table land, where appropriate

Planning Practice Guidance – Light Pollution (November 2019)

This Guidance sets out how the Government defines the link between lighting and planning:

“Artificial lighting needs to be considered when a development may increase levels of lighting, or would be sensitive to prevailing levels of artificial lighting. Artificial light provides valuable benefits to society, including through extending opportunities for sport and recreation, and can be essential to a new development. However, for maximum benefit, it is important to get the right light, in the right place and for it to be used at the right time.

Artificial light is not always necessary. It has the potential to become what is termed ‘light pollution’ or ‘obtrusive light’, and not all modern lighting is suitable in all locations. It can be a source of annoyance to people, harmful to wildlife and undermine enjoyment of the countryside or the night sky, especially in areas with intrinsically dark landscapes. Intrinsically dark landscapes are those entirely, or largely, uninterrupted by artificial light. National parks and nature reserves can serve as good examples, particularly where they support habitats for native nocturnal animals.

Lighting schemes can also be costly and difficult to change, so getting the design right and setting appropriate conditions at the planning stage is important. In particular, some types of premises (including prisons, harbour premises, airports and transport depots where high levels of light may be required for safety and security reasons) are exempt from the statutory nuisance regime for artificial light, so it is even more important to get the lighting design for these premises right at the outset.”

2.0 DESIGN CRITERIA

2.5 LIGHTING CONTROL PRINCIPLES

The external lighting shall be designed to use energy-efficient LED light sources in accordance with current good lighting practice.

As part of the overall energy saving strategy, it is proposed to introduce a lighting control system. The control system will incorporate astronomical time clock with photocell override and dimming controls.

Controlling exterior lighting elements in groups will enable specific circuits, such as non-essential lighting elements to be switched off late in the evening, to minimise energy use whilst maintaining safe levels of illuminance overnight.

Advanced lighting technology can provide dimming protocols and intelligent controls that can limit the operating hours of an installation to reduce running costs and potentially adverse environmental impact.

The Landscape lighting must be regulated to create a comfortable ambience. Efforts should be put forward to reduce the intensity of vertical illumination during the hours of darkness and retain only minimal lighting for security and safe circulation during post-curfew hours by the entrances and circulations.



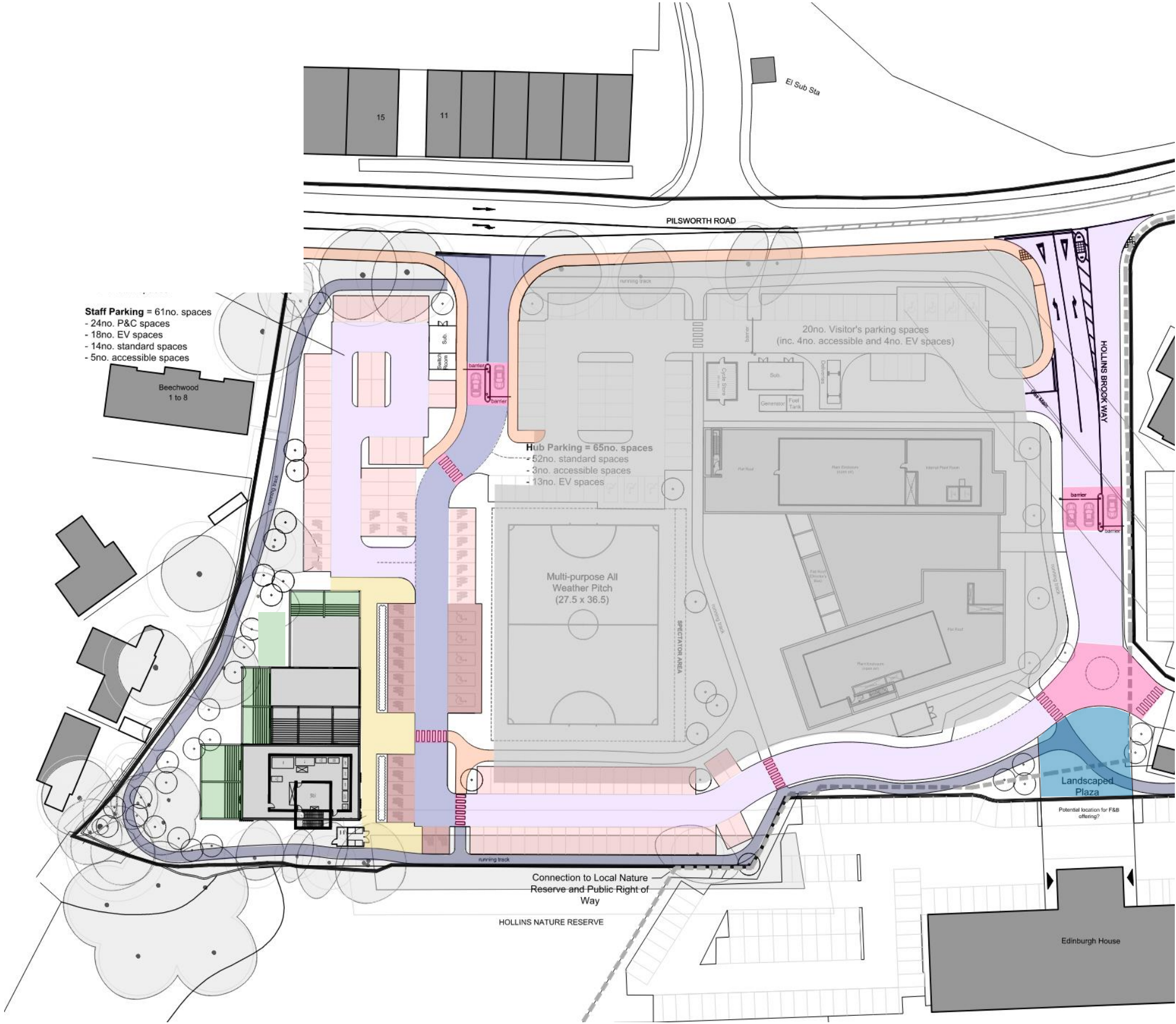
3.0 DESIGN STRATEGY PHASE ONE

3.0 DESIGN STRATEGY

3.1 STRATEGIC USAGE

In the following areas, the primary routes and locations will be used for longer periods of time, while the secondary routes will be used for a more limited period of time / peak.

- Primary Pedestrian Route
- Secondary Pedestrian Route
- Primary Vehicle Access Road
- Secondary Vehicle Access Road
- Lighting for Security and Safety (Conflict Area)
- Primary Parking
- Secondary Parking
- Running Track
- Gardens
- Phase 2
- Plaza



3.0 DESIGN STRATEGY

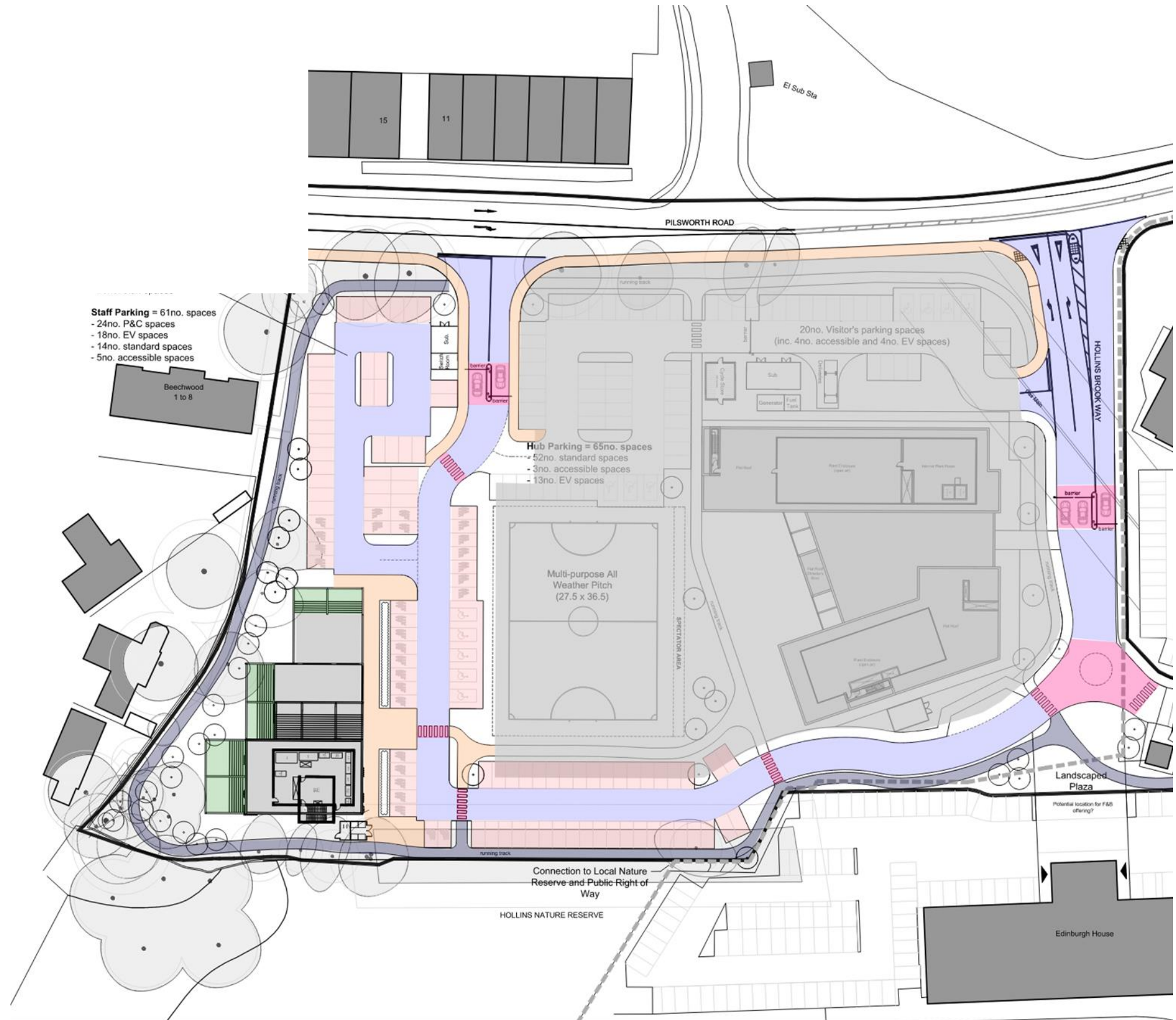
3.2 ILLUMINANCE & UNIFORMITY

The exterior lighting shall be designed in accordance but not limited to the following guides and standards:

- BS EN 12464-2:2014 Light and lighting – lighting of work places Part 2: Outdoor work places
- CIBSE SLL Lighting Guide LG6 2016: Exterior environment
- CIBSE SLL Code for Lighting
- Secured by Design - Lighting against crime. A guide for crime reduction professionals 2011
- BSI Standards Publication – BS 5489-1:2020. Design of road lighting, Part 1: Lighting of roads and public amenity areas

The following lux levels will be provided to the highlighted areas;

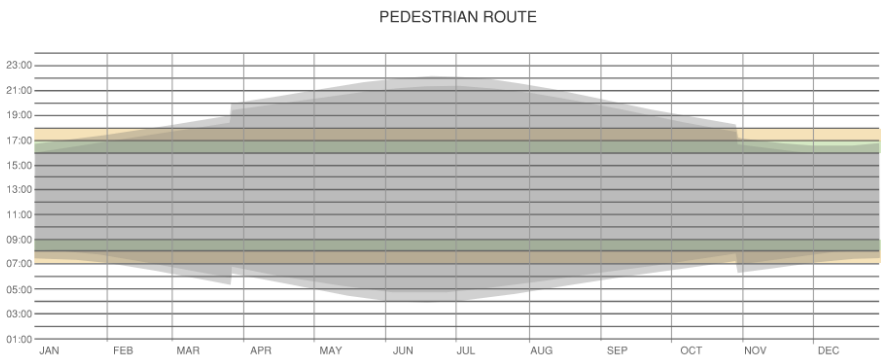
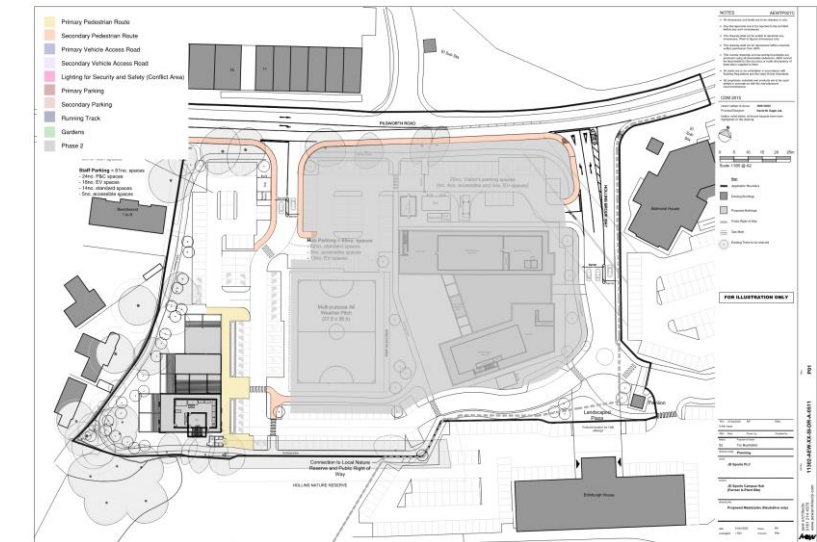
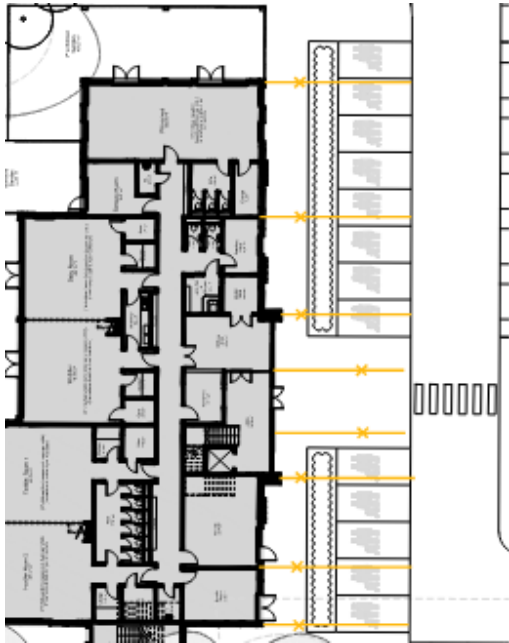
- Pedestrian Route – 5 lux
- Vehicle Access Route – 10 lux
- Vehicle Conflict Areas – 50 lux
- Parking – 10 lux
- Running Track – 10 lux / 0 lux
- Gardens – 50 lux / 0 lux



3.0 DESIGN STRATEGY

3.3 PEDESTRIAN ROUTE

The pedestrian routes and general lighting to the areas will come from multi-use columns that will incorporate the CCTV, Wi-Fi and EV Power.

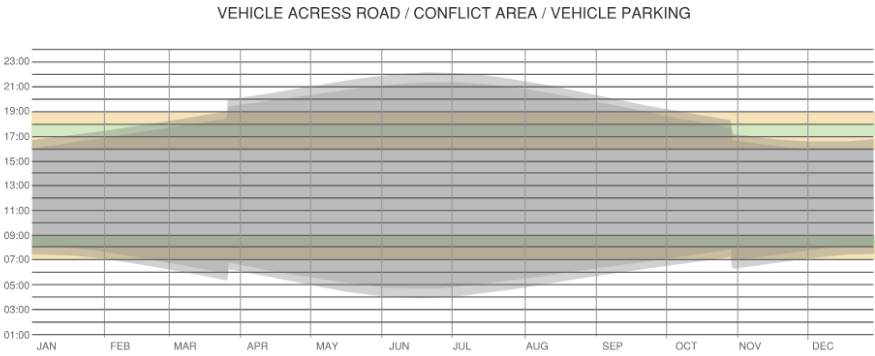
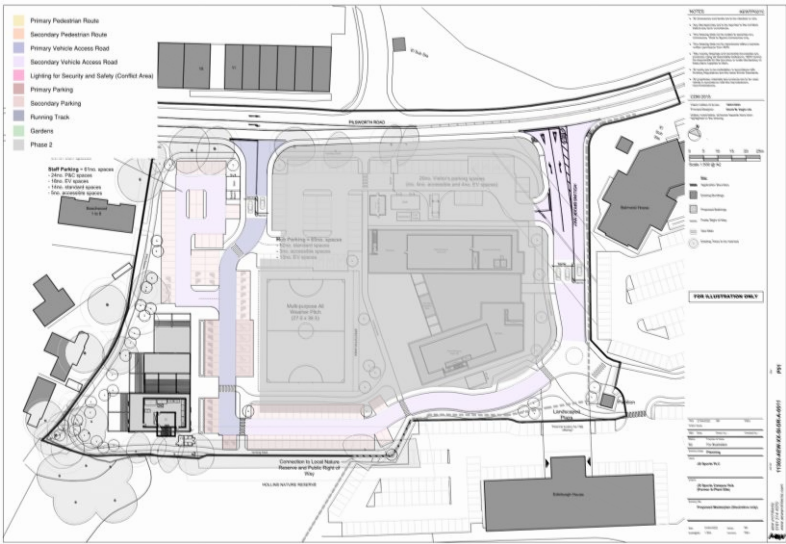


3.0 DESIGN STRATEGY

3.4 VEHICLE ACRESS ROAD / VEHICLE PARKING

Areas such as vehicle routes will require additional illuminance compared to the pedestrian route in particular around the vehicle turning point. By utilising special lighting technology and controlled illumination, a number of lighting columns have earned the 'Night Sky' epithet and are officially recognised by the International Dark Sky Association (IDA). With a reduced design, these luminaires offer guided, attractive and efficient light that is free of light scatter and form a consistent modular system.

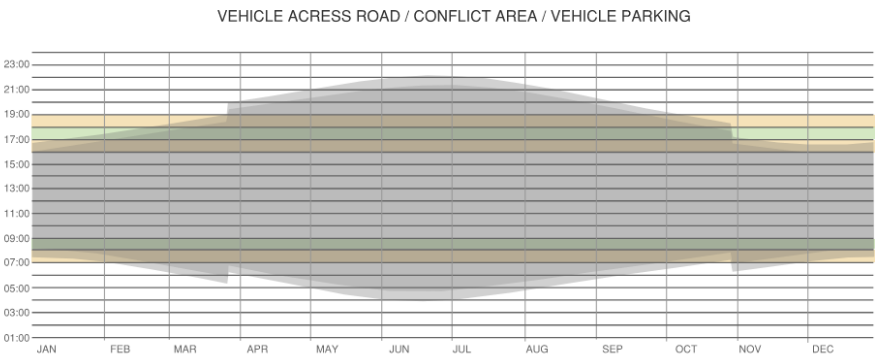
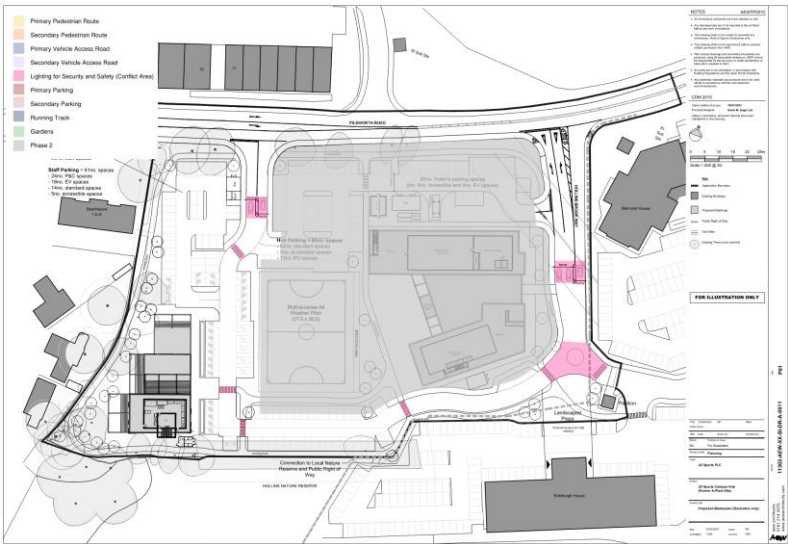
The lighting will be a warm colour temperature, downwards facing only and be located no higher than 4.5m.



3.0 DESIGN STRATEGY

3.5 LIGHTING FOR SECURITY AND SAFETY (CONFLICT AREA)

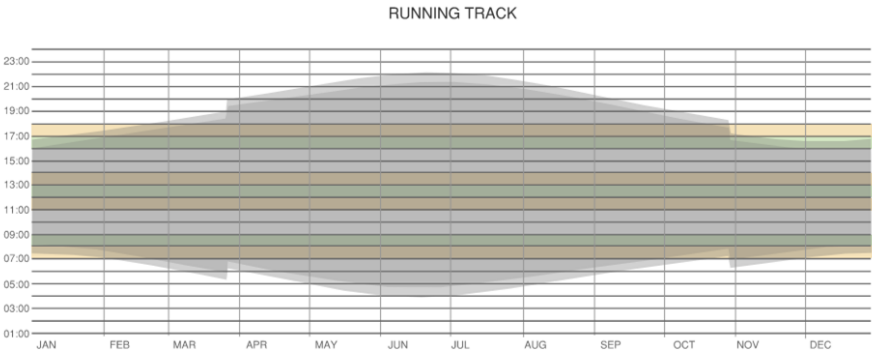
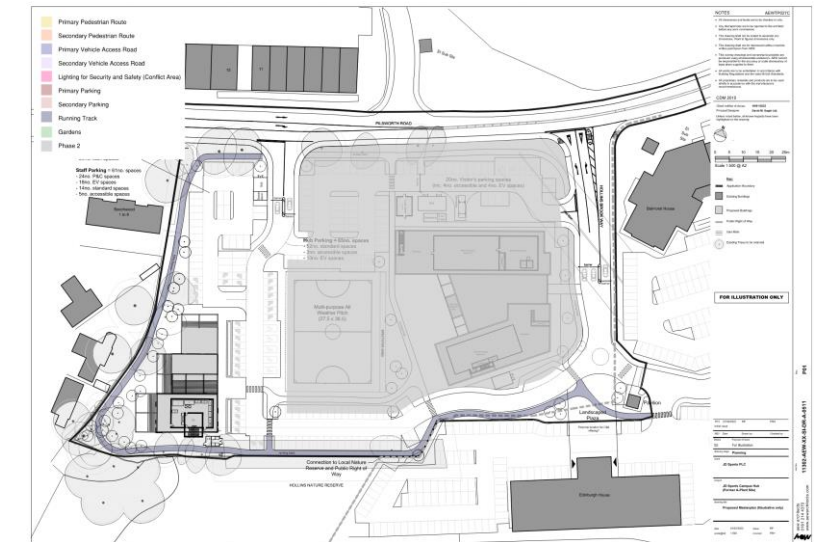
Areas that are conflict or rely that require a higher level of light will be illuminated with a dedicated however the luminaires will be a warm colour temperature, downwards facing only and be located no higher than 4.5m.



3.0 DESIGN STRATEGY

3.6 RUNNING TRACK

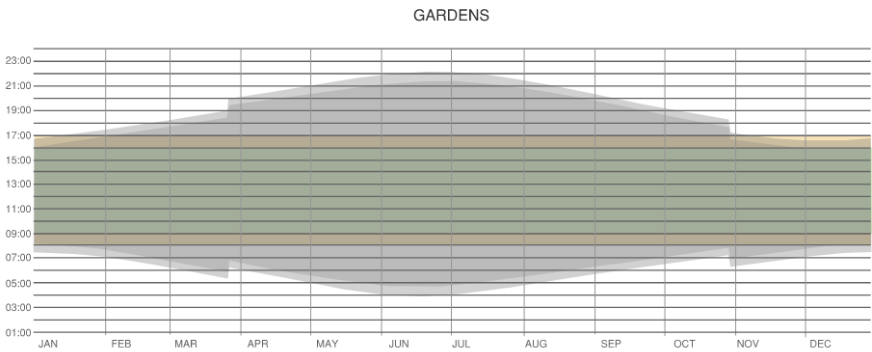
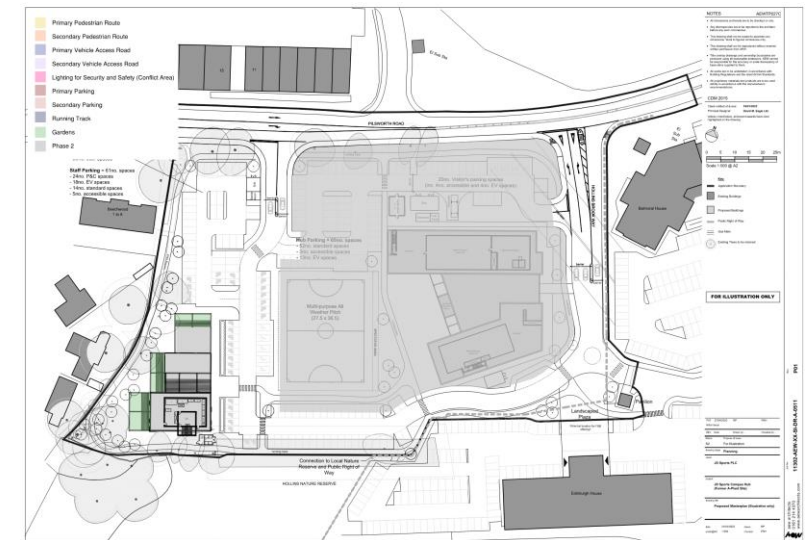
The running track will not gain from being illuminated due to the time in which it primarily used in the months in which it is warmer and brighter lessening the requirement for illumination.



3.0 DESIGN STRATEGY

3.7 GARDENS

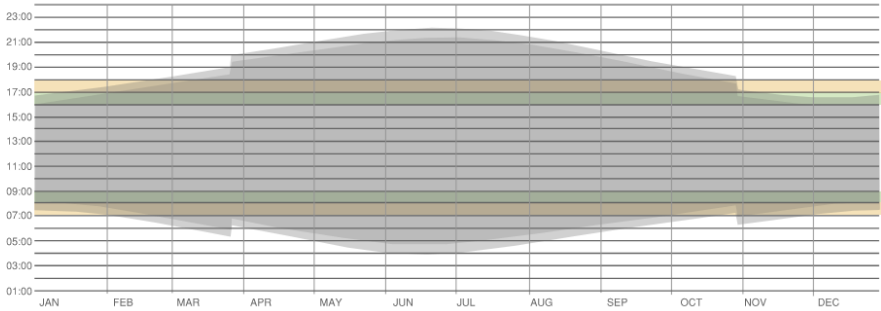
The garden will be primarily used in the months in which it is warmer and brighter lessening the requirement for illumination however, the use of a warm colour temperature, downwards facing only luminaire illuminating from the façade would be advantageous.



3.0 DESIGN STRATEGY

3.8.1 FACDAE SIGNAGE

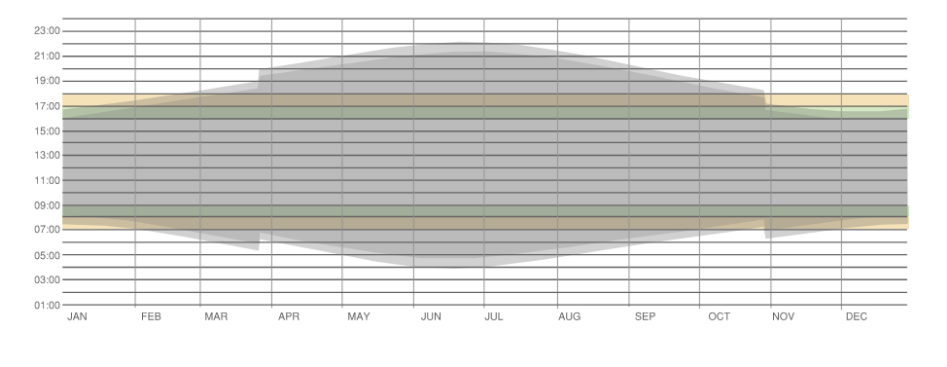
There will be illuminated signage will be one illuminated feature to the façade. It will be illuminated will three locations across the façade.



3.0 DESIGN STRATEGY

3.8.2 FACDAE – GOAL POST

The second element to the façade will be the entry point to the building. This will be goal posted as it is in a JD store, drawing people to the entrance.



3.0 DESIGN STRATEGY

3.9 SEATING

The seating areas will be spots for users to dwell and enjoy the space.

One option is to illuminate within the trees would allow for the clutter free environment and allow for a more natural dappled pool of light over the area. This pool of light would also allow for an area in which users can have conversations and dwell.

A second option would be to light the seating with a goal post type shape over the bench illuminated the desired area.

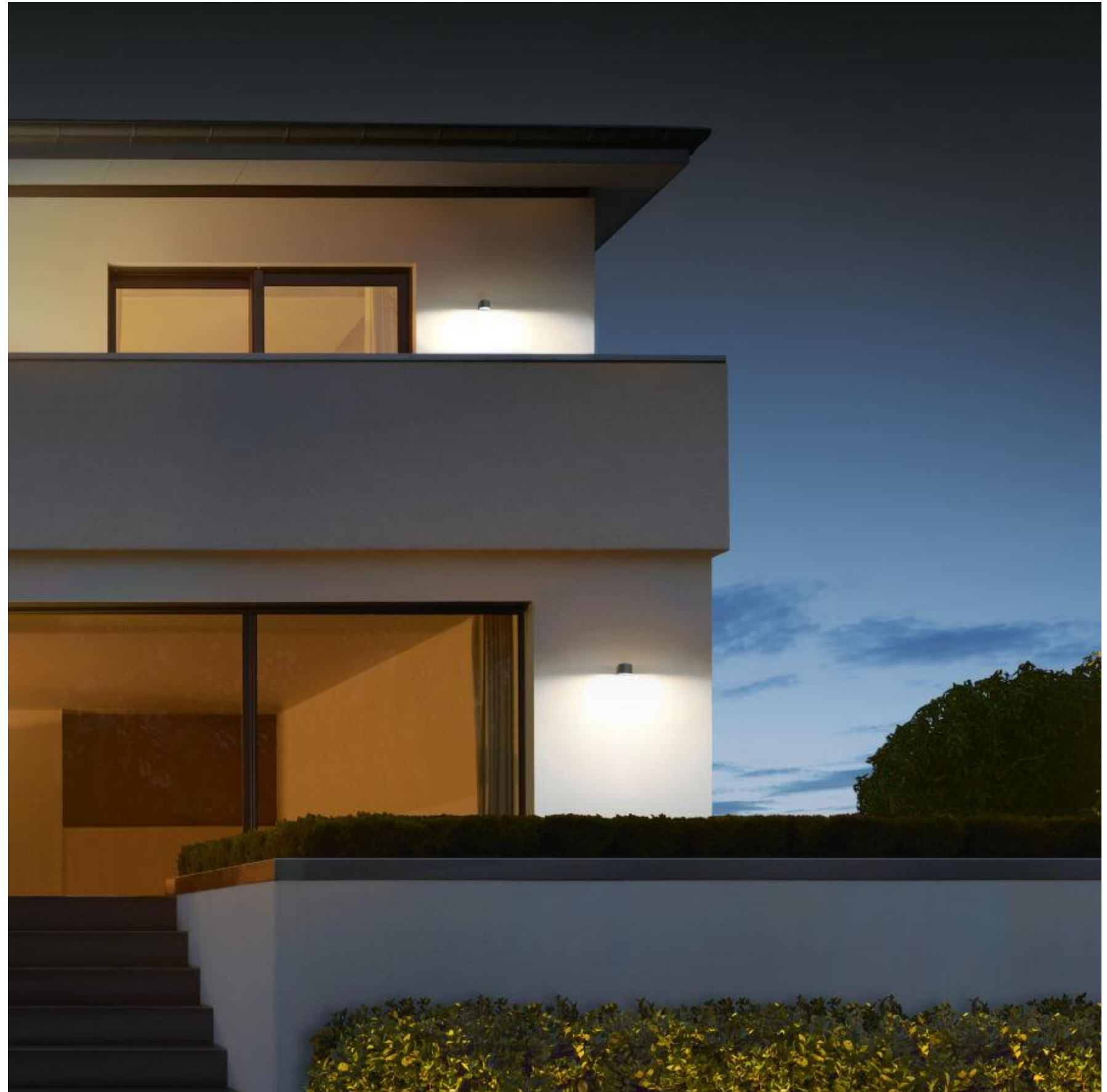
A third way could be to simply light the benches from below drawing people to these to dwell.



3.0 DESIGN STRATEGY

3.10 ROOF TERRACE

The terrace primarily used in the months in which it is warmer and brighter lessening the requirement for illumination however, the use of a warm colour temperature, downwards facing only luminaire illuminating from the façade would be advantageous. Furthermore not allowing increased illumination to the terrace will limit/exclude any nascent light to the surrounding area and residents.



3.0 DESIGN STRATEGY

3.10 PLAZA

The landscape plaza is planned to have a fitness structure. This in likily to be used during daylight hours however will be illuminated with spill light from the street and parking areas. There is possibility that come feature lighting is required to enhance the impact of the structure.



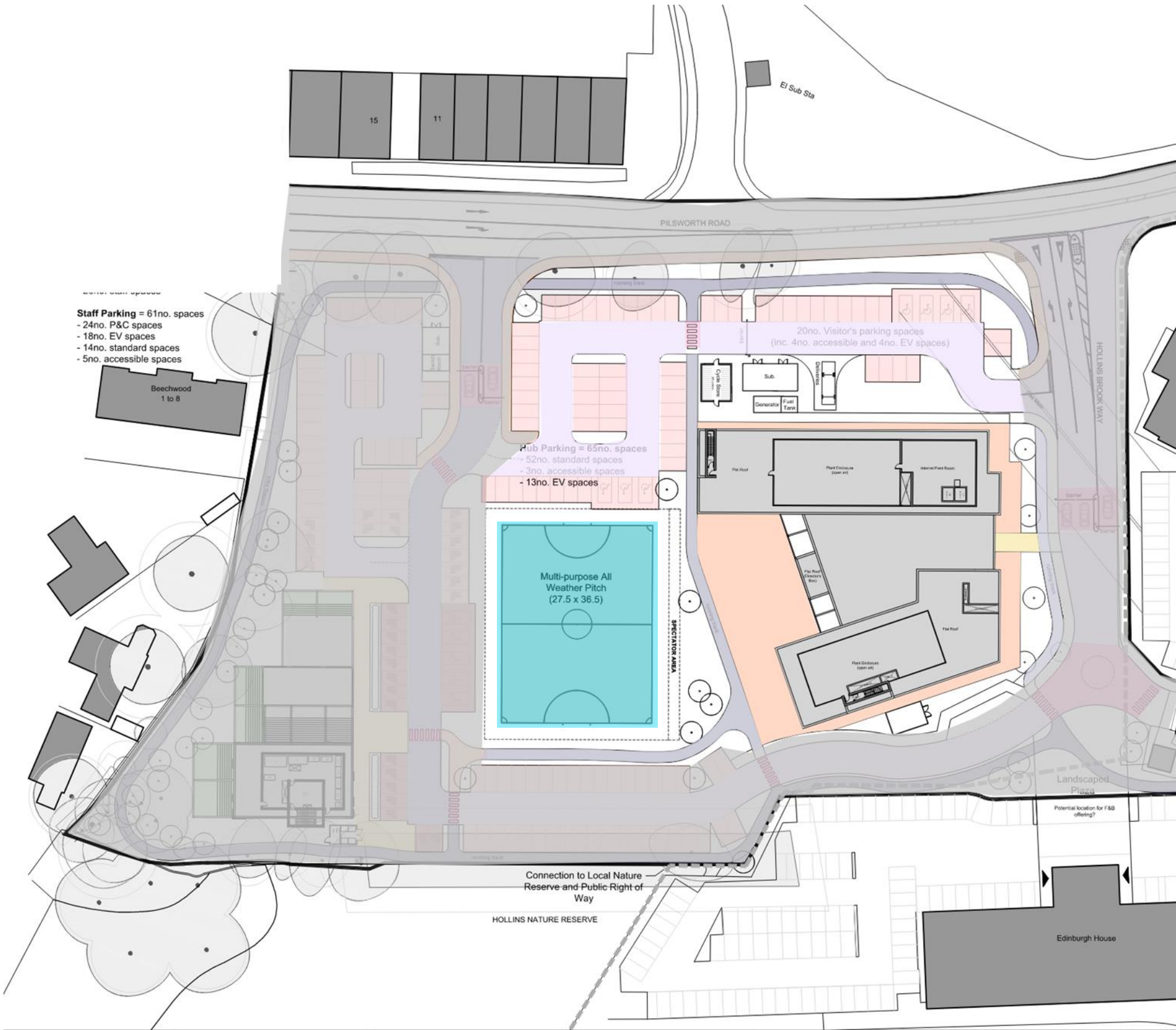
3.0 DESIGN STRATEGY PHASE TWO

3.0 DESIGN STRATEGY

3.12 PHASE 2

In the following areas for the phase 2, the primary routes and locations will be used for longer periods of time, while the secondary routes will be used for a more limited period of time / peak.

- Primary Pedestrian Route
- Secondary Pedestrian Route
- Primary Vehicle Access Road
- Secondary Vehicle Access Road
- Lighting for Security and Safety (Conflict Area)
- Primary Parking
- Secondary Parking
- Running Track --
- Gardens
- Phase 1
- MUGA



3.0 DESIGN STRATEGY

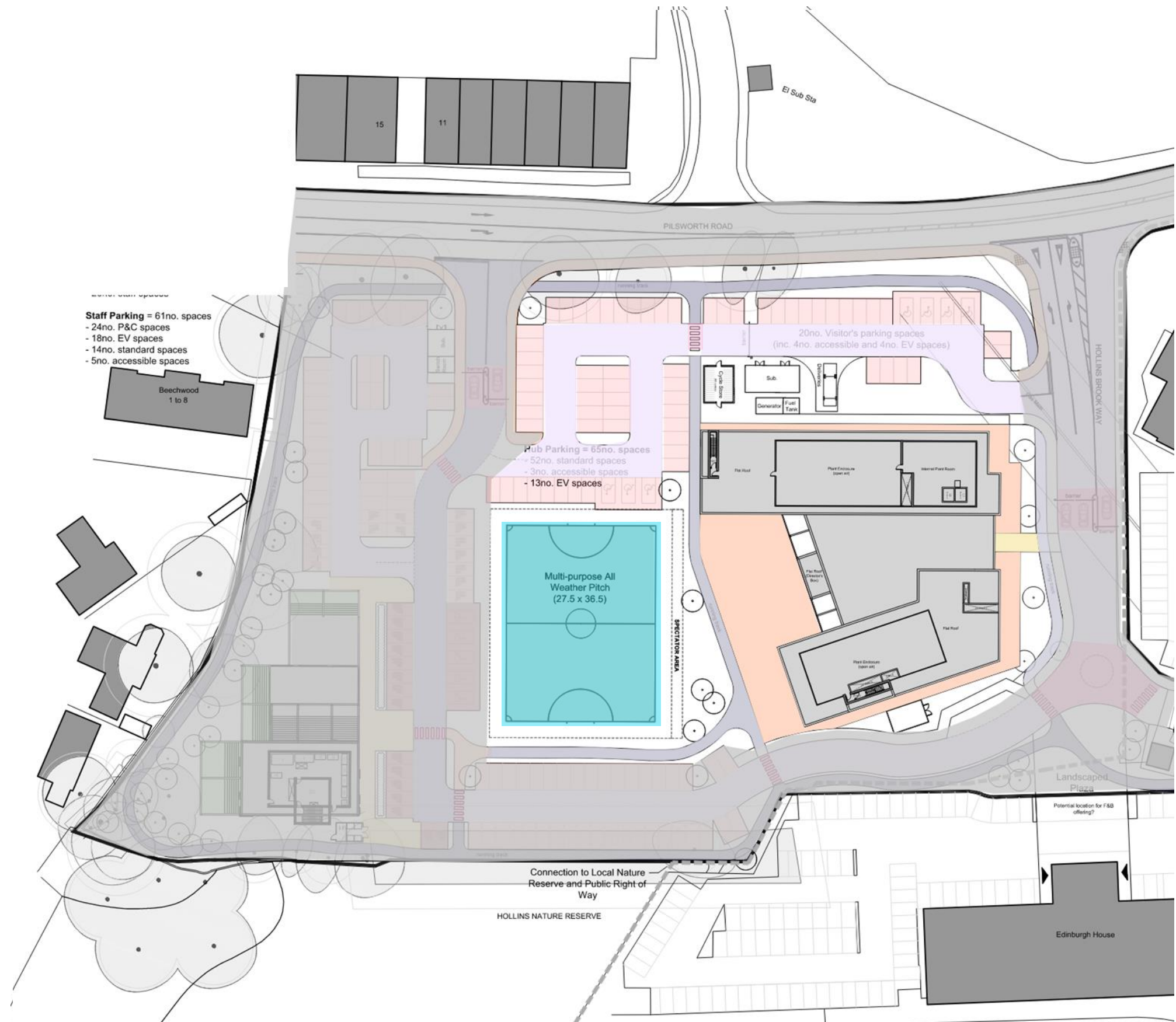
3.13 ILLUMINANCE & UNIFORMITY

The exterior lighting shall be designed in accordance but not limited to the following guides and standards:

- BS EN 12464-2:2014 Light and lighting – lighting of work places Part 2: Outdoor work places
- CIBSE SLL Lighting Guide LG6 2016: Exterior environment
- CIBSE SLL Code for Lighting
- Secured by Design - Lighting against crime. A guide for crime reduction professionals 2011
- BSI Standards Publication – BS 5489-1:2020. Design of road lighting, Part 1: Lighting of roads and public amenity areas

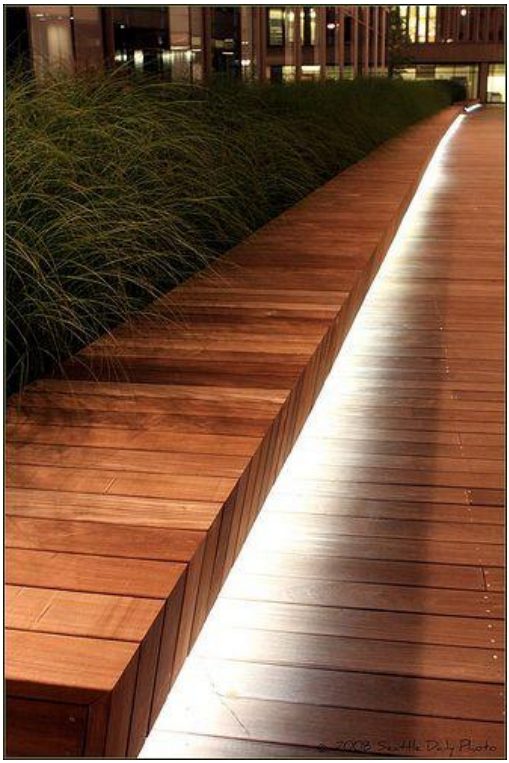
The following lux levels will be provided to the highlighted areas;

- Pedestrian Route – 5 lux
- Vehicle Access Route – 10 lux
- Vehicle Conflict Areas – 50 lux
- Parking – 10 lux
- Running Track – 10 lux / 0 lux
- MUGA – 120 lux



3.0 DESIGN STRATEGY

3.14 PHASE 2 AREAS



3.0 DESIGN STRATEGY

3.15 MUGA PITCH

CIBSE The Society of Light and Lighting (SLL), Lighting Guide 4: Sports Lighting (July 2013)

LG4: Sports Lighting; outlines example and opportunities for the lighting of 5-a-side football pitches. The lighting treatment of the external rooftop pitches, requires consideration with regards to potential light pollution.

Sports England: Artificial Sports Lighting (2012)

MUGAs: The document gives recommendations and guidance on the lighting of 5-a-side football pitches. In particular that the lighting required will be to Club or Community levels of play and not for netball.

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



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