

DRAFT - WAITING FOR IMAGE FROM SEW

MAYFIELD, PHASE 1B (PLOTS J AND K) | EXTERIOR LIGHTING ASSESSMENT



Mayfield Medlock Limited

MAYFIELD, PHASE 1B (PLOTS J AND K)

Exterior Lighting Assessment

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Illustrative Proposal | Provided by Studio Egret West

1. Introduction

1.1 The Site

The Site is located adjacent to the north of the Mancunian Way, to the south of Mayfield Park, to the west of Hoyle Street and to the east of Mayfield Phase 1a, with Baring Street beyond.

The project comprises of the phased redevelopment of Mayfield Phase 1b comprising site remediation and reprofiling followed by the erection of two residential blocks (Use Class C3) comprising 878 no. residential units contained within four buildings ranging from 7 storeys to 24 storeys in height (Plot J) and 7 to 27 storeys in height (Plot K), including ground and first floor commercial spaces comprising restaurant and / or retail units (Use Class E(b) and/or E(a), and / or indoor sports facilities (Use Class F2) together with highways works, access, servicing, rooftop plant, cycle parking and back of house, along with delivery of associated public realm and other associated works for each relevant phase.

The application for Full Planning Permission as of 21 October 2024 includes.

- Remediation and reprofiling works for the site to allow for the phased erection of two residential Plots (J and K) comprising Phase 1b.
- The development plots comprise two podium levels to address the site level changes and provide a generous amount of ground floor frontage, comprising commercial space, supporting residential amenity areas that are accessible to the public, and various back of house storage spaces, surrounded by new high quality public realm.
- Above the two storey podium levels, residential blocks will provide accommodation in four buildings providing a mix of 1-2- and 3-bedroom units in each. The total number of residential units is circa 878 at the time of writing.
- Plot J comprises two buildings on top of a two-storey podium level, with J1 being part 7 and part 18 storeys and J2 being part 10 and part 24 storeys.
- Plot K comprises two buildings on top of a podium level, with K1 being part 7, part 27 storeys and K2 being part 9 and part 20 storeys.

- Creation of an at-grade multi-modal access route to the south of the residential blocks that will be traffic calmed to encourage pedestrian flows whilst allowing for a service road to be created, with a buffer zone between this route and the Mancunian Way.

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2. Considerations

2.1 Opportunities

The Mayfield development has unrivalled opportunities to build upon the vast cultural heritage . It is crucial to visually enhance this, ensuring that the design brings this ambitious development into prime position to meet the needs of a growing multi-cultural, forward focussed society. The lighting design for Phase 1b will be visually alike to the wider Mayfield Park development building upon the success of the completed project.

Heritage:

The lighting design will have the opportunity to nod back to the heritage of the area, building upon and linking landscape principles.

People Focussed:

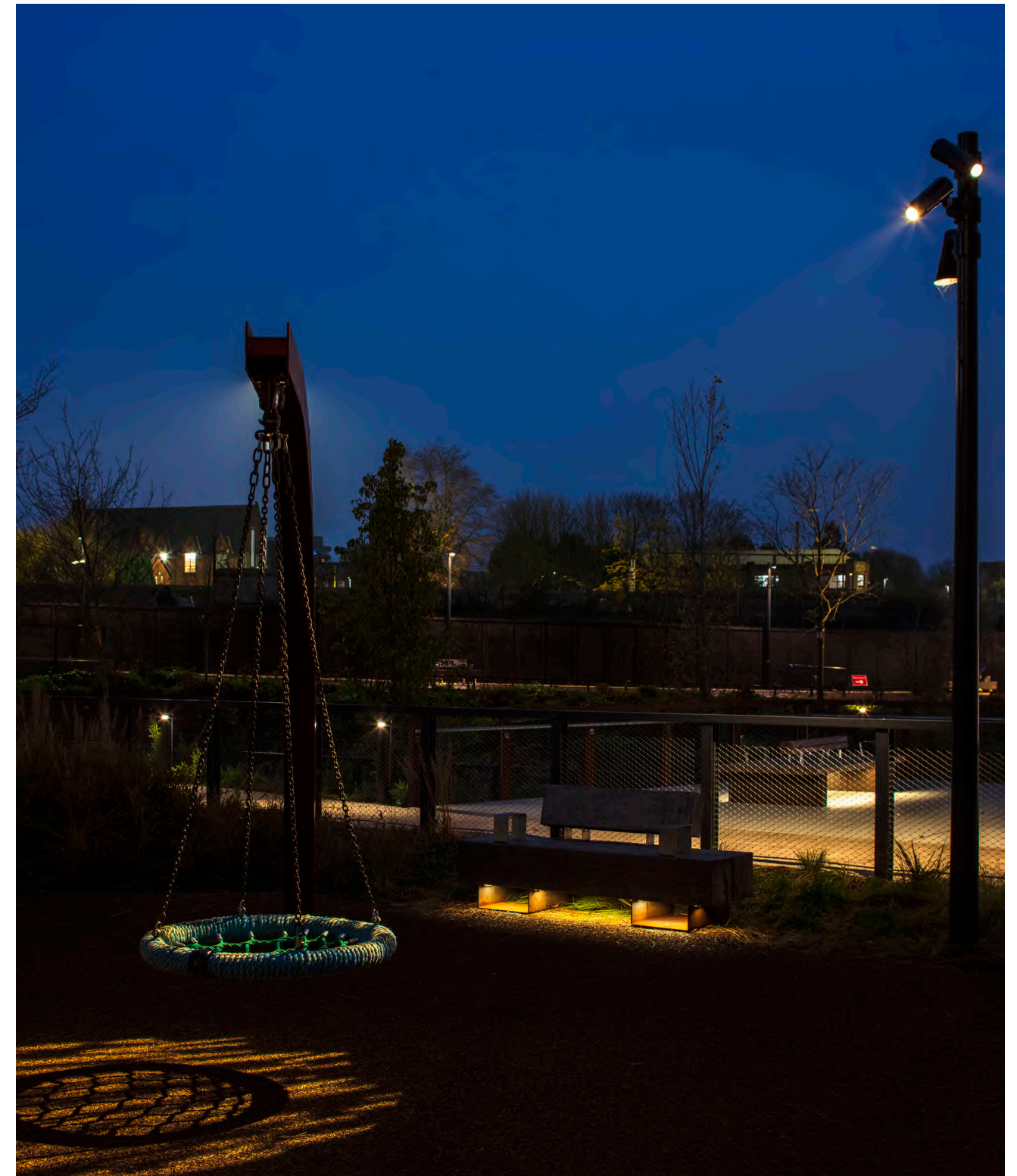
Carefully considering the luminaire typology and how it relates with the surrounding landscape and architecture is key to encourage activity after dark, thus creating a place which feels inclusive and safe.

Environment:

The lighting design should be as sensitive to it's surrounding environment as possible while providing the required lighting for safety and security. The light distribution and optical control should eliminate/reduce upward light component protecting the night time sky. Colour temperature should be selected to limit harmful blue wavelengths on light sensitive species and flora.

Sustainability:

When selecting luminaires for any lighting scheme, the manufacturers' approach to the circular economy and re-purposing of their lighting fixtures should be considered by the lighting designer, including where they source luminaire materials, their location, how luminaires are shipped and CO2 emissions. By using criteria set-out in CIBSE TM65 and TM66:2021 the specification can be assessed for its compliance to circular economy.



Mayfield Park | Studio Fractal

2. Considerations

2.2 Challenges

Any proposed lighting strategy should acknowledge the various key design challenges. These must be overcome by designing technical enhancements and following the criteria below:

Security:

Well designed lighting can help maintain a safe and secure environment and will often deter crime and antisocial behaviour. Providing sufficient vertical illumination to aid CCTV surveillance and enhances facial recognition.

Safety:

Safety of users is paramount in any scheme, good lighting practices can help highlight potential hazards e.g. edges, and changes in levels. Illuminating these areas positively, helps from both, a safety, and way-finding standpoint.

Accessibility:

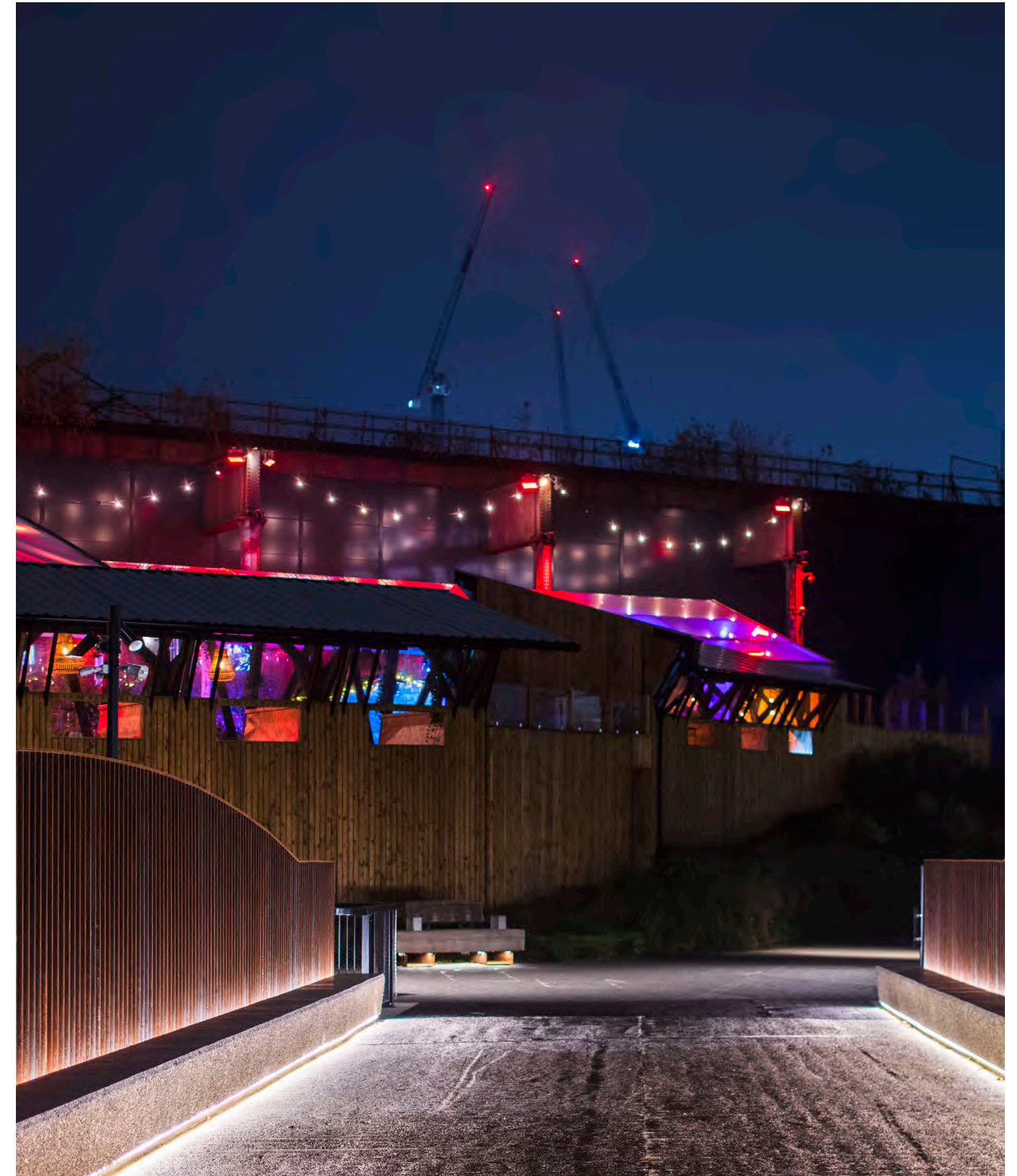
All design should be fully inclusive and therefore special attention should be considered within the lighting scheme to provide a design which also offers elements suitable for all, with special attention to zones with potential hazards.

Flexibility:

The design should include a 'future-ready' approach, by offering longevity to the design and the potential to expand should it need to in the future. Ensuring that both the lighting control and infrastructure can be easily amended and/or removed is a key feature which needs to be addressed.

Maintenance:

Even though a key benefit of LEDs are their long lifespan, regular maintenance is required to ensure the longevity of fittings but to also maintain a consistent level of light, as lighting equipment can become dirty over time. Fitting placement or technical requirements such as hinged columns are a key element to avoid unwanted risk or disruption to the site.



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2. Considerations

2.3 Qualities of Light



Åhus harbour, Sweden



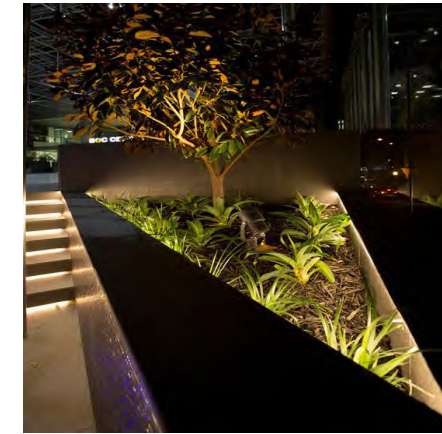
MF Pavilion, Mexico



Atelje Lyktan, Sweden



Northeastern University
International Village USA



Google image, unknown location



McBurney Lane, UK

Lighting has often been seen as a way to extend the day, however the night-time environment should be considered in its own right for its own unique qualities, which creates opportunities to use light to enhance and inform spaces by using the following tools.

Intensity:

How much light falls on a surface (illuminance) and how bright surfaces appear (luminance) are the main points of measuring within lighting design, so how luminaires are specified for their output is key to the design composition.

Colour:

Light and its colour and how it is used is fundamental, whether that is the hue/saturation of a coloured source or even in the subtleties of white light.

Scale:

Perception of space can be altered through light, spaces can feel smaller or larger dependant on the balance of light within the space, but also the scale and form factor of light fittings should be carefully considered to fit within the overall architecture and the space.

Verticality:

The use of vertically illuminated surfaces is extremely important and brings together a fully-rounded and positively lit space which offers comfort and enhances the feeling of safety to users.

Balance:

The careful composition of light, it's intensity, contrast, colour and direction offers a space filled with life and a truly holistic approach to the space.

Darkness:

Spaces which are filled with a bright uniform level of light often appear cold and dull. The true balance is that of light and shade that creates depth, life and tone. It informs nuances within the architectural forms and landscape. Provides spaces within spaces allowing users to feel safe and offers areas to sit and dwell, removed from the busy open spaces into areas of contemplation.

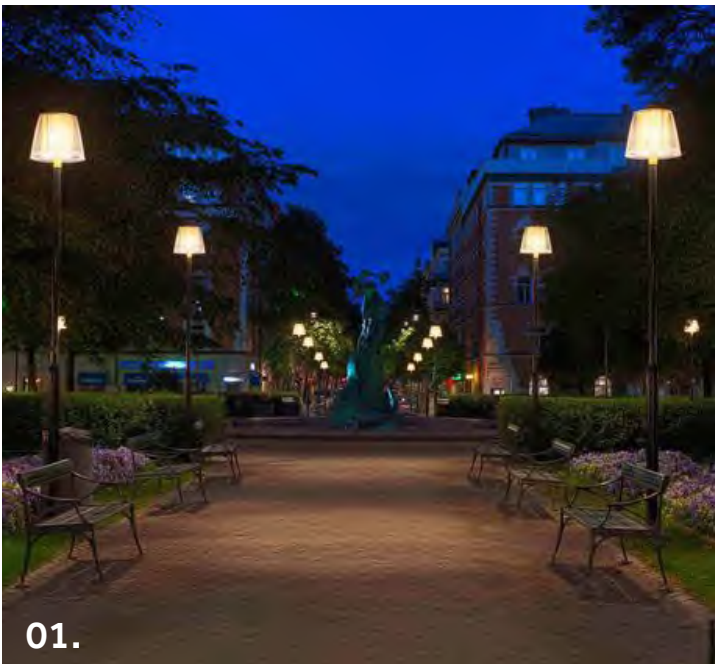
3. Lighting Criteria

3.1 Colour Temperature

The colour temperature used within the scheme will be sensitive to the night sky and light sensitive fauna and flora, while also enhancing the materials and surface qualities.

Each environment has its own unique appearance and personality therefore, should be lit to play upon their juxtapositions and material quality but also convey a sense of belonging upon the overall environment.

The lighting design should aim to reduce shorter wavelengths of visible light, moving towards warm white light, with a recommendation of 3000K or warmer.



Examples of warm white colour temperature in the urban realm.

- 01. Hoglands Park, Sweden.
- 02. Saint-Quentin-en-Yvelines, jardin du parc, France.
- 03. The University of Birmingham, UK
- 04. Dark Skies friendly decorative luminaire, UK

3. Illuminance Criteria

3.2 Luminaire Typology - Mayfield Park Precedents

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3. Lighting Criteria

3.3 Safety & Security

The safety of people is at the forefront of urban design and associated lighting therefore, a balanced approach must be taken when considering safety within the night-time environment. Many research papers have been developed to show that high levels of brightness don't necessarily equal safe environments.

Areas that are illuminated with a blanket level of high output light such as underpasses or car parks have the tendency to make the public feel threat, this is due to the lack of nuance and focal points in the lighting design. This can have a negative effect on the space and deter people to explore further.

In order to create a safe environment, the various areas must be considered holistically. Lighting should be developed in layers offering good illumination both vertically and horizontally enriching the space, aiding wayfinding and providing focal points, which allow the visitor to move unaided in a safe well balanced area. Successful lighting designs can draw the public into the area, well inhabited areas are naturally safer environments, drawing on the theory of safety in numbers.

The perception of light and how it is used also adds to safety. Adding lighting at a pedestrian scale offers clear facial recognition which again makes us feel safer.

Choosing where to add light and texture is a carefully woven composition which provides a lower level of light without having a large impact to the night sky and offering a safe night-scape.



Precedent project imagery to show examples of feature lighting encouraging movement after dark.

- 01. Tree moonlighting, location unknown.
- 02. Playground Lighting, location unknown.
- 03. Verudela Art Park Croatia.
- 04. Stair lighting, location unknown.
- 05. Wall uplighting, location unknown.

3. Lighting Criteria

3.4 CCTV & Facial Recognition

Safety and security are intrinsic to the feeling of comfort and well-being within the site in both the daytime and the night-time environment. Providing a level of appropriate light and uniformity of light is essential for creating a comfortable design.

The quality of light used at night is fundamental to the feeling of safety and facial recognition. The following are aspects which will be closely considered for light placement and specification.

- High Colour Rendering (CRI) properties, 80 CRI or above.
- Shielded/deep recessed light sources where possible to minimise glare.
- Avoid direct light adjacent or in direct view of the camera lens.
- Vertical illuminance to provide accurate facial recognition.
- Luminaires mounted at pedestrian scale, and to provide good facial recognition and illumination of level changes, edges and corners which could become hazards if not illuminated successfully.

In the exterior environment, horizontal illuminance is usually calculated on the floor level. However, this parameter does not take into consideration light landing on the vertical elements such as trees, buildings, signage and people.

Good vertical illumination is necessary to give the observer a bright and open spatial impression, to model the objects in the field of view, allow their identification hence to increase the feeling of safety particularly in the external environment at night.

Calculating the semi-cylindrical illuminance, is the parameter lighting designers calculation to assess the quantity of light falling on a semi-cylinder. This is used to abstractly represent a person's face. This allows the design to consider face identification of people approaching each other. This parameter is of extreme

importance in areas with a higher crime risk for the identification of people and objects.

Lighting is to be closely coordinated with the local council's lighting team to ensure all necessary criteria are met and a maintenance strategy is in place to ensure this remains throughout the life of the project.



Battersea Power Station | Speirs Major

3. Lighting Criteria

3.5 Light Pollution & Obtrusive Light

Light pollution, or obtrusive light, can create serious physiological and environmental problems. Light pollution can be classified as:

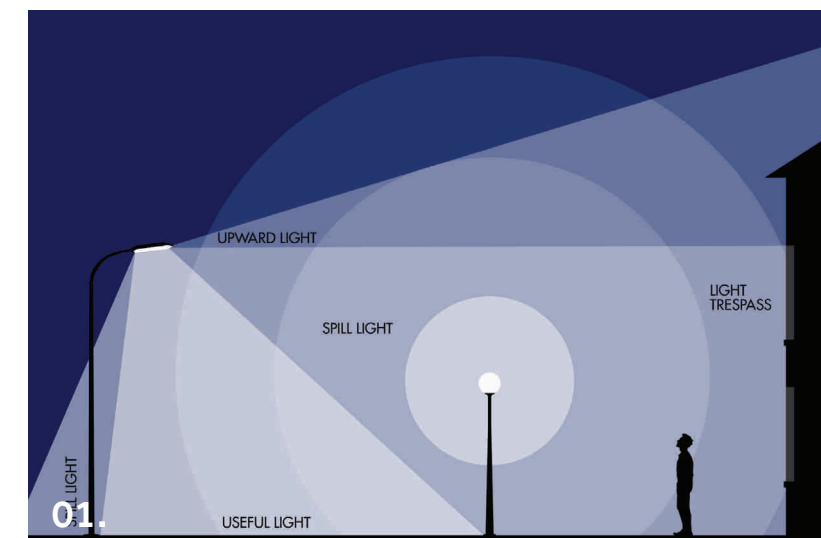
- Sky glow: The brightening of the night sky above the occupied area.
- Glare: The discomfort created by a light source in contrast to the background.
- Light trespass: The spill of light beyond the site boundary on which the light source is intended to be.
- Light ingress: The passage of light into properties from external light sources. Obtrusive light can be a problem for both humans and wildlife as well as a waste of energy and a contribution to CO2 emissions.

During the design phase of a lighting installation, consideration of the following measures to reduce the occurrence of obtrusive light is taken.

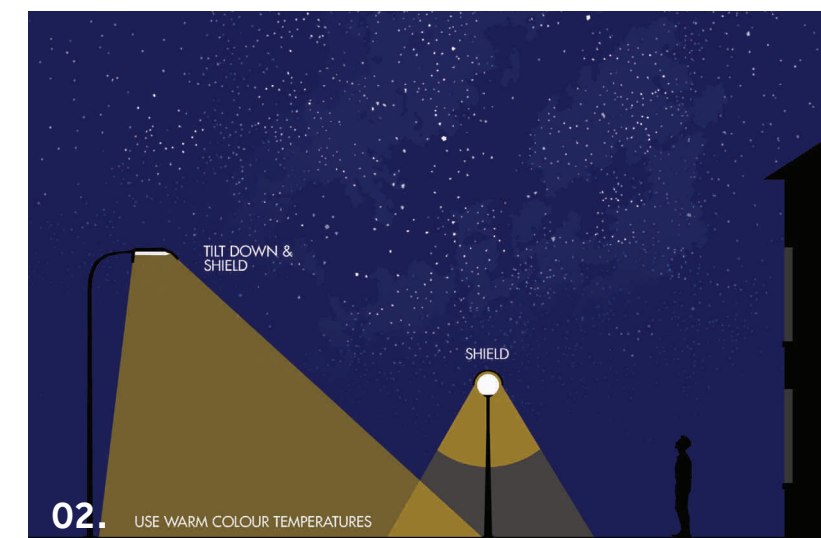
- Over-lighting: This can be avoided by conducting detail lighting calculations and selecting the correct lighting equipment for the correct application. Appropriate lighting controls can also ensure that light levels are kept within the desired limits.
- Luminaire technology: Careful consideration to the selection of the luminaires and light sources to minimise any unwanted light. Luminaires with a controlled light distribution will be utilised to ensure they illuminate only the intended areas.
- Luminaire aiming: All lighting equipment will be positioned to avoid uplight and carefully aimed towards the task area. This can be ensured during the commissioning stage.

Lighting from the internal areas will contribute to the overall light levels within the connecting exterior areas, therefore it is extremely important for this to be controlled and conform to relevant guidance. This will minimise any obtrusive light to the public realm, control glare and most importantly not compromise the safety of users.

The exterior illuminance levels are dependant upon the district brightness where the lighting is specified for. The district brightness is determined according to criteria described in the Institution of Lighting Professionals (ILP) guidance notes and requires knowledge of the local area.



01 Bad example of obtrusive light (Blinded by the Light? - Dark Skies Commission).



02 Good example of obtrusive light (Blinded by the Light? - Dark Skies Commission).

3. Lighting Criteria

3.6 Obtrusive Light - Site Classification

The criteria used to provide a baseline for the impact of lighting on the surrounding environment are taken from the ILP GN01 2021: Guidance Notes on The Reduction of Obtrusive Light.

There are five potential zones with related guidance, which are detailed in Table 1. It is assumed that the development will fall into Zone 4 of the ILP Environmental Zone guidance. Limitations imposed upon the exterior lighting within an E4 Environmental Zone are provided in the adjacent tables, extracted directly from the ILP GN01 2021 Guidance. Further guidance on limitations and how these are calculated is provided in CIE 150:2017.

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 1 | ILP Guidance Note GN01 2021 - Environmental Zones

Light technical parameter	Environmental zones				
	E0	E1	E2	E3	E4
Upward light ratio (ULR) / %	0	0	2.5	5	15

Table 2 | ILP Guidance Note GN01 2021 - Maximum values of upward light ratio (ULR) of luminaires

Light technical parameter	Application conditions	Luminaire group (projected area A_p in m^2)					
		$0 < A_p \leq 0.002$	$0.002 < A_p \leq 0.01$	$0.01 < A_p \leq 0.03$	$0.03 < A_p \leq 0.13$	$0.13 < A_p \leq 0.50$	$A_p > 0.5$
Maximum luminous intensity emitted by luminaire (I in cd) ⁵	E0 Pre-curfew Post-curfew	0 0	0 0	0 0	0 0	0 0	0 0
	E1 Pre-curfew Post-curfew	0.29 <i>d</i> 0	0.63 <i>d</i> 0	1.3 <i>d</i> 0	2.5 <i>d</i> 0	5.1 <i>d</i> 0	2,500 0
	E2 Pre-curfew Post-curfew	0.57 <i>d</i> 0.29 <i>d</i>	1.3 <i>d</i> 0.63 <i>d</i>	2.5 <i>d</i> 1.3 <i>d</i>	5.0 <i>d</i> 2.5 <i>d</i>	10 <i>d</i> 5.1 <i>d</i>	7,500 500
	E3 Pre-curfew Post-curfew	0.86 <i>d</i> 0.29 <i>d</i>	1.9 <i>d</i> 0.63 <i>d</i>	3.8 <i>d</i> 1.3 <i>d</i>	7.5 <i>d</i> 2.5 <i>d</i>	15 <i>d</i> 5.1 <i>d</i>	10,000 1,000
	E4 Pre-curfew Post-curfew	1.4 <i>d</i> 0.29 <i>d</i>	3.1 <i>d</i> 0.63 <i>d</i>	6.3 <i>d</i> 1.3 <i>d</i>	13 <i>d</i> 2.5 <i>d</i>	26 <i>d</i> 5.1 <i>d</i>	25,000 2,500

Table 3 | ILP Guidance Note GN01 2021 - Limits for luminous intensity of bright luminaires

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

Table 4 | ILP Guidance Note GN01 2021 - Maximum values of vertical illuminance on premises

3. Lighting Criteria

3.7 Lighting Controls

As the landscape lighting is required after sunset, all luminaires should link to photocells and astronomical time-clocks located at appropriate zones on the site. Once the daylight levels drop under a certain value, pre-programmed luminaires within the landscape should switch on.

It is envisaged that, when the building commercial units are in use, all functional and decorative lighting will be switched on but later in the evening, 11 p.m. onwards only light for safe passage and security (including CCTV coverage), evacuation and emergency, or dedicated loading and entrance/ exits areas should remain functioning. This will ensure that pedestrians are encouraged to navigate along the safest, most accessible routes with highest level of surveillance.

The lighting principles could be grouped and appointed to certain 'light scenes (to be discussed with landscape architect):

Scene 1 | During Sunset

As this is the busiest time of the evening and as the night sets in, it is envisaged that all lighting could be switched on.

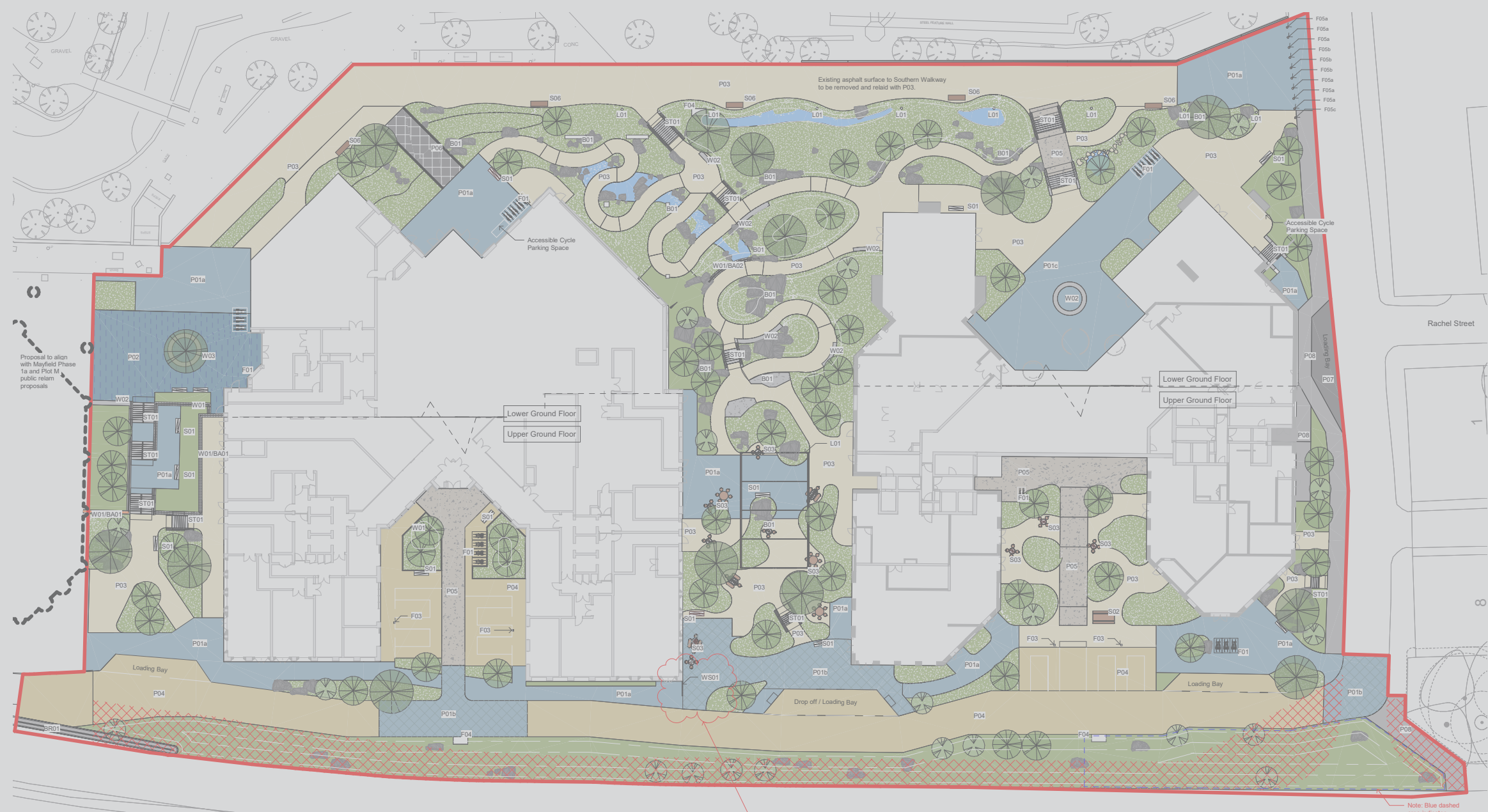
Scene 2 | After 11 p.m.

Most feature lighting elements will be switched off, leaving only main accessible routes through the site illuminated encouraging safer pedestrian routes.

4. Technical Assessment

4.1 Pedestrian Movement

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Pedestrian Movement - Masterplan Layout (background supplied by Studio Egret West)

4. Technical Assessment

4.2 Illuminance Levels

The project lighting design criteria has been designed to lighting regulations and guidelines developed by the British Standards Institute (BSI), the Institution of Lighting Professionals (ILP) and the Society of Light and Lighting (SLL/CIBSE) to ensure that the project conforms to responsible energy use, appropriate light levels, visual comfort and are easily maintained.

The lighting will be designed using the following documents for guidance and best practice.

- **BS EN 12464-2:2014:** Light and Lighting - Lighting of Outdoor work places.
- **BS 5489-1:2020:** Lighting of roads and public amenity areas.
- **BS 8300-1:2018:** Part 1 External Environment - Code of practice.
- **BS 8300-2:2018:** Design of an accessible and inclusive building environment.
- **SLL Code for Lighting 2022.**
- **SLL Lighting Guide LG 06:** The Exterior Environment (2016).
- **SLL Lighting Guide LG 14:** Control of Electric Lighting (2023).
- **SLL Lighting Guide LG 16:** Lighting for Stairs (2017).
- **ILP GN01-21:** Guidance Notes on The Reduction of Obtrusive Light.
- **ILP Professional Lighting Guide 05/22:** The brightness of illuminated advertisements including digital display (2023)

-  • 5/10 lux average, 0.25 uniformity.
Primary pedestrian walkway - BS EN 12464-2:2014.
-  • 5 lux average, 0.25 uniformity.
Secondary pedestrian walkways - BS EN 12464-2:2014.
-  • 5 lux average, 0.25 uniformity.
Light traffic car parking areas - BS EN 12464-2:2014.
-  • 10 lux average, 0.40 uniformity.
Pedestrian walkway and traffic area for slowly moving vehicles - BS EN 12464-2:2014.
-  • 20 lux average, 0.40 uniformity.
Regular vehicle traffic - BS EN 12464-2:2014.
-  • 50 lux average, 0.40 uniformity.
Vehicle loading, BS EN 12464-2:2014.
-  • 30 lux average, 15 lux minimum.
Steps - BS 8300-1:2018.
-  • 5 lux average, 0.25 uniformity.
Cycle parks - BS EN 12464-2:2014.
-  • 2/5 lux average, 0.40/0.25 uniformity.
P6 lighting class/Pedestrian walkway - BS EN 13201-2:2015/ BS EN 12464-2:2014.
-  • Feature lighting to skylight.

4. Technical Assessment

4.3 Illuminance Levels - Masterplan

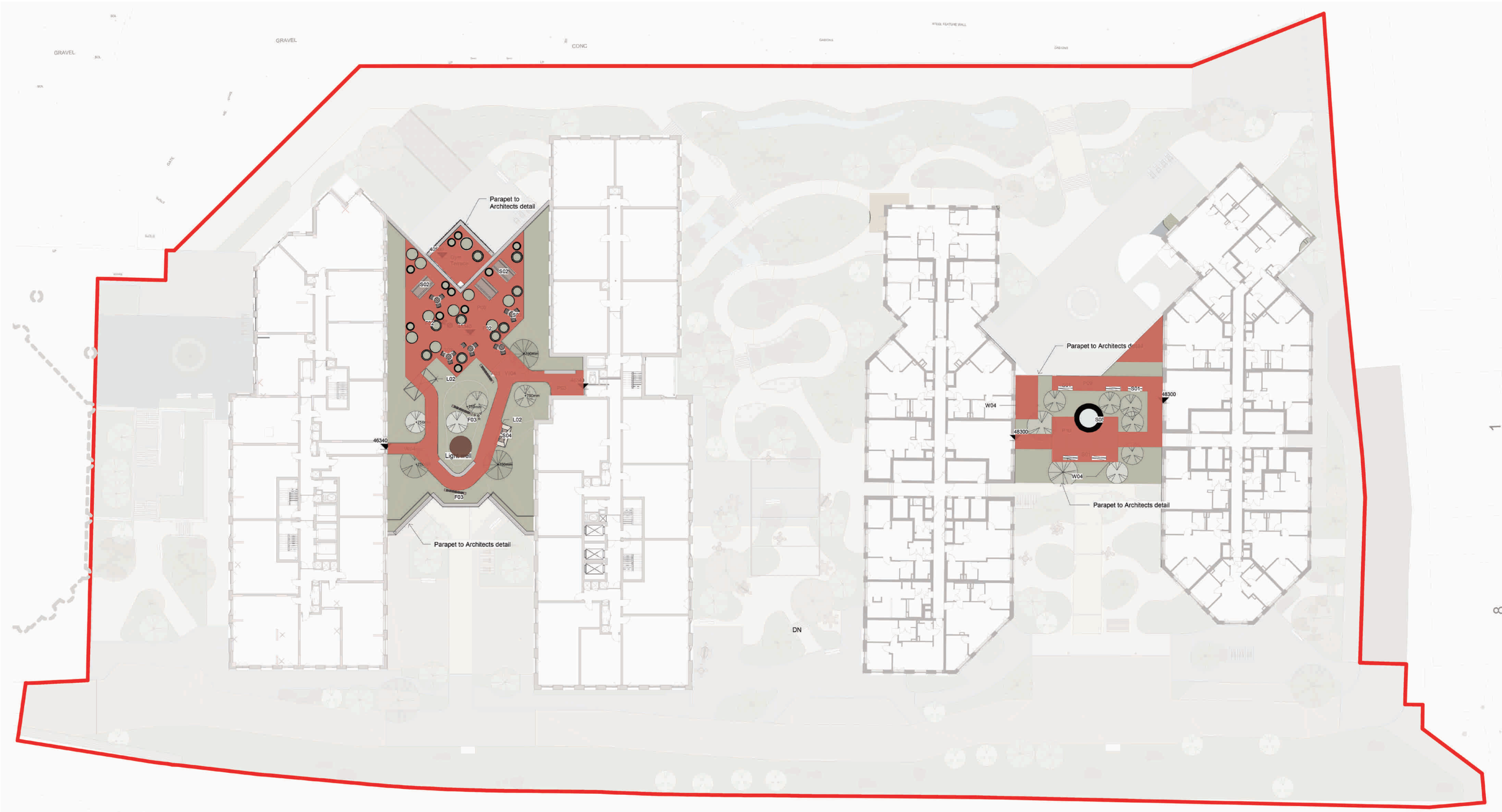
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Illuminance Levels - Masterplan Layout (background supplied by Studio Egret West)

4. Technical Assessment

4.4 Illuminance Levels - Plot J and K

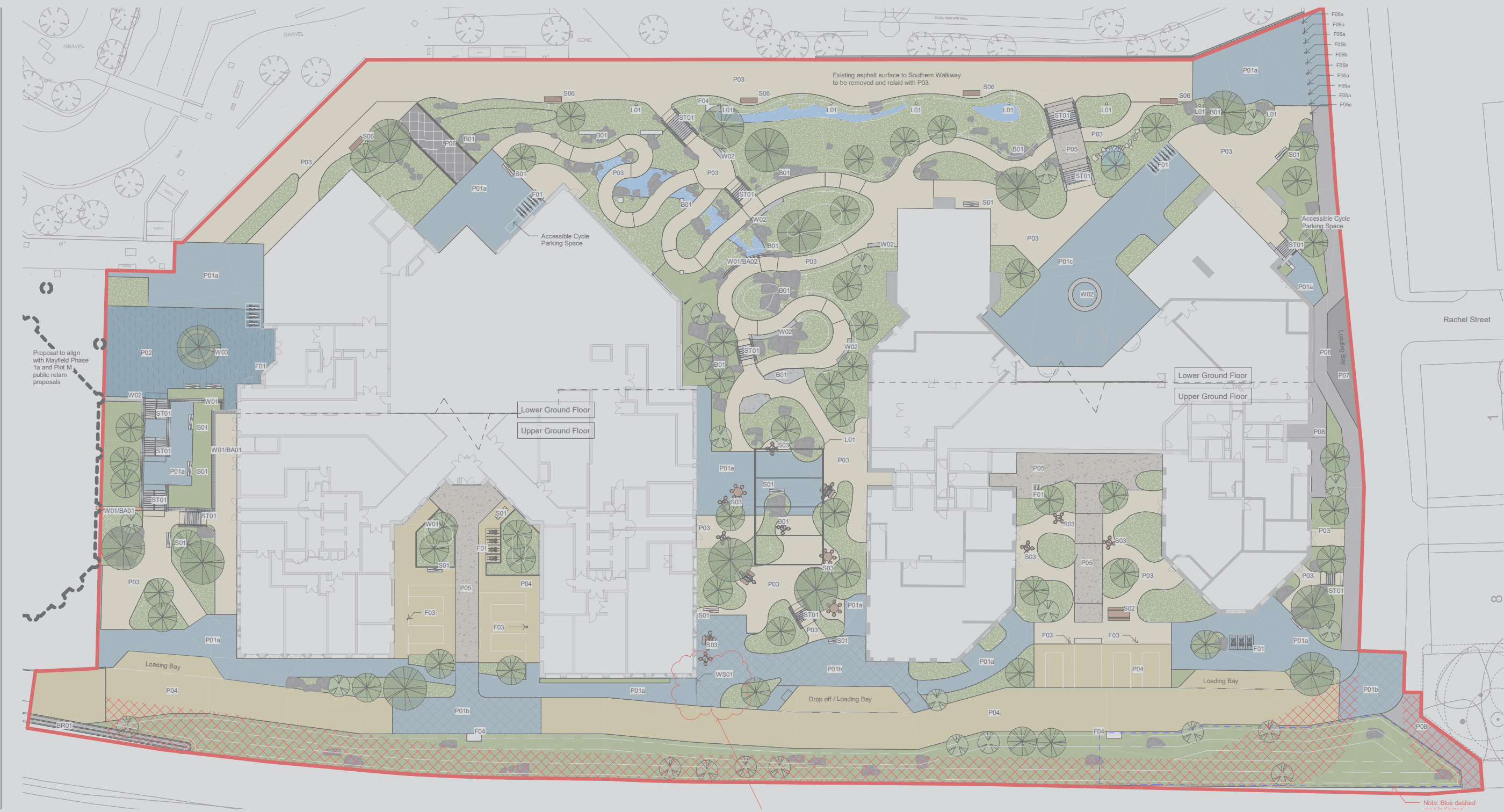


Illuminance Levels - Plot J and K (background supplied by Studio Egret West)

4. Technical Assessment

4.5 Illustrative Luminaire Layout - Masterplan

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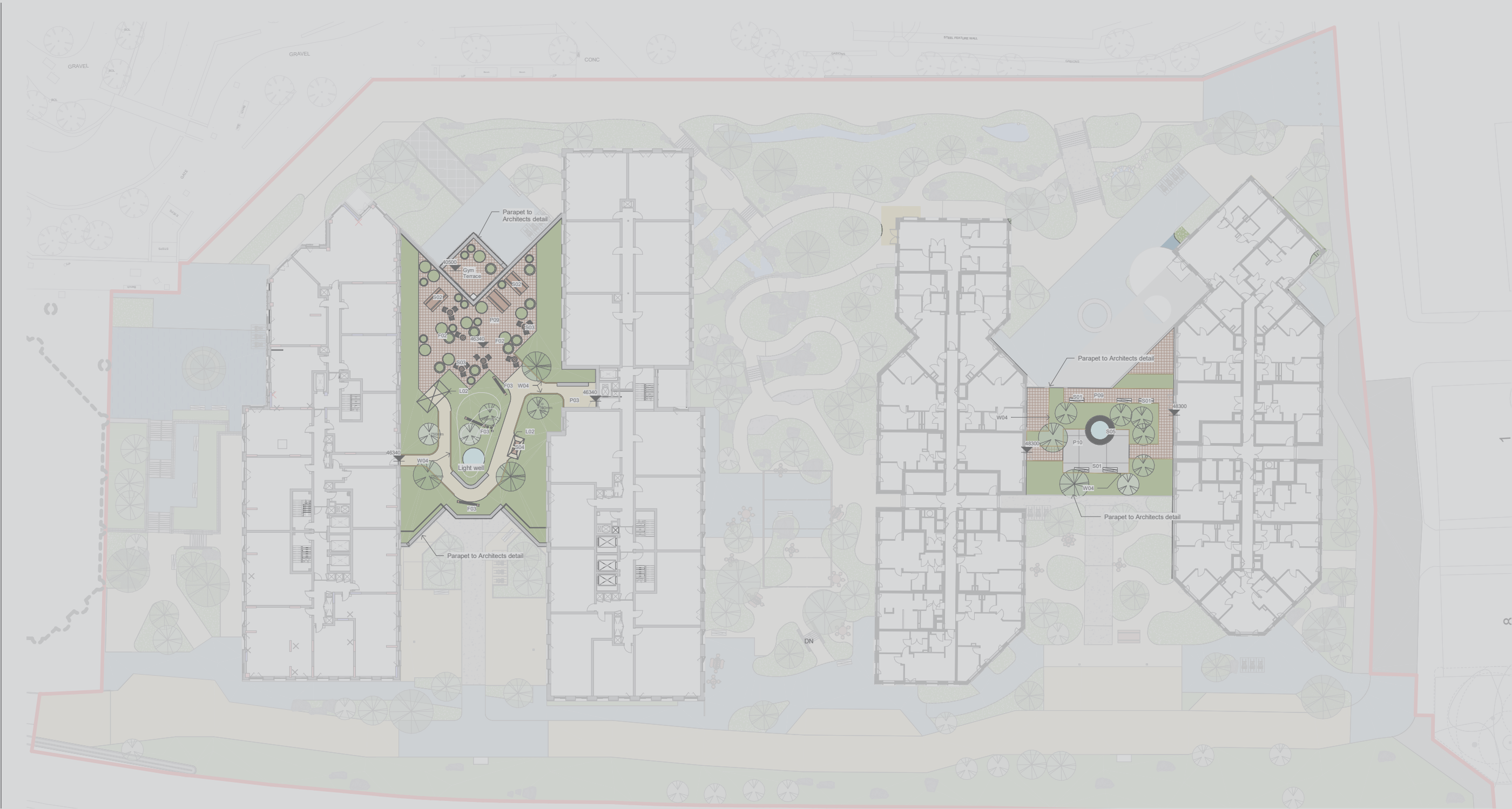
Illustrative Luminaire Layout - Masterplan (background supplied by Studio Egret West)



4. Technical Assessment

4.6 Illustrative Luminaire Layout - Plot J and K

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Illustrative Luminaire Layout - Plot J and K (background supplied by Studio Egret West)



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