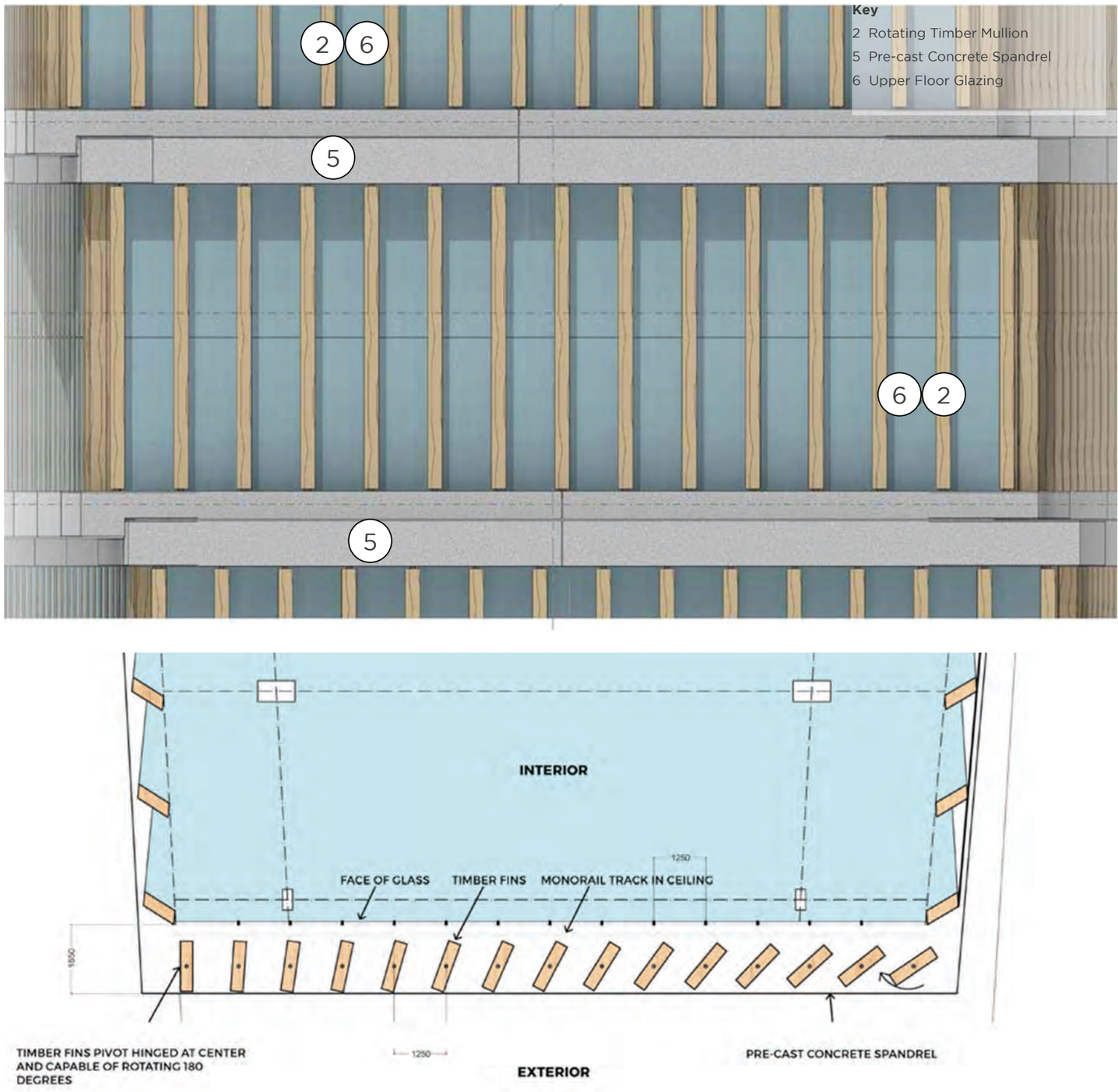


Figure 140: Illustrative view of the southern elevation of the building, showing the double height glazing and moving fins

General 12: Quality and Attention to Function and Detail

2.11

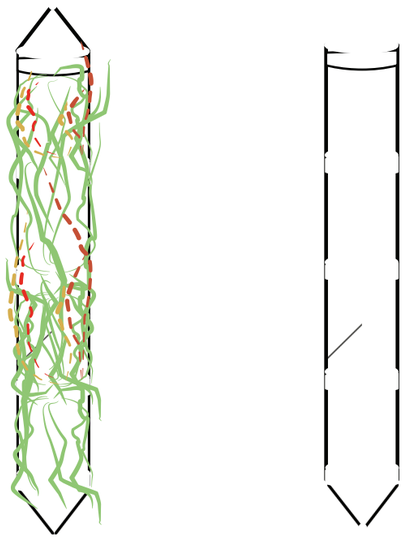


Figure 141: Facade study showing planted balconies and climbing structures

The east and west façades are punctuated with a series of nine recessed balconies of varying sizes with shrubs and tall climbers (Figure 141). Some of these will be accessible for members of staff. To prevent leaves falling onto the adjacent tracks on the east side and meet asset protection requirements from Network Rail, a stainless steel mesh encloses the balconies on this façade.

For the more prominent north and south façades, effort has been made to ensure that the façade has substantial depth and articulation through the use of double and triple height glazing, timber mullions and the use of balconies, particularly on the north façade, which take advantage of the views across the canal and the Eastern Goods Yard.

Consistent with the east and west, the extensive use of glazing on the northern elevation represents a confident response to the unique orientation of the building towards the listed Granary Building, as described in detail in Section 2.3 of this UDR. Given the limited direct solar gain on this elevation, the amount of glazing on the north façade has been increased to create triple height floors to maximise levels of daylight.

Similar to the east and west, the north façade is punctuated with four balconies to create visual interest along the northern elevation, and strengthen the edge of Goods Way. The detailing of the balconies and the soffit (formed out of high quality pre-cast concrete), together with the vertical timber mullions means that the façade takes on a duality of textures and colours, depending on where the building is viewed from. In addition, the balconies serve a practical purpose by providing some solar shading on this exposed elevation and assist in bringing additional daylight into the office floorplate.

On the south facade, the design responds to the scale between the different contextual conditions by subtly differentiating the west and north façades through the use of double height glazing and timber mullions that are capable of rotating 180 degrees, depending on the weather and the requirements of solar shading and improved daylight conditions (see Figure 140). The use of the rotating timber mullions will help to reduce solar gain on sunny days.

The building also includes a number of external features, which contribute to its overall sustainability and targeted 'Outstanding' BREEAM rating, notably, the carefully considered facade design, responding to building orientation and placing great emphasis on daylight optimisation. The environmental performance of the building is discussed in more detail in Section 1.4 of this report.

Early morning | Late morning | Early afternoon | Late afternoon | Early evening

Figure 142: Proposed south facade showing dynamic timber mullions opening throughout the day, starting in the morning from the left to early evening on the right

Station 2 and Station 4: Southern Façade

2.12

Station 2

How the southern façade details of buildings within plots A1, B2 and E reflect the roles of these façades both within urban blocks and in forming public spaces

Station 4

How the detailed designs of buildings within plots E, B2 and A1 respond successfully to the public realm that links the routes northwards from Station Square but which still retains some independent character

As described previously in relation to our response Street Hierarchy in Section 2.6, the southern end of the Zone A Building forms the gateway to the King's Boulevard alongside Building B2. Together, the Zone A Building and Building B2 marks the beginning of the north/south grain of the entire KXC site. The south facade of the Zone A Building has an important role to play firstly as a front and end marker of new urban blocks; secondly as a backdrop to the surrounding buildings, including King's Cross Station, St Pancras Station and the German Gymnasium Building; and lastly, as an enclosing yet engaging edge to the northern side of Battle Bridge Place, formerly known as Station Square.

The southern façade has been designed with these roles in mind, with robust detailing and cues influenced by the rhetoric of King's Cross and St Pancras stations. Reference has been drawn from the scale, the character and materiality of these neighbouring historic buildings. Rather than replicating them, the Zone A Building re-interprets their character so that it complements these buildings, whilst creating its own identity.

To respond with the significance needed by all of these roles, the southern end needs both a sense of importance and restrained drama, to strike a balance between respecting its location, but recognising how it will form one of the first pieces of the built environment that fronts the public realm of Battle Bridge Place. To do this, the southern end is powerful, rhythmic, and engaging; this latter facet is bought about by its gentle dynamism where the two storey timber fins are designed to slowly rotate, creating a sense of drama and spectacle, as shown in Figure 142, opposite.

This response is also followed through in the materiality of the southern façade. The heavy mass of the horizontal spandrel panels, formed of pre-cast concrete is a representative of the masonry and brick of the stations and the German Gym Building, for example; the sawtooth glazing is picked up as the glazed barrel vaults of the King's Cross and St. Pancras stations.

As noted in previous sections, the massing of the southern element is distinct, being lower in height at seven storeys (excluding ground floor), and clearly defined by the step up in height of the building at Core 1 to nine storeys marking the start of King's Boulevard and Building B2, see Figure 142.

The skewed geometry of the two stations and York Way and the realigned Pancras Road is interweaved with the complexity of three additional geometries: those of the German Gym and Stanley Building South, the Great Northern Hotel and the Western Suburban Train Shed of King's Cross. These geometries, when married with the massing of the referenced buildings, have created a public realm space in Battle Bridge Place that is hard to define. The proposed massing of the southern end of Zone A, and in particular its orthogonal flat south façade, seeks to address this issue. The massing gently tilts, or steps, in each two storey segment to the west, towards King's Boulevard. This gentle, subtle shifting of the massing directs/leads the occupant of Battle Bridge Place around the corner, drawing the eye northwards under this series of angled overhangs. At the same time, the 'flat' face of the south elevation and its reduced scale (ground plus six compared to the ground plus eight storeys for Building B2) provides a definitive edge to Battle Bridge Place. The height is not overbearing, a blend between the German Gym, the new King's Cross concourse and B2.

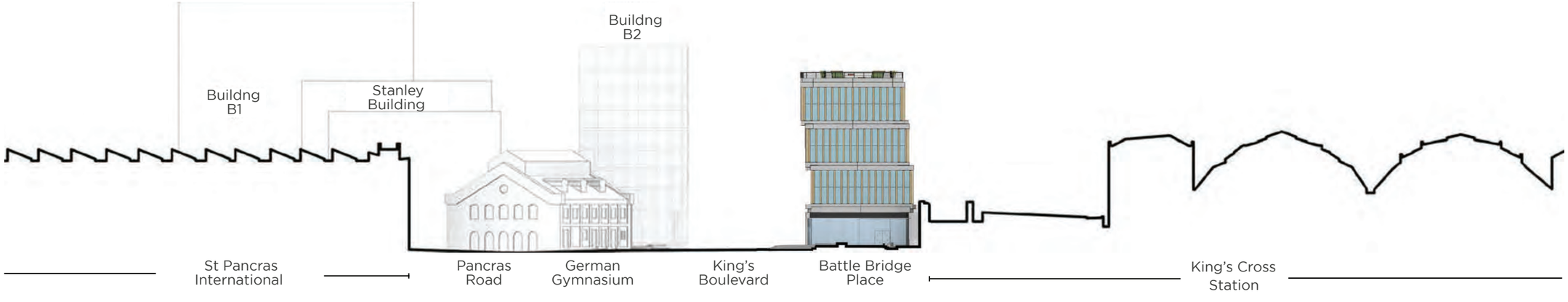


Figure 143: Illustrative south elevation showing the Zone A Building within the context of the stations, Stanley Building and German Gym

Figure 144: Illustrative views of the south anchor unit (top) when the sliding doors are open and (bottom) when closed, as seen from Battle Bridge Place

Station 2 and Station 4: Southern Façade

2.12

Figure 145: Illustrative landscape plan showing proposed etrrace on Battle Bridge Place

The design and function of the South Anchor and the associated public realm landscaping also seeks to complement and reinforce this forming of the enclosure of the public space at Battle Bridge Place. The South Anchor is designed to address the public realm in a different, and engaging way. Its enclosure is formed by large glazed panels and doors, that slide to enable the internal space to be fully opened up to Battle Bridge Place, as shown on Figure 144. This is to create an inside/outside space, that engages with users and passersby alike. Its function of retail and display supports this openness. By being fully glazed, even when closed the walls and doors are see-through – blurring the boundary between the inside and out, making the interior highly visible and engaging. Similarly, the hard landscaping around this southern end is raised to create a slightly physically separate, but visually connected urban public realm space, lifted from the remainder of Battle Bridge Place. Its gently curved, undulating perimeter and integration of benches and planting mirrors and complements that in the existent western side over the King's Boulevard (Figure 145).

Both these moves combine to do two things: firstly to gently steer people around the south end, through the generous but enclosed Battle Bridge Place; secondly, to provide an open and engaging interface between the South Anchor and the open space of the public realm. Thus at a contextual scale, the massing proposals, functions and design of the hard landscaping address the roles this southern end needs to play as part of the urban blocking, and in forming the public space.

The detailed design of these elements adds additional layers in support of this response.

Figure 146: Verified view of the south facade as seen from Battle Bridge Place

Station 2 and Station 4: Southern Façade

2.12

As shown in Figure 146, opposite the south facade is designed as part of the family of the other facades i.e. in a sawtooth configuration with timber fins. The difference on the south façade is that the fins are pulled forward, proud of the glazing enclosing the workplace. Thus the fins form an external colonnade – referencing the external columns the south façade of Building B2. This creates depth and shadow to the façade, allowing the horizontal pre-cast concrete spandrels and floor slabs to form solar shading to the office space. As the office space is stacked in two storey sections at the southern end, the mid-floor comes to the external façade (as described in Section 1.3, earlier) and is represented by dark horizontal spandrel panels – thus expressing the 'end grain' of the building.

As benefits the importance of this façade onto one of the most trafficked thoroughfares and public spaces in London, the role of this façade is also to provide interest and perhaps a little drama. The large, two storey fins are dynamic: they are designed to rotate. Hinged at the centre, capable of rotating up to 180 degrees, the fins primary function is to deliver solar shading to the workplace. The southern façade gets the highest level of solar incidence, and so the wide fins will be programmed to rotate to match the passage of the sun – optimising the shading, and reducing the need for internal glare blinds, whilst reducing the heat load of the building. The dynamism of this approach with its subtly shifting arrangements, references the varied geometry of the setting and moderates the scale of the Zone A Building with its surrounds.

Lastly, the movement itself can become an event, a showpiece for Battle Bridge Place. The movement with the passage of the sun creates a story itself. When this is not required – early evening say, or at night, the fins can be used to create patterns, life, visual interest; they could be over-clad on one side that could form a display space.

As mentioned previously, the Zone A Building will form the southern edge to Battle Bridge Place and marks the start of King's Boulevard, representing a focal point for people standing in Battle Bridge Place. This key area will form an important gateway, channelling pedestrians along the Boulevard. As noted above, the tilting of the massing westwards reinforces this movement. Further, the Zone A Building defines the space between the German Gym Building and the Stanley Building, embedding these historic buildings into their context through the use of appropriate scale, and materials. The confident design of the timber fins and the exposed pre-cast concrete slabs expressed on the south facade, is a reflection of the building's important position in the townscape.

Spaced at 1.2 metres apart, and two storey in height, these timber fins reference the scale of King's Cross and St Pancras Stations, as well as the internal structure and spaces within.

At the workplace level the generously scaled bays on the south facade result in large format apertures that engage with the public realm through variety in both reflection and transparency. The southern end of the Zone A Building therefore forms a strong, subtly different, element within the increasing massing of the building itself, and Buildings B4 and B6 behind, fronting an independent character onto the public realm.

On the south and western sides of the proposed building's ground floor retail unit, the southern and western facades open onto Battle Bridge Place and King's Boulevard with views towards the King's Cross concourse, and the east elevation of St Pancras Station. The ground floors of the German Gym, the B2 building and the King's Cross concourse are all open and engaging in their design and function, but all in different ways. By having large, clear glazed sliding doors and panels that form the South Anchor enclosure another, more literal, opening and engaging design methodology and function is added to this family of buildings around Battle Bridge Place, as shown previously in this section as Figure 144.

The glazed enclosure is detailed to have as little visual interference as possible – thin mullions and framing, no transoms, and minimalistic detailing at the junctions. This design approach is to replicate as much as possible this feeling of openness, even when the glazing is in its closed positions.

The ground floor plinth, which addresses the upwards slope of the KXC site as described in Section 1.3 extends onto Battle Bridge Place to form an area to spill out onto. The southerly aspect and views over Battle Bridge Place lends itself to create informal seating areas forming a lively backdrop to the space and corresponds with the seating areas outside the German Gymnasium restaurant and the restaurant area of Building B2.

Figure 147: Illustrative view of the building's north and west elevations viewed from the steps on Granary Square. The ground floor retail is depicted with tenant customisation.

Canal 1 & Canal 7 : Northern Facade

2.13

Canal 1

How buildings within plots A5, B3, B5 and B6 avoid appearing as an unbroken wall by using articulation at roof and lower levels, setbacks and materials to create visual interest, and a varied skyline, and reinforcing the separating spaces between buildings.

Canal 7

How the detailed designs of buildings within plots A5, B3, B5 and B6 and within the gasholder guide frames, including the choice of materials, contribute positively to backdrop views of the canal.

The Zone A Building is located at the head of Goods Way with the strong the strong visual and pedestrian connection of King's Boulevard providing a strong north to south connection as envisaged in the masterplan. This position has been addressed by taking a consistent approach to the design of the elevations with the prominent use of large glazing elements and timber mullion structures with a frame hierarchy addressing the scale of the facades.

Particular attention has been paid to the northern elevation, which has the task, along with the adjacent buildings, of providing a street frontage to Goods Way and establishing a visual connection with the northern area of the KXC site; in particular the Eastern Goods Yard across the Regent's Canal to the north.

As explained previously, the regular form of the façades, their tripartite composition and the material detailing is respectful of the setting of the Zone A Building amongst the industrial heritage of the area, in particular the Eastern Goods Yard and King's Cross and St. Pancras International Stations. These historic buildings create a context of significant massing and bold architectural styles, which the Zone A Building responds to through the use of strong form and a robust quality to the materials and detailing.

Given the contextual significance of the northern elevation and as it either starts or completes the new elevations along Goods Way, the north façade needs to have life, depth and detail, to be in keeping with those of Buildings B6, B5 and B3. In particular, the building picks up references on B5 and B3 through the addition of balconies and terraces, as shown in Figure 148.

At the base of the building, visual interest is added at key points in the façade through the functions contained within the spaces along this section of the perimeter and their respective architectural languages. They include the double-height anchor unit, set as a series of the retail frames (as described in Section 1.3); and the entrances of the office and ancillary Events Centre, with their strong pre-cast concrete frame, recessed glazing (also described in Section 1.3). Additionally, there is the existing Access Ramp entrance to the eastern end of the north elevation – again it has a completely different language in its large open volume and raw concrete frame.

As the North Anchor in particular turns the corner from Goods Way to the King's Boulevard, the frames step back in a faceted manner beneath the overhang of the upper workplace floors. This opens up the space that links Canal Square, Goods Way and the King's Boulevard, see Figure 147 opposite.

Figure 148: Elevation showing the Zone A Building in the context of Buildings B6, B5 and B3 and the visual relationship across the buildings by reference to the use of terraces and cut-outs in the facade (shown in blue)

Figure 149: Verified view of the building showing the chamfering of the exposed north-western edge, as seen from Goods Way. The ground floor retail is depicted with tenant customisation.

Canal 1 & Canal 7 : Northern Facade

2.13

The clear expression of the double height north corner retail unit reinforces this important junction and the separation between the Zone A Building and Building B6, shown in Figure 149 opposite, as well bringing vitality and natural surveillance to the square. The role and character of Canal Square has informed the design of the northern and north western façade and influenced the configuration of uses at ground floor.

By bringing the retail around this corner, the Zone A Building effectively encloses this edge of Canal Square with functions that bring life and interest. The remaining bays along the north-west elevation are given over to retailers or retail shop fronts offering a more intimate scale and retail experience to the northern half of this pedestrian route.

At this end of the building the workplace floors are grouped into threes, with the horizontal pre-cast concrete spandrels forming the expression of these layers. To allow the proposal to frame the view up the King's Boulevard from the south, turning ones eye westwards towards Granary Square, where the layers step out in a series of overhangs. Viewed in the other direction, directly from the north or from Granary Square back south, this 'tilting' towards the King's Boulevard and Building B6 breaks up the lines of the massing. One other subtle massing move made on both the north east and north west corners is the chamfering of these exposed edges. These are created using large, three storey picture windows at 45 degrees to the plan. This chamfering further softens the northern-most corners, visually breaking up the massing, whilst creating great internal viewing areas (Figure 149 opposite).

Consistent with the main body of the façade, the north follows the same design strategy as the east and west elevations, but with different layers of detail. Similar to the south, the north has an added concept of an 'end grain', whereby the internal floors are expressed as they interact with the façade giving the impression that the long building has been sliced at the end, exposing the inner environment of the building.

To create a significant 'top' to the elevation, the recessed balcony on the tenth floor runs three-fifths of the width of the building, and is very deep, see Figure 149. The design of the building's north façade allows the visual expression of the primary structural trusses that sit below the roof level, letting the passer-by understand how the building works. The large balcony will also provide life and functionality to the façade, continuity to the emerging skyline in the southern area of the KXC site. With the addition of three further inset balconies to this façade on the second, third and sixth floors, a more focused relationship is given over to the Regent's Canal and the Eastern Goods Yard to the north, giving prominence to this key elevation.

Figure 150: Long elevation of the North Anchor Unit on north and west facade

Figure 151: Illustrative view of the Plateau character area looking north

Canal 1 & Canal 7 : Northern Facade

2.13

Figure 152: Illustrative roof plan showing the amphitheatre edged in blue, as located on the Plateau character area of the roof

The roofscape of the Zone A Building is confidently articulated by way of expressing south western corner of the northern edge of the Zone A Building, as previously described as the 'Plateau' character area of the roof. This is animated by an expanse of landscape where users have the opportunity to exercise, meet or engage, away from the office floors. An amphitheatre is located at the north western corner of the plateau offering users a 270 degree view around the building's northern and western edges, shown as Figure 149. The roofscape of the Zone A Building provides a strong parapet line to the allowed datum of +72.00 metres AOD.

All of these moves combine to create a northern end that has depth, visual interest and variety, and forms an engaging backdrop to the views from the Canal and Granary Square

In combination with the adjacent buildings along Goods Way, this distinctive façade will create a sense of enclosure to the open space of Granary Square and the Regent's Canal. The massing moves, robust materials, the recessed balconies,strong horizontal emphasis, and the richness of fenestration all offer variety, scale and a hierarchy which whilst different to the adjacent buildings, creates an intriguing skyline and definition of the spaces between them. Together, they form a differing series of architectural and visual designs, as a stimulating backdrop to the views of the canal.

Appendix

A1 Technical Considerations

Performance Criteria and Professional Guidelines

Performance Criteria

For the KGX Retail Facade lighting scheme, a number of design criteria and parameters will be considered during the design process. These include but are not limited to:

- Environmental conditions
- Energy efficient and high quality light sources
- Illumination effect upon materials and surfaces
- Light spill and light pollution
- Lighting controls
- Longevity of design over time
- Initial capital costs (supply and install)
- Ease and cost of ongoing of maintenance

Professional Guidelines

The following mandatory, legislative and regulatory requirements based upon British Standards, Codes of Practice and Best Practice professional guidance publications will form the parameters of the lighting installations.

- BS EN 60598-1:2015 Luminaires – general requirements and tests (BSI)
- LG06/16 Lighting Guide 06: The Exterior Environment - LG6 (CIBSE, 2016)
- Factfile 7 - Design and Assessment of Exterior Lighting (SLL/CIBSE, 2011)
- CIE 136-2000 - Guide to the Lighting of Urban Areas (CIE, 2000)
- CIE 126-1997 - Guidelines for Minimising Sky Glow (CIE, 1997)
- LGLOL SLL Guide to Limiting Obtrusive Light (CIBSE/SLL, 2012)
- CIE 150:2017 - Technical Report, Guide to the Limitation of the Effects of Obtrusive Light From Outdoor Lighting Installations (CIE, 2017)
- GN01:2011 - Guidance Notes for Reduction of Obtrusive Light (ILP, 2011)

Maintenance

To reduce maintenance only high quality lighting equipment will be selected and should be located in easily accessible locations.

Drivers and power supply units should be located where they do not require specialist access equipment. For any landscape or temporary installations at sea level, special consideration will be given to the ease of use and longevity of these fittings to minimise maintenance.

Access will be coordinated with the building's maintenance unit, especially when working in high locations. This will help to avoid unnecessary legacy costs to the building operator.

Anything fixed onto the facade should have appropriately considered fixing details to reduce time and complexity of the installation. The architect and facade engineers should ensure the feasibility of the facade lighting design prior to commencement of construction.

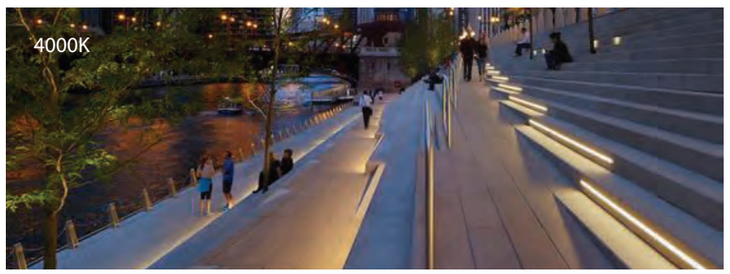
A1 Technical Considerations

Quality of Light

Colour Temperature

The colour temperature of a light source is conventionally stated in the unit of absolute temperature, Kelvin, having the unit symbol 'K'. Temperatures above 4000K are cool in colour, with bluish white light, while colour temperatures around 3000K are more neutral white in tone, providing a modern feel. Colour temperatures in the 2200K-2700K range have a warmer effect, creating a traditional atmosphere.

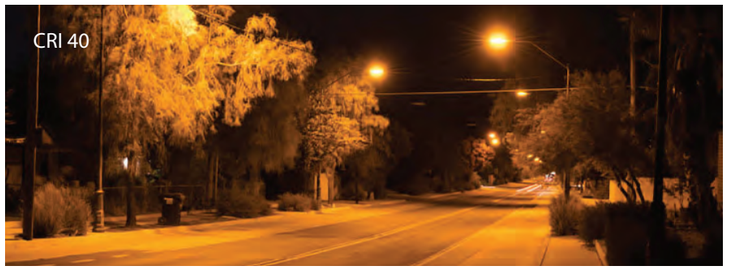
For the purpose of this report, the general lighting for KGX Retail Facade will consider a warm to cool colour temperature range (2200K-6000K).



Colour Rendering

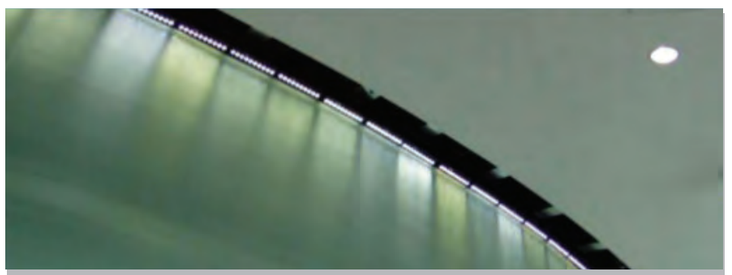
CRI (Colour Rendering Index) measures the ability of a light to truly reveal the colours of various objects faithfully in comparison with an ideal or natural light source.

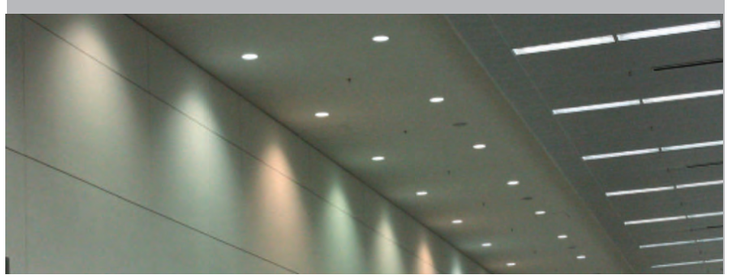
CRI of different light sources can vary greatly, with lamp sources such as low-pressure sodium (used in streetlights) being particularly poor (CRI40). LEDs, the primary source on the project, generally have a very good rating (CRI80-97).



Colour Consistency

Colour properties of lamps may change over the life of the lamp. Colour stability describes the ability of a light source to maintain its colour properties over time. One MacAdam ellipse (SDCM) describes the colour space within which the human eye cannot perceive a colour difference. In practice, colour differences from light sources with two or fewer SDCM steps are barely visible. Good quality LED chips have limited colour shift over the life of the product and, if the development is to maintain its aesthetic quality, it is important that such colour consistency is considered.





A1 Technical Considerations

Obtrusive Light

Light Pollution

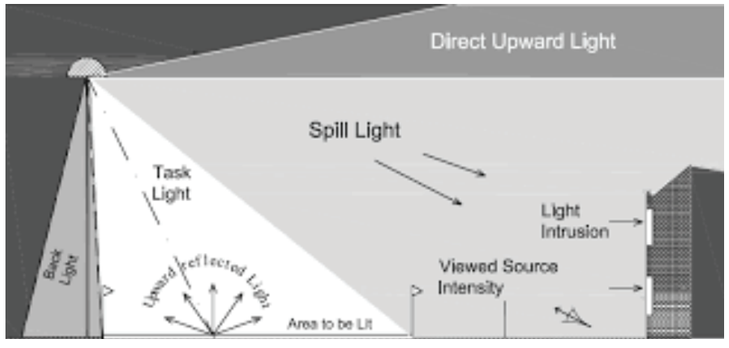
Light pollution, or obtrusive light, can create serious physiological and ecological problems. It takes various forms:

- Sky glow - brightening of the night sky above our towns and cities;
- Glare - discomfort caused from contrast of light source to its background
- Light trespass - light spill beyond the site boundary
- Light ingress - the passage of light into buildings from external sources

Obtrusive light is a nuisance to both humans and wildlife, it is a waste of energy and contributes to greenhouse gas emissions. When specifying luminaires,

Nulty carefully consider minimising upward light and the use of optical units with precise light intensity distribution: thus ensuring that spill and glare are minimised. Luminaires are positioned to avoid uplighting where possible. Where practical, directional luminaires are utilised to enable precise projection of light. Proper commissioning will ensure directional luminaires perform as intended.

During the design phase of a lighting installation, over-lighting is avoided by conducting thorough calculations and carefully selecting the most appropriate lighting equipment and lamp types. Additionally, a lighting control performance specification is produced to ensure luminaires are only switched on when deemed necessary.



Lighting according to Environmental Zone

The Commission Internationale de l'Eclairage (CIE) has outlined four environmental zones to establish a basis for outdoor lighting regulations (CIE 1997). The environmental zone rating can be used to help ensure that the lighting goals of an environment are appropriately defined and met, but not exceeded.

E1: Intrinsically dark landscapes
National Parks, Areas of Outstanding Natural Beauty
E2: Low district brightness areas
Rural, small village, or relatively dark urban locations
E3: Medium district brightness areas
Small town centres or urban locations
E4: High district brightness areas
Town/city centres with high levels of night time activity

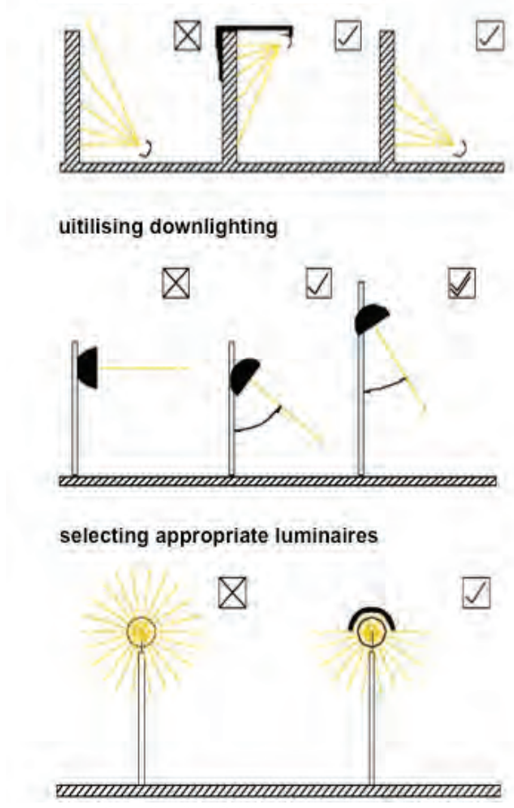
Also, the CIE gives recommendations for pre-curfew and post-curfew light levels to limit light trespass. Pre-curfew is from dusk until 11:00 p.m. local time, when the area being illuminated is more likely to be in use. Post-curfew is from 11:00 p.m. to 7:00 a.m. local time. Curfew times may differ from location to location and should be cross checked with local council guidelines before submitting planning applications.

Environmental zone	Light on properties		Luminaire intensity		Upward light	Luminance	
	E_v		I		ULR	L_b	L_s
	lx		cd		%	cd·m^{-2}	cd·m^{-2}
	Pre curfew [a]	Post curfew	Pre curfew	Post curfew		Building	Signs
E1	*2*	*0 [b]*	*2500*	*0*	*0*	*0*	*50*
E2	*5*	*1*	*7500*	*500*	*0.05*	*5*	*400*
E3	*10*	*2*	*10 000*	*1000*	*0.15*	*10*	*800*
E4	*25*	*5*	*25 000*	*2500*	*0.25*	*25*	*1000*

[a] In case no curfew regulations are available, the higher values shall not be exceeded and the lower values should be taken as preferable limits.
[b] If the luminaire is for public (road) lighting, then this value may be up to 1 lx.

Luminaire Positioning and Direction

Luminaires are positioned to avoid uplighting where possible. Where practical directional luminaires are utilized to enable precise projection of light. Proper commissioning will ensure directional luminaires perform as intended. The ILP guidance notes for the reduction of light pollution describes the following limitations for obtrusive light for exterior lighting installations:



SELECTING APPROPRIATE LUMINAIRES

A1 Technical Considerations

Lighting for Wildlife - Bat Habitats

The site hosts a number of natural reserves with the ecosystem supporting many species of fish, bird, bats and insect life. Artificial lighting introduced into the project must consider these non-human inhabitants so as to not disturb their lives.

Lighting for Bats

Due to the decline of bat numbers and the importance of roost requirements and commuting corridors in their nocturnal feeding activity, their roost sites are fully protected under international and domestic legislation, under the Conservation of Habitats and Species Regulations 2017.

It is therefore illegal to cause disturbances that affects populations of bats, obstruct access to bat roosts. They are further protected under the Wildlife and Countryside Act 1981. We therefore recommend the site is assessed by an ecologist to ascertain whether the site is used as bats for a roosting or commuting habitat and assess its importance with regard to any artificial lighting introduced.

Negative Impact of Light:

- Roosts - Lighting in the vicinity of a at roost can cause disturbance and potential abandonments of the roost, constituting an offence to a bat population or individual. Light falling on the roost access point can delay their emerging and shorten their feeding time.
- Insects - artificial sources in a dark environment, especially emitting a UV component, can attract insects such further afield drawing them from bat feeding areas reducing insect numbers in those areas.
- Bat predators - Avian predators usually active at daytime, such as kestrels have been reported hunting bats at night in artificial lighting conditions.
- Commuting - River corridors and woodland edges are often used by 'commuting' bats as feeding territories, so it benefits them hugely to leave these areas unlit.

Bat Conservation Trust Recommendations

- Avoid lighting key habitats and features all together
- No illumination on roost entrances, flight paths, associated features used by bats or rare species averse to light.
- Mitigate lighting to a minimum, set dark habitat buffers and acceptable lux limits with ecologist guidance.
- Demonstrate compliance with lux limits and buffers , using lighting calculations and baseline surveys.
- Post completion and bat monitoring.

Specifying Appropriate Luminaires

The following considerations ensure that artificial lighting is safe for wildlife:

- No UV components, avoid fluorescent and metal halide sources.
- LEDs are suitable due to short cut off, lower intensity, good colour rendering and dimming capabilities.
- Warm white 2700K should be used to reduce blue light component
- Luminaires with a peak component higher than 550nm to avoid most disturbing wavelength to bats
- Internal luminaires should be recessed to avoid glare and light spill.
- Low level downward directional luminaires to retain darkness above. It should be noted that this may compromise facial recognition.
- Column heights considered to minimise light spill.
- Luminaires with upward light ratio of 0% and good optical control should be used, as per Reduction of Obtrusive Light ILP guidance.
- Luminaires should be mounted on the horizontal, with no upward tilt.
- External security lighting should be set on motion sensors or short timer of 1 minute.
- Baffles, hoods and lovers can be used to reduce light spill and direct light where needed.
- Screening, glazing treatments or planting to minimize light spill
- Building orientation and location to minimise light spill

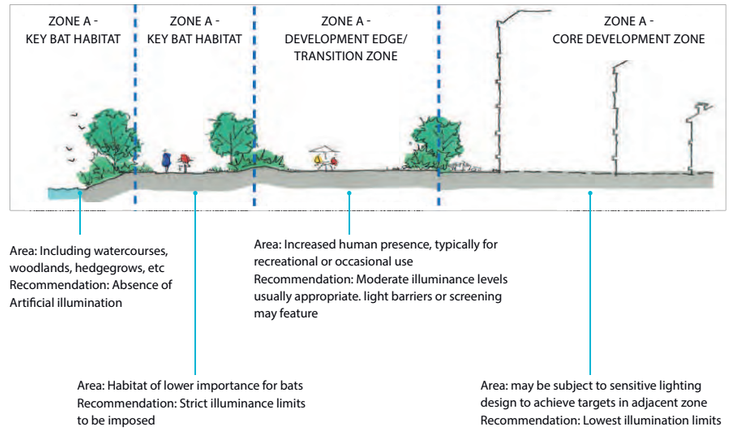
Lighting Controls

- Depending on pattern of activity identified, diurnal, seasonal or human activity centred lighting control could be designed to create part- night lighting and dimmed lighting.
- Time clock control to switch lighting off during hours with no pedestrian activity.

Demonstrating Compliance

- All luminaires used are directional and low glare.
- Light spill has been mitigated through the use of concealed details.
- Baffles/ hoods/ louvres are included in luminaire specifications.
- Warm to neutral colour temperatures used to reduce blue light component.

BAT CONSERVATION TRUST UK - GUIDANCE NOTE 08/18 BATS AND ARTIFICIAL LIGHTING



A2 Lighting Control Strategy

Scene Setting, Operational Requirements and System Specification

Introduction

The following document is intended to provide a written description of the proposed lighting control philosophy for the KGX Retail facade
Responsibility for design and specification of the lighting control system throughout remains the responsibility of the electrical engineer and as such this document should be considered a guideline only and should be subject to design team / client review and detailing.
This document should be read in conjunction with the luminaire specification, lighting layouts and load schedule.

GENERAL
A lighting control system will be provided to enable the illumination levels to be controlled to meet the needs of the occupants and functions of each space and to minimise energy consumption. All facade lighting, save for signage, to be controlled by the landlord.
Addressable lighting systems, DALI empro ballasts or equivalent, shall be employed to allow for future flexibility, floor plate management and as a mechanism of achieving the requirements below. NOTE: Some luminaires require DALI inline convertors.
Where required (to be advised by AV consultant) RS232 interfaces shall be supplied by the control system manufacturers.

SCENE SETTING
A scene setting control system shall be employed in areas where changes use/ ambience necessitate different lighting conditions. The associated control panel, placed in a suitable BOH location, for each system shall be clearly labeled (with scene engraved on the panel – e.g. evening) and shall consist of 4 scenes, raise and lower. Depending on the luminaires controlled, the system may be dimming or simply switching groups of luminaires.

DAYLIGHT
Consideration shall be given to the provision for daylight linked dimming as the façade receives significant daylight ingress. The system shall enable the dimming and switching of all luminaires in areas where daylight ingress is sufficient to reduce their output for all or part of the day to maintain designed light levels.

Area Description

AREA DESCRIPTION:

EXTERNAL
All lighting to external areas will be controlled via photocell and time clock control. Manual overrides to this should be contained within a BOH, accessible location. Access to manually change scenes should be via a password protected scene selector plate.
Each retail unit is gently haloed using a soft linear line of light, recessed into the metal fins of the façade. Coloured elements of certain units are also highlighted using linear lighting with a high CRI.
A warm graze line of light “floats” the top of the building from the retail façade, appearing to halo the façade in a contrasting colour temperature. Spike lights that are fastened to planters provide an ambient glow to fixed planters placed in between units.
The Market Hall uses a combination of uplights to structure and backlit ceiling panels to the threshold to provide a high level of ambient light within the threshold even after close of business.

The proposed DALI-DMX control system enables the above layers of light to be grouped together, enabling distinct scenes to be created as follows. Please note that even though some luminaires are specified as DMX control owing to it being a more robust protocol and one capable of handling greater inputs, they will still need to function as part of one overarching control system, together with the standard DALI fittings.

The control system will allow 4 scenes comprising:

SCENE 1: ALL ON
- Everything on 99%

SCENE 2: DAYTIME
- Downlights – 0%
- Warm graze to building – 0%
- Graze lighting to retail units – 100%
- Lighting to coloured elements of retail units – 100%
- Spike lights to fixed planters – 0%
- Uplights to Market Hall – 0%
- Backlit panels to Market Hall – 100%

SCENE 3: EVENING
- Downlights – 80%
- Warm graze to building – 80%
- Graze lighting to retail units – 100%
- Spike lights to fixed planters – 100%
- Uplights to Market Hall – 100%
- Backlit panels to Market Hall – 100%

SCENE 4: LATE
- Downlights – 40%
- Warm graze to building – 60%
- Graze lighting to retail units – 20%
- Spike lights to fixed planters – 40%
- Uplights to Market Hall – 40%
- Backlit panels to Market Hall – 60%

SCENE 5:
- Everything turned off

A2 Lighting Control Strategy

Scene Setting, Operational Requirements and System Specification

Outline of Operation and System Specification

1. OUTLINE OF OPERATION

1.1. A lighting control system shall be provided to allow dimming and switching control for the interior and exterior lighting schemes as indicated on the Paul Nulty Lighting Design contract documentation.

1.2. The system shall enable lighting scene control, where a lighting scene comprises all or any of the independently controlled groups set to any programmed output level between 0 and 100%. The system shall be capable of providing unless otherwise specified a minimum of 24 no. programmable lighting scenes in multiple individually controllable locations as indicated on drawings and documentation by Nulty and as set out in lighting control schedules prepared Nulty or others, which once programmed, can be controlled by one or more of the following means: Fee Proposal means the Fee Proposal documentation setting out our fees.

1.2.1 Directly via a photo-cell which shall be capable of providing continuous output between 10 and 10,000 lux in no more than 10 lux increments

1.2.2 Directly via an automated astronomical time clock, according to the time of day and day of the week.

1.2.3 Directly via push button Scene Selection panels or Control Plates in accordance with guidance from the facilities management team at Google. Panels shall provide the facility for local, manual selection of a minimum of eight scenes with a raise/lower facility. The panels shall be provided with a 'take control/return to automatic control' key-switch or other isolating device, either integral or adjacent to the Scene Selection panel. The key switch/isolating device shall enable the Client to preclude unauthorized operation.

1.2.4 Directly via an emergency back-up setting; a single manual lighting scene, capable of being set up (and subsequently modified) independent of the main scene controller, which will automatically be instigated in the event of the failure of the main scene controller.

1.3. The system shall allow the self-contained, non-maintained, emergency lighting to be checked by the operation of a simple (remote) switch, i.e. the dimmer outputs are disconnected, simulating mains failure. This exercise should not affect the main controller.

1.4. The system shall provide a dedicated 'scene' connected to the fire-alarm system, outputting all control modules to full (100%).

2. SPECIFIC SCENE LIGHTING OPERATION

2.1. Each Scene shall allow any group/channel to be independently addressed without affecting any other channel within that scene.

2.2. Each Scene shall be able to be assigned a fade time independent of any other Scene.

2.3. Each Scene shall be able to be linked to any other Scene with an attributed time delay.

2.4. Each Scene shall comprise any combination of control groups assigned an output between 0 and 100% independent of any other control group within any individual Scene.

2.5. Each Scene shall be able to be adjusted in intensity via a raise/lower facility included on the manual scene selection panel. The Scene shall retain the curve of the original scene and be ramped up or down as selected. This operation will not affect the Scene memory as programmed, being a unique event.

2.6. Lighting scenes in individual lighting zones shall be programmed in accordance with the lighting requirements of the space and shall include but shall not be limited to the following:

Scene 1 - Daytime scene
Scene 2 - Early Evening scene
Scene 3 - Late evening scene
Scene 4 - Security state (where applicable)
Scene 5 - Cleaning state
Scene 6 - Maintenance/Lamp Check

2.7. Manufacturer to develop and confirm exact configuration with the client prior to manufacturer.

3. GENERAL SYSTEM SPECIFICATION

3.1. All items of equipment shall be fit for purpose, conform with the relevant British/European Standards and shall be manufactured and installed in accordance with the latest edition of the IEE Regulations.

3.2. All items shall be suitable for operation in ambient temperatures up to 40 degrees Centigrade with no degradation in performance.

3.3. All mains voltage equipment shall be suitable for operation on a 230v/400v 3-phase 50Hz supply and shall be capable of operating normally on phase voltages between +10% and -6%. All extra low voltage equipment will operate on a maximum of 24v dc.

3.4. All equipment provided by the supplier shall be guaranteed for a period of not less than 24 months from the completion of commissioning. During the guarantee period, a repair or replacement service shall be provided for all items of equipment supplied, within a maximum period of 24 hours from notification of a fault.

3.5. The successful Tenderer must identify a minimum of three completed installations that are compliant with this Specification and if requested show the Lighting Consultant/ Design Team one completed installation that is to the Lighting Consultant/Design Team's satisfaction.

4. CONTROL MODULES AND MOUNTING RACKS

4.1. The Control Modules shall be able to accommodate the stated load types and functions (dim, non-dim) as identified within relevant control schedules as prepared by Nulty.

4.2. The minimum load for stable operation of any Control Module shall be 2% of the maximum rating. The switching module shall however be capable of being operated under no-load conditions without causing any damage to the components.

4.3. The switching racks shall be supplied fully wired and suitably labeled by permanent means. Final load circuits shall be labeled in accordance with the final load circuit designation as detailed in the contract documents.

4.4. The racks shall be in the form of wall-mounted or free-standing enclosures, with segregated termination areas for mains and extra low voltage control wiring. Removable panels shall be provided to gain easy access to the termination areas for connection and servicing.

4.5. The racks shall be supplied with all necessary control interfaces and accessories to enable the operation of the system as specified.

4.6. The racks shall contain accessible MCB surge protection devices for all modules and control elements with additional final circuit protection where specified. The MCB's shall be of a suitable rating according to all load types and should avoid nuisance tripping.

4.7. The racks shall, at full rated loads, require no cooling fans and shall maintain the equipment contained therein at a safe operating temperature, in ambient temperatures up to 40 degrees Centigrade.

5. MEMORY SCENE CONTROLLER

5.1. The Control Modules specified shall be controlled by one or more microprocessor-based Memory Scene Controllers which shall provide all the following facilities.

5.2. The Memory Scene Controller shall be capable of storing, and fade processing on command, a minimum of 24 independent lighting scenes over the number of control channels specified.

5.3. The assignment of levels for any or all control channels in each scene, and all other assignable parameters shall be either by a lap-top computer or hand-held programmer, which shall plug into any Memory Scene Controller or the Scene Selection panels. Alternative methods restricting such assignments to one location, or requiring the manual setting of potentiometers or switches, or insertion of matrix pins shall not be acceptable.

5.4. The system employed for assigning all data, as 5.3, shall be made available to Google at no cost, with a commissioning engineer in attendance, to undertake initial set-up to the Google's satisfaction.

5.5. All assigned parameters shall be retained permanently in non-volatile memory, without external power, up to a period of one month, and shall not be corrupted on a power-up or power-down of the equipment.

5.6. The System will provide a 'hard-copy' of the programmed memory which can be removed and retained. This hard copy will allow the system to be easily reprogrammed should the system memory become corrupted or destroyed. Any additional equipment required to allow this to happen shall be separately identified and costed in any Tender return. Our duties exclude the design of electrical containment and distribution, which should be advised by a relevant qualified engineer as appointed by the Client/ Client's agents.

6. TIME CLOCK UNIT

6.1. The Time Clock Unit shall comprise a 7-day 24-hour astronomical time clock capable of providing a minimum of 64 programmed events, which can be programmed to occur at any minute on any day of the week. In addition, the clock shall provide astrological timings pertinent to the location of the site. Timings relating to +/- sunrise and sunset shall be possible. These events shall enable the following functions to be automatically selected: To independently select any of the scenes available in the Memory Scene Controller.

7. EMERGENCY BACK-UP SYSTEM

7.1. The emergency back-up system shall provide a backup lighting scene in the event of a failure in any of the central control elements.

7.2. The backup scene shall not be dependent on any of the central control elements.

7.3. Upon restoration of normal operation, the Memory Scene Controller will automatically select the lighting state, which would normally be prevailing at that time.

8. MANUAL SCENE SELECTION PANELS

8.1. Manual scene selection panels shall interconnect with the Memory Scene Controller and shall allow selection of a minimum of eight 'Scenes' and a raise/lower facility.

8.2. The panels shall be supplied in a finish to be confirmed by the interior designer or architect, permanently labeled, the exact labeling to be advised by the Client/Lighting Consultant prior to fabrication. The Tenderer shall identify the required dates by which such information shall be provided to achieve the Construction Programme.

8.3. The switching device, either integral or adjacent shall normally indicate the current status, automatic or manual, either positively by key switch position or remotely by LED indication, but integrated into the said panel.

8.4. The switching device shall enable/disable the operation of the Manual Scene Selection Panel. The current status of this device shall be clearly indicated, as determined in 8.3 above.

8.5. Manual scene selection panel configuration to be as defined on the attached sketch, L649/ CP.1.

9. EQUIPMENT SCHEDULE

9.1. All items, unless specified otherwise, shall be supplied by a single manufacturer to form a complete, independent system. In addition, the manufacturer shall include any other items necessary in order to ensure the correct operation of the system or systems in accordance with the specification. The manufacturer shall be responsible for ensuring that the switching modules used are suitable for controlling the loads as specified.

9.2. The system shall be capable of being expanded in terms of operational capacity via the addition of all necessary hardware and software enabling seamless operation and control of the expanded system, if so desired. The Tenderer shall advise of any manufacturing limitations imposed by his Tendered Product.

9.3. The selected manufacturer shall confirm all interconnecting cable requirements and suitability of cable routes with the contractor.

9.4. The manufacturer shall confirm that the cable routes and equipment locations chosen shall not result in any adverse interference, which shall affect the operation of the lighting control system or of any other equipment or cables in the vicinity.

9.5. The manufacturer shall fully commission the system after installation by the Electrical Contractor and demonstrate its correct operation in accordance with this specification, in the presence of the Client/ Client's agent.

A3 Lighting Specification

LIGHTING

DETAILED LUMINAIRE SPECIFICATION SCHEDULE

W | nultylighting.com
E | office@nultylighting.co.uk
T | +44(0) 20 7401 3635

PROJECT TITLE:	**KGX Retail Façade**
PROJECT REF:	**0894**
CLIENT:	**Turner and Townsend**
DOCUMENT REF:	KXC-NL-XX-XX-SC-LT -0001 Luminaire Specification Schedule
REVISION NO:	P03
DATE CREATED:	2021.12.01

Revision No.	Date:	Notes:
-	2021.12.01	STAGE 2 - For Information
P01	2021.12.15	STAGE 3 Draft - For Coordination
P02	2022.01.28	STAGE 3 - For Coordination
P03	2022.02.18	STAGE 3 - For Coordination

DETAILED LUMINAIRE SPECIFICATION SCHEDULE

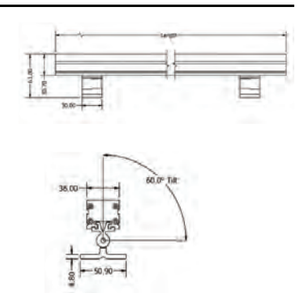
PROJECT TITLE: KGX Retail Façade
PROJECT REF: 0894 KXC-NL-XX-XX-SC-LT -0001 Luminaire Specification Schedule P03

NL-LT-A1

Luminaire Name:		Company:	LED Linear	Lamp Type:	LED	Notes:	1. Contractor to refer to manufacturer for installation details.	Length:	Per site
Description:	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	Product Code:	XOOLUX NANO LD 25 W822 1021 OV IP67	Manufacturers:	-			Width:	41 mm
		Accessories:	Adjustable brackets	Wattage:	25.0 W/m		2. All drivers to be remotely located in well ventilated, accessible, waterproof space. Exact locations to be confirmed by electrical contractor.	Height:	18 mm
		Finish:	N/A	No. of lamps:	-				
				Base:	PCB				
		Control Gear:	DMX	Voltage:	24.0 V				
Location:	Canopy separating Retail Façade from the building			Beam Angle:	15x40°		3. Manufacturer to confirm exact qty of drivers req'd.		
				CCT:	2200K				
Contact:	Eliot Horsman	Total Load:	25.0 W/m	CRI:	80+		4. Supplier to confirm final dimensions with contractor.		
Email:	Eliot.HorsmanMSLL@led-linear.com	IP Rating:	IP67						
Number:	+49 2065 94322-100	Efficacy:	56.8	Lumen Output:	1420 lm/m				

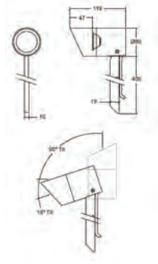
NL-LT-A2

Luminaire Name:	Rigid Optico 36 10x60 - 3000K	Company:	LEDFlex	Lamp Type:	LED	Notes:	1. Contractor to refer to manufacturer for installation details.	Length:	Per site
Description:	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	Product Code:	RO36B|1060|3080|1000DX	Manufacturers:	LEDFlex			Width:	36 mm
		Accessories:	N/A	Wattage:	36.0 W/m		2. All drivers to be remotely located in well ventilated, accessible, waterproof space. Exact locations to be confirmed by electrical contractor.	Height:	30 mm
		Finish:	N/A	No. of lamps:	-				
				Base:	PCB				
		Control Gear:	DMX	Voltage:	24V				
Location:	Retail Units			Beam Angle:	10x60°		3. Manufacturer to confirm exact qty of drivers req'd.		
				CCT:	3000K				
Contact:	Santiago Cabrera	Total Load:	36.0 W/m	CRI:	80		4. Supplier to confirm final dimensions with contractor.		
Email:	santiago@ledflexgroup.com	IP Rating:	IP66						
Number:	+44(0)2031377305	Efficacy:	60.25 lm/W	Lumen Output:	2169 lm/m				



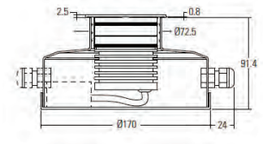
NL-LT-C1

Luminaire Name:	LD10238	Company:	Light Graphix	Lamp Type:	LED	Notes:	1. Contractor to refer to manufacturer for installation details.	Diameter:	60 mm
Description:	Spike lights to be used in planters between retail units.	Product Code:	LD10238-E2-700/LW30/WB/RAL/GS	Manufacturers:	CREE			Height:	60 mm
		Accessories:	Ground spike	Wattage:	10.0 W		2. All drivers to be remotely located in well ventilated, accessible, waterproof space. Exact locations to be confirmed by electrical contractor.	Max Spike Height:	400 mm
	Spike mount to be affixed with brackets to the inside wall of planter. Allowance for 5 core cable exit to be made within planter wall	Finish:	RAL finish TBC with Architects prior to procurement	No. of lamps:	1				
				Base:	PCB				
		Control Gear:	DALI	Voltage:	14.0 V				
Location:	Planters			Beam Angle:	34°		3. Manufacturer to confirm exact qty of drivers req'd		
				CCT:	3000K				
Contact:	Mitchell Wood	Total Load:	10.0 W	CRI:	85+				
Email:	mitchell@lightgraphix.biz	IP Rating:	IP 67						
Number:	+44 (0)1322 527 629	Efficacy:	68 lm/W	Lumen Output:	601 lm				



NL-LT-D1

Luminaire Name:	LD151	Company:	Light Graphix	Lamp Type:	LED	Notes:	1. Contractor to refer to manufacturer for installation details.	Diameter:	73 mm
Description:	Compact and powerfull uplight to highlight architectural elements of the Market Hall	Product Code:	LD151-E2-700/LW30/NB/GHSM/316/484N	Manufacturers:	CREE			Height:	91 mm
		Accessories:	Half-moon Glare sheild, Concrete housing with 1x PG9 IP67 gland	Wattage:	10.0 W		2. All drivers to be remotely located in well ventilated, accessible, waterproof space. Exact locations to be confirmed by electrical contractor.		
		Finish:	RAL finish TBC with Architects prior to procurement	No. of lamps:	1				
				Base:	PCB				
		Control Gear:	DALI	Voltage:	14.0 V				
Location:	Market Hall			Beam Angle:	10°		3. Manufacturer to confirm exact qty of drivers req'd		
				CCT:	3000K				
Contact:	Mitchell Wood	Total Load:	10.0 W	CRI:	85+				
Email:	mitchell@lightgraphix.biz	IP Rating:	IP 67						
Number:	+44 (0)1322 527 629	Efficacy:	60	Lumen Output:	595 lm				



DETAILED LUMINAIRE SPECIFICATION SCHEDULE

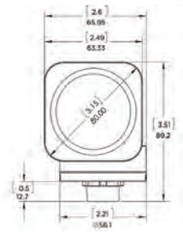
PROJECT TITLE: KGX Retail Façade
PROJECT REF: 0894 KXC-NL-XX-XX-SC-LT -0001 Luminaire Specification Schedule P03

NL-LT-G1

Luminaire Name:	Bright Green Matrix	Company:	Bright Green Technology	Lamp Type:	LED	Notes:	1. Contractor to refer to manufacturer for installation details	Length:	310 mm
Description:	Modular LED system integrated into market hall ceiling within threshold to provide diffuse, even glow.	Product Code:	MS-S50DW-1510	Manufacturer:				Width:	21 mm
		Accessories:	BGT-PT-060 (Heavy Duty Fixing Bracket)	Wattage:	60.0 W/m		2. All drivers to be remotely located in well ventilated, accessible, waterproof space. Exact locations to be confirmed.	Height:	7 mm
	Dynamic white CCT - 2700 to 6500K	Finish:	-	No. of lamps:	-				
				Base:	-				
		Control Gear:	DALI	Voltage:	24.0 V		3. Manufacturer to confirm exact qty of drivers req'd		
Location:	Market Hall - ceiling behind "garage doors"			Beam Angle:	Diffuse°				
				CCT:	2700-6500 K		4. Details of mounting, light box, and glass to be developed with specialist canopy contractor.		
Contact:	Jonty Rugg	Total Load:	60.0 W/m	CRI:	80+				
Email:	jonty.rugg@brightgreentechnology.com	IP Rating:	IP67						
Number:	01932355221			Lumen Output:	1200 lm				

NL-LT-H1

Luminaire Name:	Rise F080	Company:	Ecosense	Lamp Type:	LED	Notes:	1. Contractor to refer to manufacturer for installation details	Length:	177 mm
Description:	Miniature pole mounted spotlight to be positioned in between retail units as a future lighting provision.	Product Code:	F080-1S-MO-30-9-S-C-F	Manufacturer:	-			Width:	64 mm
		Accessories:	4m pole with rigging infrastructure; Full snoot	Wattage:	7.5 W/m		2. All drivers to be remotely located in well ventilated, accessible, waterproof space. Exact locations to be confirmed.	Height:	89 mm
		Finish:	RAL finish TBC with Architects prior to procurement	No. of lamps:	1				
				Base:	PCB				
		Control Gear:	DALI	Voltage:	-		3. Manufacturer to confirm exact qty of drivers req'd		
Location:	Moments			Beam Angle:	20°				
				CCT:	3000		4. Details of mounting, light box, and glass to be developed with specialist canopy contractor.		
Contact:	Neil Spurling	Total Load:	7.5 W/m	CRI:	90+				
Email:	neil.spurling@ecosenselighting.com	IP Rating:							
Number:	+44 (0) 7505 007 427	Efficacy:	80	Lumen Output:	600 lm				



IMPORTANT NOTES:
1. Catalogue numbers are included for REFERENCE ONLY. They MUST be checked against the description with the manufacturer. If in doubt, contact Nulty.
2. Please refer to Nulty for any queries or anomalies regarding items described in this document, BEFORE ordering. IF IN DOUBT ASK.
3. Supplier to coordinate with contractor to confirm all lengths and quantities prior to order.

A4 Lighting Schedule

LIGHTING

LOAD AND CONTROL SCHEDULE

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PROJECT TITLE:	**KGX Retail Façade**
PROJECT REF:	**0894**
CLIENT:	**Turner and Townsend**
DOCUMENT REF:	KXC-NL-XX-XX-SC-LT -0002 Load and Control Schedule
REVISION NO:	P03
DATE CREATED:	2021.12.15

Revision No.	Date:	Notes:
P01	2021.12.15	STAGE 3 Draft - For Coordination
P02	2022.01.28	STAGE 3 - For Coordination
P03	2022.02.18	STAGE 3 - For Coordination

LOAD AND CONTROL SCHEDULE

PROJECT TITLE: KGX Retail Façade
PROJECT REF: 0894 KXC-NL-XX-XX-SC-LT -0002 Load and Control Schedule P03

CONTROL CHANNEL:	LUMINAIRE:							TOTAL LOAD:	CONTROL TYPE:
	REF:	QTY:	DESCRIPTION:	LENGTH/QTY:	LAMP TYPE:	WATTAGE:	LOAD:		
NL-LT-RU 1	NL-LT-A1 aa	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	7.6 m	LED	25 W /m	190.0 W	190.0 W	DMX
NL-LT-RU 1	NL-LT-A1 ab	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	7.5 m	LED	25 W /m	187.5 W	187.5 W	DMX
NL-LT-RU 1	NL-LT-A1 ad	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	9.9 m	LED	25 W /m	247.5 W	247.5 W	DMX
NL-LT-RU 1	NL-LT-A1 ae	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	9.8 m	LED	25 W /m	245.0 W	245.0 W	DMX
NL-LT-RU 1	NL-LT-A1 af	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	15 m	LED	25 W /m	375.0 W	375.0 W	DMX
NL-LT-RU 1	NL-LT-A1 ag	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	18.45 m	LED	25 W /m	461.3 W	461.3 W	DMX
NL-LT-RU 1	NL-LT-A1 ah	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	27.61 m	LED	25 W /m	690.3 W	690.3 W	DMX
NL-LT-RU 1	NL-LT-A1 ai	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	29.95 m	LED	25 W /m	748.8 W	748.8 W	DMX
NL-LT-RU 1	NL-LT-A1 aj	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	81 m	LED	25 W /m	2025.0 W	2025.0 W	DMX
NL-LT-RU 1	NL-LT-A1 ak	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	0.85 m	LED	25 W /m	21.3 W	21.3 W	DMX
NL-LT-RU 1	NL-LT-A1 al	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	0.88 m	LED	25 W /m	22.0 W	22.0 W	DMX
NL-LT-RU 1	NL-LT-A1 am	1	Linear LED to graze the lower canopy to create a warm line of light to contrast between the retail facade and the rest of the buildings envelope.	7.05 m	LED	25 W /m	176.3 W	176.3 W	DMX
NL-LT-RU 2	NL-LT-A2 aa	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	0.82 m	LED	36 W /m	29.5 W	29.5 W	DMX
NL-LT-RU 2	NL-LT-A2 ab	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.45 m	LED	36 W /m	124.2 W	248.4 W	DMX
NL-LT-RU 2	NL-LT-A2 ac	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.6 m	LED	36 W /m	129.6 W	259.2 W	DMX
NL-LT-RU 2	NL-LT-A2 ad	3	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.65 m	LED	36 W /m	131.4 W	394.2 W	DMX
NL-LT-RU 2	NL-LT-A2 ae	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.7 m	LED	36 W /m	133.2 W	133.2 W	DMX
NL-LT-RU 2	NL-LT-A2 af	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.8 m	LED	36 W /m	136.8 W	273.6 W	DMX
NL-LT-RU 2	NL-LT-A2 ag	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.95 m	LED	36 W /m	142.2 W	284.4 W	DMX
NL-LT-RU 2	NL-LT-A2 ah	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4 m	LED	36 W /m	144.0 W	288.0 W	DMX

LOAD AND CONTROL SCHEDULE

NULTY+

PROJECT TITLE: KGX Retail Façade
PROJECT REF: 0894 KXC-NL-XX-XX-SC-LT -0002 Load and Control Schedule P03

CONTROL CHANNEL:	LUMINAIRE: REF:	QTY:	DESCRIPTION:	LENGTH/QTY:	LAMP TYPE:	WATTAGE:	LOAD:	TOTAL LOAD:	CONTROL TYPE:
NL-LT-RU	2 NL-LT-A2 aj	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.15 m	LED	36 W /m	149.4 W	298.8 W	DMX
NL-LT-RU	2 NL-LT-A2 ak	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.2 m	LED	36 W /m	151.2 W	151.2 W	DMX
NL-LT-RU	2 NL-LT-A2 al	4	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.25 m	LED	36 W /m	153.0 W	612.0 W	DMX
NL-LT-RU	2 NL-LT-A2 am	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.35 m	LED	36 W /m	156.6 W	156.6 W	DMX
NL-LT-RU	2 NL-LT-A2 an	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.45 m	LED	36 W /m	160.2 W	320.4 W	DMX
NL-LT-RU	2 NL-LT-A2 ao	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.65 m	LED	36 W /m	167.4 W	167.4 W	DMX
NL-LT-RU	2 NL-LT-A2 aq	3	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.9 m	LED	36 W /m	176.4 W	529.2 W	DMX
NL-LT-RU	2 NL-LT-A2 ar	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5 m	LED	36 W /m	180.0 W	360.0 W	DMX
NL-LT-RU	2 NL-LT-A2 at	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.15 m	LED	36 W /m	185.4 W	370.8 W	DMX
NL-LT-RU	2 NL-LT-A2 au	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.2 m	LED	36 W /m	187.2 W	187.2 W	DMX
NL-LT-RU	2 NL-LT-A2 av	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.5 m	LED	36 W /m	198.0 W	396.0 W	DMX
NL-LT-RU	2 NL-LT-A2 aw	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.8 m	LED	36 W /m	208.8 W	208.8 W	DMX
NL-LT-RU	2 NL-LT-A2 ax	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.65 m	LED	36 W /m	203.4 W	203.4 W	DMX
NL-LT-RU	2 NL-LT-A2 ay	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.9 m	LED	36 W /m	212.4 W	212.4 W	DMX
NL-LT-RU	2 NL-LT-A2 az	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	0.73 m	LED	36 W /m	26.3 W	26.3 W	DMX
NL-LT-RU	2 NL-LT-A2 ba	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	6.3 m	LED	36 W /m	226.8 W	226.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bb	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	6.6 m	LED	36 W /m	237.6 W	475.2 W	DMX
NL-LT-RU	2 NL-LT-A2 bd	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	6.9 m	LED	36 W /m	248.4 W	248.4 W	DMX
NL-LT-RU	2 NL-LT-A2 be	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	7.4 m	LED	36 W /m	266.4 W	266.4 W	DMX
NL-LT-RU	2 NL-LT-A2 bf	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	7.5 m	LED	36 W /m	270.0 W	270.0 W	DMX

LOAD AND CONTROL SCHEDULE

PROJECT TITLE: KGX Retail Façade
PROJECT REF: 0894 KXC-NL-XX-XX-SC-LT -0002 Load and Control Schedule P03

CONTROL CHANNEL:	LUMINAIRE: REF:	QTY:	DESCRIPTION:	LENGTH/QTY:	LAMP TYPE:	WATTAGE:	LOAD:	TOTAL LOAD:	CONTROL TYPE:
NL-LT-RU	2 NL-LT-A2 bg	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	8.4 m	LED	36 W /m	302.4 W	604.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bh	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	8.45 m	LED	36 W /m	304.2 W	304.2 W	DMX
NL-LT-RU	2 NL-LT-A2 bi	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	8.75 m	LED	36 W /m	315.0 W	315.0 W	DMX
NL-LT-RU	2 NL-LT-A2 bj	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	9.9 m	LED	36 W /m	356.4 W	356.4 W	DMX
NL-LT-RU	2 NL-LT-A2 bk	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	6.05 m	LED	36 W /m	217.8 W	217.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bl	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	1.1 m	LED	36 W /m	39.6 W	39.6 W	DMX
NL-LT-RU	2 NL-LT-A2 bm	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	1.3 m	LED	36 W /m	46.8 W	46.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bn	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	1.65 m	LED	36 W /m	59.4 W	59.4 W	DMX
NL-LT-RU	2 NL-LT-A2 bo	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	1.7 m	LED	36 W /m	61.2 W	61.2 W	DMX
NL-LT-RU	2 NL-LT-A2 bp	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	1.9 m	LED	36 W /m	68.4 W	136.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bq	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	2.15 m	LED	36 W /m	77.4 W	77.4 W	DMX
NL-LT-RU	2 NL-LT-A2 br	3	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	2.25 m	LED	36 W /m	81.0 W	243.0 W	DMX
NL-LT-RU	2 NL-LT-A2 bs	3	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	2.65 m	LED	36 W /m	95.4 W	286.2 W	DMX
NL-LT-RU	2 NL-LT-A2 bt	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	2.8 m	LED	36 W /m	100.8 W	100.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bu	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	2.9 m	LED	36 W /m	104.4 W	208.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bv	3	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.1 m	LED	36 W /m	111.6 W	334.8 W	DMX
NL-LT-RU	2 NL-LT-A2 bw	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.25 m	LED	36 W /m	117.0 W	117.0 W	DMX
NL-LT-RU	2 NL-LT-A2 bx	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.3 m	LED	36 W /m	118.8 W	118.8 W	DMX
NL-LT-RU	2 NL-LT-A2 by	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.1 m	LED	36 W /m	147.6 W	147.6 W	DMX
NL-LT-RU	2 NL-LT-A2 ca	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	3.75 m	LED	36 W /m	135.0 W	135.0 W	DMX

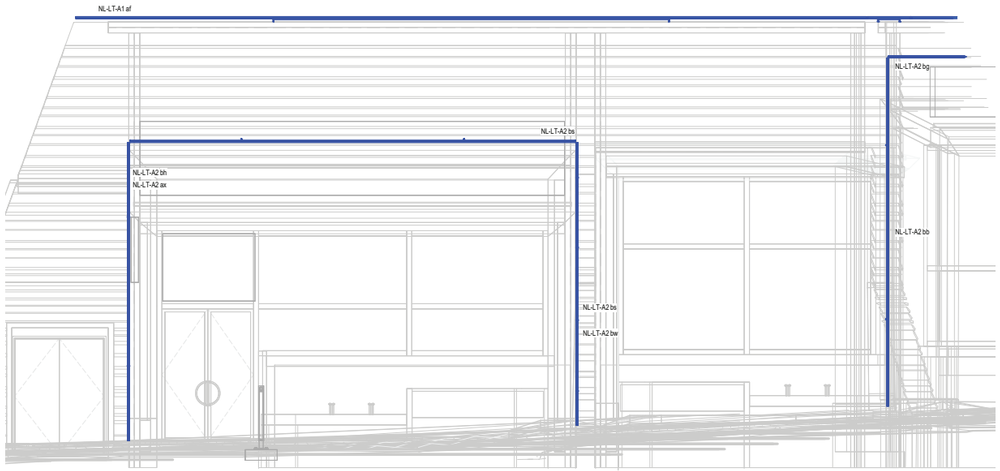
LOAD AND CONTROL SCHEDULE

PROJECT TITLE: KGX Retail Façade
PROJECT REF: 0894 KXC-NL-XX-XX-SC-LT -0002 Load and Control Schedule P03

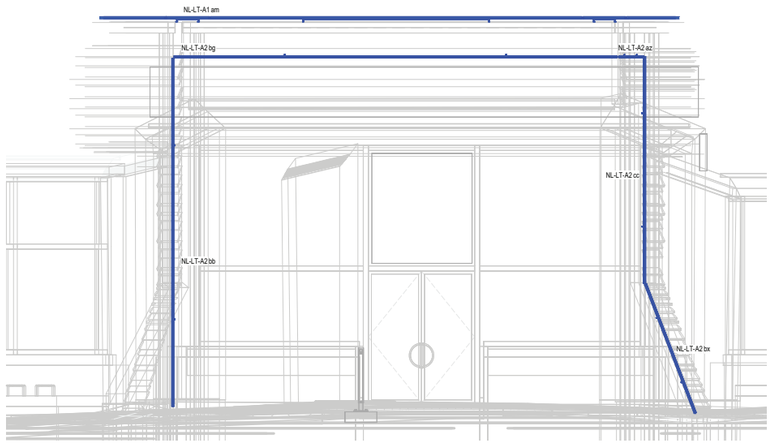
CONTROL CHANNEL:	LUMINAIRE: REF:	QTY:	DESCRIPTION:	LENGTH/QTY:	LAMP TYPE:	WATTAGE:	LOAD:	TOTAL LOAD:	CONTROL TYPE:
NL-LT-RU	2 NL-LT-A2 cb	1	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.95 m	LED	36 W /m	214.2 W	214.2 W	DMX
NL-LT-RU	2 NL-LT-A2 cc	3	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	4.3 m	LED	36 W /m	154.8 W	464.4 W	DMX
NL-LT-RU	2 NL-LT-A2 cd	2	Linear LED to frame the retail units. To be recessed within façade such that the outer envelope of each unit is grazed.	5.85 m	LED	36 W /m	210.6 W	421.2 W	DMX
NL-LT-RU	3 NL-LT-C1	36	Spike lights to be used in planters between retail units.	1	LED	10 W	10.0 W	360.0 W	DALI
NL-LT-RU	4 NL-LT-D1	4	Compact and powerfull uplight to highlight architectural elements of the Market Hall	1	LED	10 W	10.0 W	40.0 W	DALI
NL-LT-RU	5 NL-LT-G1 aa	8	Modular LED system integrated into market hall ceiling within threshold to provide diffuse, even glow.	5.2 m	LED	60 W /m	312.0 W	2496.0 W	DALI
NL-LT-RU	5 NL-LT-G1 ab	7	Modular LED system integrated into market hall ceiling within threshold to provide diffuse, even glow.	5.2 m	LED	60 W /m	312.0 W	2184.0 W	DALI
NL-LT-RU	6 NL-LT-H1	12	Miniature pole mounted spotlight to be positioned in between retail units as a future lighting provision.	1	LED	8 W	7.5 W	90.0 W	DALI
							TOTAL	**23168.8 W**	

Important Notes:
- Please refer to Nulty+ Lighting Design for any queries or anomalies regarding items described in this document, BEFORE ordering. IF IN DOUBT ASK.
- ALL linear LENGTHS to be confirmed by contractor PRIOR to order.
- All light sheet dimensions to be confirmed by contractor from shop fit drawings PRIOR to order.
- 1-10V/0-10V luminaires and circuits require 2 no. cable. One for main and one for circuit.

A5 Lighting Drawings



1 **Unit -1-9 Elevation 1**
1 : 50



2 **Unit -1-9 Elevation 2**
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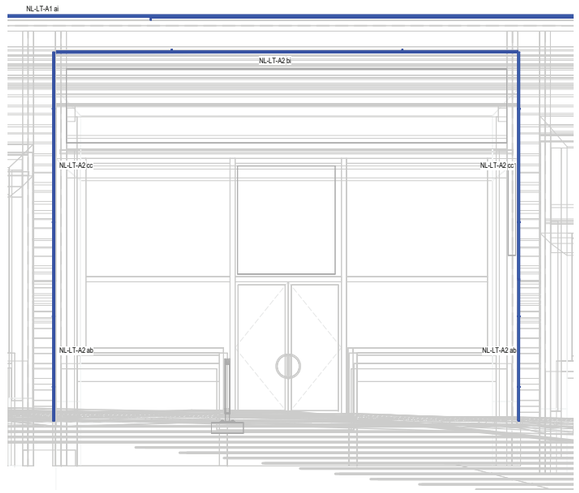
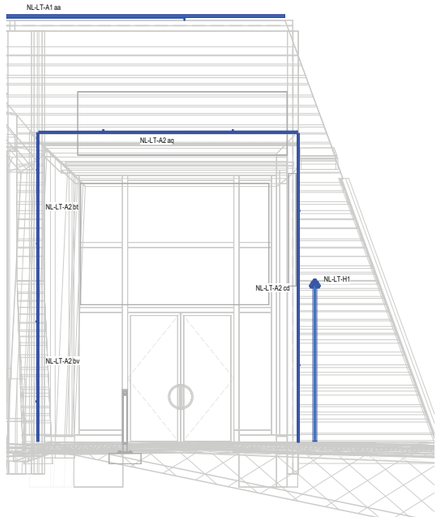


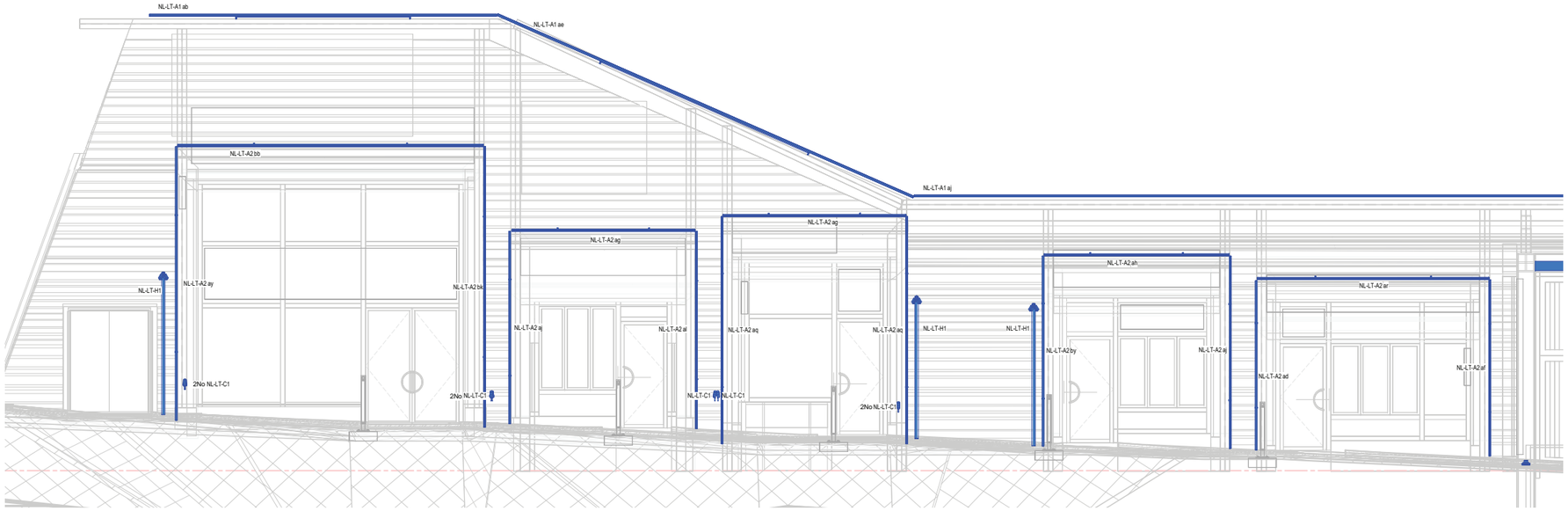
3 **Unit -1-9 Elevation 3**
1 : 50



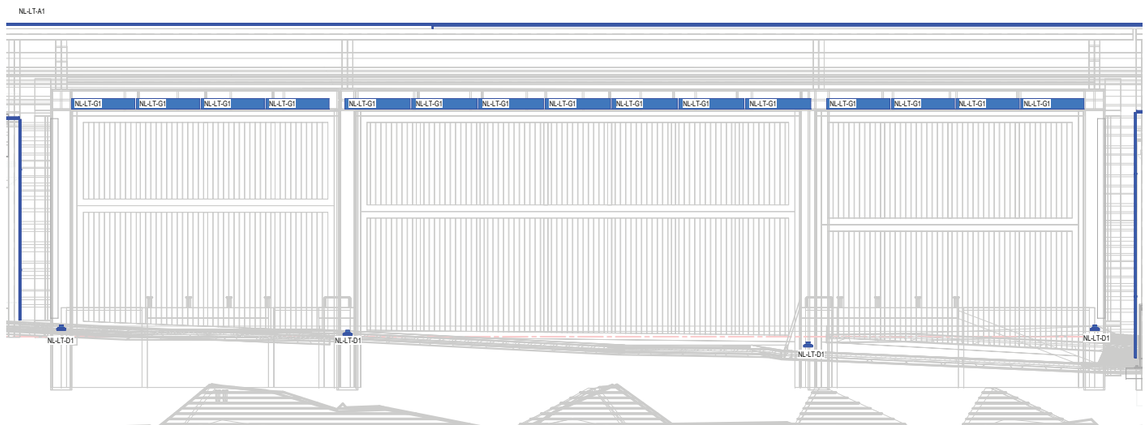
4 **Unit -1-9 Elevation 4**
1 : 50

IMPORTANT NOTES

- Where dimensions are not given do not scale this drawing.
- All dimensions to be verified by the contractor on site.
- Electrician to carry out voltage drop calculations for remote transformers and drivers. The maximum distance between a luminaire and the remote transformer / driver will depend on the cable size, the distance and the total load.
- For lighting control requirements please refer to the Nulty+ Load Schedule and relevant notes on the drawing. Electrician to make sure the lighting control system installed compatible with the drivers andballasts specified.
- Contractor to refer to relevant manufacturer for luminaire installation details.
- Controls supplier to confirm exact load on circuit and supply in line resistors if req'd.
- 1-10V transformers/drivers require 2 cables – Power & Data.
- Luminaire manufacturer to confirm exact qty of drivers required against each lighting circuit.
- Back boxes, burial tubes and some plaster-in recessed fittings are required at first fix. Electrician to provide adequate notice to manufacturer of when these are required on site.
- Exact location and height of wall lights TBC by interior designer/client.
- Exact lengths of linear fittings TBC from site by contractor prior to order.
- 5Amp socket locations to be co-ordinated with small power locations for consistency by load consultant.
- Electrician to ensure that the ceiling is braced to support the client's choice of decorative pendants.
- All remote drivers / transformers to be located within ventilated and accessible areas.
- Report discrepancies / conflict to Consultant(s) team immediately.
- Drawings to be read in conjunction with Nulty+ Luminaire & Load Schedules.
- If any doubts, please contact Nulty+ directly.



1 **Unit -1-9 Elevation 5**
1 : 50



2 **Market Hall Elevation**
1 : 50

IMPORTANT NOTES

- Where dimensions are not given do not scale this drawing.
- All dimensions to be verified by the contractor on site.
- Electrician to carry out voltage drop calculations for remote transformers and drivers. The maximum distance between a luminaire and the remote transformer / driver will depend on the cable size, the distance and the total load.
- For lighting control requirements please refer to the Nulty+ Load Schedule and relevant notes on the drawing. Electrician to make sure the lighting control system installed compatible with the drivers andballasts specified.
- Contractor to refer to relevant manufacturer for luminaire installation details.
- Controls supplier to confirm exact load on circuit and supply in line resistors if req'd.
- 1-10V transformers/drivers require 2 cables – Power & Data.
- Luminaire manufacturer to confirm exact qty of drivers required against each lighting circuit.
- Back boxes, burial tubes and some plaster-in recessed fittings are required at first fix. Electrician to provide adequate notice to manufacturer of when these are required on site.
- Exact location and height of wall lights TBC by interior designer/client.
- Exact lengths of linear fittings TBC from site by contractor prior to order.
- 5Amp socket locations to be co-ordinated with small power locations for consistency by load consultant.
- Electrician to ensure that the ceiling is braced to support the client's choice of decorative pendants.
- All remote drivers / transformers to be located within ventilated and accessible areas.
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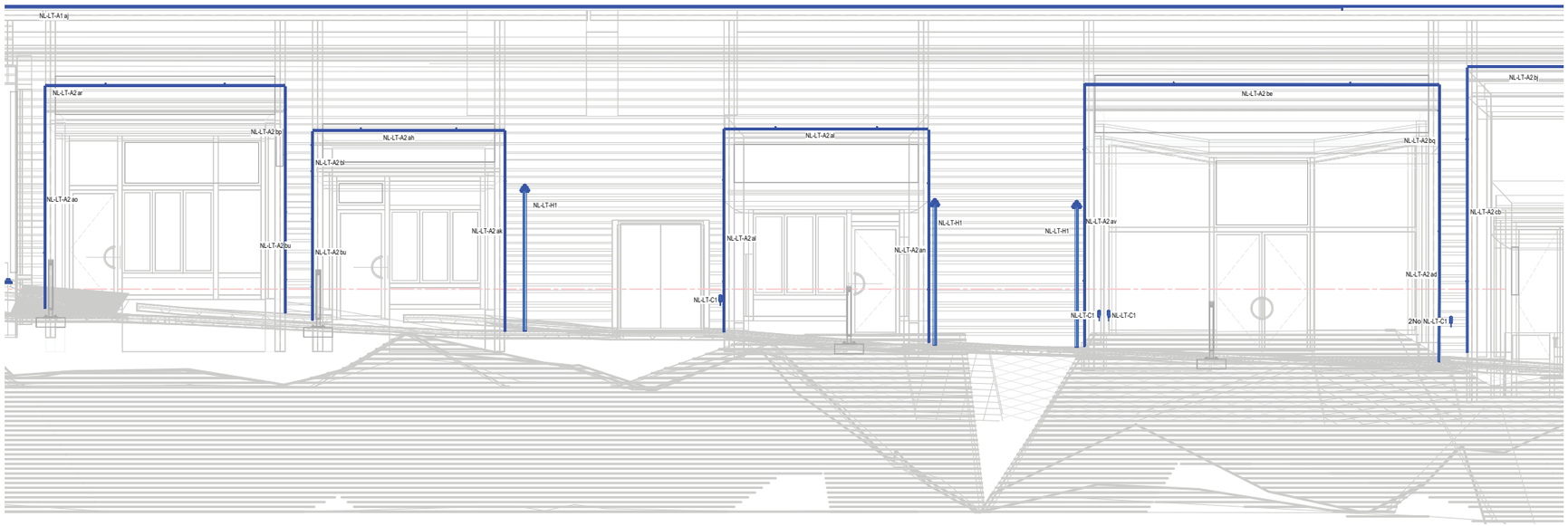
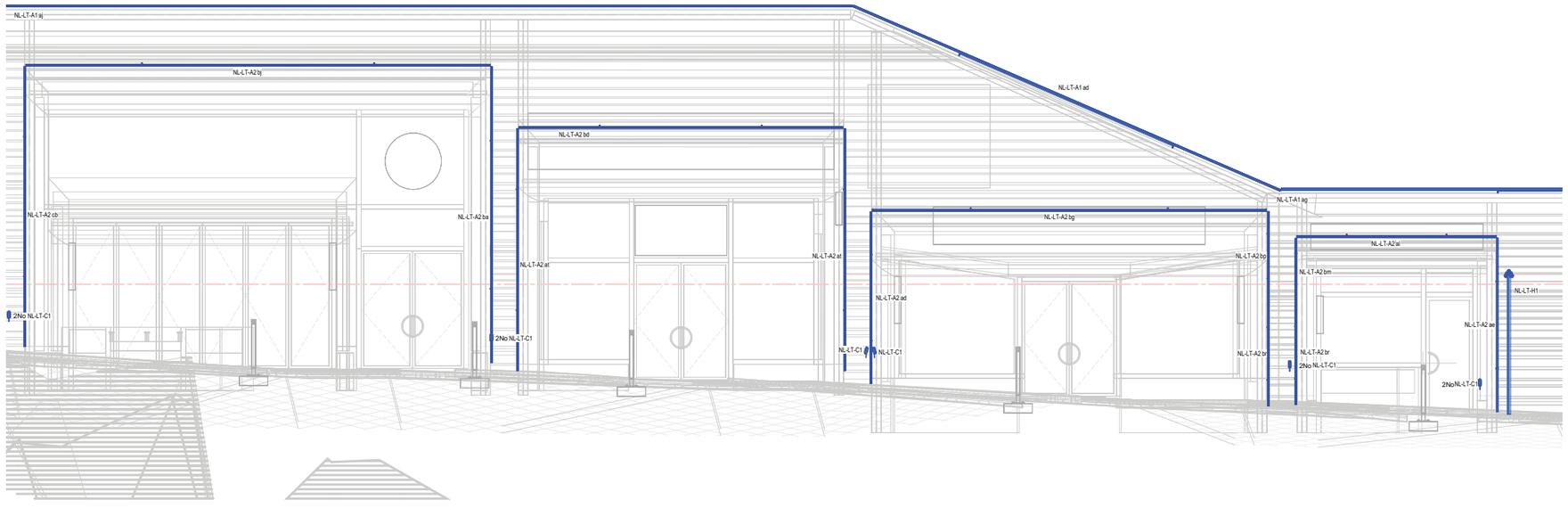


1 **Unit 10-19 Elevation 1**
1 : 50



2 **Unit 10-19 Elevation 2**
1 : 50

IMPORTANT NOTES

- Where dimensions are not given do not scale this drawing.
- All dimensions to be verified by the contractor on site.
- Electrician to carry out voltage drop calculations for remote transformers and drivers. The maximum distance between a luminaire and the remote transformer / driver will depend on the cable size, the distance and the total load.
- For lighting control requirements please refer to the Nulty+ Load Schedule and relevant notes on the drawing. Electrician to make sure the lighting control system installed compatible with the drivers andballasts specified.
- Contractor to refer to relevant manufacturer for luminaire installation details.
- Controls supplier to confirm exact load on circuit and supply in line resistors if req'd.
- 1-10V transformers/drivers require 2 cables – Power & Data.
- Luminaire manufacturer to confirm exact qty of drivers required against each lighting circuit.
- Back boxes, burial tubes and some plaster-in recessed fittings are required at first fix. Electrician to provide adequate notice to manufacturer of when these are required on site.
- Exact location and height of wall lights TBC by interior designer/client.
- Exact lengths of linear fittings TBC from site by contractor prior to order.
- 5Amp socket locations to be co-ordinated with small power locations for consistency by load consultant.
- Electrician to ensure that the ceiling is braced to support the client's choice of decorative pendants.
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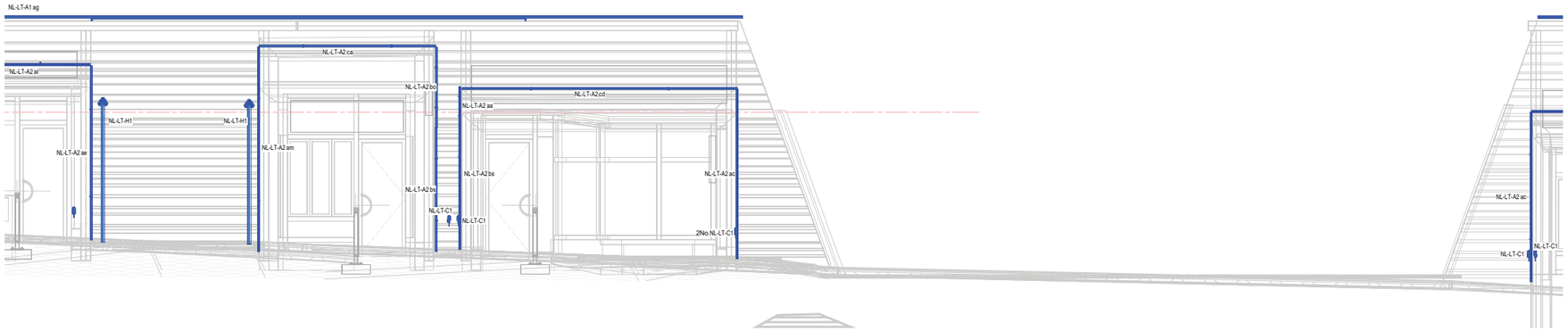
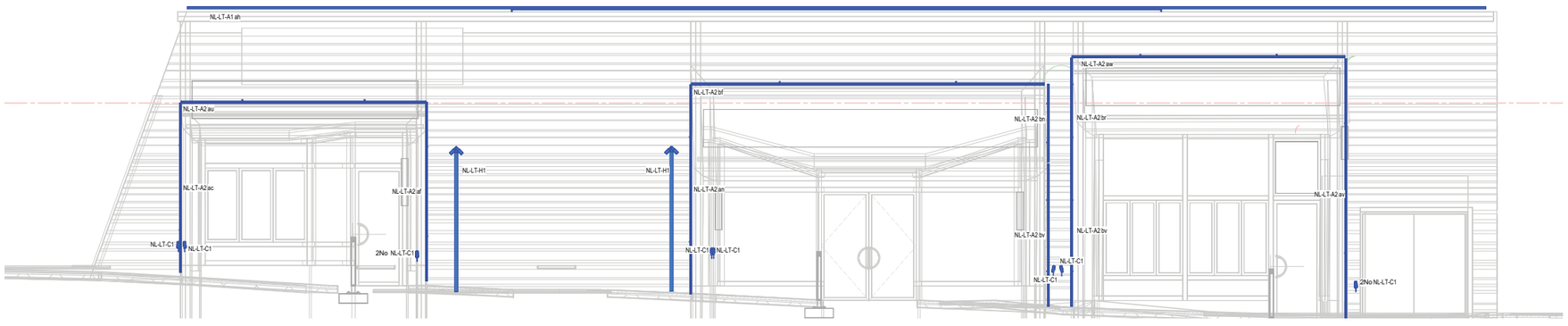


1 Unit 10-19 Elevation 3

1 : 50



2 Unit 10-19 Elevation 4

1 : 50

IMPORTANT NOTES

- Where dimensions are not given do not scale this drawing.
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- Electrician to carry out voltage drop calculations for remote transformers and drivers. The maximum distance between a luminaire and the remote transformer / driver will depend on the cable size, the distance and the total load.
- For lighting control requirements please refer to the Nulty+ Load Schedule and relevant notes on the drawing. Electrician to make sure the lighting control system installed compatible with the drivers andballasts specified.
- Contractor to refer to relevant manufacturer for luminaire installation details.
- Controls supplier to confirm exact load on circuit and supply in line resistors if req'd.
- 1-10V transformers/drivers require 2 cables – Power & Data.
- Luminaire manufacturer to confirm exact qty of drivers required against each lighting circuit.
- Back boxes, burial tubes and some plaster-in recessed fittings are required at first fix. Electrician to provide adequate notice to manufacturer of when these are required on site.
- Exact location and height of wall lights TBC by interior designer/client.
- Exact lengths of linear fittings TBC from site by contractor prior to order.
- 5Amp socket locations to be co-ordinated with small power locations for consistency by load consultant.
- Electrician to ensure that the ceiling is braced to support the client's choice of decorative pendants.
- All remote drivers / transformers to be located within ventilated and accessible areas.
- Report discrepancies / conflict to Consultant(s) team immediately.
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- If any doubts, please contact Nulty+ directly.

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