UCL Bicentennial Projects : Main Quad and Wilkins Cloisters

Lighting Assessment for Planning and Listed Building Consent Submission

Revision: 02
Date: July 2024

BDP.

Table of Contents

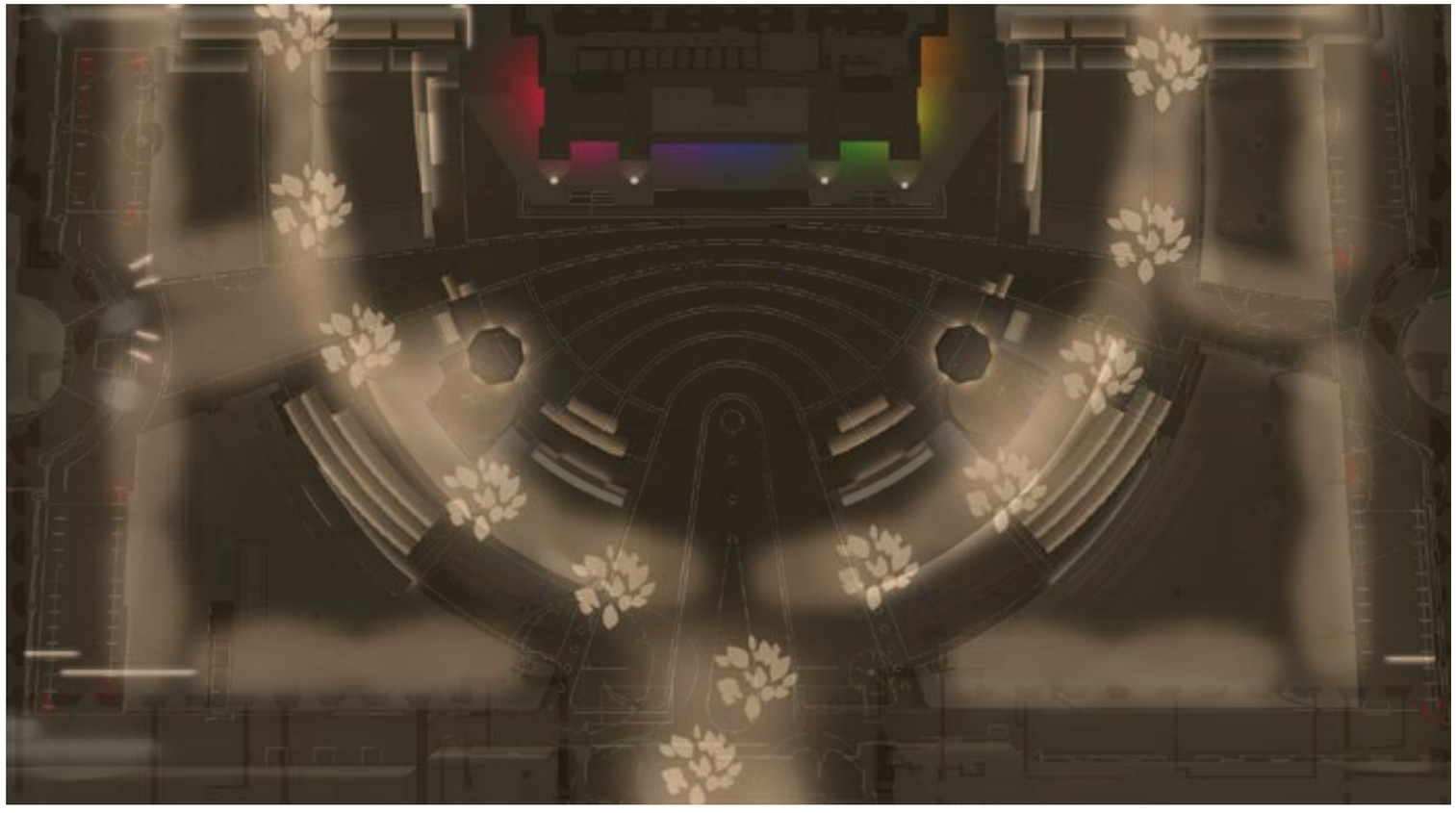
1 Introduction

Introduction

This report is the lighting document for exterior lighting to support the Planning and Listed Building Consent application. The following pages describe the lighting design for the Main Quad as part of the UCL Bicentennial project. BDP Lighting has been tasked to develop the detailed design for artificial lighting that will contribute towards creating a world-class environment for students, academics, staff and visitors.

The Main Quad is what welcomes students, staff and visitors to the heart of the UCL campus. Our main goal is to establish an inviting and distinctive space that sets the stage for the student experience. This will be achieved through a versatile and modern lighting plan, capable of adapting to both daily use and special events throughout the academic year, while respecting the rich historical environment in which it is situated.

2 Design Criteria



2.1 Performance objectives

- The aim for the lighting will be to:
- Harmonise the overall illuminated effect to all external areas considering light levels, surface brightness light distribution and control of glare'
- Enhance the arrival experience with light features to create a welcoming, vibrant and visually interesting environment for students, staff and visitors;
- Upgrade the exterior environment to reflect UCL's aspiration to provide a high quality education destination;
- Integrate and conceal lighting equipment wherever possible in architectural elements, to de-clutter the exterior environment;
- Illuminate both vertical and horizontal surfaces appropriately giving users a comfortable and safe environment which is easy to navigate;
- Manage views (particularly long views) to keep contrast ratios within comfortable ranges, thus limiting eye-strain and providing opportunity for visual relief;
- Manage contrast between exterior areas and changes of level whilst maintaining a safe environment for all users regardless of sight capabilities;
- Control the lighting to provide illumination suitable for the task or activity occurring in each space, including normal, security and maintenance operations, while also minimising energy consumption, maximising the life of lighting equipment and keeping maintenance requirements as low as possible;

2.2 Design parameters

BDP Lighting has adhered to all mandatory legislative and regulatory requirements and best practice professional guidance publications related to the lighting installation. Special consideration has been given to local planning guidance. With particular focus on:

- Code for Lighting. CIBSE/SLL, 2012
- Building Regulations, Approved Document L2A: Conservation of Fuel and Power in New Buildings Other then Dwellings. HM Government, 2010
- BS EN 12464-2:2014 - Light and Lighting - lighting of outdoor work places.
- BS EN 8300-1:2018 - Design of an accessible and inclusive built environment. External environment
- CIBSE Lighting Guide 6 - 2016 - The exterior environment
- CIBSE Lighting Guide 12 - 2014 - Emergency Lighting Design Guide.
- ILP Guidance Note GN01/21 - The Reduction of Obtrusive Light, 2021
- BS 5266-1 2016 - Emergency lighting - Code of practice for the emergency escape lighting of premises.
- UCL Estates Standards - Employer's Requirements and Design Standards for MEP services. V9.0, Oct 2022
- UCL Fire Technical Note No:020, Jan 2015
- The London Plan - The Spatial Developement, Strategy for Greater London, Mar 2021
- Camden Planning Guidance - Amenity, Jan 2021
- Camden Local Plan - 2017

The aforementioned guides, standards and codes of practice have informed the lighting requirements described in this document.

2.3 Colour rendering

- Good colour rendering is important to maintain a comfortable lit environment. All areas must have light sources with a colour rendering index (CRI) of Ra ≥80.

2.4 Lighting calculation

The values below have been utilised for the purposes of Planning and Listed building consent submission calculations, particularly responding to Camden's Local Plan, Policy A1, Section G.

Following figures are based on BS 8206:2.

- Concrete: 30%
- Paving: 20%
- Glass: 6%
- Pale stone: 40%
- Tree foliage: 10%

Calculation planes: height and dimensions:

- Exterior circulation. Floor level
- Workplace task plane: 0.75m AFFL, typically 0.6m x 0.6m square (& only where applicable)

During the lighting design development, sample calculations have been undertaken to ensure the proposals will work technically and to minimise the impact of the development onto the surroundings. These calculations have involved modelling the various spaces and simulating the lit environment using DIALux Evo 12.

2.5 Maintenance factor

The maintenance factor (MF) is a correction factor applied to an internal or external lighting installation to account for the depreciation in light levels over a given design life. Maintenance includes replacement of failed or deteriorated lamps and control gear, the cleaning of luminaires, the cleaning of room surfaces and early failures of lamps.
A maintenance factor (MF) of 0.80 has been applied to the calculations.

2.6 Emergency lighting

From conversations with UCL stakeholders it is BDP Lighting's understanding that the exterior escape strategy is "dispersal" and that there is not a dedicated muster point outside the Quad. Therefore emergency lighting needs to be provided solely to the scape routes from all the building exists to the main exit of the Quad onto Gower Street. Final building exit lighting already exists and additionally does not form part of the scope of this project.

Emergency lighting will be provided by normally operational luminaires connected to batteries that automatically switch to emergency power supply in the event of mains power failure.

Both the column mounted projectors and the low level integrated details will be utilised for emergency lighting. The use of a small dedicated central battery system serving just the Quad will be considered.

The emergency lighting supply will operate the lamps for a duration of three hours. If the luminaires are not operating at the time of mains failures then the lamps will be automatically ignited to provide emergency lighting. All batteries are to feed-back report to the University Addressable Self-Testing System as per UCL design

particulars.

2.7 Exterior lighting considerations

As outlined in The London Plan - The Spatial Development, Strategy for Greater London, Mar 2021 Policy D8, section B, light intensity and distribution will be carefully considered to ensure that upward light spill is minimised and that light distribution cut-off from luminaires do not result in severe light trespass into neighbouring buildings. Obtrusive lighting, nuisance lighting and light pollution and sky glow will be limited, by the positioning and the choice of controlled optics and accessories of the luminaires, and minimising the use of uplighting. The following steps will be undertaken to keep light pollution and negative effects on the local amenity to a minimum:

The use of uplight will be contained to key features only and focused such as to have as little impact on the sky as possible.

Angle of tilt of any adjustable luminaires will be restricted to maximum 30° to minimise source intensity glare.

Low level lighting will be either recessed in-ground or integrated, and, where necessary, will use appropriate glare shielding to minimise light source visibility.

Over-lighting: This is avoided by designing to the minimum levels prescribed in the codes and standards, whilst maintaining safety and carefully selecting the most appropriate lighting equipment and lamp types.

Landscape lighting: So as not to encroach on the biodiversity development in the landscape, there is no dedicated landscape lighting on this project. Lighting is only present on the circulation routes and bicycle parking zones.The illuminance requirements are dependant upon the use of the outdoor space, the environmental zone, and the existing lighting environment (district brightness), where the lighting design is to be implemented.

The district brightness is determined according to criteria set out in ILP publication, Guidance Notes for the Reduction of Obtrusive Light, 2021

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

Environmental area ‘E4 urban area with high district brightness’ has been selected for the Main Quad, as the location is in the heart of a busy urban area, characterised by a high level of public use with a reasonably busy public roadway nearby.

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

Table 6 extracted from the ILP guide, shows the maximum upward light ratio of luminaires. For zone E4, up to 15% of the overall light output, can be directed upwards. Based on British Standards and best practice recommendations the lighting scheme will be designed to achieve maintained illuminance levels (on the ground):

- 10lx (average) to the main path and bicycle parking
- 5lx (max) to the secondary paths, excluding the central zone

2.8 Light spill analysis

Special considerations

In line with Camden Planning Guidance - Amenity, Jan 2021,special consideration has been given to choice and positioning of luminaires. The beam angles of all proposed lights are well bellow the advised 70 degrees, with the wide beam luminaires set at 55 degrees and tilting restricted to a maximum 5-15 degrees. BDP conducted a simulation of the proposed external lighting scheme to ensure the chosen equipment meets our requirements for the space, particularly in controling light trespass into neighbouring areas.

Calculation Process

Calculations are done in DIALux Evo 12.0 program. For this purpose, we placed horizontal calculation surfaces at the areas of activity and vertical calculation surfaces along the South, half of the North, and half of the West facades. The vertical calculation was performed on half of the buildings given that the scheme is almost entirely symmetrical.

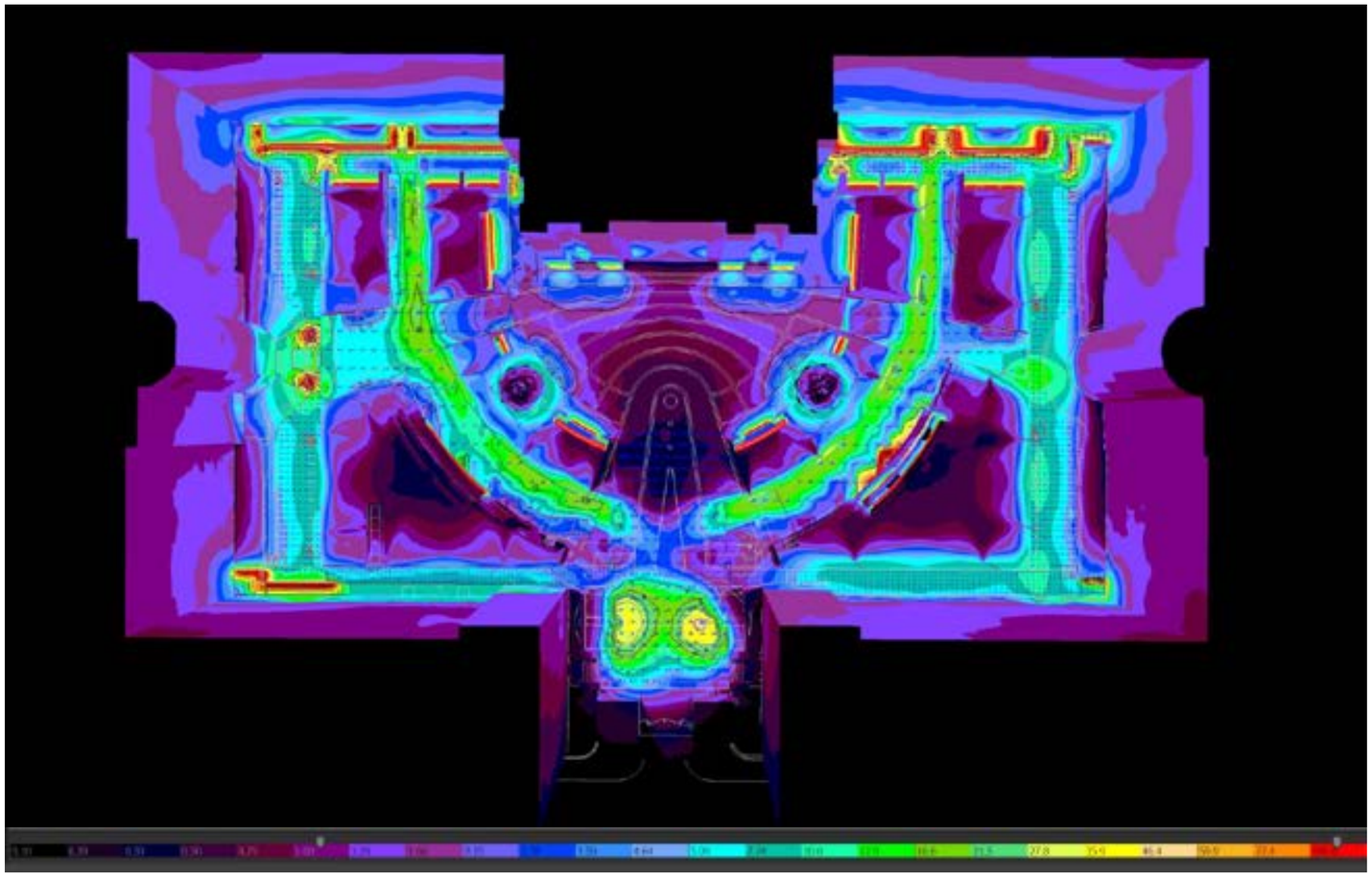


Image showing calculated illumination presented in false colours

Calculation Results

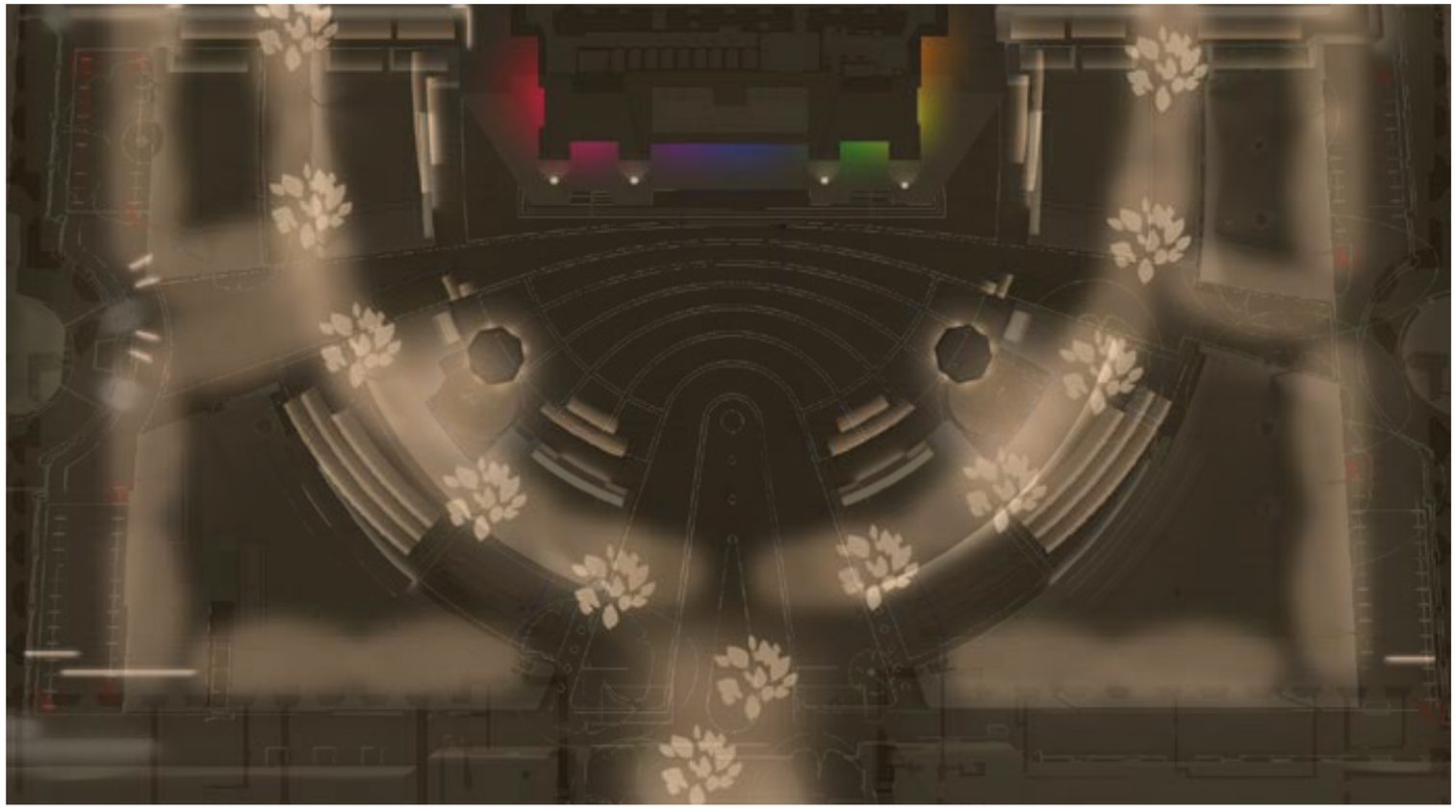
The calculation results, illustrated here with false colours, demonstrate our strategy to provide lighting precisely where it is needed. This is achieved using high-quality lighting equipment with precise optics. Main circulation areas and entrances are illuminated the most, while greenery and natural areas are left unlit to preserve their natural cycles. The calculated illumination levels on the building facades indicate minimal light spill into the interiors, maintaining levels well below ILP Guidance which states maximum value of vertical illuminance on properties post-curfew at 5 lux.

Illumination levels in lx on the vertical calculation surfaces at the North, South and West facades

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 3 (CIE 150 table 2): MAximum values of verrtical illuminance on premises

3 Lighting Controls



3.1 Types of lighting controls

A well planned and implemented lighting control strategy will ensure the environment looks its best, will enable the illumination levels to be controlled to meet the needs of the occupants and functions of each space and will save considerable amounts of energy.

This section covers the design intent of the automatic lighting control system for the Main Quad as described here.

Control of external luminaires must be linked to hours of darkness and time of day. All lighting shall be automatically controlled by a Central Management System (CMS) through the use of an astronomical time clock, which will be able to account for seasonal daylight changes.

It is proposed that a curfew will be implemented to switch off or dim down elements of the lighting scheme from 23:00 o'clock.

The controls requirements include but are not limited to:

- Presence detection
- Scene setting
- Astronomical Timeclock

3.2 Lighting controls philosophy

The exterior lighting will be managed in a way that the artificial lighting is synchronized with the natural light cycle, ensuring the light comes on from dusk til dawn and remaining off during the day.

All exterior luminaires for the Main Quad shall be controlled via an astronomical timeclock, linked to a DALI control system capable of recalling five scenes and automatically scrolling through some or all of them. These scenes will be Dusk, Curfew, Event 1, Event 2 and Daytime (all off).

DALI Controls: The lighting control system shall be fully programmable and have the facility to address and control each identified lighting group within the project only.

All individual luminaire types are to be dimmed as groups using DALI Broadcast protocols such that all details of the same type, dim and raise simultaneously together.

The controls philosophy proposed is described below.

Everday Mode lighting components:

- All column (and tree) mounted projectors with elliptical beams
- All bench integrated lighting
- All hand/tapping rail lighting
- Uplighting to plinths
- Facade lighting to observatories

30 minutes prior to sunset (Dusk), lighting will gradually switch on over period of 15 minutes, and remain on at designed levels until Curfew time. At the start of pre-curfew time lighting to benches in the outer ring and seating niches will be gradually dimmed down for 15 minutes and at Curfew (23:00 o'clock) will switch off. The column mounted lighting (including 2no projector mounted in trees) will remain on until the Curfew scene is triggered. The column mounted lighting, the observatories' facade lighting and the plinth uplights will be gradually dimmed down for 15 minutes and remain on at 30% output. The bench lighting integrated in the inner ring and all the hand/ tapping rail lighting will remain on until dawn. These illuminance levels will remain until sunrise, or 8:00 o'clock, at which point all lighting will switch off (Daytime). No lighting shall be switched on during daytime, between 08:00 and sunset.

Final light levels shall be adjusted during commissioning stage on site and agrewed with the Client. Presence detection could be utilised during Curfew scene to temporarily dim up the lighting if presence is detected and dim down again 10mins after presence was last detected.

Event Mode lighting components:

- All column (and tree) mounted gobo projectors
- Medium beam projectors
- All column (and tree) mounted projectors with elliptical beams
- All bench integrated lighting
- All hand/tapping rail lighting
- Uplighting to plinths
- Facade lighting to observatories

Event modes 1 and 2 can be a different mixture of

components and dimming levels to suit the most typical events taking place in the Quad. In Event 1 only the gobo projectors should be utilised on the main path. In Event 2 (if higher lighting levels are needed) both projector types can be used, with the elliptical projectors being dimmed down to 35% so as not to wash out the effects from the gobos. The medium beam projectors aimed at the stage must be controlled separately to allow them to be dimmed or switched off in event mode if hired stage lighting is in use.

Equipment compatibility:

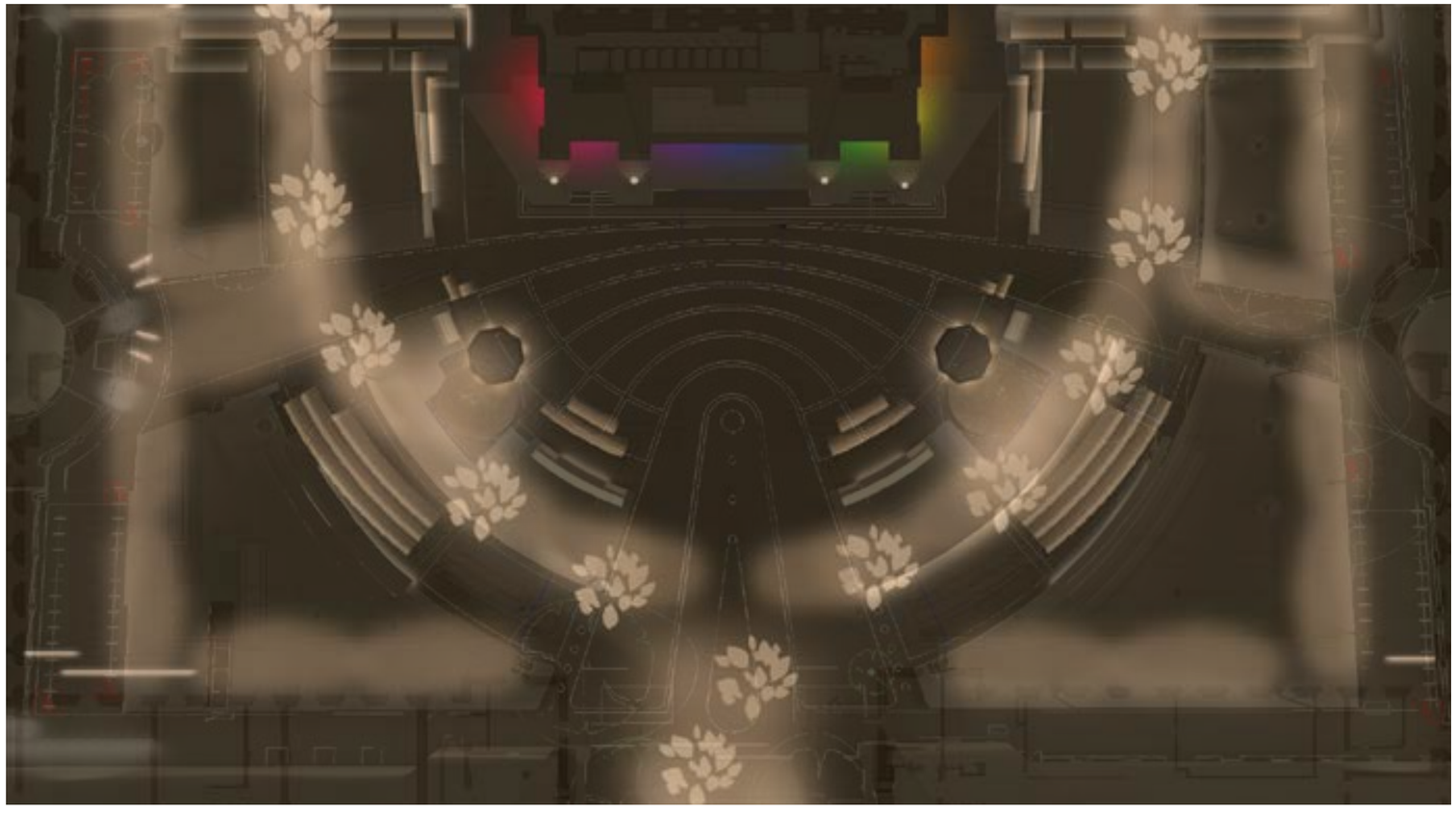
LED technology uses a wide variety of complicated electrical components from a variety of suppliers. As such, it is crucial that luminaire, driver (if required) and building-wide control system are checked for compatibility to avoid issues with dimming and control. It is strongly recommended that the appointed electrical contractor undertakes checks with suppliers of all lighting and associated electrical equipment to ensure the proposed drivers are suitable for the respective luminaires. If no such approvals can be gained from the luminaire suppliers, then bench-testing may be required to ensure compatibility. The entire lighting system must be considered holistically and not just as a series of individual components.

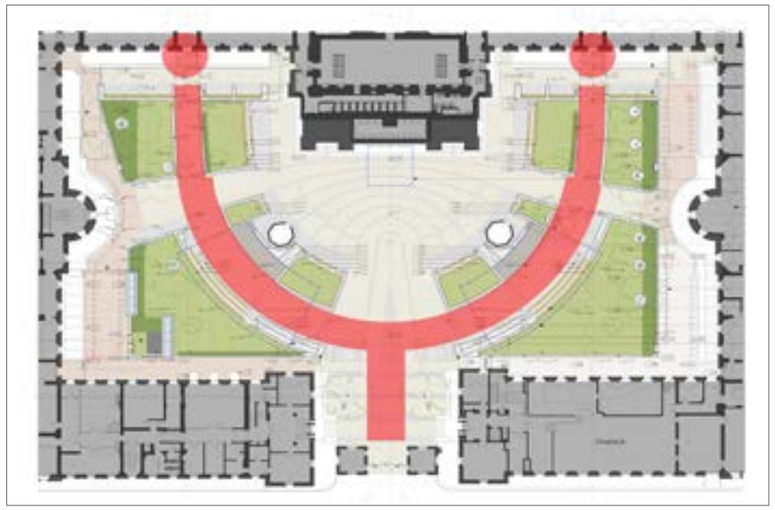
The lighting controls suppliers are to submit an itemised price for compatibility testing or provide compliant driver recommendations for their system to provide the requirements set out in the specification.

All control gear to be chosen from the lighting control suppliers approved list of tested and compatible manufacturers. If an alternative gear supplier is required which is not on the approved list, than it shall be tested and certified by the lighting control supplier before being deemed acceptable.

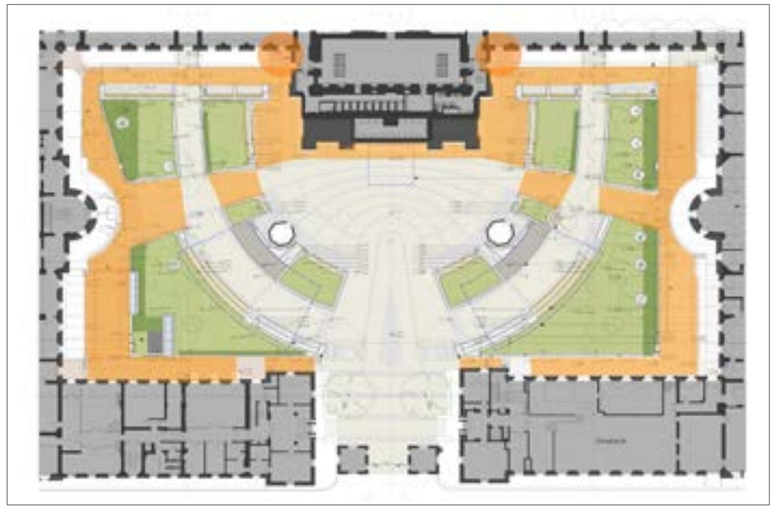
All luminaires of the same type will contain identical control gear to ensure consistent performance. Mixing of gear manufacturers or mixing of gear models will not be accepted. For luminaires with integral control gear, the manufacturer specified will determine and supply the control gear. Remote control gear shall be selected that conforms to the above and for its IP rating also. Appropriately high IP rating must be selected for remote drivers and they must be housed in IP-rated, dry, ventilated and accessible enclosures.

4 Concept



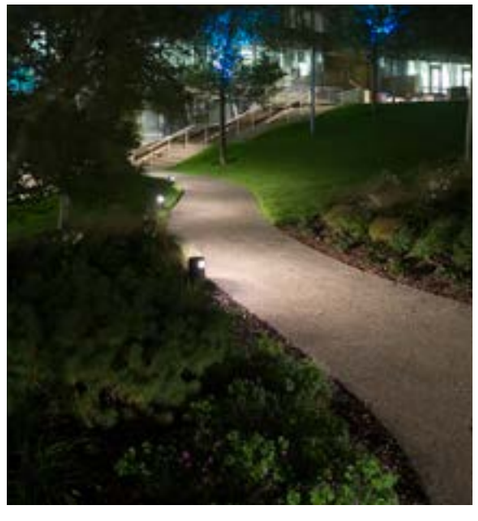


High brightness zones



Medium brightness zones

Low brightness zones



4.1 Overall concept

The UCL Main Quad is an area of high heritage sensitivity. The artificial lighting needs to be subtle and as well as functional within the constraints of working with a heritage building, whilst creating a safe and easily navigated environment at night.

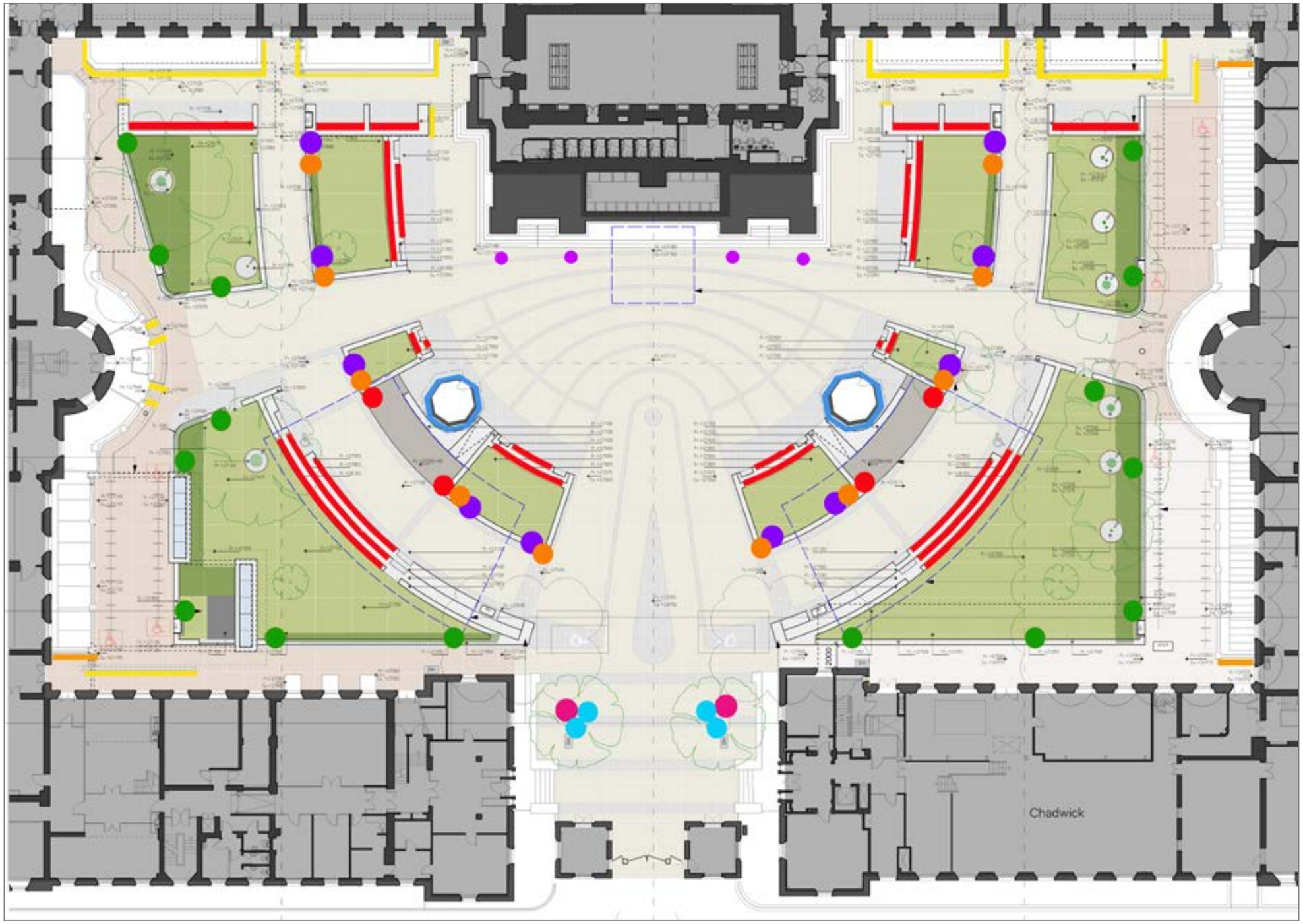
The Quad is at present quite poorly illuminated and traversing it can pose risk of tripping in the uneven ground surfaces. Refer to Appendix 2 where the existing lighting is described in more detail.

Whilst ensuring that a safe environment is being created, there will not be a great emphasis on high light levels or uniformity throughout the whole Quad. Different lighting techniques will be utilised to make sure that the space is perceived as bright and that lighting is directed at where it is most needed. The emphasis will be on the main path, letting the new landscape areas present naturally at night.

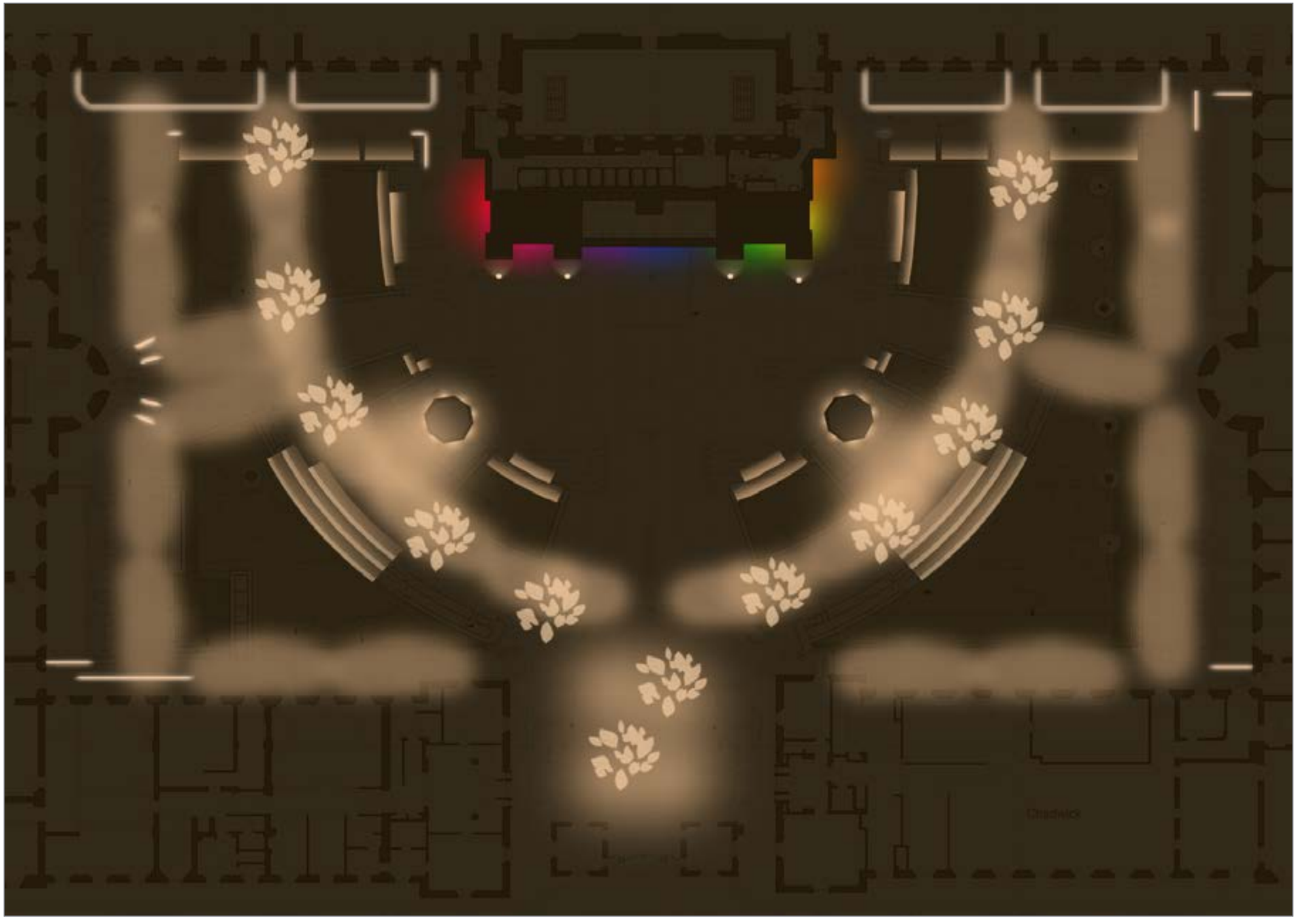
The proposed lighting will be species sensitive in line with the Wild Bloomsbury objectives. Dimming and the utilisation of warm colour temperature lighting is explored. Uplighting is minimised.

There emphasis is on the main path leading to the Cloister entrances, which is the brightest zone in the Quad and thus will enhance the natural orientation in the space. The secondary paths and the bicycle parking will be zones of medium brightness. The central area and the landscape will be zones of low brightness, allowing the Portico to stand out.

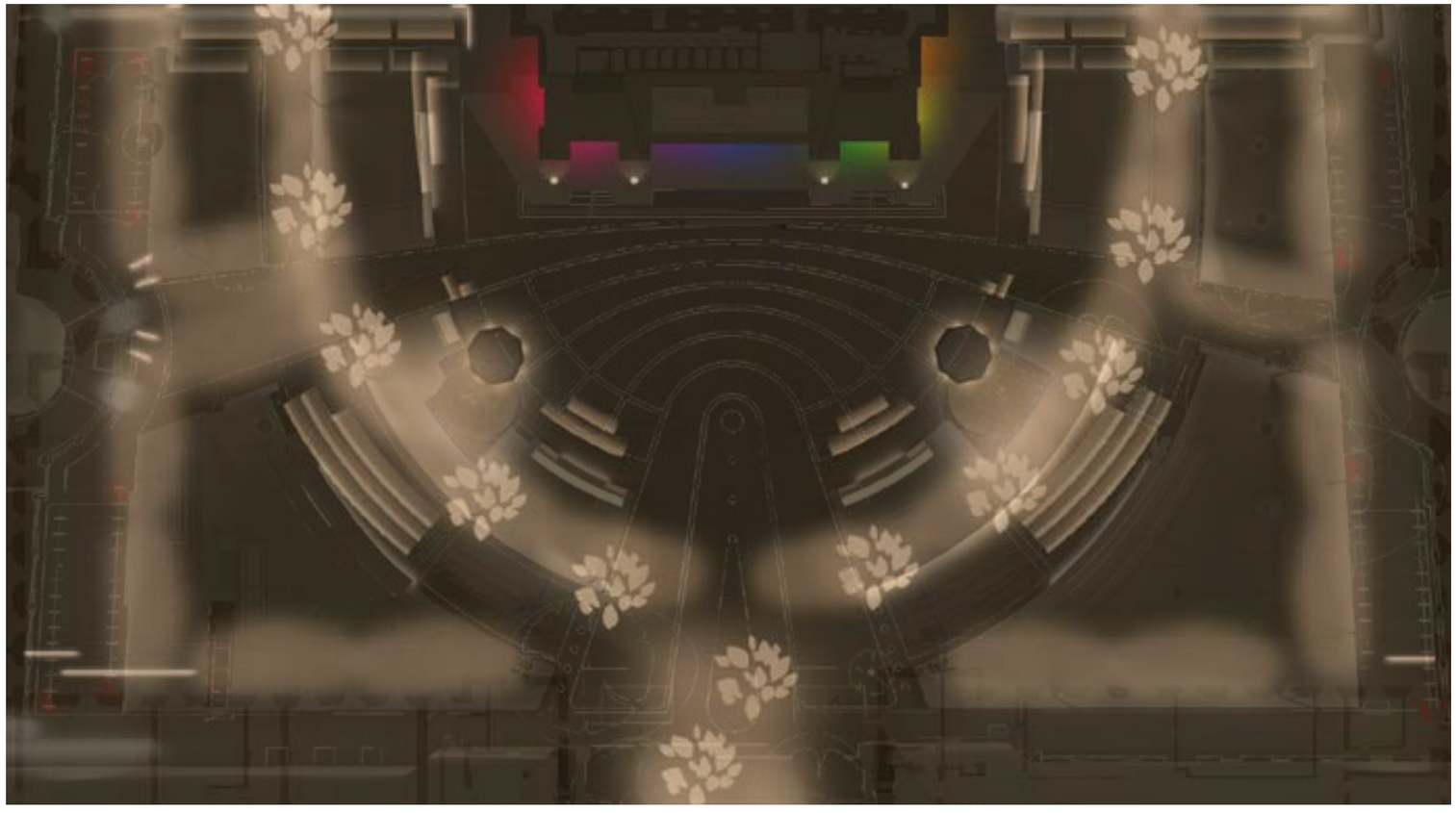
Indicative Plan of Lighting Equipment Locations



Overall Glow Plan



5 Area by Area Lighting



Precedent image of pedestrian path column lighting

Precedent image of piazza and bicycle park with column lighting

Image showing brightly lit path among shadowy green areas

5.1 General Lighting

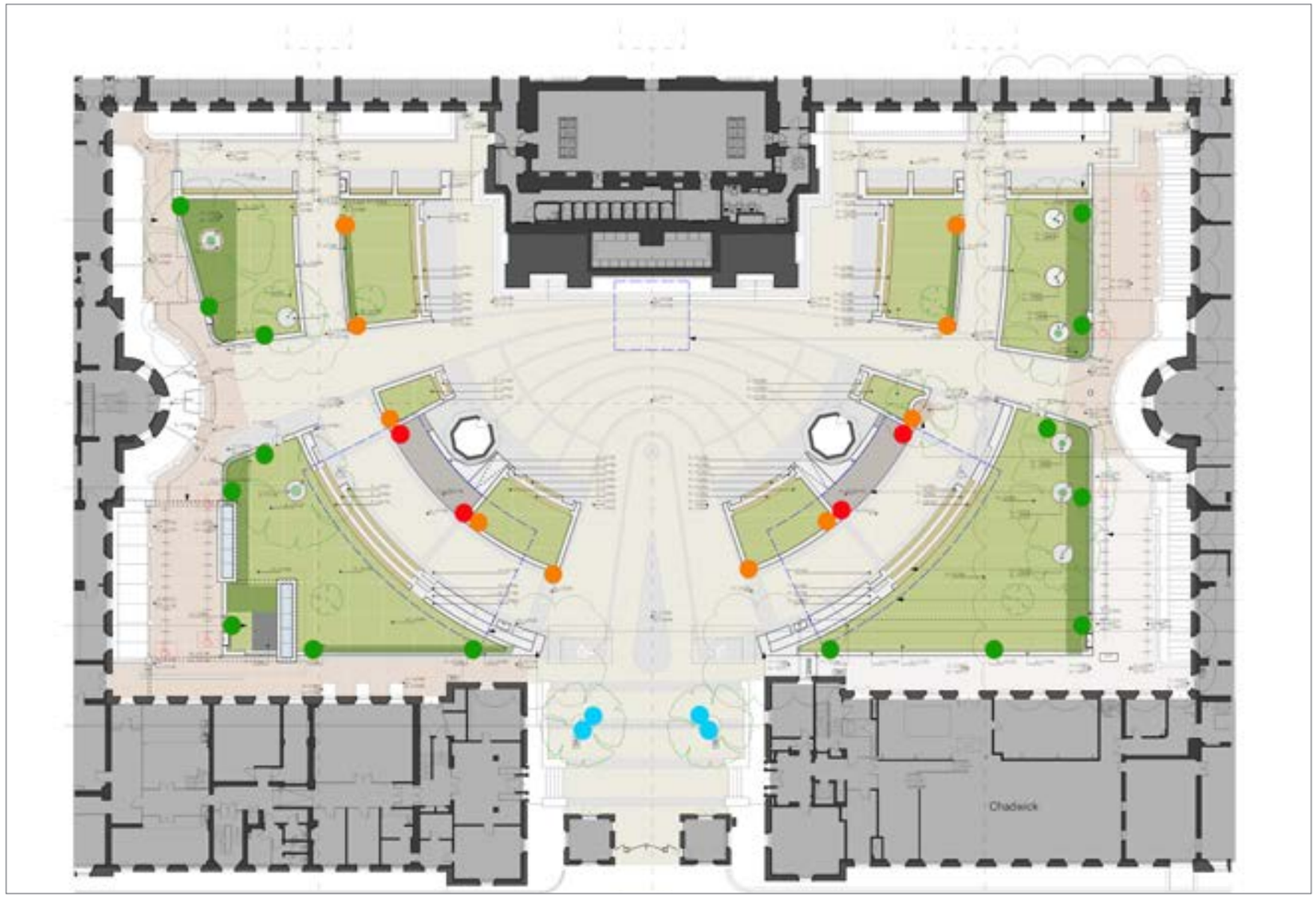
The general lighting will mostly be achieved via projectors mounted on 3 or 5 meter high columns. The projectors will have asymmetric elliptical beams for optimal coverage of the pathways with minimal spill lighting into the landscape and surrounding buildings. Both the main path and the bicycle parking will be lit in the same manner.

Four of the columns on the central path will be tiltable to allow them to be lowered when the stretch tents are being assembled and disassembled on site.

On the columns that frame the permanent stages two additional spotlights with a medium beam can be mounted. Those spotlights will provide some light onto the stage and the access ramps behind them. Professional stage lighting can be hired for special events and is not covered within the scope of this document.

The column mounted projectors will also be used to provide the emergency lighting in the Quad. The columns can also be used as convenient positions for mounting CCTV cameras.

General lighting - Lighting Layout and Luminaires

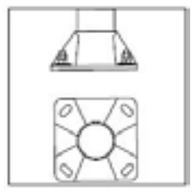


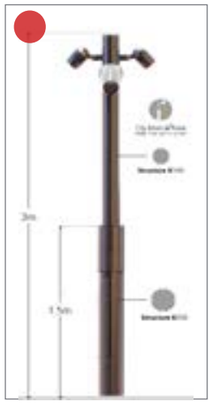
General lighting layout

Description: Spotlight head mounted at 3.0m high pole with the street optics.
Specification: Meyer Lighting | Metaspot 1
Performance: 883lm | 14W
Colour temperature and Ra: 2700K | 80+
Control: Dali dimmable

Description: Additional spotlight head with wide beam optics, mounted at 3.0m high, tiltable pole or strapped to tree trunk.
Specification: Meyer Lighting | Metaspot 1
Performance: 1067lm | 15W
Colour temperature and Ra: 2700K | 80+
Control: Dali dimmable

Description: Exterior lighting column
Specification: Technilum | Structure K140
Dimensions: H=3.0m /H=5.0m | D=120mm
Installation: Anchored in mast base with base buried in landscape topsoil





Description: Tiltable exterior lighting column
Specification: Technilum | Structure K Moove
Dimensions: H=3.0m | D=120mm
Installation: Anchored in mast base with base buried in landscape topsoil

Description: Spotlight head mounted at 5.0m high pole with the street optics.
Specification: Meyer Lighting | Metaspot 1
Performance: 883lm | 14W
Colour temperature and Ra: 2700K | 80+
Control: Dali dimmable

Precedent image of low level lighting for cascading seating with gobo projections on the path

Image showing projections with projectors mounted on columns

Image showing projections with projectors mounted on trees

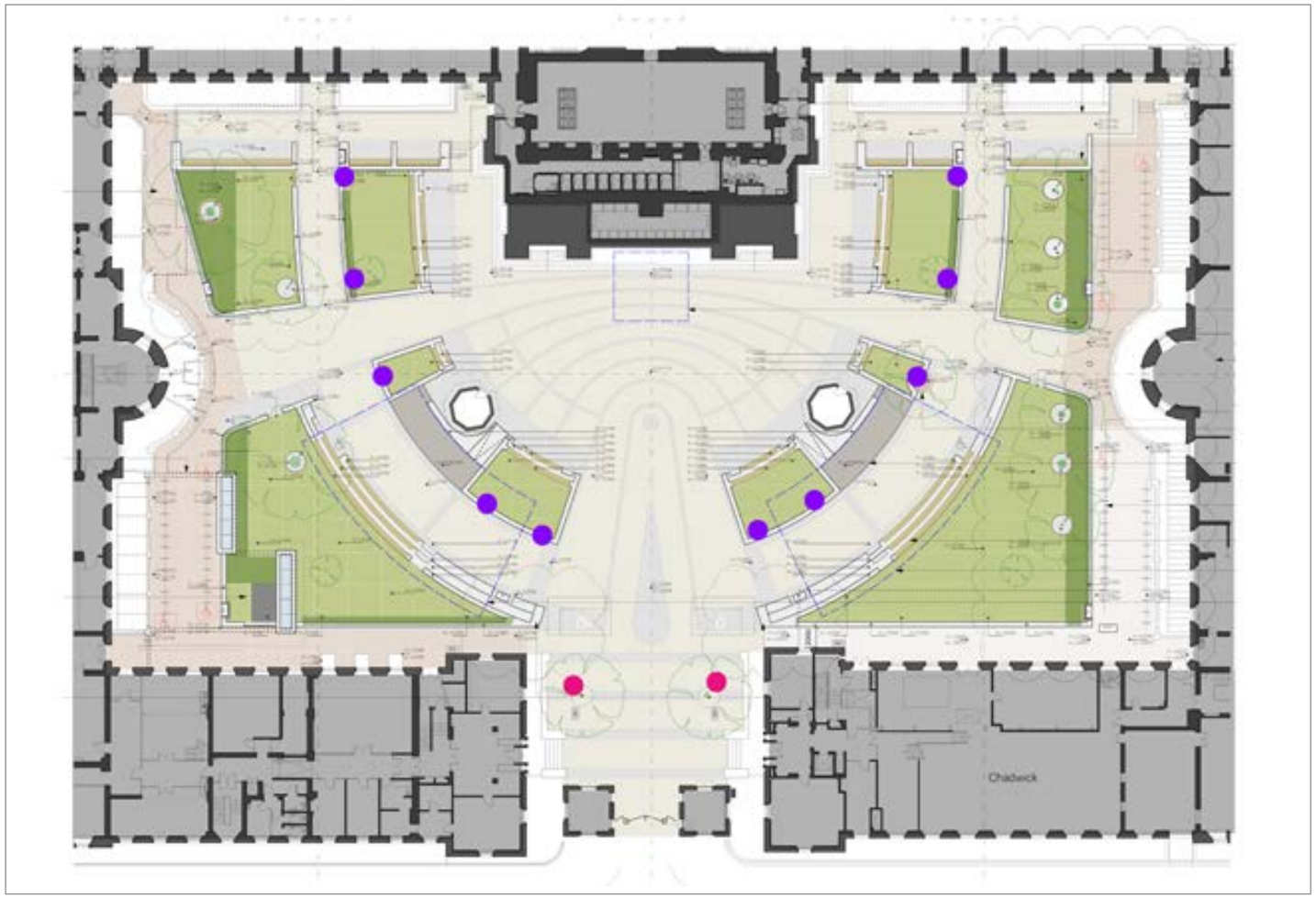
5.2 Textured Lighting

As an additional feature in the events mode of the Quad it is proposed that gobo projectors are mounted on the columns as well as in the two large trees flanking the main entrance. The gobo projectors create visual interest by projecting images on the pavement. Typically the images are leaf patterns simulating natural shadows created by sunlight seeping through foliage, but they can also be custom design images or even text. The UCL art team could get involved by procuring custom art design for the gobos that are unique to UCL.

It is proposed that the column mounted gobos are only switched on for events, so as not to over-saturate the lit environment.

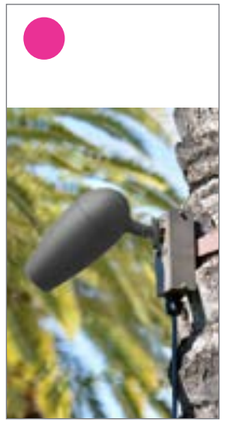
There are two gobo projectors that are proposed to be mounted to the tall trees closest to the lodges by the main entrance. It is intended that they stay switched on all the time to supplement the light levels by the entrance, in a subtle manner.

Textured Lighting - Lighting Layout and Luminaires



Texture projectors lighting layout

Description: Gobo projector head at the same street pole along the main path
Specification: Meyer Lighting | Metaspot Gobo
Performance: 1401lm | 49W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable



Description: Gobo projector head strapped to a tree, to create textured lighting for added visual interest and to supplement light levels by entrance.
Specification: Meyer Lighting | Metaspot Gobo
Performance: 1401lm | 49W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

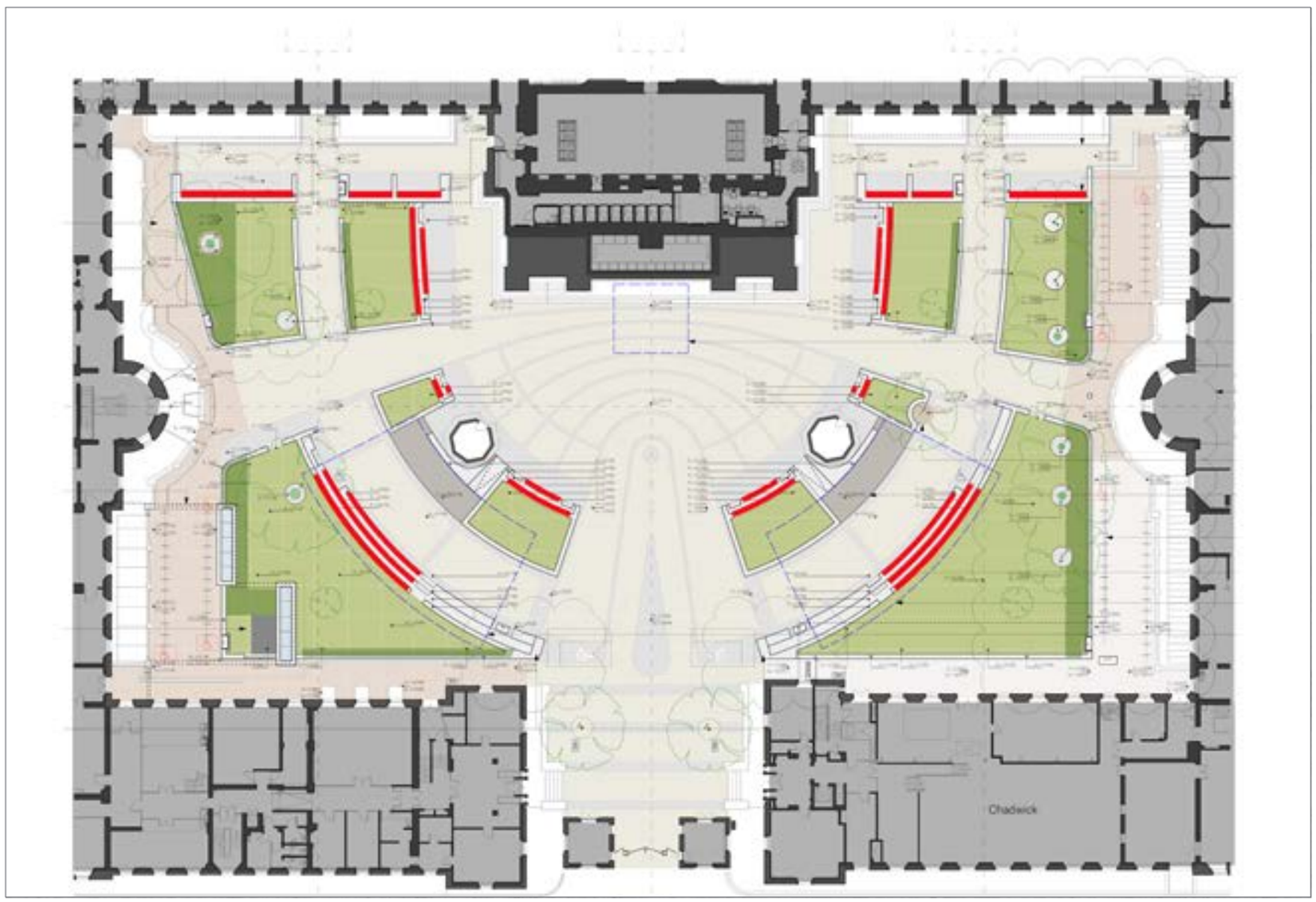
Precedent image of warmly lit areas for socialising

5.3 Areas for socialising and relaxation

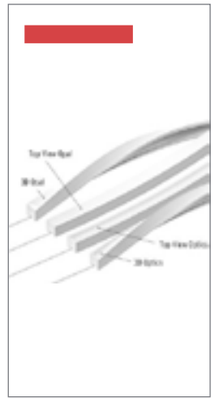
The cascading seating along the main path and facing the central space will benefit from homogenous LED strips integrated to the underside. Likewise the seating niches closest to the Wilkins building will have the same LED strips mounted underneath. This low level detail will create human-scale warm pools of light and will make the seating areas attractive for increased dwell time by the students.

Precedent image of low level lighting for cascading seating and planters

Areas for socialising and relaxation - Lighting Layout and Luminaires



Seating areas lighting layout



Description: Flexible, homogenous and encapsulated medium output LED light line for outdoor use. Mounted within architectural detail.
Specification: LED linear | Venus IP67
Performance: 615lm/m | 10W/m
Colour temperature and Ra: 2700K | 85+
Control: Dali dimmable

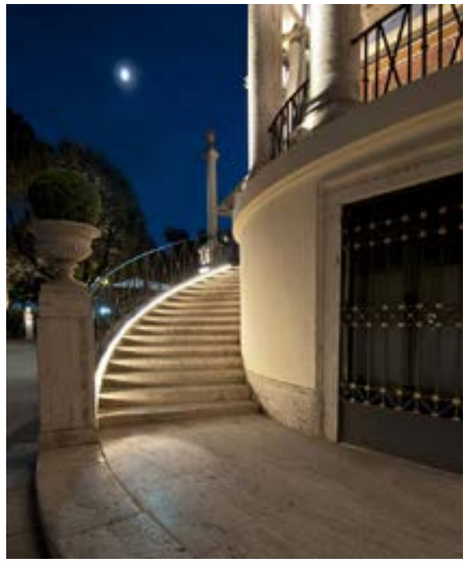


Image showing low level staircase lighting

Precedent image of staircase lighting integrated in handrail

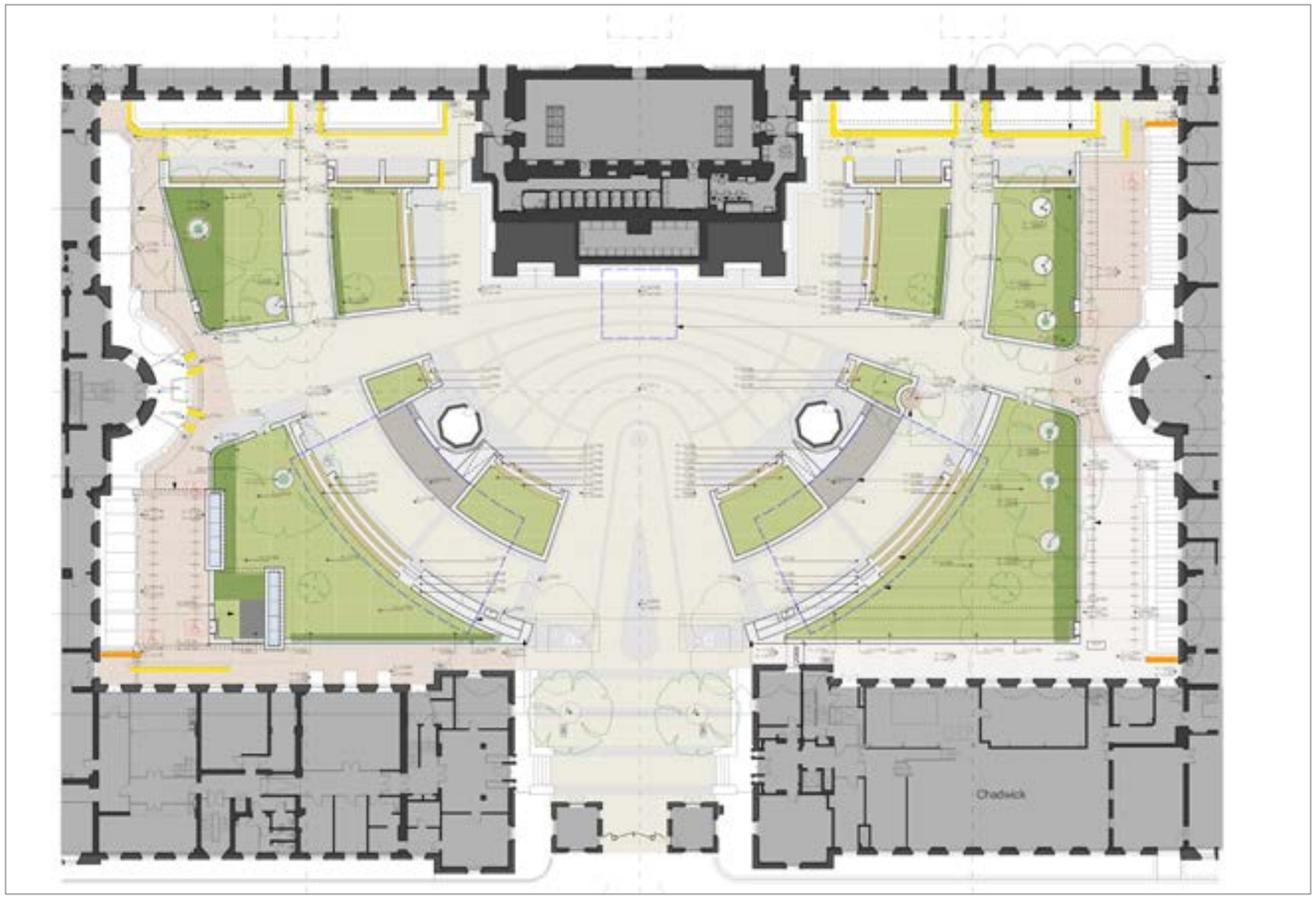
Image showing low level surface mounted path lighting

5.4 Areas next to entrances and exits

The entrances will be accented with low level lighting details making them visible and easily identifiable. There is currently not enough lighting to the entrances so it will be important to provide illumination to them as they are also close to changes of levels.

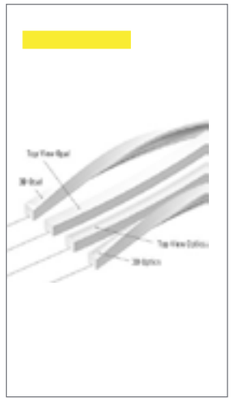
The lighting will take the form of either stand-alone luminaires mounted on the ground plane or lighting mounted to the tapping rail or under the new handrails. The exact lighting technique will depend on the final design of the hand and tapping rails. If light is integrated in the tapping rails a homogenous LED strip will be used. If light is integrated in the handrails either LED strips or small recessed pucks can be used, depending on the handrail design. The plan on the next page shows all the locations where a form of integrated lighting will be required.

Areas adjacent to entrances and exits - Lighting Layout and Luminaires



Entrances/Exits lighting layout

Description: Miniature LED light with one - sided beam integrated in the new railings
Specification: Wila | Puck XT
Performance: 166lm | 1.5 W
Colour temperature and Ra: 2700K | 80+
Control: Dali dimmable



Description: Flexible, homogenous and encapsulated medium output LED light line for outdoor use. Mounted within architectural detail.
Specification: LED linear | Venus IP67
Performance: 615lm/m | 10W/m
Colour temperature and Ra: 2700K | 85+
Control: Dali dimmable

Description: Surface mounted rigid linear LED light in areas without new railings
Specification: Linea Light | Dirigo FL
Performance: 900lm |17W
Colour temperature and Ra: 2700K | 80+
Control: Dali dimmable

Image showing vertical illumination at Somerset House that creates overall impression of brightens

Image showing highlighting of historical facade

Precedent image of even facade lit from the top down

Precedent image of historic facade wall-wash lighting mounted in the eaves

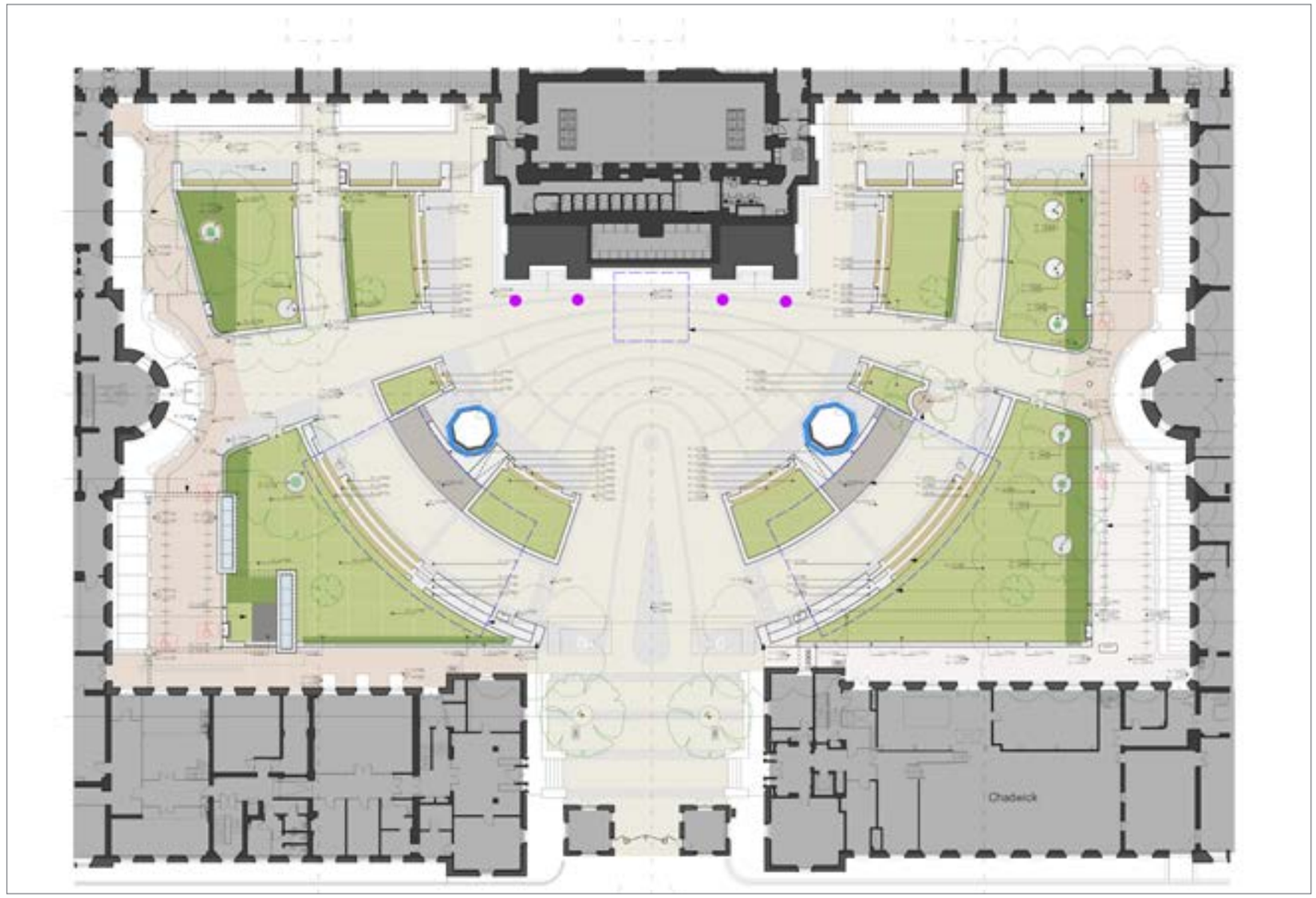
5.5 Historic background
Framing the views

To increase the vertical brightness of the Quad it it proposed that the facades of the two observatories are lit. This new detail can be achieved by mounting miniature linear LED luminaires underneath the observatories' roofs. There are existing grooves in the fabric which would lend themselves very well as discreet mounting positions. The downwards directional illumination ensures that light pollution is not added to the Quad environment.

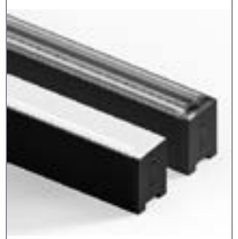
The only uplighting detail that is proposed on the scheme is relating to the Portico. The four large plinths at the base of the Portico currently have uplighters recessed in the pavements, that are no longer operational. It is proposed to keep the positions and cable routes and insert new LED uplights cut in the new stone paving to replace the failed old ones. This will make the lower level of the Portico more visible and will read well with the existing upgraded coloured uplighting to the Portico columns.

The addition of more vertical lighting in the Quad will add texture to the lit environment and will increase the sense of overall brightness that is lacking currently. It should be noted that the surrounding fcades do not form part of the bicentennial project. However it is our recommendation that UCL maintain the existing facade lighting, which is currently in poor state of repair. The facade lighting will complement the brand new lighting scheme to the Quad ground plane and present a renewed look for the beautiful surroundings of the Portico - UCL's logo and iconic symbol.

Historic background - Lighting Layout and Luminaires



Heritage buildings lighting layout



Description: Miniature linear LED light with opal diffuser for gentle wall-wash of the observatories. Integrated within the roof recess. Could be static white or colour changing.
Specification: LED Linear | Adonis architectural High CRI
Performance: 430lm/m | 11W/m
Colour temperature and Ra: 3000K | 97+
Control: Dali dimmable

Description: Round LED uplight with wall-washing adjustable optics, recessed into the paving to accentuate four plinths of the portico.
Specification: Meyer Lighting | Uplight 220
Performance: 672 lm | 19W
Colour temperature and Ra: 3000K | 80+
Control: Dali dimmable

Appendix 1 :
Colour Temperature Strategy

Throughout the day, the perceived colour temperature of natural light changes, transitioning from very warm at sunrise, to very cold at midday, finally returning to very warm at sunset. This is a naturally occurring cycle that humans have evolved with for millions of years.

When it comes to artificial lighting, colour temperature of white light is selected at the specification phase and has a profound effect on the feel of a space. Cooler colour temperatures are generally associated with daytime, alertness, efficiency. Warmer colour temperatures have a more relaxing, welcoming and intimate perception and are much better suited to leisure spaces at night.

The varied personality of the environment we're designing means that lighting is an important tool to 'glue together' the public realm as one space. During daylight hours, the artificial lighting will be switched off, so in a sense we are designing lighting for an optimal after-dark condition.

It is proposed that the socialising areas and ambient lighting throughout the public areas are at 2700K warm white. Historic background could feature similar but slightly cooler 3000K to visually differentiate vertical elements within the overall ambience.

Appendix 2 :
Survey of Existing Main Quad Lighting

Here are presented the results of a survey that was done at the beginning of stage 3. The survey results have informed the direction of the lighting detailed design.

Survey Process

The survey comprised three parts: a visual survey to identify existing lighting elements, spot measurements of current light levels and an observation the overall nocturnal ambiance within the Quad.

Multiple light sources identified:

- Six heritage street lamp posts standing approximately 3-4 meters tall, positioned along the perimeter of the central semicircular square. These lamp posts were retrofitted with metal halide lamps and were operational at the time of visit.

- Five inground uplighters in vicinity of some trees and additional four at the front of the portico. Uplighters were not in operation at the time of survey.

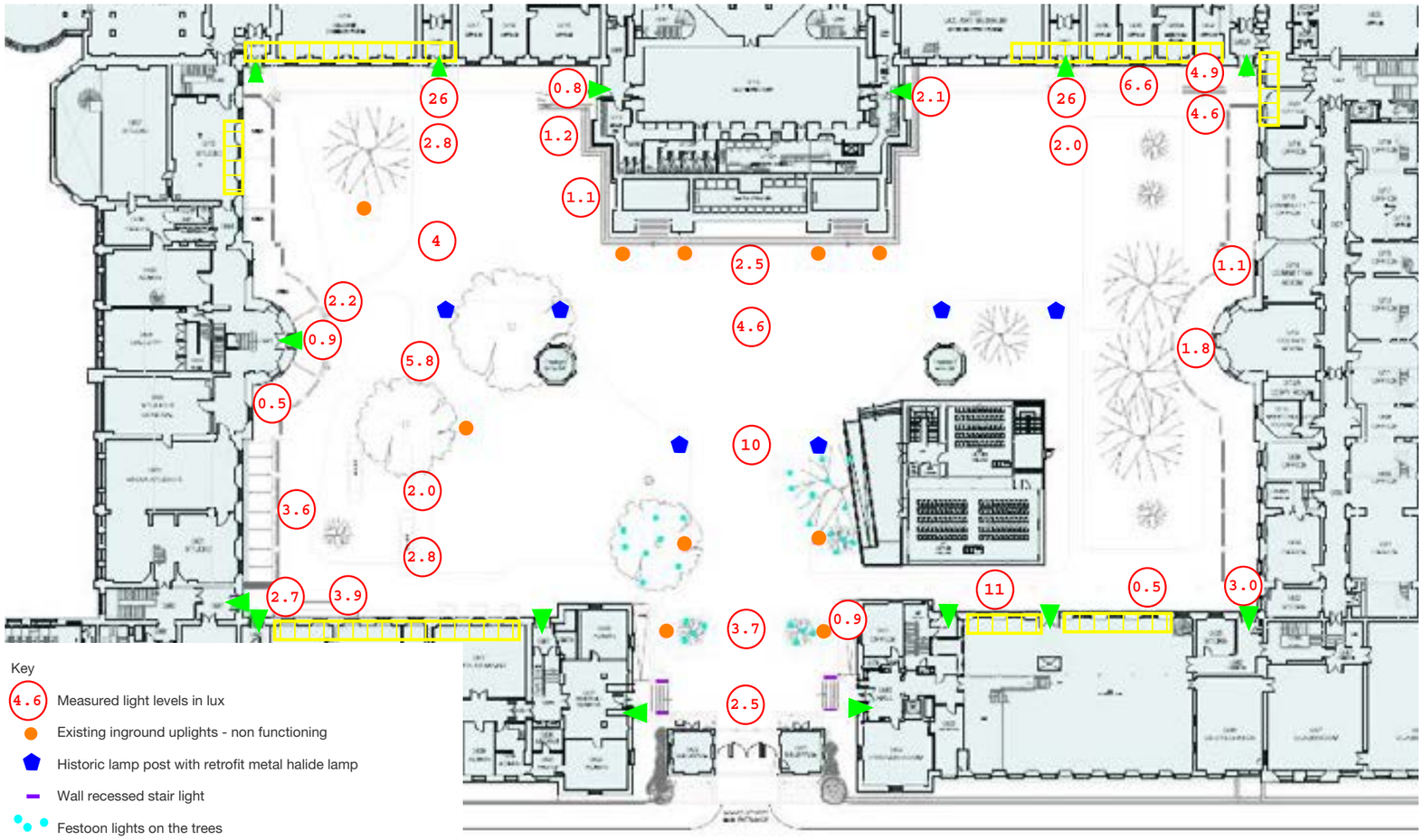
- Wall mounted lights to staircases at the left and right entrances to North-West building and Recruitment and Admissions hub, as observed from the main gate on Gower street.

- Temporary colour-changing, uplighting floodlights at the base of the columns of the Portico.

- Temporary festoon lighting on the trees in vicinity of the main gate.

- Dedicated emergency flood lights mounted on the facade above each emergency exit, as marked on the map. Several exits with additional bulkhead emergency lights. Bulkheads presented with the control light on, it is not clear if floodlights are operational.

- Lastly, light that spills out and trespasses from the facades or opened doors on multiple entrances.



Survey map with results

Spot measurements of current illuminance was taken:

- At most frequented footpaths
- At all main entrances, with and without opened door
- At the central semicircular square
- Along the perimeter of the Quad

Discussion

The Quad's ambience is inadequate and lacks coherence: The main observations from the night-time survey can be summarised as follows:

Current lighting set-up lacks structure and provides inconsistent lighting conditions.

Heritage lamps provide enhanced light levels in their immediate surrounding but fail to address dark areas further away.

The observatories lack dedicated lighting.

On several buildings along the perimeter of the Quad light seeps onto the immediate area in harsh contrast with neighbouring dark spots.

The south side of the quad relies almost completely on the light spill from the surrounding buildings. Uneven floor surfaces in combination with random lighting presents a serious tripping hazard.

Colour temperature of lights is arbitrary and varies from source to source in range from colour changing to 3000K - 5500K

Existing facade lighting is poorly maintained and many floodlights have failed creating a patchy and uneven lit effect on the facades.

Space for social interaction is not clearly defined so the Quad feels more like a pass-through area after dark.

Floor surfaces are uneven with some areas featuring narrow open rainwater drainage channels. These are not clearly visible in the current conditions and present a trip hazard.

The colour-changing floodlights at the portico draw attention to it, making the actual entrances less noticeable and challenging to locate.

Entrances lack dedicated lighting, relying on interior illumination when the doors are opened to indicate their presence.

The existing uplights to the portico plinths have failed, leaving the lower part of the Wilkins' iconic design without definition at night.

A lot of the other existing feature lighting has failed. With the tree uplights being off, the wider landscape lacks in any visual interest and texture, apart from the festoons by the entrance

Conclusions

Current lighting arrangement does not provide adequate lighting conditions throughout the Quad.

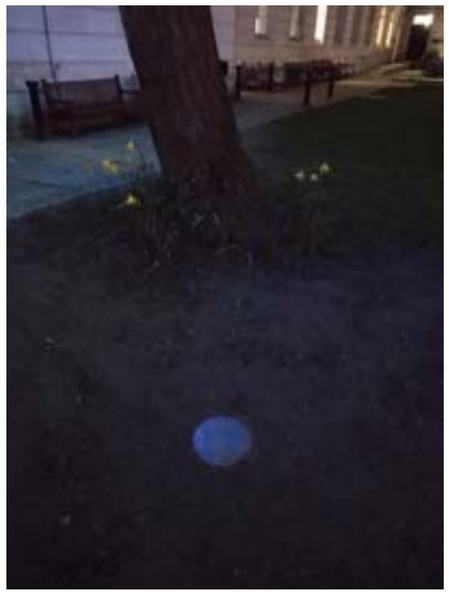
Lighting of the pedestrian ares does not support safe movement as it relies on the spill light from surrounding buildings. This is especially evident at entrances where the levels are way below recommended light levels by British Standards.

Lighting lacks unity and visual clarity, failing to capture the Quad's character and to meet specific needs of this area such as to aid orientation, create a welcoming atmosphere and promote further engagement with the space.

Current state of facade lighting does not do justice to the buildings and will be at odds with the new landscape interventions unless maintained (cleaned and re-lamped as a minimum).

Main Quad - Lighting Survey Photos

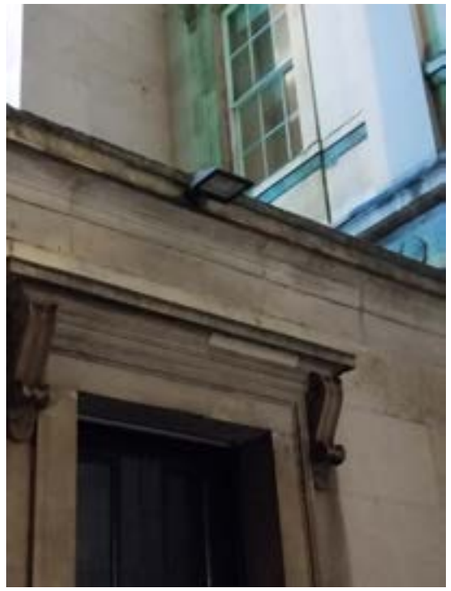
Some of the festoons were off



None of the tree uplights were operational

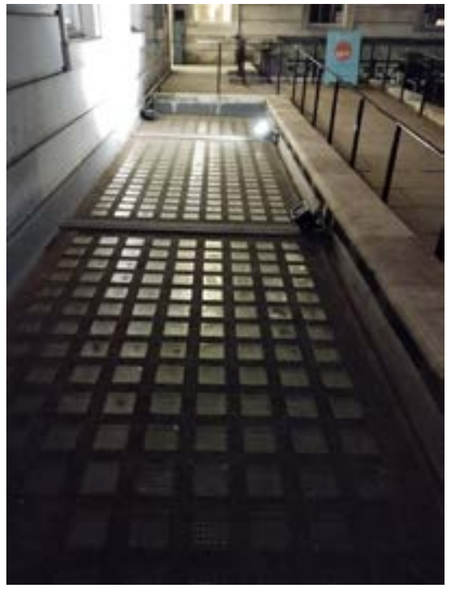
None of the Portico plinth uplights were operational

Wall mounted luminaires, presumably for emergency escape



Facade mounted flood lights, presumably for emergency escape

Some entrances had additional emergency bulkheads



Not all facade lights were in working order, which created a very patchy facade lighting effect

Areas with no spill light from the windows were visibly darker than areas with internal illumination switched on. The resultant high contrast is hazardous.

Table of contents

1 Introduction

Introduction

This report is the lighting document for interior lighting to support Planning and Listed Building Consent application. The following pages describe the lighting design for the Wilkins Building as part of the UCL Bicentennial project. BDP Lighting has been tasked to develop the detailed design for artificial lighting that will contribute towards creating a world-class environment for students, academics, staff and visitors.

The Wilkins Building houses a series of spaces, very flexible in their usage. This chapter describes the intent for the illuminated environment for each space and details the luminaire typologies to be used, as well as lighting controls. It outlines the requirements for light levels and emergency lighting.

2 Design Criteria

2.1 Performance objectives

The aim for the lighting will be to:

- Provide a flexible lighting solution that can accommodate the current and future needs of the UCL Wilkins building being cognisant of the driving architectural concept;
- Illuminate the vertical surfaces during the day wherever appropriate, to maximise perceived brightness;
- Create a welcoming, vibrant and visually interesting environment with focus on flexibility;
- Support the UCL identity as a top, global university in the heart of London;
- Enhance and compliment the architecture. Reveal and highlight specific architectural elements, as appropriate, to improve the users' perception of the building;
- Integrate and conceal lighting equipment wherever possible - ensuring that the quality of the lit effect (i.e. brightness and colour of interior surfaces) is never compromised;
- Manage views (particularly long views) to keep contrast ratios within comfortable ranges, thus limiting eye-strain and providing opportunity for visual relief;
- Control the lighting to provide illumination suitable for the task or activity occurring in each space, including normal, security and maintenance operations, while also minimising energy consumption, maximising the life of lighting equipment and keeping maintenance requirements as low as possible;
- Changing light scenes throughout the day to support changing daylight conditions and activities taking place.

2.2 Design parameters

The following mandatory, legislative and regulatory requirements, British Standards, Codes of Practice and Best Practice professional guidance publications will form the parameters of the lighting installation:

- Code for Lighting. CIBSE/SLL, 2012
- Building Regulations, Approved Document L2A: Conservation of Fuel and Power in New Buildings Other then Dwellings. HM Government, 2010
- BS EN 12464-1:2021 - Light and Lighting - lighting of indoor work places.
- BS EN 12464-2:2014 - Light and Lighting - lighting of outdoor work places.
- BS EN 8300-2:2018 - Design of an accessible and inclusive built environment. Buildings
- CIBSE Lighting Guide 12 - 2022 - Emergency Lighting Design Guide.
- BS 5266-1 2016 - Emergency lighting - Code of practice for the emergency escape lighting of premises.
- UCL Estates Standards - Employer's Requirements and Design Standards for MEP services. V9.0, Oct 2022
- UCL Fire Technical Note No:020, Jan 2015

The aforementioned guides, standards and codes of practice have informed the lighting requirements described in this document.

2.3 Colour rendering

To enhance all spaces and to complement the incoming natural light, good quality colour rendering is recommended for the Wilkins building lighting scheme. All areas must have light sources with a colour rendering index (CRI) of Ra ≥90.

2.4 Lighting calculation

Interior design information, available to BDP, has been limited at this stage, therefore the values stated below have been used for the lighting calculations. These figures are based on BS 8206:2 Further coordination at stage 4 is required to ensure the lighting design criteria will still be achieved as and when all room finishes have been finalised.

- Acoustic white/painted white: 70%
- General painted walls: 50%
- Glass: 6%
- General floor: 20%

Calculation planes height and dimensions::

- Workplace task plane: 0.75m AFFL, typically 0.6x0.6m square

- Circulation areas and WC's. Floor level

The wall offset zone for any task plane intended to span an entire space is 0.5m. Any task plane types not listed here will be assessed according to the activity taking place.

During stage 3, calculations have been undertaken to ensure the proposals will work technically. These calculations have involved modelling the various spaces and simulating the lit environment using DIALux Evo 12.

2.5 Maintenance factor

The maintenance factor (MF) is a correction factor applied to an internal or external lighting installation to account for the depreciation in light levels over a given design life. Maintenance includes replacement of failed or deteriorated light sources and control gear, the cleaning of luminaires, the cleaning of room surfaces and early failures of light sources.

Taking values from Table 2.2.1 in the British Council for Offices Guide to Lighting, the following maintenance factors have been assumed for the Stage 3 development:

- In areas with predominantly direct illumination and a variable cleaning regime for both room and luminaire, a value of 0.80 has been used;

- In areas with predominantly direct/indirect lighting and a variable cleaning regime for both room and luminaire, a value of 0.81 has been used.

2.6 Emergency lighting

The purpose of the emergency lighting remains to provide safe egress out of the building in the event of normal mains power failure. In general emergency lighting shall be provided mostly by:
Dedicated stand-alone, non-maintained emergency luminaires that will automatically switch on in the event of a mains power failure

In areas where the emergency lighting requirements cannot be met by the stand-alone luminaires there will be in use:

- Normally operational luminaires that will automatically switch to emergency power supply in the event of a mains power failure

- The emergency lighting supply will operate the lamps for a duration of three hours. If the luminaires are not operating at the time of mains failures then the lamps will be automatically ignited to provide emergency lighting.

- Generally, emergency lighting will be provided by the use of 'self-contained' battery packs, located within 1000mm of the luminaires.

- All batteries are to feed-back report to the University Addressable Self-Testing System as per UCL design particulars.

- Emergency lighting luminaires located to the exterior of the building at final emergency exit points already exists and it is proposed that this is maintained and used.

The following outline performance requirements have been used for the Wilkins building emergency lighting strategy:

- Open areas (anti-panic lighting): A minimum of 1 lux must be achieved at any point on the floor within a central core area which excludes a border of 0.5m from the wall or any fixed obstructions.

- Escape route: A minimum of 1 lux must be achieved at any point on the 2m wide central line of the escape route. 0.5 lux must also be achieved over 50% of the entire width of the scape route.

Useful information and points of note regarding the emergency lighting:

- A full risk assessment must be conducted in stage 4 by the relevant person in conjunction with the "responsible person" on the client body. This will then inform any special emergency lighting requirements.

- The location and specification of the emergency exit signage is excluded from the scope of works of this document and is part of the architects scope of works - this should be included as part of stage 4 works on electrical drawings and not on lighting drawings.

- Whilst exit signs are not covered in this document, the cost plan should make allowances for wiring to internally illuminating signs.

- The emergency lighting design is assuming that all emergency signs will be internally illuminated and we advise against using externally illuminated or photoluminescent signs.

- A complete emergency lighting strategy will be developed at the next stage of the project.

3 Lighting Controls

3.1 Types of lighting controls

Utilising a lighting control system within a project such as the Wilkins Building has numerous benefits, including:

- Reduced energy consumption and in-turn, reduced running costs;
- Increased life of light fittings;
- Contributions towards sustainability credits;
- A flexible lit environment that can be tuned and customised to the needs of the users.

Building management and control systems can be extremely complex, but fundamentally, lighting control of a space can be categorised as a typology. The primary typologies for the lighting control within the Wilkins building are listed below. A space may feature one or several following:

- Absence detection: Luminaire(s) are manually switched ON by occupants and remain on as long as movement is detected. If no movement is detected for a predetermined period of time (typically 20 minutes), the luminaires will step down for 2 minutes and then finally switch OFF. The time-out periods above can be modified prior-to or during commissioning or post occupancy. Typically absence detection means switches are required.
- Daylight sensing: This method will automatically adjust the artificial light levels accounting for any natural light entering a space. The, luminaire dimming percentages should be graded so there is a gradual transition between natural and artificial light.
- Timeclock automation: Automated programming based on an astronomical timeclock. Luminaire(s) are programmed to switch ON/OFF or dimmed levels at predetermined time periods throughout day. Adjustment for daylight saving can happen automatically and this system can be linked with a daylight photocell on the roof to trigger switching/ dimming based on artificial changes.
- Scene setting: Each luminaire in a space is assigned to a group allowing for allocation to a specific light scene. Each luminaire group(s) will be dimmed to a preset output creating distinct scenes for different uses. Generally scenes are set during commissioning but can easily be modified at any time during post occupancy. Scenes can be set to trigger at a predetermined time but there is typically also manual control allowing users to select their desired preset most appropriate to the use of the space. This is usually via a scene plate(s) at key locations and/or a wireless device. Scene setting is to be programmed in conjunction with a control schedule produced in Stage 4 indicating luminaire groupings and corresponding dimming percentages for each.

On each area-by-area overview page in this report, an outline control philosophy is marked indicating the control typologies anticipated in the space.

3.2 Stage 3 control considerations

- Operations Brief: This document outlines the control philosophy for each space and is based on experience, assumptions and best practise. Given the flexible nature of the multifunctional rooms it is highly recommended that the Client forms and ‘operational brief’ for selected spaces. This will help inform the lighting control design in Stage 4.
- Equipment compatibility: LED technology uses a wide variety of electrical components from a variety of suppliers. As such, it is crucial that luminaire, driver (if required) and building-wide control system are checked for compatibility to avoid issues with dimming and control. It is strongly recommended that the appointed electrical contractor undertakes checks with suppliers of all lighting and associated electrical equipment to ensure the equipment is compatible. Note: UCL’s design guidance specifies preferred control systems suppliers to be used on this project.
- Dimming: All luminaires specified as dimmable in the schedule must be connected to compatible dimmable control gear. Dimming must be smooth and flicker-free, with the ability to achieve a range of measured dimming percentages.
- Sensor types locations and coverage: The type of light sensors (PIR, Microwave etc) should be selected carefully based on the space, its occupants and the expected use. Multi-sensors could also be considered should the Client wish to incorporate CO2, temperature, occupancy etc. The quantity and location of all the sensors within a space must be adequate to achieve the required range of coverage. The controls supplier should provide full control equipment drawings outlining sensor type and location, demonstrating complete coverage.

3.3 Building perception at night

Switching hour should be considered carefully, not just in terms of operations and energy efficiency but also how the building presents itself to the surrounding environment after dark. From an ethical standpoint, the environmental credentials of UCL could be scrutinised depending on how the building looks at night. Switching cycles should be tailored to the use of the building. If 24h operation is not expected or needed a switching cycle should be pre-porgrammed in the automated control system.

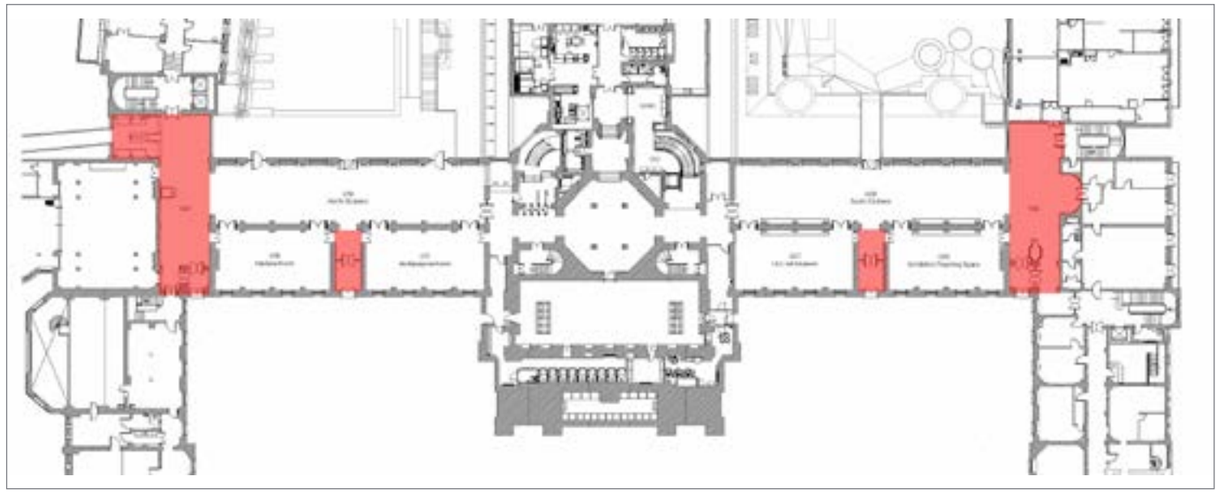
4 Concept

4.1 Overall concept

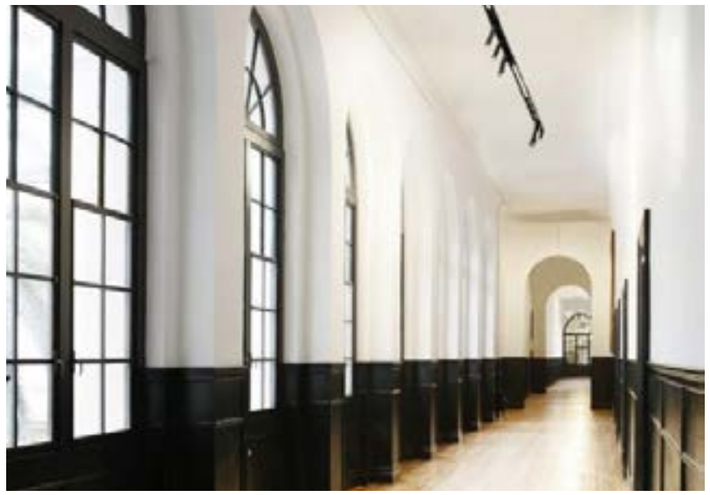
Functionality and flexibility are the key drivers for the new lighting for the Wilkins building. All the areas included in the Bicentennial project will be used for multiple functions and by multiple user groups throughout the academic year. Therefore the lighting must be able to respond accordingly and quickly, and easily be tailored to both everyday mode use and events mode use.

The lighting will utilise the feature ceiling element design by the architectural team that will be the connecting thread through all spaces. Track-mounted luminaires will be integrated in the ceiling feature. They will be a family of fittings, a combination of linears and spots that through different optical properties will produce a combination of soft diffused lighting for general use and accenting for events. A sophisticated control system will enable users to switch between different pre-programmed scenes which produce different lit effects and light levels to suit the events taking place.

5 Area by Area Lighting



Key plan of entrances, vestibules and lobbies



Precedent image of a hall with track lighting with linear lights and spotlights

Precedent image of a round pendant light

Precedent image of track lighting with linear insets and spotlights in a historic hallway

5.1 Entrances, Vestibule and Lobby

The entrances, vestibules and lobbies will all utilise the same track system with associated luminaire family. All elements will be interchangeable and they will provide a combination of diffuse and accent light.
The lobbies to the central Cloister entrances have an existing coffered ceiling. As a linear track system will not be appropriate there, a different luminaire typology will be utilised. Slim, pendants with diffuse direct/ indirect lighting will provide light to the floor as well as an accent to the ceiling coffer. The pendants will be carried through in both small lobbies for consistency, differentiating them from the strong conceptual language of the Cloisters.

Lighting requirements:

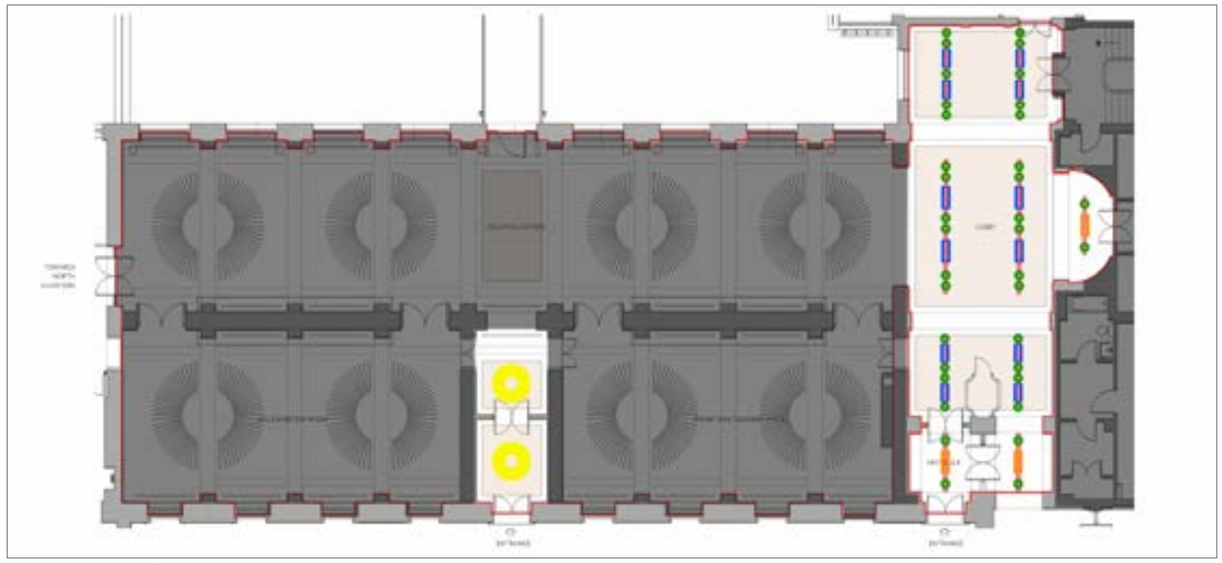
Everyday mode	100lx
Event mode	250lx

Installation requirements: The track system will be recessed in the new ceiling rafts suspended just below the existing ceilings. The pendants to be suspended at 4000mm AFFL.

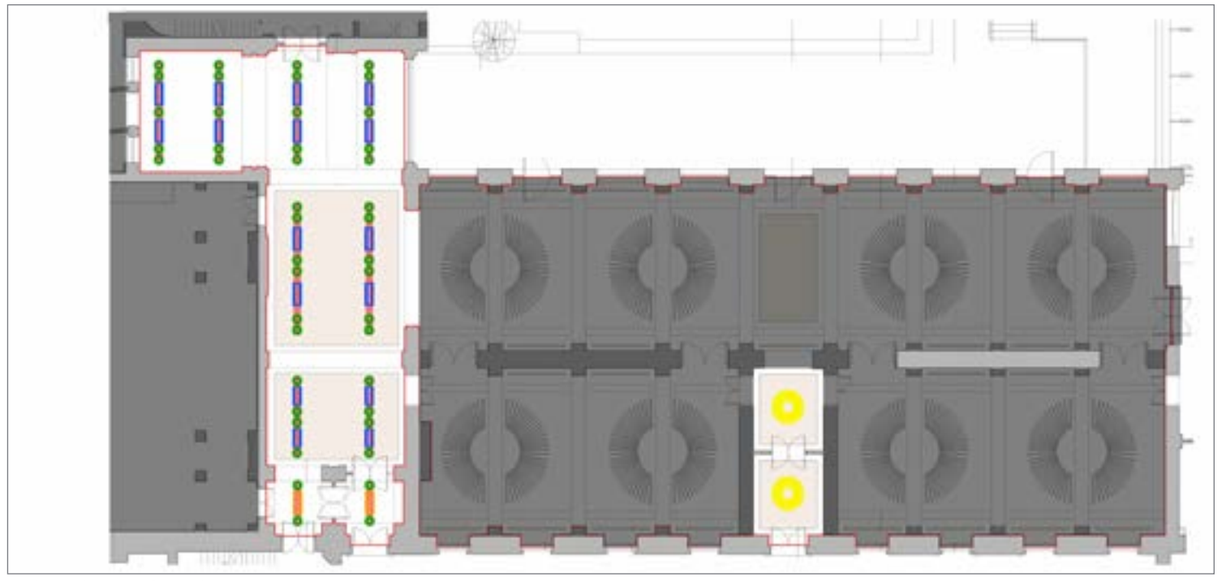
Control requirements: The luminaires in the entrances, vestibules and lobbies to be controlled together as part of the overall control system for the project. The lighting here should be switched on and off via an astronomical timeclock during the main opening hours for the building. Suggested timings 07:00-21:00 (UCL to ocnfirm). Before and after this time the lighting to be controlled via presence detectors on a step-dimmed configuration. If presence has not been detected for 10mins the lighting dims down to 50%. After a further 10mins of no activity the lighting either switches off or dims down to 10%. Timings and dimming levels can be adjusted during the commissioning process.

Emergency lighting requirements: 1lx to centre line of escape route.

Entrances, Vestibule and Lobby - Lighting Layout and Luminaires



Lighting layout of circulation areas in South Cloisters



Lighting layout of circulation areas in North Cloisters

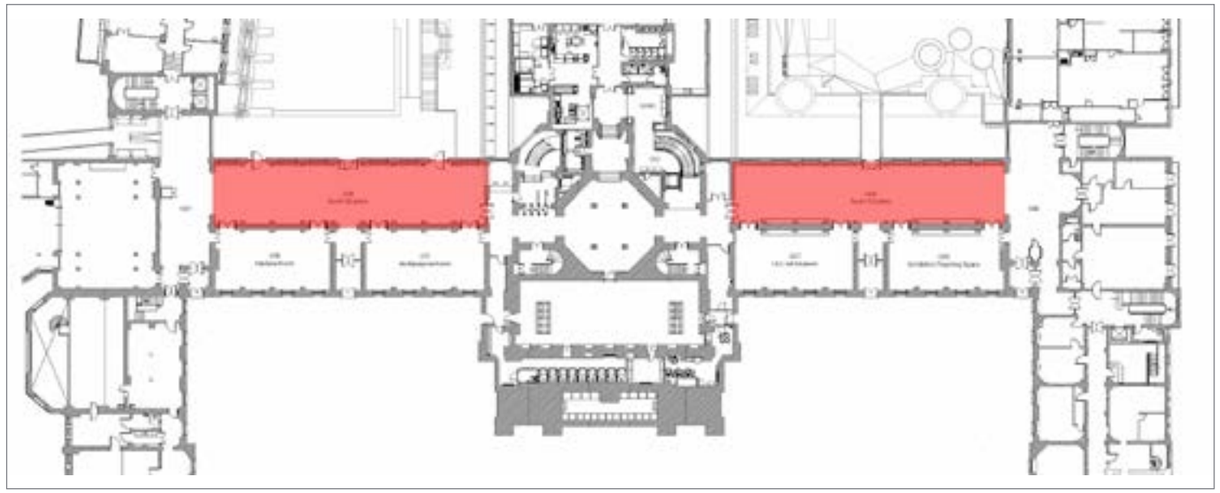
Description: Round pendant with direct indirect distribution & opal diffuser
Specification: XAL | Vela Suspended 600
Performance: 4350lm | 45W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Ceiling recessed, trimless, magnetic track
Specification: XAL Lighting | Move IT 45
Performance: N/A
Colour temperature and Ra: N/A
Control: Dali2

Description: Spotlight inset for magnetic track, tiltable and rotatable with medium beam
Specification: XAL Lighting | Just Move IT 45
Performance: 753lm | 11.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Length 1200mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 1270lm| 18.3W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Length 600mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 636lm | 9.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable



Key plan of North and South Cloisters

Image showing modern pendant lighting in a historic hallway

Precedent mages of track lighting with linear insets and spotlightsbetween wooden slats

Image showing wall-wash lighting

5.2 North and South Cloisters

There are two main components to the lighting in the North and South Cloisters - lighting integrated in the ceiling feature and lighting to the periphery of the spaces.

The luminaires that are integrated in the ceiling feature are suspended tracks with linear and spot components. The luminaires on the periphery are track-mounted linear luminaires. All the luminaires will be from the same family and therefore will also be interchangeable. They will provide a combination of diffuse and accent light. By switching between the different components, different light scenes and light levels will be achieved.

Note: An allowance should be made for lighting integrated in the new display cabinets housing the AV screens and museum artefacts. Final specification and quantities pending on receipt of architectural display cabinet design drawings.

Lighting requirements:

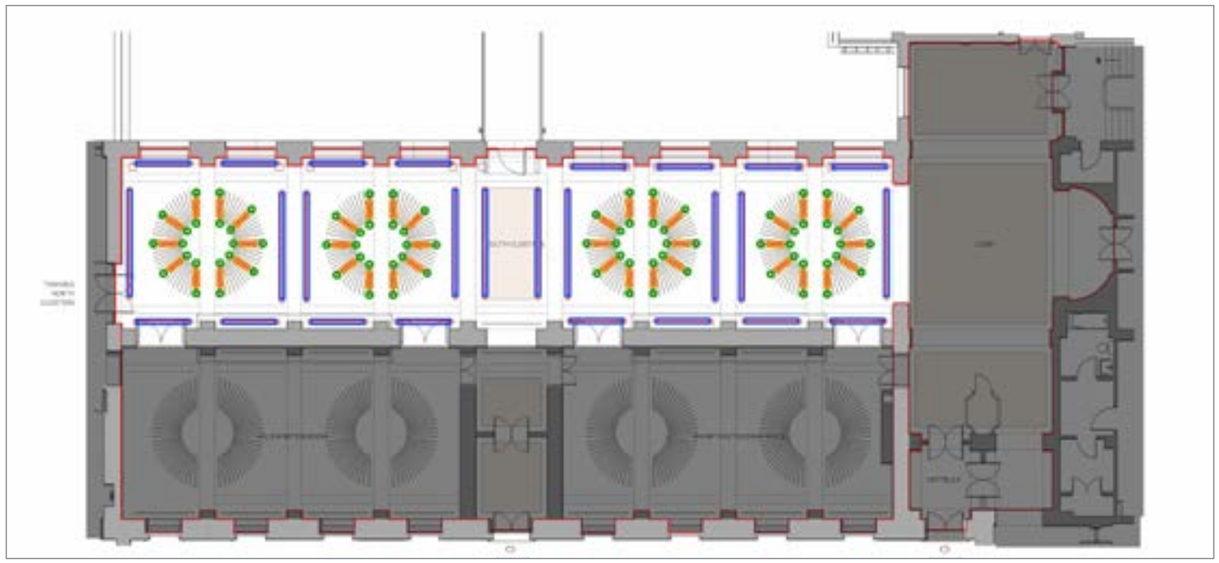
Everyday mode	200lx
Event mode	350lx

Installation requirements: The track system in the ceiling feature will be integrated within the ceiling construction. The linear luminaires in the periphery will be suspended from the ceiling level with the ceiling rafts.

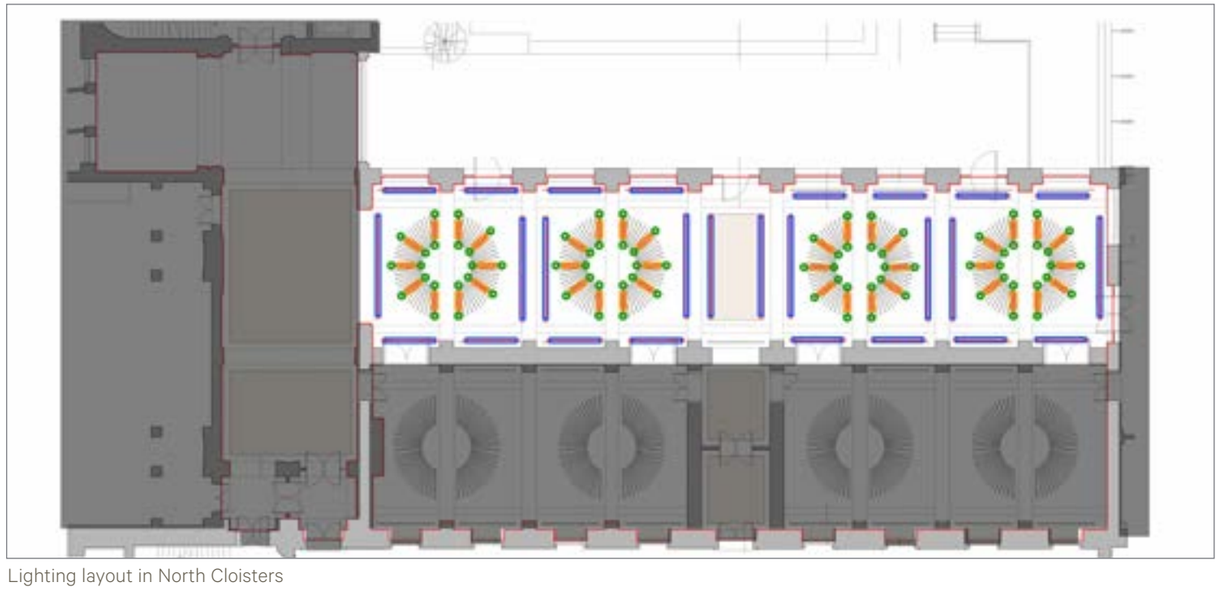
Control requirements: The luminaires in the Cloisters to be controlled together as part of the overall control system for the project. The lighting here should be controlled via automated scene setting and should have override control panels wall mounted in discreet locations by the entrances. The automated scenes to be triggered by input from roof mounted photocells (for daylight harvesting)and astronomic timeclock. Every luminaire group to be controlled separately.

Emergency lighting requirements: 1lx to centre line of escape route.

North and South Cloisters - Lighting Layout and Luminaires



Lighting layout in South Cloisters



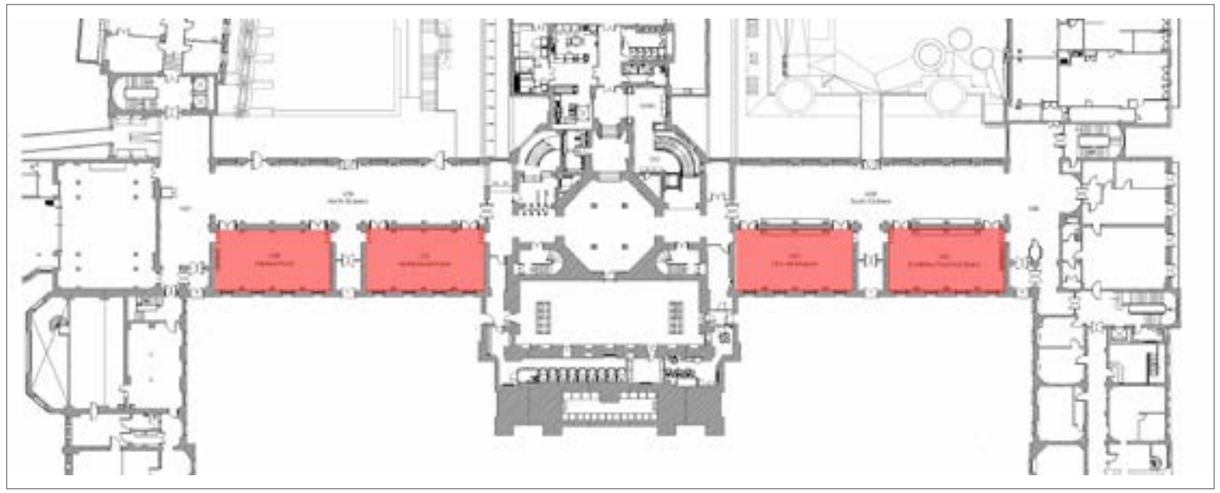
Lighting layout in North Cloisters

Description: Ceiling recessed, trimless, magnetic track
Specification: XAL Lighting | Move IT 45
Performance: N/A
Colour temperature and Ra: N/A
Control: Dali2

Description: Spotlight inset for magnetic track, tiltable and rotatable with medium beam
Specification: XAL Lighting | Just Move IT 45
Performance: 753lm | 11.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Length 1200mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 1270lm| 18.3W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Length 600mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 636lm | 9.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable



Key plan of North and South Cloisters

Image showing radial linear lights with track lighting in a lecture hall

Image showing radial track lighting in an informal setting

Image showing an opportunity to incorporate lighting in fixed display cabinets

Oportunity for RGB lighting within cornice detail

5.3 Multifunctional Rooms

The multifunctional rooms will be lit by the same principles as the Cloisters. There will be lighting integrated in the ceiling feature and lighting to the periphery of the spaces. The luminaires that are integrated in the ceiling feature are suspended tracks with linear and spot components. The luminaires on the periphery are track-mounted linear luminaires. The only significant difference is that the density of the track in the ceiling feature will be higher in these rooms to ensure that light levels are adequate for any number of uses that the rooms can be put to. By switching between the softer linear components and the directional spotlights varying lit environments will be created. The periphery lights will also be controlled separately to the ceiling feature lights and by switching between them the atmosphere of the rooms can be altered quite dramatically.

Note: An allowance should be made for lighting integrated in the new display cabinets housing the AV screens and museum artefacts. Final specification and quantities pending on receipt of architectural display cabinet design drawings.

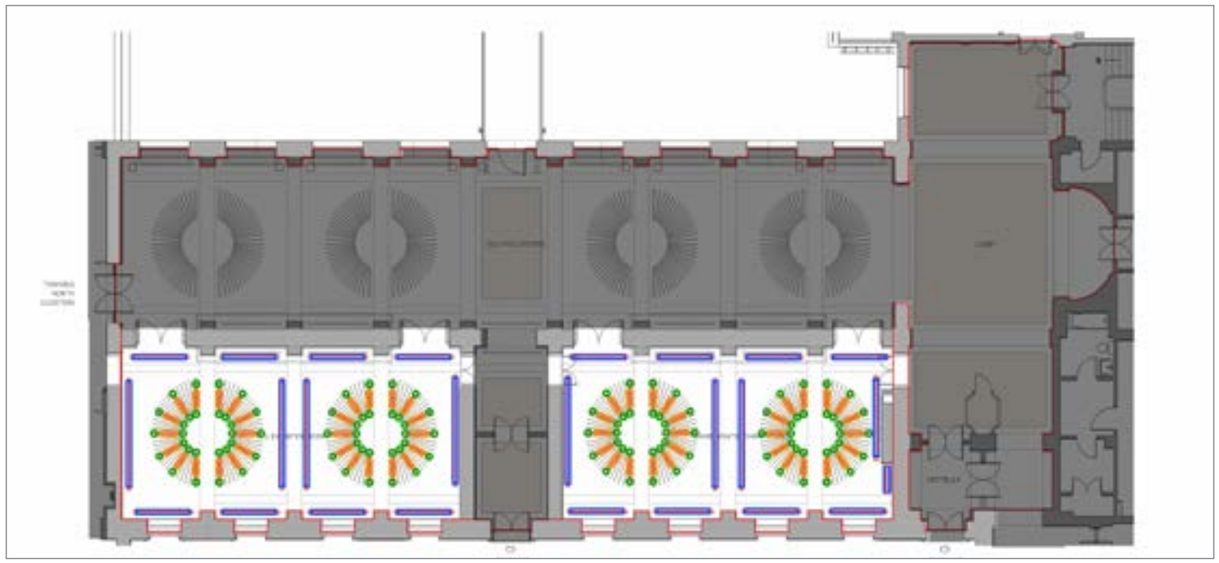
Lighting requirements: Everyday mode -250lx; Event mode -450lx.

Installation requirements: The track system in the ceiling feature will be integrated within the ceiling construction. The linear luminaires in the periphery will be suspended from the ceiling level with the ceiling rafts.

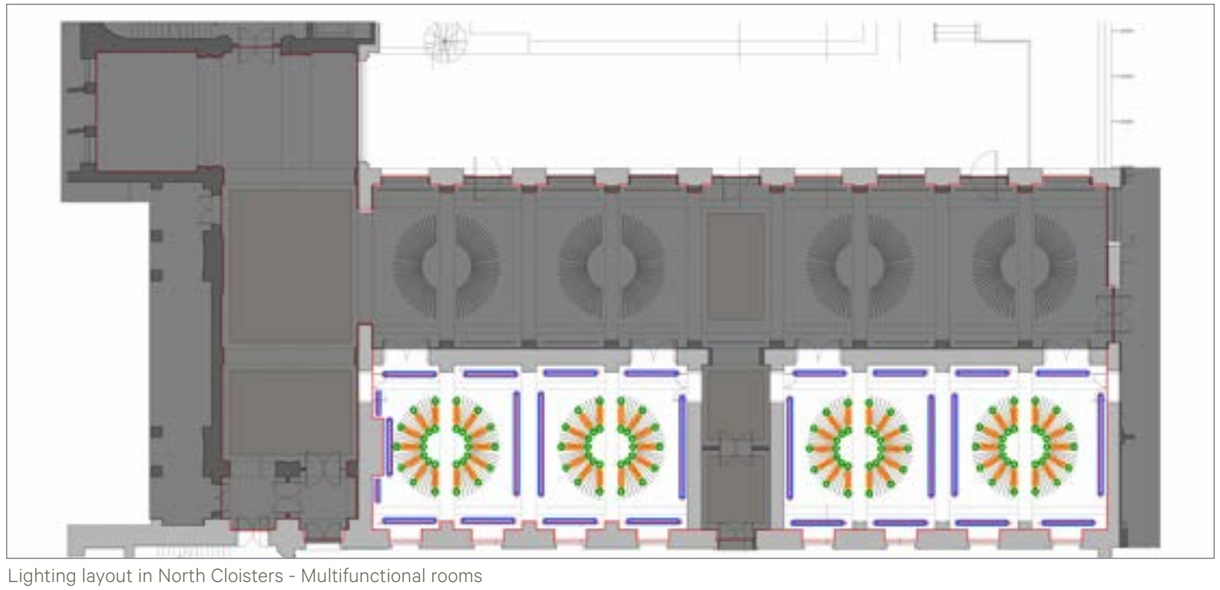
Control requirements: The lighting should be controlled via automated scene setting and should have override control panels wall mounted in discreet locations by one of the entrances. The automated scenes to be triggered by input from roof mounted photocells (for daylight harvesting) and astronomic timeclock. Every luminaire group to be controlled separately. Absence detection on a step-dimmed basis also to be employed to ensure the lights do not stay on when the rooms are vacated.

Emergency lighting requirements: 1lx to the open area;

Multifunctional Rooms - Lighting Layout and Luminaires



Lighting layout in South Cloisters - Multifunctional rooms



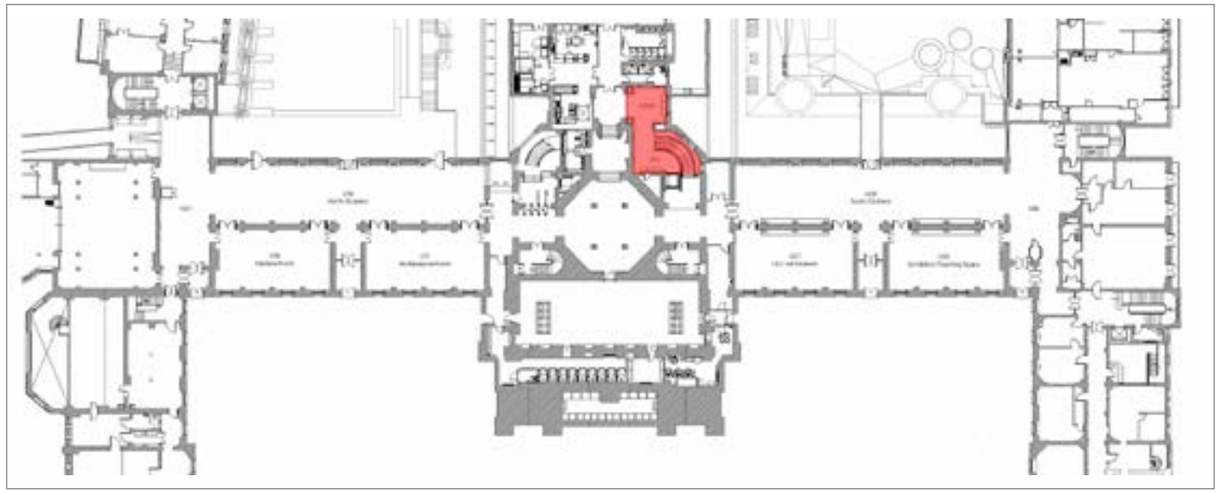
Lighting layout in North Cloisters - Multifunctional rooms

Description: Ceiling recessed, trimless, magnetic track
Specification: XAL Lighting | Move IT 45
Performance: N/A
Colour temperature and Ra: N/A
Control: Dali2

Description: Spotlight inset for magnetic track, tiltable and rotatable with medium beam
Specification: XAL Lighting | Just Move IT 45
Performance: 753lm | 11.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Length 1200mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 1270lm| 18.3W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Length 600mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 636lm | 9.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable



Key plan of Level access to JBR with Whistler room

Precedent image of handrail integrated staircase lighting

Image showing track lighting for display and general illumination

Image showing lighting integrated into display cases

5.4 New Level Access

The new stair will be lit by continuous LED strips integrated in the handrails on both sides of the balustrades. This low level methodology guarantees good illumination to the stair treads and is easy to maintain locally without the need for high level access.

The landings on both lower ground and ground floor will be lit with surface mounted track from the same family as the Cloisters. A combination of linear and spot inserts will give ambient lighting to the circulation route as well as allow for accent to the Whistler reliefs that will be displayed on the walls.

The display cabinets should have integrated accent lighting as well, in the form of diffuse, homogenous LED strips hidden from direct view in the joinery.

Lighting requirements: Circulation -100lx; Stairs -150lx.

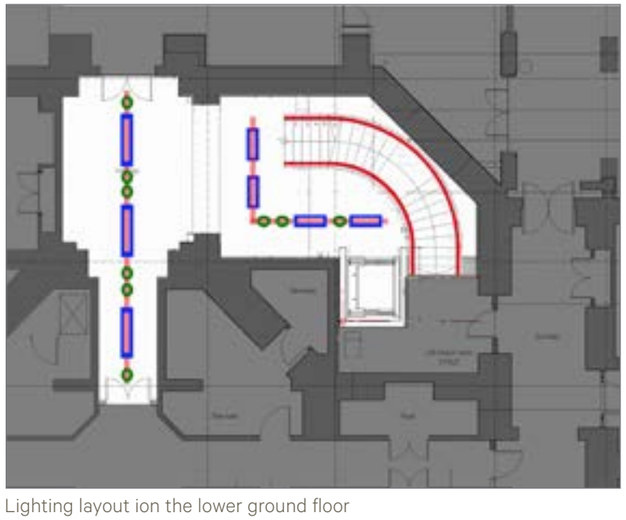
Installation requirements: The track system can be recessed in the new ceiling or surface mounted to the existing ceilings.

Control requirements: The luminaires in stair and landings to be controlled together as part of the overall control system for the project. The lighting here should be switched on and off via an astronomical timeclock during the main opening hours for the building. Suggested timings 07:00-21:00 (UCL to ocnfirm). Before and after this time the lighting to be controlled via presence detectors on a step-dimmed configuration: If not presence has been detected for 10mins the lighting dims down to 50%. After a further 10mins of no activity the lighting either switches off or dims down to 10%. Timings and dimming levels can be adjusted during the commissioning process.

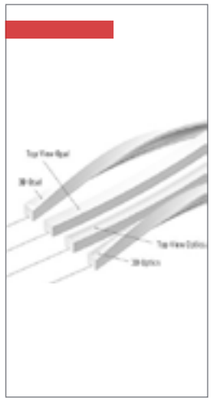
Emergency lighting requirements: 1lx to centre line of escape route if required as part of the escape strategy.

New Level Access - Lighting Layout and Luminaires

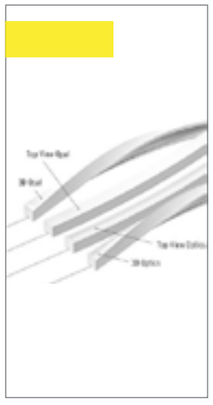
Lighting layout on the ground floor



Lighting layout ion the lower ground floor



Description: Flexible high output LED light line for indoor use. Mounted within staircase handrail
Specification: LED linear | Venus
Performance: 615lm/m | 10W/m
Colour temperature and Ra: 2700K | 85+
Control: Dali dimmable



Description: Flexible high output LED light line for indoor use. Mounted in joinery architectural detail.
Specification: LED linear | Venus
Performance: 270lm/m | 5W/m
Colour temperature and Ra: 2700K | 85+
Control: Dali dimmable

Description: surface mounted or recessed magnetic track
Specification: XAL Lighting | Move IT 45
Performance: N/A
Colour temperature and Ra: N/A
Control: Dali2

Description: Spotlight inset for magnetic track, tiltable and rotatable with medium beam
Specification: XAL Lighting | Just Move IT 45
Performance: 753lm | 11.2W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Description: Linear light inset with low UGR for magnetic track. Lengths 600mm and 1200mm
Specification: XAL Lighting | Microprism Move it 45
Performance: 636lm | 9.2W/ 1270lm| 18.3W
Colour temperature and Ra: 3000K | 90+
Control: Dali dimmable

Appendix 1 :

Colour temperature Strategy

Throughout the day, the perceived colour temperature of natural light changes, transitioning from very warm at sunrise, to very cold at midday, finally returning to very warm at sunset. This is a naturally occurring cycle that humans have evolved with for millions of years.

When it comes to artificial lighting, colour temperature of white light is selected at a specification phase and has a profound effect on the feel of a space. Cooler colour temperatures are generally associated with daytime, alertness, efficiency. Warmer colour temperatures have a more relaxing, welcoming and intimate perception and are much better suited to leisure spaces and evening use.

The recommended colour temperature for the Wilkins building lighting design is 3000K. This is a somewhat warmer colour temperature than what is normally recommended for teaching and work spaces (4000K). This will help to visually separate the Cloisters and associated new rooms from the functional spaces of the rest of the Wilkins building and give them a welcoming, softer atmosphere. Whilst a warmer colour temperature is more indusive to relaxation, 3000K is not so warm so as to appear out of place in a multifunctional environment.

BDP.

16 Brewhouse Yard, London EC1V 4LJ July 2024