

UK Head Office

Whitecroft Lighting Ltd
Burlington Street
Ashton-Under-Lyne
Lancashire OL7 0AX

T +44 (0)161 330 6811
F +44 (0)161 331 5855
email@whitecroftright.com

Rep. Ireland Office

Ireland Office
Fagerhult Ltd
F1 Calmount Park
Ballymount, Dublin 12
Ireland

T +353 (0)1 426 0200
F +353 (0)1 429 9606
info@fagerhult.ie
www.fagerhult.ie

London Customer Centre

Whitecroft Lighting Ltd
102-108 Clerkenwell Road
London
EC1M 5SA

T +44 (0)161 330 6811
F +44 (0)161 331 5855

Middle East Office

Fagerhult Middle East
P.O. Box 126287
Dubai
United Arab Emirates

T +971 (0)4 3297120
F +971 (0)4 3297130
info@fagerhult.ae
www.fagerhult.ae

Whitecroft
lighting

Whitecroft
lighting

whitecroftright.com

Education
Lighting



The importance of lighting in modern-day education simply can't be underestimated. A critical element of the learning environment, it must create a positive setting and meet the needs of flexible learning spaces. Today's education lighting and control solutions must be suited to the latest building techniques, reducing installation time whether in rapid on-site programmes or modular off-site builds.

Contents

General and Practical Learning

Classrooms	6
Lecture Theatres	10
Libraries and Study Areas	12
Research and Laboratories	14

Social and Recreation

Sports Facilities	16
Dining and Breakout	18
Circulation Space	20

Supporting Facilities

Administration and Ancillary	22
------------------------------------	----

Safety and Control

Lighting Controls	24
Outdoor Amenities	26
Emergency Lighting	27

From our early years through to adulthood, education is an integral part of our daily lives. It's therefore imperative to provide effective, stimulating and comfortable environments that will help and encourage the learning process. At Whitecroft Lighting we understand that both artificial and natural daylight are important in achieving the goal of any educational establishment.

Throughout this lighting guide we look at the different areas that are key to any educational development, assessing the varying needs of these spaces, and the four key pillars that underpin our education lighting and controls proposition.



User Experience

The main purpose of any lighting scheme is to enable people to undertake their task effectively in a comfortable and safe environment.

The lighting scheme should be appropriate for the users – in this instance staff and pupils – and take into account all aspects, such as age, when settling on the required solution. By definition, learning spaces are multidisciplinary, multi-task areas. For this reason all teaching surfaces (desks, interactive whiteboards, walls) and teaching methods, whether verbal or digital, must be considered.

Technology in tunable white luminaires and app enabled lighting control solutions are opening up new opportunities (backed by increasing research) for the designer to create truly inspiring environments.



Lighting Standards and Compliance

Modern-day educational establishments are not two - dimensional environments.

A fact often recognised not least by schools, colleges and universities. To simply provide a light level on the horizontal plane is not enough.

The standards set targets throughout all areas of an educational premises for, amongst other things, daylight, cylindrical illuminance, surface illumination, discomfort glare and disability glare. The speed and change in technology gives the designer opportunity to use these guidance documents as they are intended - a mere starting point for a lighting design rather than the solution itself.

CIBSE LG5:
Lighting for Education

BS EN 12464-1:
Light & Lighting –
Indoor Work Places
BS EN 12464-2:
Light & Lighting –
Outdoor Work Places

BS5266 - Part 1:
Code of practice
for the emergency
lighting of premises

**ESFA Output
Specification**
Annex 2E – Daylight
& Electric Lighting

BS EN 12193:
Light & Lighting
– Sports Lighting

Building Bulletins:
BB90, BB102, BB93

Building Regulations:
Parts B & L

**Energy Initiatives
& Financing:**
BREEAM
Enhanced Capital
Allowances, Salix
Finance, SKA Rating



Design Optimisation

Design optimisation can only be delivered alongside compliance and consideration of the user. It is false economy for a solution and scheme to be selected simply on cost.

Selecting products designed with the education sector at the forefront of the design ethos will deliver the best possible scheme along with true value and cost performance. More than simply meeting the required metrics these solutions will consider integration into the building fabric, daylight, installation, controllability, commissioning and their ongoing maintenance.

The lighting and control solutions that have been specifically designed for the education sector are demonstrated throughout this guide.



Energy and Sustainability

The most energy efficient and sustainable solutions are those designed for the life of the installation. Within any lighting discussion, design responsibility should consider the following aspects:

- Incorporating the latest LED technology to maximise luminaire efficacy
- Luminaire performance over life including maintained light levels ('L' value), colour shift and driver performance
- Effective lighting controls and reconfiguration of lighting and control systems
- Monitoring of lighting energy consumption, emergency lighting, testing and reporting

Flexible learning spaces

Classrooms are the centre of any learning establishment and the most commonly occupied space. The activities undertaken in these learning areas are many and varied and, regardless of the task or age of the user, lighting must accommodate this diversity. Lighting standards reflect this with a requirement to comply with a defined set of metrics including horizontal, wall and cylindrical illuminance, for each application.

On a day-to-day basis, tasks will vary from desk-based activities to those undertaken on the classroom wall. Tasks can be both written and digital and the lighting solution should not only provide sufficient illumination on the desk to perform the task, but also consider vertical illuminance.

Lighting control also has an important role to play in a learning space. It must be intuitive, simple and logical to the user as well as deliver energy saving benefits such as maximising daylight harvesting and the inclusion of an occupancy strategy, typically absence detection.

As learning space use can change throughout the day or over time, evening study for example, the lighting control solution be adaptable and configurable so that changes can be made with minimal impact.

Visual Acuity within any teaching space communication both from a single point in a classroom or via close one-to-one work is crucial. The standards achieve this by documenting cylindrical illuminance and modelling targets.

Comfort & Safety - delivering comfortable and safe spaces to support learning is critical in any teaching space. Using low glare lighting solutions will aid productivity and concentration, reduce fatigue, reduce hazard risk and limit veiling reflections on monitors and other digital teaching aids. The standards define targets for both disability glare (luminaire luminance limits, cd/m2) and discomfort glare (UGR) to ensure a comfortable learning environment.

Lighting Criteria

CIBSE LG5 and BS EN12464-1 both set the required standards for lighting levels in classrooms and typical convention requires that lighting should be dimmable. The tables opposite describe the specific levels for each type of classroom. Lighting guidance states a minimum IP rating in practical learning spaces of IP44.



Mercia School, Sheffield



Cascade LED



Stylus Comfort



Selene Suspended



Foil Radiant



Foil XS-Line

CIBSE LG5

Classroom

Average Illuminance: 300 lux at desk height
Mean Cylindrical Illuminance: 150 lux at 1.2m
UGRL ≤19

Classroom (Evening/Adult)

Average Illuminance: 500 lux at desk height
Mean Cylindrical Illuminance: 150 lux at 1.2m
UGRL ≤19

Classroom (Science & Technology/Art)

Average Illuminance: 500 lux at desk height
Mean Cylindrical Illuminance: 150 lux at 1.2m
UGRL ≤19

BS EN12464-1:2011

Classroom

Average Illuminance: 300 lux
Mean Cylindrical Illuminance (Section 4.6.2): 150 lux
UGRL ≤19

Classroom (Evening/Adult)

Average Illuminance: 500 lux
Mean Cylindrical Illuminance (Section 4.6.2): 150 lux
UGRL ≤19

Classroom (Science & Technology/Art)

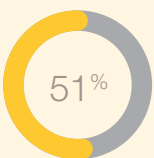
Average Illuminance: 500 lux
Mean Cylindrical Illuminance (Section 4.6.2): 150 lux
UGRL ≤19

Energy Consumption

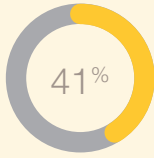
Linear Suspended



T5 2 x 35W = 77W



LED 39W



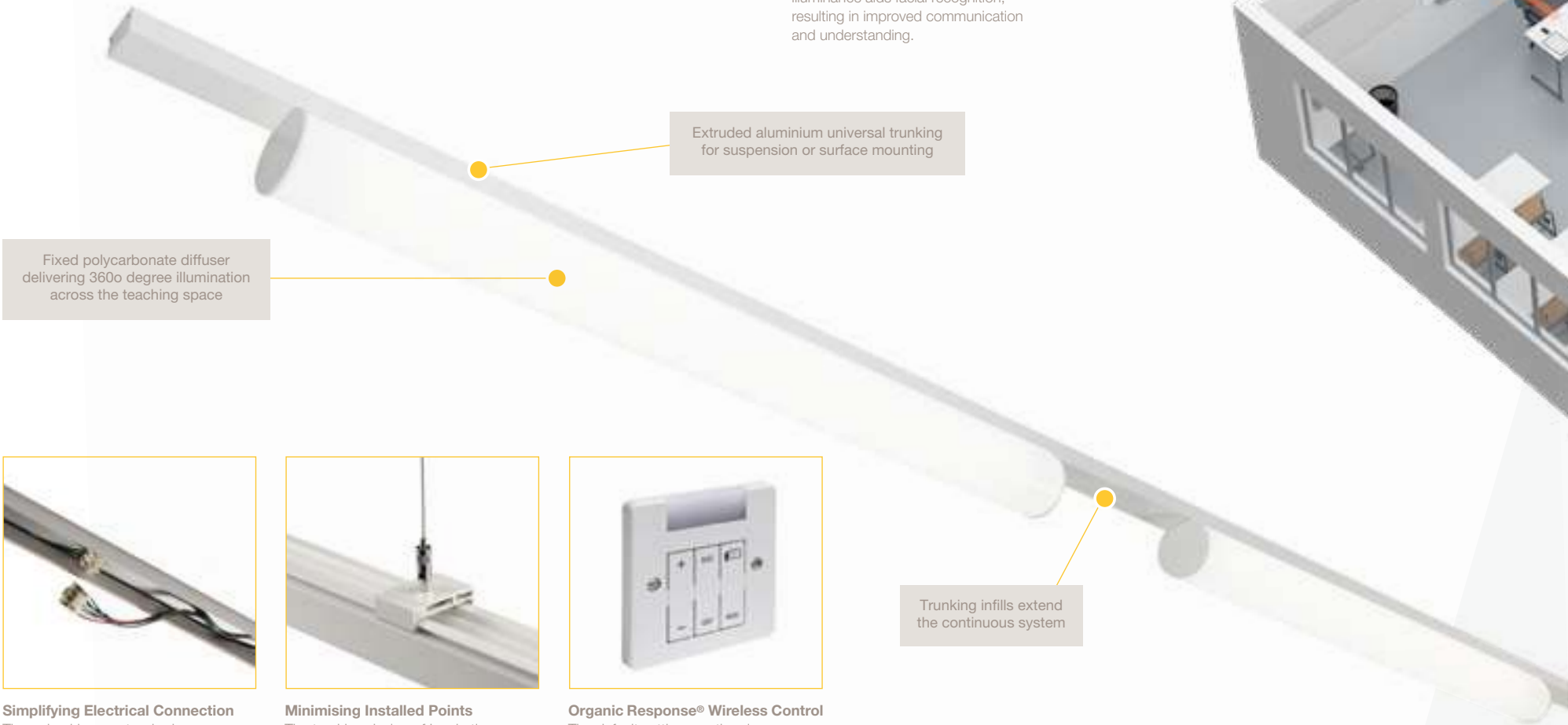
Daylight and
Absence Control

Delivering the best possible teaching environment

The wide distribution pattern of Inspiration ensures even illumination of all teaching surfaces including walls, whiteboards and desk surfaces. Fewer installed points and through wiring allows for speedy installation times, and the compression of build schedules in both refurbishment and new-build projects. The option of Organic Response® lighting control minimises energy usage by harnessing daylight penetration and absence detection without the need for costly and time-consuming commissioning.



Higher levels of cylindrical illuminance aids facial recognition, resulting in improved communication and understanding.



Simplifying Electrical Connection
Through wiring as standard means that only one electrical connection is required per run of luminaires.

Minimising Installed Points
The trunking design of Inspiration requires only four suspension points per run of 3 luminaires.

Organic Response® Wireless Control
The default settings on the classroom wall plate allow for instant interaction with installed sensor nodes.



The Deanery Church of England High School, Wigan



Single Classroom Layout (56m²)

Inspiration has been designed to provide a cost-effective and efficient modular solution allowing a variety of different classroom sizes to be lit with minimal installed points. Only two rows of luminaires are required to light a standard classroom, from eight suspension points.

Lecture Theatres

Lighting for lecture theatres has to consider two different lighting solutions working in tandem for the users of the space, namely the presenter and the audience. Good design schemes will provide for both user types enabling them to undertake their independent tasks whilst still providing a comfortable and productive learning environment.

Prior to the undertaking of any lighting design and to ensure balanced and functional illumination, it is important to recognise the position of the lecturer, method of teaching and whether the seating is raked or flat.

Horizontal illuminance plays an important role for note taking and practical demonstrations. The lighting solution should also provide good facial recognition for both the lecturer and the audience. Something easily achieved through consideration of good modelling and cylindrical illuminance.

Audience comfort, concentration and effective digital and written note taking can be achieved with low glare and minimised veiling. Appropriate product selection and positioning will aid in the viewing of screens and ensure that sightlines are not impeded. Avoiding harsh cut off angles and positioning luminaires correctly is crucial in this respect.

Ensuring maintenance is kept to a minimum in these often difficult to access areas is key. It is therefore important to select high quality LEDs and drivers which offer a long operational life.

The lighting control solution should be simple so that the lecturer is at ease with its use without additional technical support. LG5 provides four typical lighting scenes from a blanket lux level through to all luminaires dimmed for the purpose of visual demonstrations. A change in light levels between the scenes should be gradual to minimise any disturbance.

Lighting Criteria

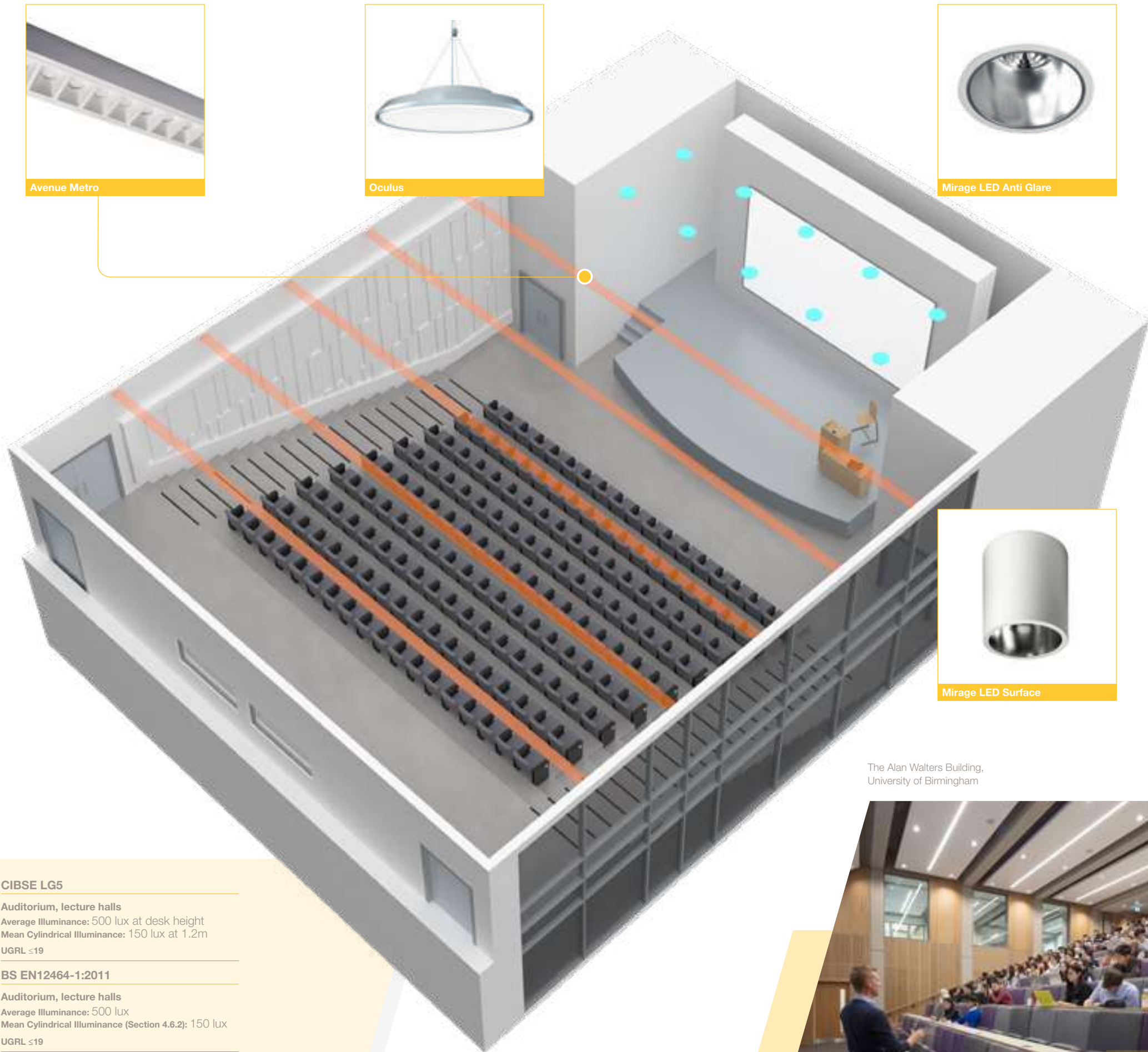
CIBSE LG5 and BS EN12464-1 both set the required standards for lighting levels in auditorium and lecture halls. The tables opposite describe the specific levels, the guidance also states that lighting should be dimmable to suit various audio visual needs.

CIBSE LG5

Auditorium, lecture halls
Average Illuminance: 500 lux at desk height
Mean Cylindrical Illuminance: 150 lux at 1.2m
UGRL ≤19

BS EN12464-1:2011

Auditorium, lecture halls
Average Illuminance: 500 lux
Mean Cylindrical Illuminance (Section 4.6.2): 150 lux
UGRL ≤19



The Alan Walters Building,
University of Birmingham

Libraries and Study Areas

As libraries and study areas accommodate a diverse range of activities, the lighting design must address these multiple uses. Therefore an installation that delivers a well-lit, comfortable environment and aids concentration across differing study techniques is key. With students undertaking both written and digital study, often for long periods, the lighting solution must seek to maximise a comfortable, productive and effective learning environment.

Comprising open areas for collaborative group work, individual study spaces, along with sections accommodating bookcases, the layout of a library may prompt the lighting designer to consider an alternative layout which creates separate zones. In book storage areas the lighting should be positioned to maximise vertical illumination across the height of the shelving, whilst in study areas a more localised task lighting approach could be adopted.

Research continues into the benefits of individuals having personal control over the level of light output and colour temperature. In individual study areas, the use of smart controls and tunable white luminaires could provide a positive impact on the students' learning environment.



Avenue Metro



Duo Evo



Libraries and Study Areas
University of Lancaster



Mirage LED Anti Glare

Lighting Criteria

The lighting criteria defined by both CIBSE LG5 and BS EN12464-1 is noted opposite with particular reference to the lighting level on vertical face of bookshelves.

CIBSE LG5

Library, bookshelves
Average Illuminance:
200 lux at desk height
200 lux at vertical face
Uniformity / 0.6
UGRL ≤19

Library, reading areas
Average Illuminance:
500 lux at desk height
Uniformity / 0.6
UGRL ≤19

BS EN12464-1: 2011

Library, bookshelves
Average Illuminance:
200 lux at desk height
Uniformity / 0.6
UGRL ≤19

Library, reading areas
Average Illuminance:
500 lux
Uniformity / 0.6
UGRL ≤19



Libraries and Study Areas
University of Gloucestershire

Research and Laboratories

Within specialist clean area environments such as laboratories, the balance between visual comfort and room integrity must be considered. Subject to the task being undertaken the required IP rating to the front face of the room can vary from IP44 through to IP65.

Ingress protection is, of course, vitally important, but this does not mean that lighting quality and user comfort can be sacrificed. These spaces often require higher levels of illumination (minimum 500 lux). Therefore the use of premium optics with advanced glare control technology will minimise veiling reflectance on monitors as well as minimising UGR for assured visual comfort in spaces often requiring exacting and detailed work.

But the choice of luminaire is more than simply down to IP rating. They must be resistant to cleaning chemicals, have minimal horizontal surfaces and maintain room integrity during

maintenance. Back access capability available where room integrity cannot be compromised. Research and laboratory spaces can be occupied for long periods of time particular in higher education establishments. Luminaires with minimal LED depreciation and longer driver life will not only ensure maintained illuminance values throughout the life of the installation, but also keep maintenance requirements to a minimum.



DTFU IP65/54



Lister IP65/20



Tegan Slim IP44



Lighting Criteria

Lighting levels in laboratories and clean area facilities need to accommodate a wide range of visual tasks.

CIBSE LG5

Laboratories
Average Illuminance: 500 lux at working plane
Uniformity / 0.6
UGRL ≤19

BS EN12464-1: 2011

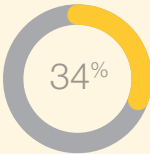
Laboratories
Average Illuminance: 500 lux
Uniformity / 0.6
UGRL ≤19

Energy Consumption

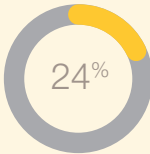
600mm x 600mm IP65/20



T5 4x24W=102W



LED 35W



Daylight and
Absence Control

Sports Facilities

When designing lighting schemes for sports facilities, it's important to consider internal and external sport applications equally. In both cases the potential level of play and most stringent activity is key as the light level and uniformity expectations reflect this. Generally the faster the activity and the higher the standard of play so increases the required lighting level and uniformity.

Whilst light levels for school sports halls are specified at 300 lux, consideration for club use, examinations and specific sports activities may mean higher lighting levels are required, although not at all times or across the whole hall.

A good example of this are cricket nets, which often require higher lighting levels but only for part of the sports hall. Additional luminaires situated above these areas, which can be separately switched, deliver an effective solution.

In a sports hall best practice design is to ensure that surface finishes are light in colour and that luminaires are resistant

to ball impact. Luminaire position is also important, in badminton for example, luminaires should be positioned between the courts rather than directly above or at the end for maximum player comfort.

With the appropriate product selection combined with absence detection lighting controls, these individual lighting requirements can be met in a cost effective and energy conscious way.

Lighting Criteria

CIBSE LG4 sets the standards to which sports halls should be designed, both in terms of illuminance levels and glare factors. Further guidance can also be found in BS EN 12193:2007 and sport governing body documentation such as Sport England and the England and Wales Cricket Board.

CIBSE LG5

School Sports/Leisure

Average Illuminance: 300 lux
Mean Cylindrical Illuminance: 50 lux at 1.6m
UGRL ≤22

Regional Competition

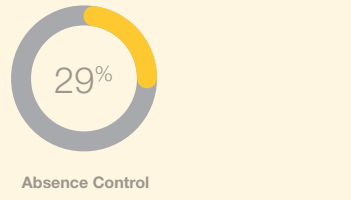
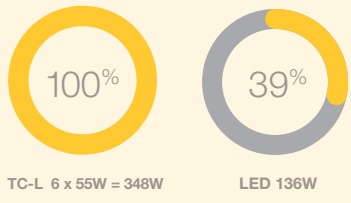
Average Illuminance: 500 lux
Mean Cylindrical Illuminance: 50 lux at 1.6m
UGRL ≤22

National & International Competition

Average Illuminance: 750 lux
Mean Cylindrical Illuminance: 50 lux at 1.6m
UGRL ≤22

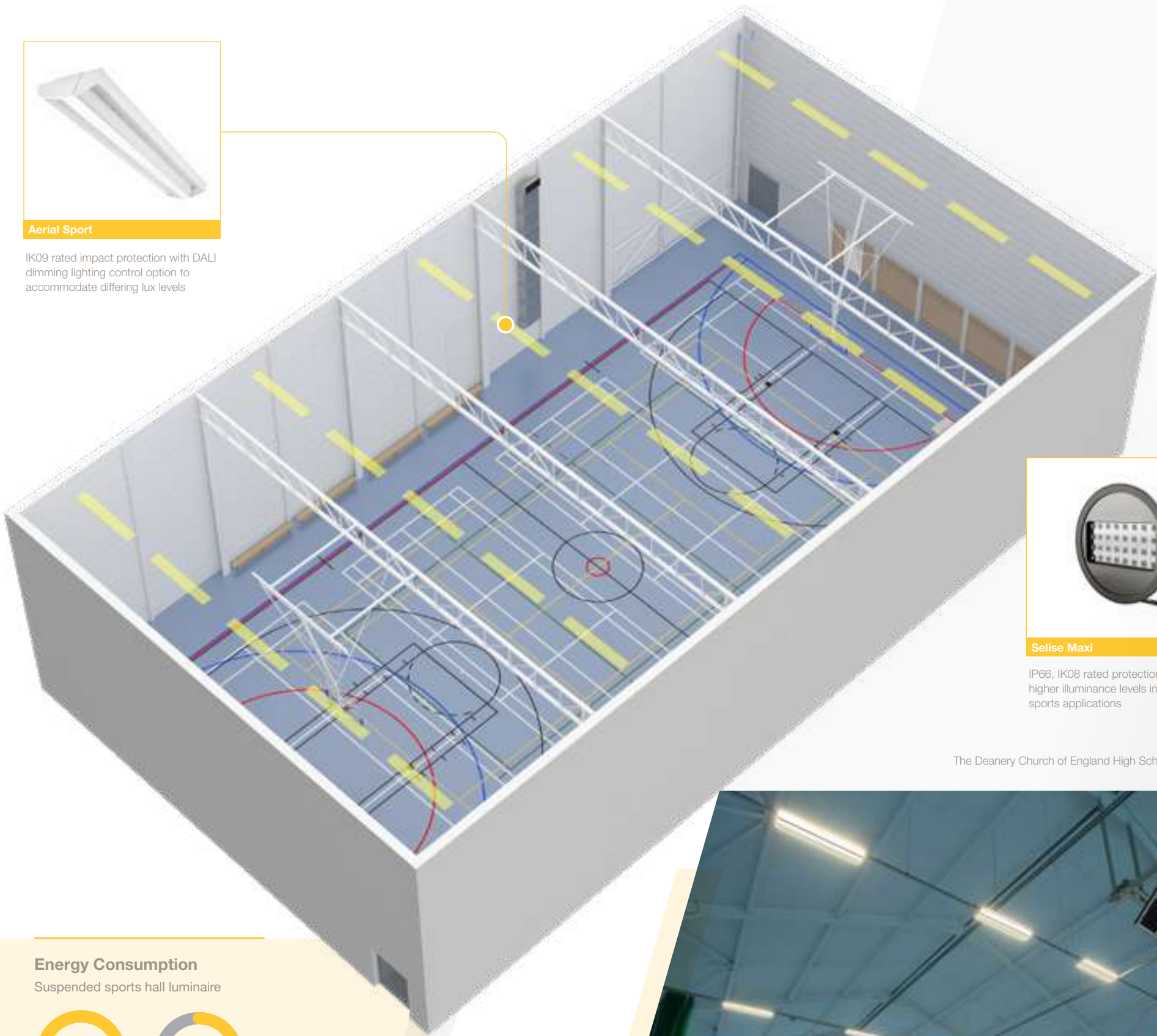
Energy Consumption

Suspended sports hall luminaire



Aerial Sport

IK09 rated impact protection with DALI dimming lighting control option to accommodate differing lux levels



Selise Maxi

IP66, IK08 rated protection for higher illuminance levels in outdoor sports applications

The Deanery Church of England High School, Wigan



Dining and Breakout

The dining and breakout areas of the building offer more freedom and scope for design innovation and present the opportunity to create an environment with contrast, visual stimulation and visual interest.

In seated areas, understanding the furniture layout and architectural design aspirations will aid a 'people first' design approach through the use of task and accent lighting.

These spaces should be bright and comfortable to encourage social interaction whether face-to-face or digital, as well as relaxation. Good vertical illumination and modelling should be considered to support these objectives.

Uniformity is important in servery and kitchen areas for a safe working environment. Luminaire selection should have an IP rating in keeping with the activity being undertaken and have a wipe clean front face to support the cleaning and maintenance regime.

Across all levels of education, these spaces are frequently used throughout the day and into the evenings and often have daylight at the centre of their design intent. Incorporating variable light levels and colour temperatures into the lighting solution will reflect the desired ambience of the space at the appropriate times, whilst occupancy and central daylight control will reduce energy consumption.

London School of Economics



Lighting Criteria

The lighting criteria defined by both CIBSE LG5 and BS EN12464-1 is noted in the tables opposite.

CIBSE LG5

School/college Canteens
Average Illuminance: 200 lux
Uniformity: 0.4
UGRL ≤22

Kitchens
Average Illuminance: 500 lux
Uniformity: 0.6
UGRL ≤22

BS EN12464-1: 2011

Library, reading areas
Average Illuminance: 200 lux
Uniformity: 0.4
UGRL ≤22

Kitchens
Average Illuminance: 500 lux
Uniformity: 0.6
UGRL ≤22

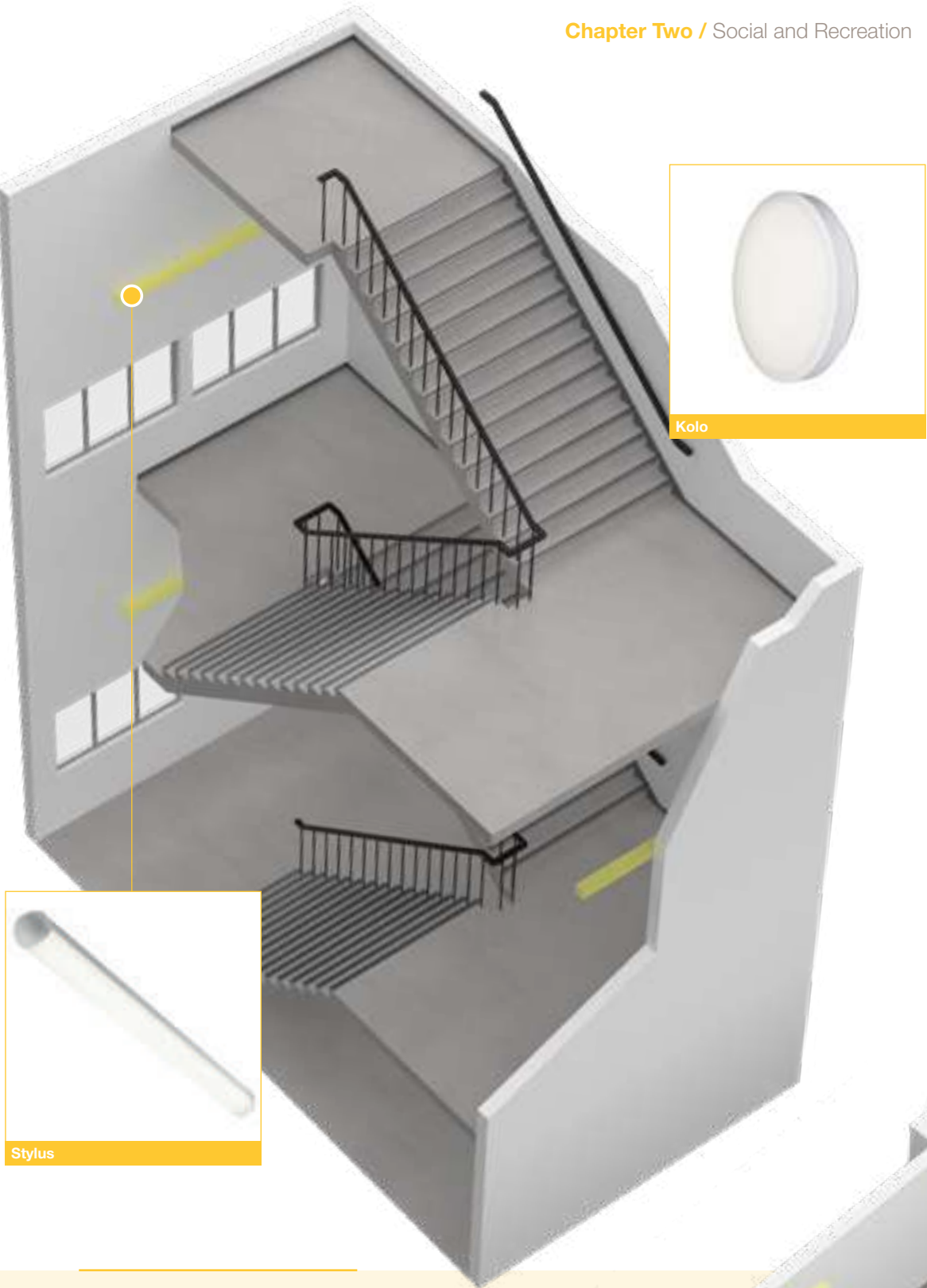
Circulation Space

The main arteries of the building, circulating pupils, staff and visitors throughout the day. Horizontal illuminance at floor level is a key metric at the forefront of the lighting design, however, best practice also seeks to provide excellent vertical illumination.

Circulation spaces often being unsupervised, the use of linear or modular luminaires with a wide distribution will deliver more light at higher angles, minimising shadowing and dark corners, creating a safe environment and improving facial recognition and modelling. While welcoming, bright and well-lit wall surfaces, notice boards, artwork, illuminated signage and directional indicators will assist a safe and well-defined passage.

Corridors are commonly used for carrying services around a building reducing the available space in the ceiling void, linear off centre

lighting frees up important service space supporting construction and maintenance activity, with improved modelling and uniformity benefits. Energy savings can be maximised with the implementation of simple intuitive occupancy and daylight controls, where appropriate. The use of wireless controls, for stairways in particular, removes the need for additional controls wiring reducing install costs and increasing positioning flexibility.



University of Gloucestershire



Avenue Metro



Stylus



Mirage LED



Helm Asymmetric

Lighting Criteria

The lighting criteria defined by both CIBSE LG5 and BS EN12464-1 is noted in the tables opposite.

CIBSE LG5

Circulation areas, corridors
Average Illuminance: 100 lux
Uniformity: 0.4
UGRL ≤25

Stairs

Average Illuminance: 150 lux
Uniformity: 0.4
UGRL ≤25

BS EN12464-1: 2011

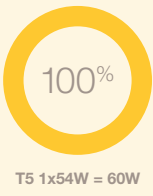
Circulation areas, corridors
Average Illuminance: 100 lux
Uniformity: 0.4
UGRL ≤25

Stairs

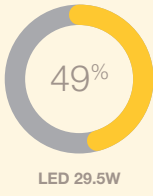
Average Illuminance: 150 lux
Uniformity: 0.4
UGRL ≤25

Energy Consumption

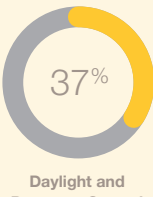
1200mm x 150mm luminaires



T5 1x54W = 60W



LED 29.5W



Daylight and Presence Control

Administration and Ancillary

In staff and administration rooms lighting should be comfortable and aesthetically pleasing. Luminaires with good glare control will safeguard staff against discomfort or reduced visibility. The potential for reduced energy consumption is significant in these areas where lighting is often not required for long periods of time. Integration of energy saving lighting control, with room occupancy detection, will ensure that no luminaire is on when it doesn't need to be.



Cascade LED
Diffusing light and
graduating brightness



Tegan Slim
Slim body profile with
a choice of mounting



ACL Industry **IP66**
Corrosion resistance for
challenging environments



Duo3 Evo
Tiled optic configuration with
hexaprism inner optic

Lighting Criteria

Levels of illumination vary depending on the ancillary or administration area, the tables opposite give examples of lighting criteria defined by both CIBSE LG5 and BS EN12464-1.

CIBSE LG5

- Plant Rooms**
300 lux at floor
- Supplies Stores**
300 lux at bench
- Stock Rooms for teaching materials**
100 lux at floor
- UGRL ≤ 25**
- Staff Room/Office**
300 lux
- UGRL ≤ 19**

BS EN12464-1: 2011

- Plant Rooms**
200 lux
- Store and stockrooms**
100 lux
- Stock Rooms for teaching materials**
100 lux
- UGRL ≤ 25**
- Staff Room/Office**
300 lux
- UGRL ≤ 19**

Essential for a clean, safe and functional environment, ancillary areas in education establishments range from general storage of equipment and materials to more hazardous boiler and plant rooms.

Lighting must therefore accommodate both the protection requirements and the functionality of each individual space. Inadequate lighting in areas such as plant rooms, maintenance and housekeeping which commonly have little or no natural light, can conceal slippery floors, trip hazards or other potentially dangerous situations. Careful consideration must be given to luminaires exposed to water and condensation, with extra protection ensuring safe and reliable operation.



Stylus **IP54**
Solid construction with optional
louvre and diffuser system

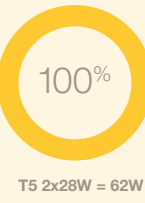


Trimpak **IP20**
Easy install general lighting batten

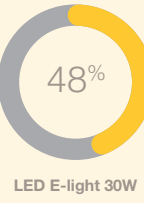
Woodside School, Sheffield

Energy Consumption

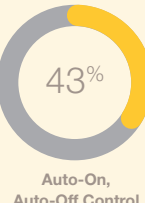
Surface Batten



T5 2x28W = 62W



LED E-light 30W



Auto-On,
Auto-Off Control

Lighting Controls

Predominantly used as an energy saving tool, lighting controls can offer significant opportunity for savings, particularly in educational establishments where a high proportion of the total energy cost comes from lighting alone.

Best practice classroom design will make use of any natural light that is available. Daylight linked dimming activated through the monitoring of ambient light levels will ensure that any available daylight is maximised and unwanted light level reduced. The use of manual override controls to adapt light levels to the teaching conditions, for example whiteboard and flip chart presentations, will help prevent veiling reflections and make material easier to read.

In corridors, staircases and administration areas, lighting controls can maintain light levels during occupation periods for safe passage but reduce when no presence is detected.

Wireless intelligent lighting control systems offer much more than energy saving in terms of building flexibility, reduced installation costs, ease of use, particularly in areas with higher ceilings such as sports halls and entrance atria, and integration into wider building management systems. Further benefits are delivered by the ability to re-configure the lighting functionality to suit the usage of the building without costly and time consuming external commissioning.



Organic Response®

Integrated or remotely housed sensor nodes detect motion and ambient daylight levels and transmit and receive infrared messages wirelessly for intelligent decisions about required light levels. Can be customised to provide an interface with building management systems and vital building management information via a web based portal.



Air Control

Based on Bluetooth Mesh networking configured to provide basic functionality through advanced lighting control and scene recall. Bringing wireless control to areas with higher ceilings, the high performance mesh networking technology delivers seamless communication without the need for additional gateways.



Lighting control configuration and energy consumption reduction can vary depending on the function of a space and its usage patterns. Customising the controls design to the individual space will support the overall lighting control strategy and deliver favourable results.

General Classroom

- Absence switching
- Whiteboard row switching
- Window row dimming
- Offset dimming to rows 2 and 3
- Typical energy saving 30%

PSBP Compliant Classroom

- Absence switching
- Whiteboard row switching
- Detector 1 dimming window row
- Detector 2 dimming row 2, offset to row 3
- Typical energy saving 43%

Linear Corridors

- Microwave detectors for increased range
- Presence switching with daylight dimming where appropriate
- Hard wired luminaires
- 30 - 40% reduction in energy

Circulation and Administration Areas

- Presence or Absence detection
- Hard wired luminaires
- Variable timing programmable from infra-red handset
- Dimming employed where sufficient daylight is present
- 30 - 40% reduction in energy depending on application

Assembly and Dining Areas

- Hard wired scene setting for feature lighting
- Maximum flexibility of multi-use spaces
- Multiple programmable scenes selected from wall switch panel

Sports Hall

- Microwave presence detection
- Hard wired luminaires
- Suitable sized contactor between luminaires and switches
- Dual output luminaires employed for multiple use spaces
- Occupancy sensing delivers 30% energy savings in high load area

Large Utility Areas

- Presence detection switching only
- Hard wired luminaires
- Low cost detectors where complex programmability is not required
- 30% energy savings

Small Utility Areas

- Integral detectors used in areas requiring a single luminaire
- Reduction in installation time and associated cost
- Delivering 30% reduction in energy usage compared with uncontrolled areas



Verve

Bringing simplicity and efficiency to lighting control through plug-and-play installation, wireless configuration and operation of luminaire and control groups through Bluetooth Mesh networking. Functionality can be extended to include remote emergency testing with immediate reporting and recording.

Outdoor Amenities

The primary goal of exterior lighting is to provide safe transit for building users with minimal upward lighting and unnecessary light pollution.

In pedestrian areas and car parks, high levels of uniformity are required and, to aid facial recognition, cylindrical illuminance should be considered. On roadways careful selection of road classifications should be taken, as slower traffic flow may mean that a lower level of illuminance is required than in normal highway lighting.

The lighting design must take into account these differing needs, and provide clear separation between pedestrian and motor traffic. Additional lighting requirements for areas such as pedestrian crossings

and disabled parking bays can be covered through the careful positioning of luminaires. Smart lighting control systems in parking areas achieve much lower operating costs, whilst still enhancing safety and security. Maintain set levels of illuminance during occupied periods, or reduce illumination levels when no presence is detected. Lighting can adjust to accommodate both vehicle or pedestrian traffic, as well as automatically detecting daylight and dimming the light down to conserve energy when nobody is present.

Lighting Criteria

When planning lighting for outdoor amenities, consideration should be given to the following standards and guidance:

Standard / Guidance

BS EN12464-2
Lighting – Outdoor Workplaces

BS 5489-1
Lighting of roads and public amenity areas

Secured by Design Lighting against crime
A Guide for Crime Reduction Professionals

ILP GN01
Guidance Notes for the Reduction of Obtrusive Light

Park Mark®
The Safer Parking Scheme

Emergency Lighting

Emergency lighting provision is an important part of any lighting scheme. In the event of a power failure, a secure, effective, non-disruptive emergency solution is vital in order to ensure the safe evacuation at any time of the day or night.

Early consultation with the appropriate person(s) responsible for the provision of emergency lighting, will ensure that the lighting design supplied is such that considerations, including areas identified as high risk, used at night time or which are highly populated, will be delivered.

The use of Florin LED allows the designer to provide an effective emergency lighting strategy by allowing a flexible design to be employed through careful positioning and simple maintenance of the emergency lighting units.

Product selection and system design for the emergency lighting should consider:

- Ease of maintenance
- Flexibility of design
- Parasitic energy consumption
- Minimising staff and student disruption
- Testing & reporting

Any emergency system requires regular and annual testing. The use of central emergency testing and reporting systems to ensure an effective emergency provision is therefore in place at all times. The Whitecroft Organic Response® Portal allows for simple set-up of scheduling and recording of the emergency lighting system to deliver compliance to BS EN 62034.



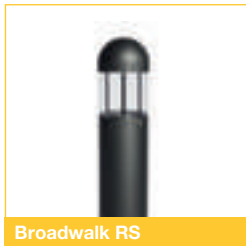
Sirocco Park

High efficacy ultra slim post top lantern delivering up to 148 l/cw



Kolo - IP65

Combining style and efficiency, attachments create further visual interest



Broadwalk RS

Amenity bollard with 360° horizontal light distribution



Mirage IP65

Anodised aluminium reflector, wide beam symmetrical light distribution

City of Glasgow College



BASE GUIDANCE DOCUMENT

SYSTEM STANDARDS

PRODUCT STANDARDS

BS 5266-1, Emergency lighting - Part 1

BS EN 1838
Lighting applications -
Emergency lighting

BS EN 60598-2-22
Luminaires for
emergency lighting

BS EN 50172
(BS 5266-8)
Emergency escape
lighting systems

BS EN 5017
Central power
supply systems

BS EN 62034
Automatic test systems
for battery powered
emergency escape lighting



Florin E3

Specifically designed for high risk or high output emergency task lighting for compliance with BS5266 Part 1

