Light + Darkness in the City/

A Lighting Vision for the City of London/ Chapter 4

CITY OF LONDON

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0.0/Executive Summary

The re-lighting of the City of London is a 'once in a generation' opportunity afforded by the upgrading of the street lighting and the improvement of specific architectural and landscape lighting as well as lighting of other features owned and operated by the City of London. The ongoing development of the area, including major initiatives such as Culture Mile, Illuminated River and Crossrail, will act as a further catalyst for change. This Lighting Strategy provides analysis and guidance to help facilitate the delivery of the new lighting and includes a number of important recommendations for the future.

The following provides a brief summary of the key observations and recommendations:

Vision

"This Lighting Strategy aims to deliver a creative, holistic and smart approach in which light and darkness are better balanced to meet both a functional and aesthetic need."

It aims to provide the vision, methodology, standards and guidance to meet the future requirements of the City of London. It also suggests how light may be employed to help reinforce the City's existing identity as a world-class business centre, whilst respecting and complementing both its heritage and character. It specifically looks to encourage walking and cycling by creating an enjoyable, safe and secure experience of the public realm after dark, but in a sensitive and environmentally responsible manner. In recognising the City of London's Smarter City programme initiatives it introduces an innovative approach to both technology and technique to help create much greater flexibility for the future.

Approach

The quality of light and darkness, key design issues and opportunities for change were identified as follows:

1. Reducing the amount of light used and improving both colour appearance and colour rendering.
2. Providing a more human scale lighting after dark and improving legibility through the lighting of vertical surfaces.
3. Controlling the balance of light and shade including retaining natural darkness to some areas.
4. Highlighting changes of level and conflict areas and supporting the prevention of crime through surveillance.
5. Improving the uniformity of light and reducing glare to help provide a more legible and accessible environment.
6. Enhancing character to assist with place-making to create an exciting and pleasing experience after dark.
7. Highlighting key landmarks and providing the conditions to support night-time events.
8. Balancing the social and economic benefits of light with the environmental consequences.

Key Opportunities

A number of key opportunities were identified:

- Providing improved levels of illuminance for the various routes and open spaces to enhance pedestrian use.
- Using light to accentuate the unique qualities of the overall network and each distinct area after dark
- Illuminating key buildings and bridges to help improve intuitive way-finding and orientation at night
- Reassessing the existing lighting levels and uniformity to help reduce energy use and light pollution
- Upgrading the existing light sources to newer low energy, longer life LED
- Upgrading both contemporary and heritage street lanterns, bulkheads and other fittings while retaining existing gas lighting
- Installing a City-wide smart lighting control system to improve management, provide flexibility and reduce energy
- Re-assessing mounting positions and heights of fittings including the occasional use of columns
- Illuminating important archaeological, heritage, cultural sites and public art
- Reducing light spill, intrusive lighting and light pollution, particularly adjacent to residential properties
- Providing better environmental control of the lighting will assist in reducing adverse impacts on local ecologies
- Embedding lighting within the planning system will help improve design and control aesthetic outcomes
- Taking a more holistic approach to lighting will assist with communications between key stakeholders

Corporate Plan and Objectives

The City Lighting Strategy strives to follow the vision of the City of London Corporate Plan to support a diverse and sustainable London within a globally-successful UK.

This document contributes towards the achievement of the three aims and their outcomes as follows:

Contribute to a flourishing society

- People are safe and feel safe through the careful design of lighting the public realm
- People enjoy good health and wellbeing as a result of limiting obtrusive light spill into windows, light pollution and using warm white light in residential areas
- People have equal opportunities to enrich their lives and reach their full potential in the City's public spaces made accessible at night through appropriate lighting
- Communities are cohesive and have the facilities they need in the City's welcoming spaces where people can meet and socialise during the day as well as after dark

Support a thriving economy

- Businesses are trusted and socially and environmentally responsible by taking a more sustainable approach to lighting
- We are a global hub for innovation in finance and professional services, commerce, and culture: our night time economy is supported by better lighting to encourage commercial activities in the public realm after dark

Shape outstanding environments

- We are digitally and physically well connected and responsive through an interactive and efficient Control Management System (CMS)
- We inspire enterprise, excellence, creativity and collaboration with stakeholders including engineers, designers, planners and developers among others
- We have clear air, land and water and a thriving sustainable natural environment by reducing light pollution and energy consumption
- Our spaces are secure through the recommended lighting design principles, resilient and well maintained, with a reduction of maintenance costs through the use of LED lighting

Strategy

The following is a summary of the key recommendations of this report for the City of London:

Safety

Lighting plays a key role in enhancing safety after dark. The following measures are recommended within the City of London:

- Prioritise improvements in lighting in relation to pedestrians and cyclists
- Contribute to road danger reduction through the positive highlighting of conflict areas
- Employ fuller spectrum white light sources such as LED to help improve vision
- Provide better optical control to light fittings to help reduce disability glare for motorists
- Use integrated lighting to changes of level such as staircases or ramps
- Illuminate vertical surfaces to improve legibility
- Avoid high light levels where possible to discourage unsafe driving practices such as increased driving speeds.

Security

Lighting can support the prevention of crime and anti-social behaviour and improve the perception of personal security. The following are recommended:

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- Employ fuller spectrum white light sources such as LED to help improve recognition
- Design for the minimum requirements of CCTV cameras
- Consider improved lighting local to hotels and residential areas
- Allow the control of individual groups of luminaires in response to incidents
- Provide sufficient flexibility to allow a managed response to police requirements

Accessibility

The public realm in the City of London must remain accessible for all after dark. Measures should include:

- Enhanced lighting on key routes for people with reduced mobility
- Avoid glare and excessive contrast for those with visual impairments
- Positively illuminate steps, ramps and other changes of level
- Ensure that uplighting is well shielded and properly directed to avoid glare
- Ensure dimming of light sources during off-peak hours will not compromise accessibility needs.
- Consider the needs of people with mental health disability or have sensory/ neurological processing difficulties and how lighting could improve their journeys

Sustainability

A balance should be achieved between the social and economic benefits that good lighting brings with the environmental consequences of its use. The following should be considered:

- Improve the quality of light in residential areas
- Provide an appropriate ambience in night time economic areas
- Reduce light spill and light trespass local to hotels and residences
- Consider a 'dark night' to help save energy
- Consider the impact of artificial light on people's well-being
- Provide good practice guidelines to building owners and users including contractors
- Employ high quality luminaires with good optical control
- Ensure that any upward light is directed at vertical surfaces rather than into the sky to minimise light pollution
- Consider retaining natural darkness as is appropriate in environmental sensitive areas
- Employ best practice guidance with respect to limiting impacts on bio-diversity and reducing light pollution
- Remove unrequired luminaires where deemed appropriate

Culture

Lighting can play a key role in cultural development, interpretation, education and tourism in the City of London. The following are recommended:

- Develop a simple policy for the highlighting of key building, bridges and other landmarks, beginning with a pilot proposal in Culture Mile area
- Avoid over-lighting, floodlighting and the inappropriate use of colour
- Manage timings of lighting schemes through the City-wide smart lighting control system
- Co-ordinate the feature lighting of buildings, bridges and artwork with a programme of local, national and international events including flexibility in lighting control

Planning

Lighting is part of urban design and can contribute to place-making. The following should be considered:

- Promote best practice on lighting around design and environmental considerations
- Require lighting strategies to be provided as part of the pre-application process where appropriate
- Improve communication between key stakeholders regarding function and aesthetic outcomes
- Publish detailed planning guidance as to the use of lighting within the City of London to support and enhance the implementation of policy

Management

The lighting of the City of London requires careful ongoing management and investment. The following recommendations will help:

- Improve communication and follow up with key stakeholders
- Develop a clear policy of the long term procurement, upgrading and repair of new systems
- Employ smart lighting controls to provide a more responsive and flexible approach
- Consider the appointment of a dedicated City of London Lighting Board
- Update the City Public Realm Technical Manual to include the introduction of new luminaires and light fittings to inform external stakeholders

Technology

State of the art technology can be employed to assist in improving the lighting to the City of London as follows:

- Upgrade all public lighting within the area to high quality LED with the exception of historic gas lighting which should be preserved to enhance character
- Employ simple lanterns and bracketry that are architecturally neutral
- Consider the use of custom housings where fitted to key listed structures
- Upgrade the lighting control to a smart system allowing the individual addressing, feedback and monitoring
- Provide more flexible management of the lighting systems adopting different lighting levels at different times
- Save energy by using technology to allow the lighting to respond more dynamically to background lighting levels

Delivery

The Lighting Strategy for the City of London will only be effective if feasible delivery mechanisms for its recommendations are identified. Whilst this will take both time and funding the realisation of the vision can be achieved in the short to medium term through:

- Fully replace and upgrade all of the existing street and amenity lighting to LED whilst retaining and enhancing the historic gas lighting and heritage lanterns. The installation of smart lighting controls to monitor and manage the system, offers a unique opportunity to put a large amount of the recommendations of this Lighting Strategy into practice
- Improve the illumination of the public realm and key landmarks through a series of ongoing publically and privately funded initiatives including Culture Mile, Illuminated River, the upgrading of the architectural lighting of St. Paul's Cathedral, the realisation of the way-finding strategy and various public realm projects. The use of section 106 incentives for best practice could also help improve lighting of public spaces throughout the City
- Implement planning policy and guidance in respect of lighting to see the early introduction of more detailed requirements for development with respect to the aesthetic, environmental and residential amenity impact of lighting including adherence to the recommendations made in this report. The requirement for all new development not only to properly consider issues such as character after dark but also to provide a greater level of detail as to the implementation of the lighting.
- Improve communication between key stakeholders and with the wider public
- Creation of a Strategic Lighting Board and a growing understanding of the importance of lighting within the City

Conclusion

Further detail can be found on all aspects of this study in Sections 1.0 – 4.0 of this document and in the Appendix.

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4.0/Strategy

4.1/Key Recommendations

This Lighting Strategy seeks to provide a number of recommendations for improving the lighting within the City of London. It does so not only through examining the quality and quantity of light itself but also through the identification of ideas and measures that might be practically implemented over time.

Whilst the introduction of new dimmable LED lighting systems and a smart lighting control system, along with a review of standards, will provide a better quality of light and balance of illumination, people's experience of the City of London after dark can be enhanced through many other initiatives. However, the key to gaining the most from the implementation of the various recommendations is to focus on how lighting can be best orientated and prioritised towards pedestrians and cyclists rather than vehicles.

Most of the prevailing standards, techniques and methodologies that have dominated the design of public lighting in the post war period are based on 'lighting the highway'. This has often led to over-scaled solutions that have focused light onto the kerb and roadway from fittings located at high level on building or columns leaving pedestrian footways largely illuminated by secondary spill. Whilst providing light that aims to prevent accidents is critical, priorities may now shift in response to the reduction of traffic speed and increased pedestrianisation. Changing attitudes towards the relationship between light and crime also inform new ways of thinking whilst concern to provide even greater accessibility creates new requirements. Above all the need to create a more sustainable approach means that reductions in energy use, light pollution and ecological impacts are imperative.

All this points towards a new approach in which the ability to reduce the background levels of illumination whilst enhancing the enjoyment of architecture, landscape and art through bold and imaginative lighting schemes.

This section of the Lighting Strategy addresses key areas of design and management that are recognised as the main priorities for the design, implementation and maintenance of the public lighting: safety, security, accessibility, sustainability, culture, planning, management and delivery. These have been the subject of more detailed consultation with key stakeholders and have been revised following the comments received through the public consultation. It also examines the possibilities offered by new source, luminaire and control technologies, a topic that has been widely discussed with the Street Lighting Division.

4.1.1 Safety

One of the key roles of artificial lighting is to keep people safe and prevent accidents, whether through the avoidance of conflicts or the clear identification of potential hazards such as changes of level. Road danger reduction, the improvement of lighting for pedestrians and cyclists and the highlighting of conflict areas are all priorities.

Improvements in lighting technology have seen the introduction of fuller spectrum white light, initially through metal halide and more recently through light emitting diodes (LEDs). These new sources improve our ability to see, including our peripheral vision. Their small size and potential for better optical control allows greater uniformity without recourse to glare. It is therefore possible to improve the lighting of conflict zones despite reducing levels of illumination. This has the advantage of mitigating other factors that can impair vision such as glare and excessive contrast whilst at the same time reducing energy use and light pollution.

The clear identification of hazards against a lower background illumination also makes for a safer environment. By example highlighting junctions makes crossing points clearer or providing integrated lighting to staircases not only signals changes of level but also put sources below eye level allowing a clearer field of view. Improving vertical illumination can make for better recognition, an important factor in the future where increased use of bicycles and electric vehicles raises the risk of accidents due to their silent running. Whilst recent research questions the direct correlation between the incidence of traffic collisions and the reduction of street lighting the reduction of lighting levels should only be considered when balanced by other positive measures such as an increase in the lighting of vertical surfaces.

Recommendations:

- Prioritise improvements in lighting in relation to pedestrians and cyclists.
- Contribute to road danger reduction through the positive highlighting of conflict areas .
- Employ fuller spectrum white light sources such as LED to help improve visual function.
- Provide better optical control to luminaires to deliver uniformity without recourse to disability glare for motorists.
- Use integrated lighting to changes of level such as staircases or ramps.
- Illuminate vertical surfaces to improve legibility and heighten the sense of security.

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4.1.2 Security

Lighting plays a key role in the prevention of crime, largely through surveillance. Whilst new research demonstrates that there may be little direct correlation between the incidence of crime and the reduction of street lighting, and that turning down lighting can have a positive impact on behaviour, good lighting nonetheless governs people's perception and provides them with the confidence to use the public realm after dark.

Improvements in light quality through the provision of fuller spectrum white lighting providing good colour rendering aids facial recognition and helps support CCTV, not only helping to deter and prevent crime and anti-social behaviour but also assist with suicide watch. The use of higher quality lighting with its more accurate rendering of colours combined with improved camera technology can result in accurate CCTV footage despite lower levels of light.

It is also important to recognise the need to improve the lighting as the residential population of the City of London increases. This relates as much to areas with hotels that serve tourists as it does for the more permanent residents. There is also the requirement to respond to peak lighting demand in different areas by various authorities, and in particular City of London Police; by example to be able to raise or lower lighting levels when clubs and pubs close down or in response to the threat of terrorism.

The ability to control public lighting, and in particular street and amenity lighting, on an area by area or even fitting by fitting basis provides the potential for a more dynamic response when incidents occur after dark. Opportunities include ideas such as officers attending an accident or crime scene being able to turn up the street lighting local to the incident to assist them with their work. This in turn means that general reductions in street lighting may not compromise policing.

Recommendations:

- Improve communication and coordination between different stakeholders.
- Employ fuller spectrum white light sources such as LED to help improve recognition.
- Design for the minimum requirements of CCTV cameras
- Consider improved lighting local to hotels and residential .areas
- Allow the control of individual groups of luminaires in response to incidents.
- Provide sufficient flexibility to allow a managed response to police requirements.
- Ensure consultation is carried out with CoL Police to obtain recommendations for colour temperature, light levels and timing management of streetlighitng in vulnerable areas.

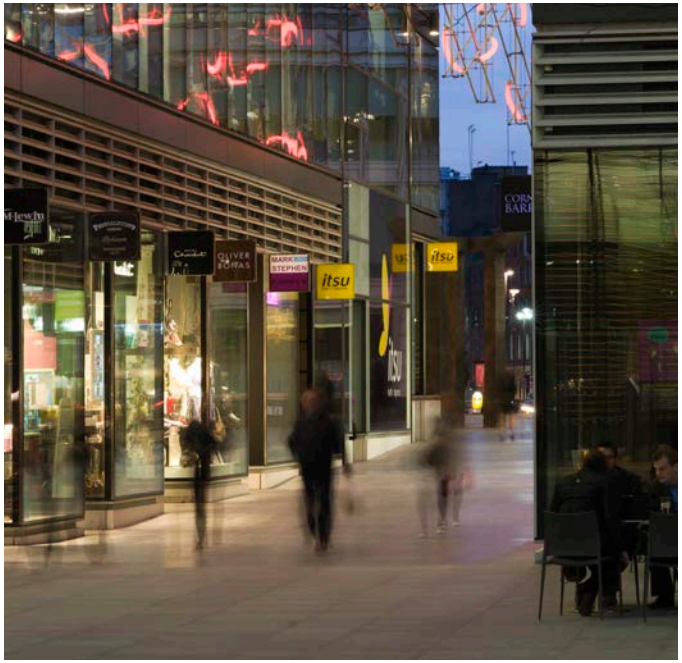
4.1.3 Accessibility

The City of London should be accessible to all, regardless of ability and age. Future measures should carefully consider how lighting may be better employed to assist people with disabilities, especially those with visual impairments and address the needs of an ageing population including the increased use of mobility scooters, wheelchairs and walking aids. Whilst the working population has a reasonably young demographic there are residential communities within the City that include large numbers of elderly people. The needs of tourists, young children and other visitors must also be considered. Improvements in the quantity, quality and uniformity of street and amenity lighting and the reduction of glare will help improve accessibility. Measures to use lighting to provide greater legibility after dark will further assist with orientation and movement.

Recommendations:

- Consider the needs of people with reduced mobility, particularly on key routes
- Avoid glare and excessive contrast for those with visual impairments
- Positively illuminate steps, ramps and other changes of level
- Ensure that uplighting is well shielded and properly directed to avoid glare
- Ensure dimming of light sources during off-peak hours will not compromise accessibility needs.
- Consider the needs of people people who have sensory and / or neurological processing difficulties and how lighting could improve their journeys

Prioritise improvements in lighting to pedestrians and cyclists



Design for minimum requirements of CCTV

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4.1.4 Sustainability

Sustainable lighting development seeks to balance the social and economic benefits that good lighting can bring to the City of London after dark with the environmental consequences that arise from using artificial light. These include energy use, light pollution and potential ecological impacts. Re-lighting the City of London over time provides a unique opportunity to observe best practice.

Social: In terms of social benefit good lighting can improve communication and interaction within communities after dark. A reduction in light spill and light trespass that can impact sleeping patterns amongst the residential population can aid well-being through observation of the impact of light on circadian cycles. This not only includes commercial properties, advertising sites and the floodlighting of buildings but also temporary measures such as security lighting on construction sites.

Economic: Benefits should include providing more focus to retail areas at night, and in particular those streets and open spaces where food and beverage offers might thrive. This might include a warmer quality of ambient lighting and the more frequent highlighting of architecture, public art and landscape features. The provision of a network of hanging points and electrical outlets that are closely integrated to the smart lighting control system will help improve the City's ability to create more imaginative, colourful, and spectacular events after dark which in turn will help boost the economy.

Environmental: Whilst new LED lighting technologies can provide greater efficiency, lowering light levels or encouraging private building owners to switch off unnecessary lighting after hours, will greatly help reduce the City's overall carbon footprint. Such reductions can not only be achieved through better use of lighting control but also through better design. Light pollution can be mitigated through the use of light fittings with improved distribution and which limit light spill into the sky and removing unrequired luminaires where appropriate. Glare can be better controlled through selecting luminaires with high quality optical design. Ensuring that fittings are properly angled such that they are directly lighting surfaces will help reduce unwanted light spill. A reduction in background levels of illumination will make it easier to highlight buildings, monuments and art without recourse to creating lighting solutions that are brighter than necessary due to competition from street lighting. Observing good practice with respect to limiting obtrusive light will help minimise light trespass and nuisance. Retaining and protecting natural darkness in landscaped areas such as parks, gardens, churchyards and by the river will also help protect local ecologies. Adverse impacts on bio-diversity can also be avoided through specific measures such as limiting the amount of uplighting to trees, particularly where there are nesting birds, observing the presence of bat corridors and following recognised guidance such as DEFRA's Statutory Nuisance from Insects and Artificial Light. A 'dark night' might be considered where lighting to key landmarks is turned off.

Recommendations

- Improve the quality of light in residential areas.
- Provide an appropriate ambience in night time economic areas
- Reduce light spill and light trespass local to hotels and residence
- Reduce over-lighting through consideration of the lit context.
- Consider a 'dark night' turning off non-essential lighting to help save energy
- Consider the impact of artificial light on well-being.
- Reduce levels of illumination either through design or the use of smart lighting controls
- Provide good practice guidelines to building owners and users including contractors
- Employ high quality luminaires with good optical control.
- Ensure that any upward light is directed at vertical surfaces rather than into the sky
- Consider retaining natural darkness as is appropriate in environmental sensitive areas
- Employ best practice guidance with respect to limiting impacts on bio-diversity and reducing light pollution
- Remove unrequired luminaires where appropriate

4.1.5 Culture

Lighting can play a key role in the cultural development of the City of London at night. This will be particularly important with respect to key programmes and projects such as Culture Mile and the Illuminated River. It is therefore recommended that key archaeological, historic and culturally significant buildings, bridges and artworks are highlighted to assist with interpretation, educational outreach and cultural tourism. Whilst details of typical subjects are included in the Legibility Study in Appendix A a separate analysis should be carried out to identify priorities, hierarchy and funding. For this to be successful and sustainable a clear and simple policy is required that provides guidance as to the lighting of such features, particularly where listed. An overall reduction in lighting levels will help ensure that building and bridges do not become over-lit by having to compete with the background conditions. Floodlighting should be avoided in favour of 'close offset' techniques where the lighting is either directly attached to the subject or located very locally. Integration of architectural and landscape lighting with the smart lighting control system will assist with the management of timings.

Recommendations

- Develop a simple policy for the highlighting of key building, bridges and other landmarks, beginning with a pilot proposal in Culture Mile area
- Avoid over-lighting, floodlighting and the inappropriate use of colour
- Manage timings of lighting schemes through the City-wide smart lighting control system
- Co-ordinate the feature lighting of buildings, bridges and artwork with a programme of local, national and international events

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4.1.6 Planning

Lighting is required to be properly and fully embedded within the planning system and both national guidance and local policies seek to secure this. This can be further achieved through measures such as more detailed planning guidance. The successful illumination of new developments could be better secured through earlier engagement with applicants and the requirement to include a lighting strategy as part of any pre-application submission. Better resources and an improved knowledge base are required to assist with the discharging of conditions including the provision of best practice guidelines for commercial, retail and residential buildings. Improved communication between the planning department and key stakeholders as to the aesthetic and wider environmental outcomes of lighting decisions will greatly aid a more holistic approach. The new planning guidance would be required to cover both design and environmental considerations as well as the potential impact on residential amenity e.g. obtrusive light, light spill, light pollution etc.

Recommendations

- Promote best practice on lighting around design and environmental considerations
- Require lighting strategies to be provided as part of the pre-application process where appropriate
- Good communication between key stakeholders regarding function and aesthetic outcomes
- Publish detailed planning guidance as to the use of lighting within the City of London to support and enhance the implementation of policy

4.1.7 Management

However successful the design and delivery of the various recommendations of this Lighting Strategy, its continued success will be reliant on the ongoing management and maintenance of both the lighting policies and systems. Improved communication between key stakeholders, and in particular residential groups, will greatly assist in continuing the dialogue, knowledge base and response. Careful observation of policy and the coordinated procurement of both lighting equipment and control, including spare parts, will avoid a repetition of the piecemeal development of the lighting systems over time and will help maintenance and reduce running costs. Use of smart lighting controls to help control the lighting in response to background levels of light, footfall and the need to respond to incidents will make for a more successfully managed scheme. Lighting is now sufficiently important to the social, economic and sustainable development of the City of London that it may require a dedicated strategic group to champion it and direct its management on a night-by-night basis.

Recommendations

- Improve communication and follow up with key stakeholders.
- Develop a clear policy of the long term procurement, upgrading and repair of new systems
- Employ smart lighting controls to provide a more responsive and flexible approach
- Consider the appointment of a dedicated Strategic Lighting Board
- Update the City Public Realm Technical Manual to include the introduction of new luminaires and light fittings to inform external stakeholders

4.1.8 Technology

The City of London has decided to upgrade its street and amenity lighting systems. These will use new types of lanterns employing light emitting diodes (LED) as sources, which in turn will be controlled by a new state-of-the-art 'smart' lighting control system. Upgrading to new light sources will not only provide improvements in the quality of the light but also allow much slimmer and lighter-weight lanterns to be used. This in turn will help reduce the visual clutter on facades. At the same time consideration must be given to the visual design of new lanterns and their sympathy for the architecture onto which they are fitted. This is particularly important in the case of listed buildings. The use of special and customised luminaire variants should be considered for luminaires mounted on listed buildings or installed withing historic areas. In some cases it may be considered appropriate to provide custom design housings and/or bracketry. This in turn will help reduce the visual clutter on facades. Whilst current solutions do not provide good glare control it is anticipated that this will improve with new generations of lanterns that follow.

A new 'smart' lighting control system will not only allow the street and amenity lighting to be switched on and off on a fitting by fittings basis as required but also dimmed such that it can account for spill light coming from buildings as well as responding to time, footfall and incidents. It will not only provide greater flexibility but also allow monitoring and feedback which will assist with the management of the lighting systems and help reduce maintenance costs. It will also allow light and darkness to be better balanced.

Recommendations

- Upgrade all public lighting within the area to high quality LED
- Employ simple lanterns and bracketry that are architecturally neutral
- Consider the use of custom housings where fitted to key listed structures
- Upgrade the lighting control to a smart system allowing the individual addressing of luminaires and feedback and monitoring
- Provide more flexible management of the lighting systems adopting different lighting levels at different times and the ability to respond to incidents
- Save energy by using luminaire and control technology to allow the lighting to respond more dynamically to background lighting levels
- Consider opportunities to reduce number of luminaires where practical

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4.1.9 Delivery

The Lighting Strategy for the City of London will only be effective if feasible delivery mechanisms for its recommendations are identified. Whilst this will take both time and funding there are three key ways the realisation of the vision can be achieved in the short to medium term:

- Replacement of Street and Amenity Lighting: The current proposal seeks to fully replace and upgrade all of the existing street and amenity lighting to LED whilst retaining and enhancing historic gas lighting and heritage lanterns. The installation of smart lighting controls to monitor and manage the system offers a unique opportunity to put a large amount of the recommendations of this Lighting Strategy into practice. Not only will the upgrade allow smaller and more efficient light fixtures to be employed that will save energy and reduce environmental impact, but also the ability to dim the street lighting on an area by area or street by street basis will allow for a general reduction in brightness without compromise to safety and security. Such an upgrade will also allow for improvements to mounting heights, when feasible and agreed by building owners, and glare and promote a potential reduction in the amount of lighting equipment and its supporting infrastructure. Along specific roads and alleyways and historically sensitive areas the use of trial tests could help agree appropriate colour temperature for new lighting.
- Improvements to the illumination of the public realm and key landmarks: A series of ongoing publically and privately funded initiatives including Culture Mile, Illuminated River, the upgrading of the architectural lighting of St. Paul's Cathedral, the realisation of the way-finding strategy and various public realm projects all provide the opportunity to deliver a series of finished lighting projects. This will greatly help improve the overall experience and perception of the City of London after dark. It is also hoped that a wider series of initiatives will be considered for the illumination of key elements that assist with creating a more legible environment at night including the illumination of various historic buildings such as churches and livery halls, public art and key public spaces. The use of section 106 incentives for best practice could also help improve lighting of public spaces throughout the City.
- Implementation of improved planning guidance: Improvements to planning policy and guidance in respect of lighting as suggested by this Lighting Strategy will see the early introduction of more detailed requirements for development with respect to the aesthetic, environmental and residential amenity impact of lighting including adherence to the recommendations made in this report. The requirement for all new development not only to properly consider issues such as character after dark but also to provide a greater level of detail as to how the implementation of the lighting will encourage a response that is more sensitive to the broad requirements of each character area. It is recommended that this framework is provided through planning guidance. Such guidance will provide clarity of advice on potential lighting impacts arising from development and how they need to be considered as part of the planning process.

Other measures as recommended in this report including improved communication between key stakeholders and with the wider public, the creation of a Strategic Lighting Board and a growing understanding of the importance of lighting within the City of London will greatly help with incremental improvements over time that will further support the initiatives outlined above.

Lighting integrated into public realm design

Vertical illumination can help create continuity between spaces

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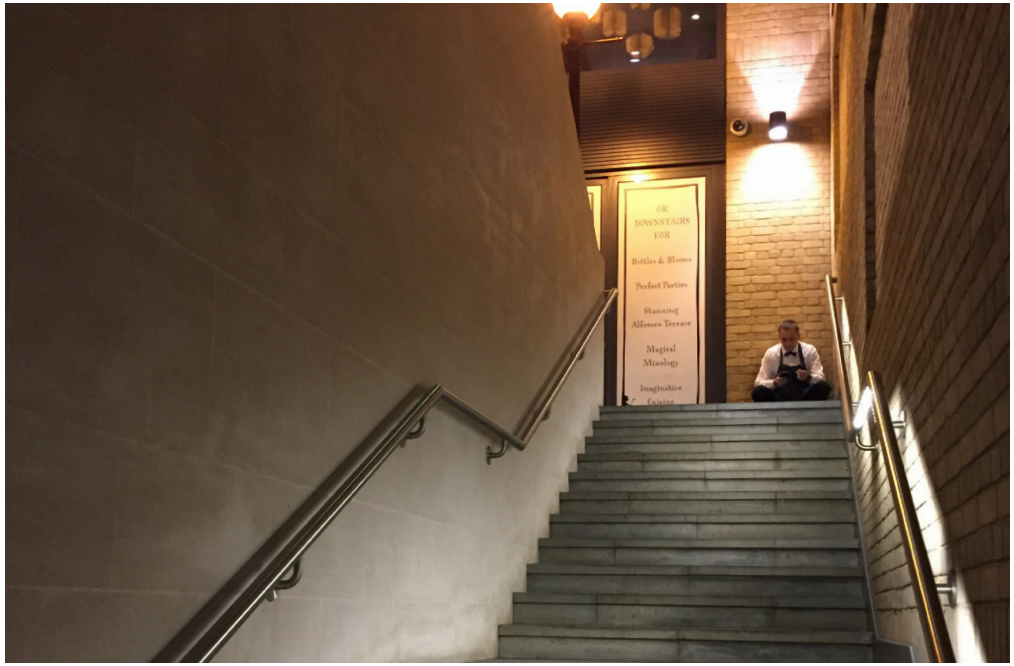
Improve lighting local to hotels and residential areas



Upgrade to LED sources can help improve facial recognition

Balance public and private light

Illumination of key landmarks improves legibility and wayfinding

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4.2/Lighting Standards

4.2.1 Lighting Levels

The City of London currently maintains over 14,000 lighting points the majority of which deliver the street and amenity lighting throughout the City to help keep people and property safe and secure. It also illuminates street signs and bollards and a number of key buildings, bridges and monuments.

Public lighting for the streets and open spaces is currently designed to a set of standards that are based on British Standard BS5489/EN13201-1:2013. This nationally recognised standard provides guidance for the design of lighting of roads and public amenity areas. Other lighting standards which inform current policy includes codes and design and engineering guidance from the Institute of Lighting Professionals, Chartered Institute of Building Services Engineers, Secured by Design and other organisations with an interest in public lighting.

It is recommended that the current lighting standards are amended to align with the adoption of an updated transport strategy and account for the following:

- Improvements in the quality of light delivered by new source technologies.
- Improvements in the flexibility of lighting delivered by new control technologies.
- The needs of character and ambience
- Requirements of the City of London Public Realm team
- Requirements of the City of London Police
- Requirements of the City of London Accessibility Group
- Changes in best practice

The definition of routes used in the following diagrams has been created following the Local Plan, Transport Strategy and the highways route classifications (Appendix C.2) which is based on the purpose and the users of the roads. 'Main Roads' are both London and City access, which are strategic roads and London, local and borough distributor roads (as per the Town&Country Planning Act definition). 'Side Roads' and 'Footways and Alleyways' are local access roads and function as local access roads for vehicles and cycles with pedestrian priority, and streets which are closed to vehicles.

A table outlining the recommended lighting standards to be employed in the City of London is included below. This includes for three levels of light which are influenced by time of day and levels of daylight:

- Peak: the general lighting level to be employed during busy times from twilight and dawn until an agreed curfew which may vary from area to area
- Off-Peak: a lower level of lighting to be employed during quieter times from an agreed time which may vary from area to area until dawn
- Incident: a maximum level of light which may only be employed in emergencies or in direct response to incidents or public order issues
- Night: a lower level of lighting which can be employed after an agreed curfew time in residential areas or areas of lower traffic among others.

Although the timings and management of these different states can be determined on a street by street basis once the new street and amenity lighting is installed and commissioned, it is proposed the new control system is based on levels of daylight in conjunction with time of day. Since the peak/off-peak times do not greatly vary seasonally, the difference in dusk and dawn times is accounted for by sensing daylight and using that condition as the main on/off trigger. This will allow peak, off-peak and night-time levels to be pre-programmed and respond to the dramatic shift in daylight hours between the summer and winter months. The tables below provide suggested lighting levels and lighting levels criteria which may be adjusted after a trial period in response to feedback.

Lighting levels may be increased at key junctions where there is a proven or perceived heightened risk of accidents occurring. However, high light levels should be avoided where possible to discourage unsafe driving practices such as increased driving speeds. A series of unique scenes may also be used to suit areas of increased night time economy, residential areas, temporary events, and proximity to transport hubs by example. The following diagram provides a summary of the recommendations with respect to lighting levels:

Lighting Levels Timings Criteria*

Peak Time	5:00 - 21:00
Off-Peak Time	21:00 - 0:00
Night Time	0:00 - 5:00

*Lights to turn on only if light levels fall below designated levels

Streets

	Uniformity (U_o)	Peak (E_{av})	Off-peak (E_{av})	Incident (E_{av})	Night (E_{av})
Main Roads	0.4	20lx	10lx	50lx	10lx
Side Roads	0.4	15lx	7.5lx	30lx	7.5lx-5lx
Footway/Alleyway	0.2-0.4	10lx	7.5lx	20lx	7.5lx-5lx
Riverbank	0.2-0.4	7.5lx	5lx	15lx	--

**Appropriate 'Night' light levels to be assessed depending on location and foot traffic
**Uniformity (Uo) dependent on routes through space as defined by use

Open Spaces

	Peak (E_{av})	Off-peak (E_{av})	Incident (E_{av})
Adjacent to Main Roads	15lx	10lx	30lx
Adjacent to Side Roads	10lx	7.5lx	20lx
Adjacent to Footway/Alleyway	7.5lx	5lx	15lx
Adjacent to Riverbank	7.5lx	5lx	15lx

**Lighting levels indicated define values for routes around or through open spaces. Values noted should not be applied to entire space.
**Uniformity (Uo) dependent on routes through space as defined by use

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4.2.2 Colour

The hue of white light (colour temperature) of the public lighting systems should be more consistent. It is recommended that the main street and amenity lighting systems range from warm white light (2700K) to cool white light (4000K) depending on the typology of the route or open space with consideration given to the intended character of the wider area and the particular route. As the classification of routes changes over time as a result of traffic experiments and implementation of reduced traffic zones supporting more pedestrian oriented use it is important to reevaluate colour temperature and ensure it supports the changing character and primary user accordingly.

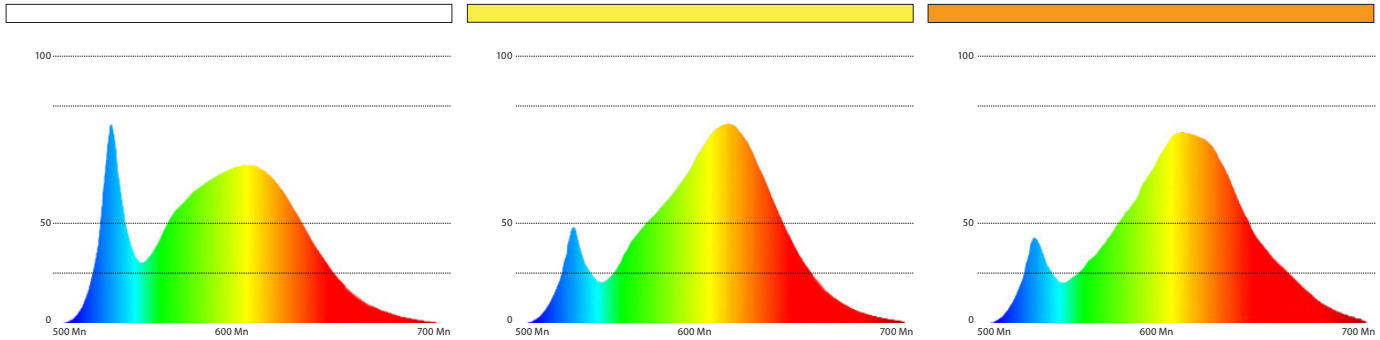
Distinctions between certain character areas may be made through the use of colour temperature, by example Fleet Street's warmly lit narrow streets and passageways will help enhance the historic character or within the Eastern City Cluster where the highly glazed towers marry well with warmer colour temperatures of the public realm and open spaces. In the near future tuneable white luminaires will offer a flexible alternative allowing a luminaire to shift between a range of colour temperatures as explained in Appendix C.5.

Where there is doubt over the appropriate colour temperature required for a route, the decision should be informed by the wider character of the area as well as the following criteria themes:

- Conservation area
- Pedestrian dominated
- Residential area
- Proximity to wildlife and greenery
- Open space
- Vulnerable area
- Night time operation use

LED's generally provide high quality colour rendering Ra 90 or above. This means colours will look natural or accurate. In some cases such high quality might work against the character of an area, by example in historic districts where a lower quality may seem more authentic and appropriate. In such areas the use of lower colour rendering such as Ra 80 or lower may be employed.

The use of saturated coloured light should be limited to temporary lighting schemes only such as is employed for festivals and events. The permanent lighting of public art or light art itself may be an exception. This is in recognition of the unique setting of the City of London as a historic and cultural centre. Care should be taken to regulate coloured spill light onto building facades and into the public realm from illuminated advertising and media screens. Please note estate lighting should follow residents' consultation and advice regarding listed building consent. The following diagram provides a summary of the recommendations with respect to colour temperature:



4000K
80CRI

3000K
80CRI

2700K
80CRI

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*Colour temperature of routes will be determined in response to the criteria themes listed in text opposite such as conservation area, proximity to wildlife and pedestrian dominated among others. Colour temperature will be reevaluated in future in response to changes of route typology

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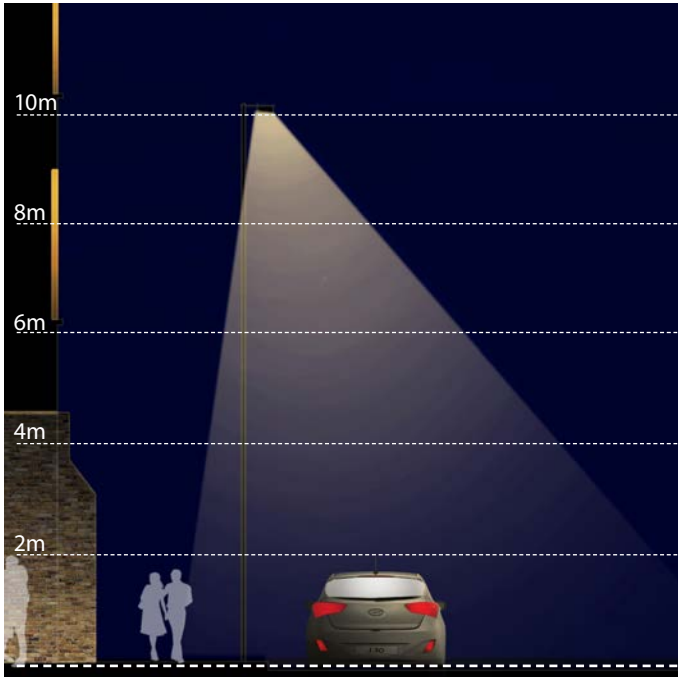
4.2.3 Mounting

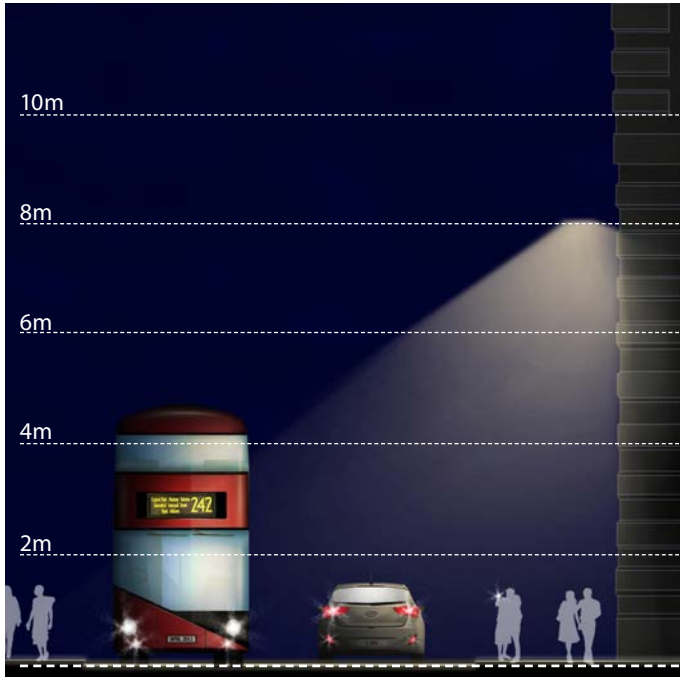
Lanterns should generally be mounted on building facades wherever possible in accordance with current policy and in the interests of reducing clutter on the footway. The occasional use of column mounted lanterns may be permitted where it can be clearly demonstrated that such an arrangement makes a positive contribution to the design of the public realm or no alternative strategy is possible or practical.

Lanterns should be mounted on building facades such they respect the design and visual hierarchy of the building with custom fixtures and/or brackets being considered in the case of important listed buildings or bridges. Whilst spilling light onto the facades of buildings is often unavoidable lanterns should be specified so as to limit visually inappropriate scalloping or shadows.

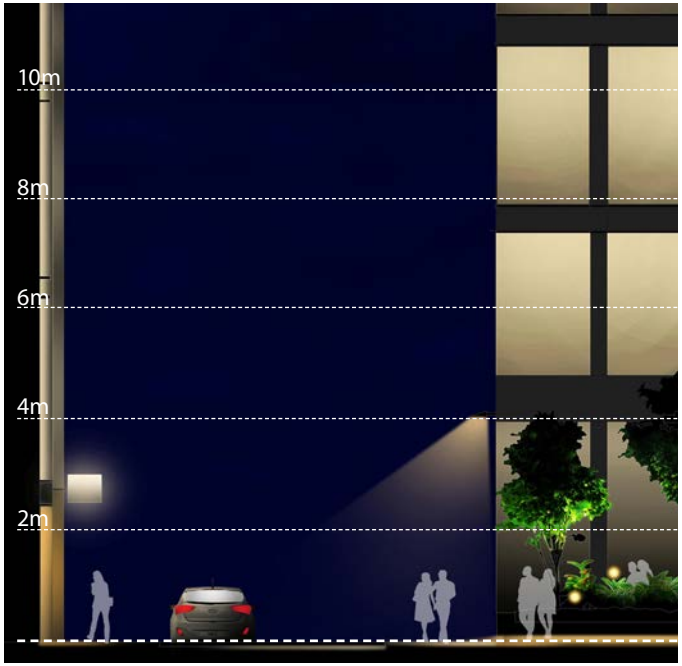
The mounting height of lighting equipment should generally be sympathetic to the height and width of a street or open area such that it either responds to the architecture or human scale. The following diagram provides a summary of the recommendations with respect to mounting heights. Estate lighting should follow residents' consultation and advice regarding listed building consent as to how existing luminaires are upgraded.



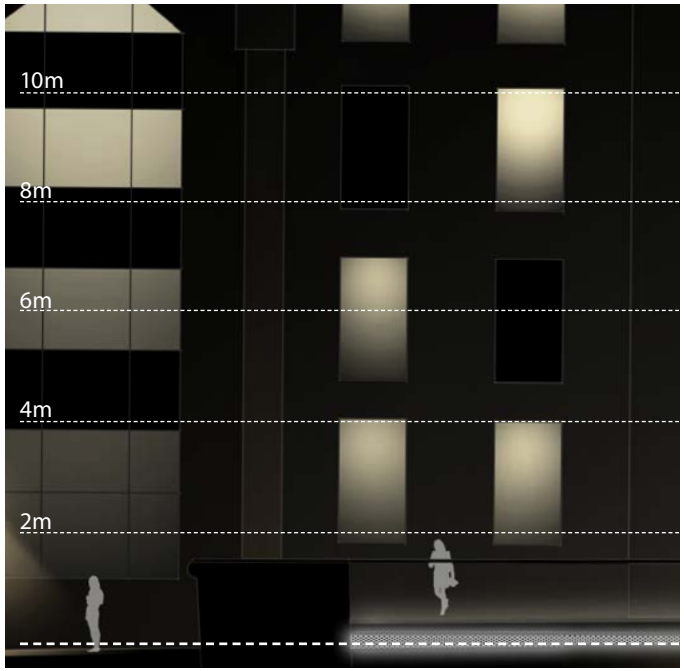
Illustrative diagram: 10m mounting height



Illustrative diagram: 8m mounting height



Illustrative diagram: 4m mounting height



Illustrative diagram: under 4m mounting height

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4.3/Character Areas

The City of London is made up of a series of character areas, each with distinct attributes. The distinction between these areas in terms of the hierarchy and scale of the streets, the design and materiality of the buildings and the provision of open space is clear by day. Appreciation of the character of each area directly contributes to the experience of being in the City.

Lighting can play a key role in place-making after dark through creating the right balance of light and darkness, revealing the texture and colours of materials, providing new interpretations for architecture and landscape and promoting the use of light for public events. In so doing lighting becomes a key urban design tool.

This Lighting Strategy aims to accentuate the unique qualities of each area through a layered lighting approach such that the various character areas maintain some distinction after dark. This will help avoid homogeneity and enhance people's experience of the public realm at night.

The following summaries build on the general recommendations of this strategy to provide a guide as to measures that might be adopted in addition or as variations to suggested lighting standards, colour temperature, scale, mounting heights, etc. Such guidance is not intended to be prescriptive, rather it provides the context against which individual lighting schemes might be developed in different areas over time.

4.3.1 Network

There are a series of site-wide conditions that require specific lighting considerations irrespective of the character area within which they exist. These 'network elements' include routes, changes of level, transport entrances and exits, bus stops and shelters and taxi ranks.. A consistent approach to the illumination of such network elements will help create cohesion.

The most prominent elements within this wider network are the various East/West and North/South routes used by pedestrians, cyclists and vehicles on a daily basis. Whilst the intensity of light will distinguish each type of route it is proposed to unite all primary routes with secondary and tertiary routes in line with each character area through employing a consistent colour temperature. This differentiation of routes is proposed with the intent to encourage pedestrians onto alternate routes alleviating overcrowding.

In addition to the functional lighting of routes accent lighting is proposed to assist wayfinding along primary and secondary routes and to help provide a more human scale. This includes the positive lighting to bus stop totems and shelters, illuminated bollards adjacent to cycle hire stations and taxi ranks. This will help to highlight their presence after dark.

Transport hubs such as underground stations and bus terminals are currently illuminated to much higher levels than those proposed within the wider public realm leading to areas of high contrast in which the eye struggles to adapt. It is therefore proposed that light levels gradually step up around transport entrances and exits to create a gradual transition into and out of the public realm.

The implementation of a dedicated site-wide control system supported by sensors and monitoring devices will provide the potential for light levels to be automatically adjusted in response to surrounding light levels or conversely respond to a drop or increase in light levels around station entrances.

Recommendations:

- Employ a consistent colour temperature to primary routes. Highlight changes of level including steps and ramps when appropriate.
- Highlight entrances to rail and underground stations, bus stops, cycle stations and taxi ranks.

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Chancery Lane

Temples

Fleet Street

St.Paul's and Carter Lane

Culture Mile

Cheapside and Guildhall

Bank

Liverpool Street

Middlesex Street

Eastern City Cluster

Aldgate

Riverside Walk

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4.3.2/Chancery Lane

Providing a unique mix of historic and modern, Chancery Lane houses modern amenities at its Northern and Southern extremes with a wide variety of historic buildings located in between. Historic lanterns should be employed to illuminate streets and passageways in a warm white light enhancing the character of the area while concurrently supporting pedestrian safety and security. The introduction of a consistent human scale of mounting height and retail signage lighting will help reinforce vistas along routes and allow shops, cafes and restaurants in the area to become focal points after dark. Listed buildings such as The Public Record Office should be carefully illuminated in rich warm light delivered from customised lanterns.

Recommendations:

- Use historic lanterns to enhance the character after dark.
- Introduce consistent luminaire mounting heights.
- Introduce a retail lighting strategy along main routes to help reinforce night-time economy.
- Highlight major junctions to assist with legibility and improve safety.
- Use customised lanterns to deliver subtle lighting to historic facades.
- Employ warm white lighting to enhance historic character.

Consistent mounting heights reinforce vistas

Warm white colour temperature enhances historic character

Retail lighting strategy gives cohesive appearance to street

Illustrative Section

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Chancery Lane Sketch Visual

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4.3.3/Temples

Situated in the western periphery of the City, Temples is an area full of rich architectural history illuminated by modern and historic light sources. Middle and Inner Temple, both privately maintained areas, are illuminated by gas light providing a softly lit and unique atmosphere after dark with very low yet uniform light levels. In order to reinforce the historic character, period appropriate lanterns shall be mounted at a human scale of between 4-6m throughout the area including on streets such as Temple Avenue, Carmelite Street and, most notably, Tudor Street which provides a direct link to the Inner Temple. Entrances into Temples along Fleet Street as well as Victoria Embankment will be illuminated in a subtle manner conveying a welcoming atmosphere after dark. A warm white colour temperature will be implemented throughout the area to assist in stitching the historic and more modern urban fabric together while carefully balancing light and darkness avoiding high levels of contrast. Careful consideration should be taken in the selection of LED light sources to compliment and enhance the existing gas lighting of the area. Many LED sources such as LED panels cause notable reflections in historic style lanterns resulting in an unwanted appearance after dark which does not marry well with the historic lantern. Given that footfall throughout the area will vary at peak and off peak hours, the lighting control will adjust light levels during these times of the early morning and evening to assist with wayfinding creating a safe and secure environment.

Recommendations:

- Retain historic lighting and ensure addition of modern luminaires and light sources complements and enhances the existing lanterns of the area.
- Maintain low uniform light levels to enhance historic atmosphere, deliver balanced light levels, and reduce contrast. Introduce historically appropriate lighting to Temple gateways including retrofit LED sources, such as LED gas mantle replacement modules, to maintain historic appearance by day and night.
- Use colour temperature to blend newer areas with historic:
  -Historic gas: 2000-3000K
  -Modern LED: 2700K
- Keep mounting heights low to create positive pedestrian experience and reduce visual contrast between historic area and surroundings.
- Ensure luminaire distribution provides gentle illumination to vertical surfaces

Historic lantern with original gas mantles

Discharge lamp period style lantern fitted with appropriate LED module

Illustrative Section

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Tudor Street Sketch Visual

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4.3.4/Fleet Street

Directly north of Temple and bordering Culture Mile, the character area of Fleet Street is home to a series of narrow lanes and courtyards, some which are still illuminated by gas, such as Gough Square. These narrow routes are pedestrian spaces accessed via covered passageways. Soft illumination to these routes combined with positively illuminated terminations will help encourage pedestrian movement through the area.

It is proposed that the network of medieval streets and lanes will be softly illuminated by historic lanterns mounted at human scale with controlled light spill onto walls. Careful consideration must be given to limiting obtrusive light spill through the windows of residential properties.

Key landmarks within the area, such as St. Brides Church, should be illuminated to serve as local landmarks after dark and aid legibility and orientation.

North of the network of courts and lanes the area has given way to larger commercial developments composed of glazed buildings and large public spaces. As a result mounting heights in these areas need to increase to respond to the architecture with a cooler colour temperature introduced to aid the transition between the historic and modern. Low level lighting to seating areas, landscape and artworks will help provide a more human scale supporting social activity after dark.

Recommendations:

- Provide vertical illumination to key thresholds reinforcing visual links between streets and smaller courtyards and lanes.
- Illuminate key elements forming end views beyond covered passageways to encourage pedestrian movement.
- Introduce low level lighting within seating areas to support social activity after dark.
- Provide lighting to significant landmarks, such as St. Brides, to support wayfinding and enhance legibility.
- Smooth transitions between routes must be established to reduce areas of high contrast and support accessibility.

Illuminated thresholds and end views encourage pedestrian movement

Human scale mounting height emphasises pedestrian routes

Illustrative Section

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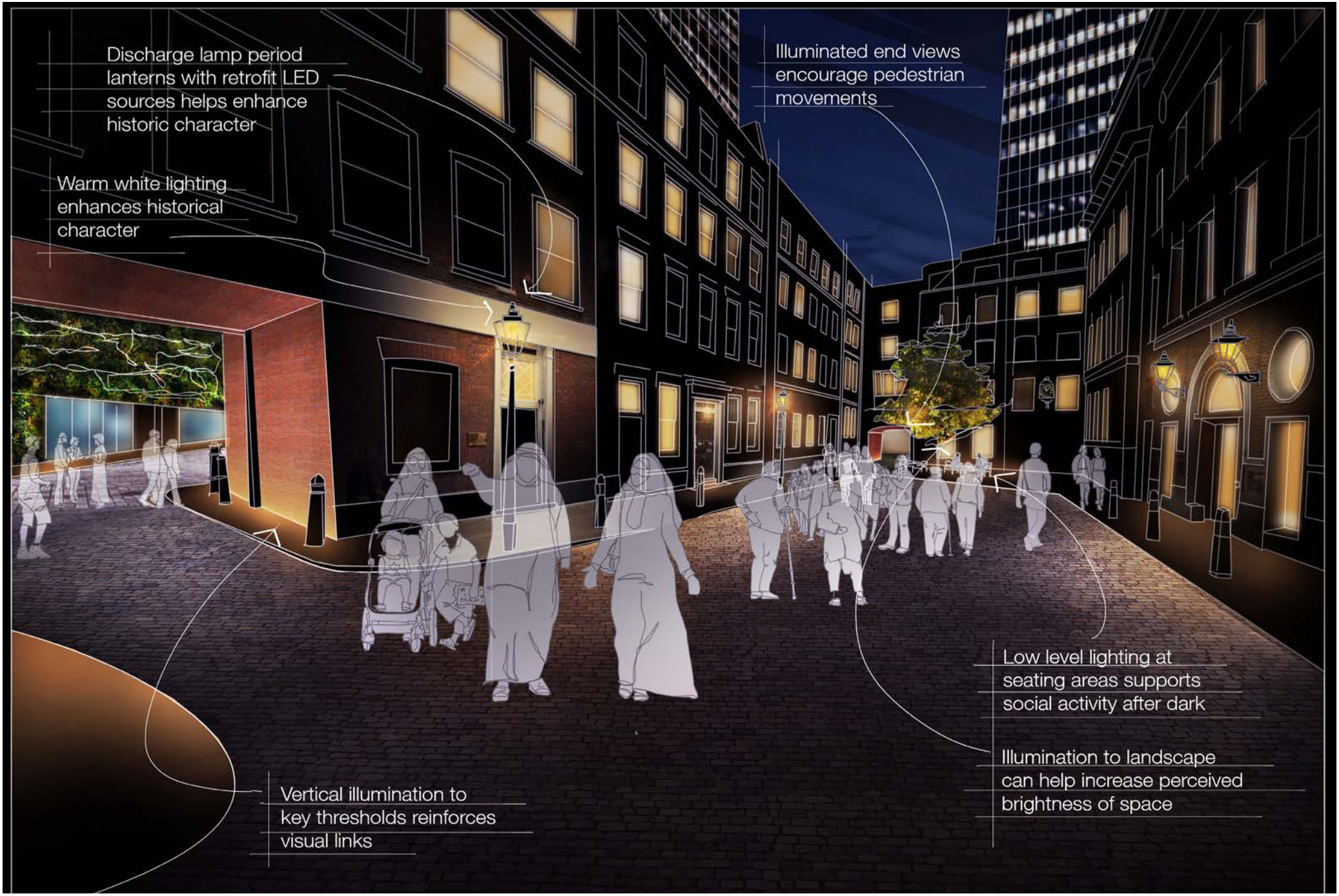

Gough Square Sketch View

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4.3.5/St. Paul's and Carter Lane

Bounded by Cannon Street and the Riverside Walk, St. Paul's and Carter Lane area is made up of a series of narrow lanes and passages largely dominated by pedestrian movement and cyclists. Hosting a wide variety of public realm design styles the lighting should aim to respond to the immediate context with modern luminaires adopted along routes such as Peter's Hill with period luminaires introduced on narrower roads such as Carter Lane and Burgon Street.

Low level lighting should be introduced where possible to promote views to landmarks such as St. Paul's Cathedral and the Tate Modern. Additional landmarks including St. Benets Metropolitan Welsh Church and the national Firefighters Memorial will be carefully illuminated to serve as local landmarks within the area assisting wayfinding and legibility.

Restoration of the lighting to Millennium Bridge and the upgrade of external lighting to St. Paul's Cathedral will introduce positively illuminated end views towards and from the river encouraging pedestrian movement. Bifurcated by Lower and Upper Thames Street the illumination of key pedestrian crossing point will help reinforce connections to the riverfront and create a more safe and secure area.

Recommendations:

- Introduce low mounting heights to promote views to landmarks and destinations such as the Tate Modern and St. Paul's Cathedral.
- Luminaire style and integration method should respond to public realm design creating a cohesive design approach.
- Feature lighting to historic buildings and landmarks such as the National Firefighters Memorial and St. Benets Metropolitan Welsh Church will enhance character after dark.
- Restoration of lighting to Millennium Bridge and St. Paul's Cathedral to support connections to and from the River Thames and Riverside Walk.
- Low level lighting to key pedestrian crossing point along Upper and Lower Thames street will reinforce connections to the riverside walk.

Controlled spill light to greenery creates welcoming space

Low level illumination celebrates vistas

Sketch View from Millennium Bridge

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Peter's Hill Sketch View

© 2018 Speirs + Major LLP.

4.3.6/Culture Mile

Poised to become a major arts and culture destination in the future Culture Mile will transform the area attracting vast amounts of visitors throughout the year. The opening of the new Crossrail station in the area will see footfall increase dramatically and careful consideration must be taken to ensure light levels around the new station and existing stations is adequate and blends into the wider context in a sympathetic manner to avoid areas of high contrast.

In keeping with the aspirations of the public realm design and methodology, the lighting should aim to complement the public realm design whilst simultaneously introducing a unique identity to the area to distinguish it from the adjacent surroundings which includes Golden Lane Estate and the City's largest residential community within the Barbican Estate. Consideration must be taken to prevent any negative impact to residents and respecting the needs of residential areas.

Glowing light objects could be peppered throughout the public realm to introduce lighting with which the public can interact. These objects should provide a soft diffuse light and serve multiple functions such as seating, wayfinding and play features becoming local landmarks and supporting wayfinding.

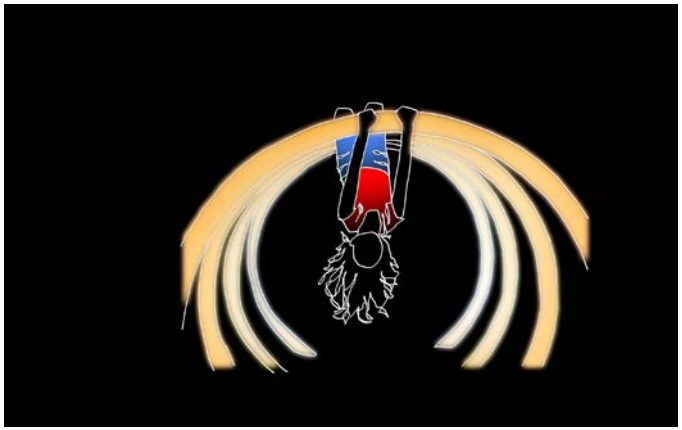
Key landmarks and memorials such as Smithfield Market and the William Wallace Memorial should be lit in a sympathetic manner to enhance their presence after dark.

Recommendations:

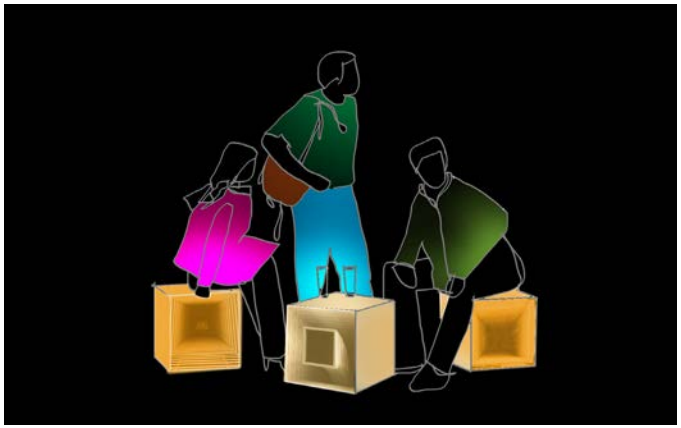
- Introduce a playful lighting approach which assists in connecting the various cultural institutions in the area, most notably, the Barbican.
- Celebrate the rich historic and iconic architecture of the area by introducing lighting which is sensitive to the original design intent.
- New developments such as the Museum of London provide opportunities to become beacons after dark.
- The base level of functional light for large open spaces is to be delivered from high level low glare luminaires to allow maximum flexibility for events.
- 'Light objects' to be introduced throughout the area to create unique identity and allow for moments of interaction.
- Low level lighting to seating areas after dark to create intimate ambience and encourage activity after dark.
- Ensure lighting does not negatively impact residents or residential areas.

Light objects blend into the surroundings by day.

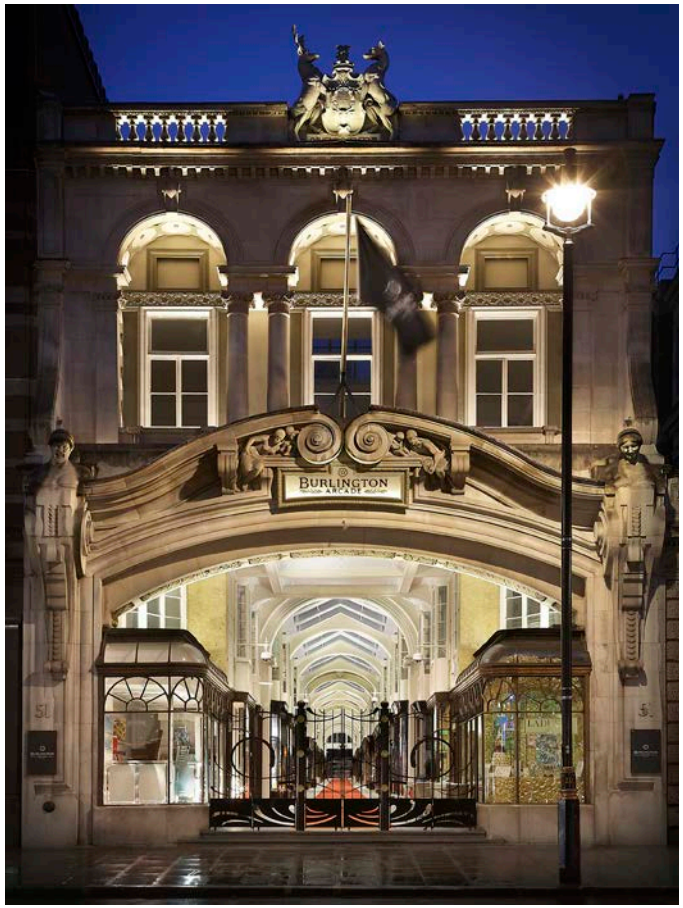
Playful lighting assists with wayfinding and legibility after dark.



Illuminated objects allow moments for interaction and play



Integration of public art into urban fabric increases their prominence



Considerate illumination of historic landmarks

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Long Lane Sketch View - Typical Evening

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4.3.6/Event lighting within Culture Mile

With various cultural institutions already within the vicinity and various others to be introduced in time, Culture Mile is poised to become an ideal location for events in the future.

The introduction of temporary event lighting, such as projections and colour changing elements, will allow the area to transform at specific times throughout the year becoming a destination known to visitors and locals alike. Invited artists could create temporary site specific installations which will bring the area to life after dark.

A flexible infrastructure to facilitate event lighting and temporary installations should be introduced. This will aid in reducing costs and providing easy installation and removal of temporary lighting for a variety of events.

The installation of permanent coloured or theatrical lighting should be avoided. The use of theatrical light including coloured and textured illumination to be subject to an assessment on the impact of such lighting on those with visual impairments which also considers and respects the residential areas in the area.

Recommendations:

- Avoid permanent use of coloured lighting
- Consider how temporary lighting can enhance art installations, events or exhibition launches.
- Identify areas where temporary installations or theatrical lighting features could be installed and provide required infrastructure to allow easy and cost effective installation.
- Event lighting should consider and respect residential areas and ensure there is no negative impact on residents.

Janet Echelman's temporary installation illuminated after dark.

Temporary installation within Beech Street Tunnel

Long Lane Sketch View - Temporary Event Mode

© 2018 Speirs + Major LLP.

Beech Street Tunnel Sketch View - Typical Evening

Beech Street Sketch View - Temporary Event Mode

Beech Street Sketch View - Temporary Event Mode

Beech Street Sketch View - Temporary Event Mode

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4.3.7/Cheapside + Guildhall

Deemed as the new retail destination within the City, Cheapside has recently been upgraded to provide wider pavements and improved lighting running from Bank to St. Paul's Cathedral. Human scale lighting should be introduced to help support North/South pedestrian movement.

An emphasis should be placed on lighting to corner buildings in order to encourage pedestrians away from main thoroughfares onto alternate routes. Low level lighting should be employed to enhance the greenery of local pocket parks whilst warm white light will create intimate areas of pause around seating areas creating a welcoming experience after dark encouraging extended footfall throughout the evening. Uplighting to trees should be dimmed after a designated curfew time to reduce negative impact on ecology and reduce light pollution.

Feature lighting to key landmarks such as the Guildhall and St. Lawrence Jewry will help celebrate the historic character of the area and encourage pedestrian movement through the area after dark.

Recommendations:

- Human scale lighting and lighting to building corners will support pedestrian flow onto alternative routes and alleviate overcrowding of pavements.
- Lanterns along pedestrian routes to provide vertical illumination to create vistas.
- Cool white (4000K) lighting will be introduced to landscape to accentuate greenery while warm low level lighting to seating areas will create welcoming after dark environment for pedestrians.
- Tree uplights will be dimmed or switched off after an agreed curfew time.
- Introduce a consistent lighting approach to shopfronts and associated signage to reinforce character after dark and avoid obtrusive lighting.
- Architectural feature lighting to key landmarks such as Guildhall and St. Lawrence Jewry will celebrate historic character of area and improve their presence within the public realm after dark.

Consistent retail lighting approach enhances legibility

Highlighting building corners encourages pedestrian movement

Illustrative section

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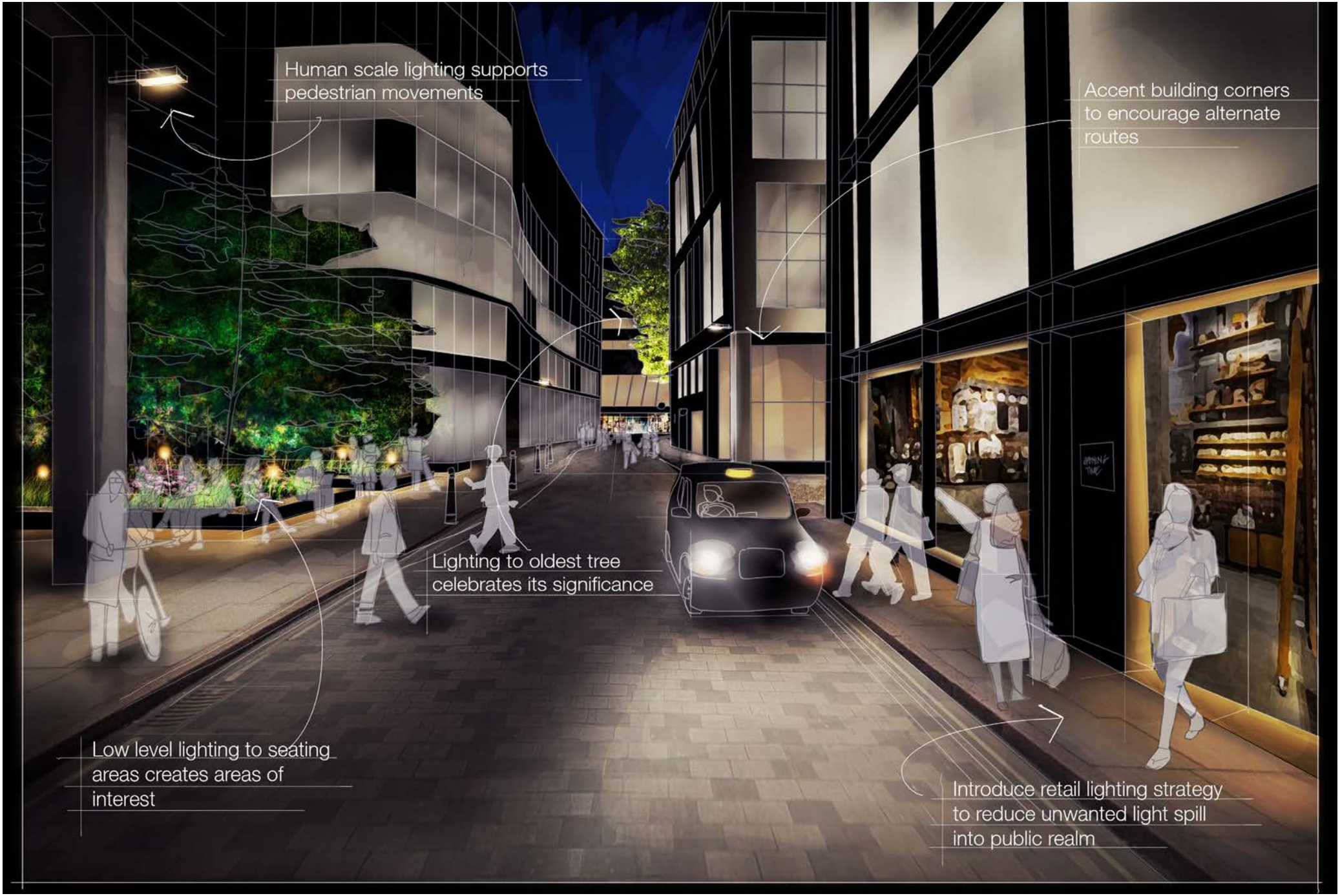

Sketch View

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4.3.8/Bank

An area defined by the movement of people and vehicles, Bank functions as the daily route for many throughout the City. However, unbeknownst to most, it is also the largest and oldest conservation area within the City. Architectural illumination to key monuments including Mansion House and 1 Princes Street would help celebrate these landmarks after dark while also increasing vertical illumination at Bank junction aiding in wayfinding.

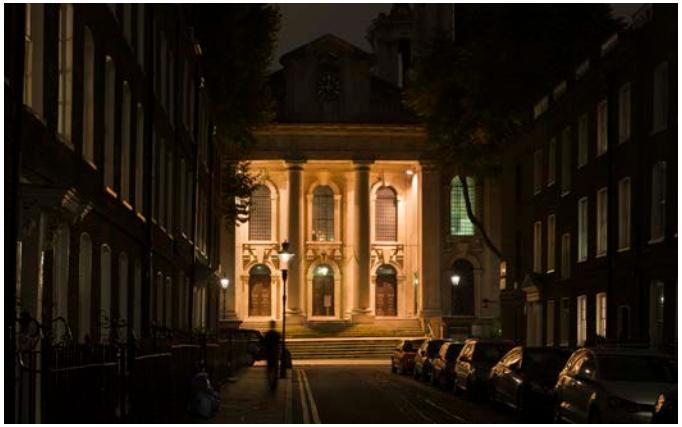
Where streetlights are mounted onto historic buildings adjustment to luminaires should be applied to soften the backspill onto the building facades reducing harsh scallops.

The subtle illumination of building corners and smaller streets and passageways of pedestrian scale in a warm white light will promote alternate routes for pedestrians aiding congestion and overcrowding along pavements supporting a positive pedestrian experience.

As a result of the current traffic experiments and the potential for future implementation of reduced traffic zones and route reclassification geared towards more pedestrian orientated use, the lighting levels and colour temperature will require reassessment in accordance to the intended users.

Recommendations:

- Introduce architectural lighting to the landmark buildings at Bank Junction to improve legibility of junction and elevate buildings' historic importance.
- Provide lighting control to luminaires to capitalise use of public space after dark during peak and off peak hours.
- Illuminate junctions to improve safety and legibility and connect into the larger network of routes.
- Highlight street corners and secondary routes to encourage pedestrian use of alternative routes.
- Introduce feature lighting to destinations supporting night time economy and pedestrian movement.
- Provide a hierarchy of routes using luminaire mounting height and colour temperature to differentiate primary and secondary/tertiary routes.
- Consider future traffic changes to the area and ensure lighting levels and colour temperature adapt in accordance to any new route classifications



Architectural lighting enhances historic character

Vertical illumination enhances landmarks

Illustrative section- Primary Route

Illustrative section- Secondary Route

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Bank Junction Sketch View

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4.3.9/Liverpool Street

Already one of London's busiest transport hubs, Liverpool Street will see a dramatic increase in pedestrian activity with the opening of Crossrail. The lighting local to this area must therefore be designed to create a welcoming and secure environment with pedestrian comfort, wayfinding and security as a priority.

Human scale mounting heights should be introduced along pedestrian routes such as Liverpool Street to support the burgeoning night-time economy while also enticing pedestrians onto alternate routes, alleviating overcrowding of pavements throughout the area.

Light levels should be increased during peak hours, returning to a low, uniform level throughout off-peak hours to encourage cafe, restaurant and bar spill out into the public realm to help create a vibrant and colorful atmosphere.

Care must be taken to avoid harsh transitions between private and public lighting, most notably transport hubs, in order to reduce unwanted contrast and provide an accessible environment after dark. Along with an increase in vehicular and pedestrian traffic, cyclists are plentiful throughout the area and will likely increase in number with completion of developments within the Eastern Cluster and Moorgate. With Sun Street serving as a major connection into the Cycle Superhighway network, passive reflective materials embedded into the pavement would create interest by day and increase safety after dark without the need to increase light levels dramatically.

The illumination of artworks and key buildings and artworks would improve perceived brightness supporting wayfinding and providing meeting points away from busy station entrances alleviating congestion.

Recommendations:

- Introduce dynamic lighting control, including light sensors, to adapt light levels throughout public realm in response to commercial office spill therefore reducing energy.
- Lighting control will respond to pedestrian volume and activity:
  - Morning > Commuters > High light level
  - Evening > Commuters/Shoppers >High light levels
  - Night > Visitors/Social > Medium light levels
- Introduce vertical illumination at transport hubs to reduce contrast an support wayfinding.
- Utilise passive light sources to improve wayfinding and maintain low light levels.

Reducing contrast around transport hubs improves legibility of space

Passive reflective sources can assist in identifying hazards

Illustrative section

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Liverpool Street Sketch View

© 2018 Speirs + Major LLP.

4.3.10/Finsbury Circus

Nestled within the larger Liverpool Street area, Finsbury Circus serves as a retreat for pedestrians traversing the busy area from Moorgate and London Wall directly adjacent. The historic square is surrounded by a multitude of listed buildings which gives the area a distinct character.

Lighting levels should be kept to a minimum throughout the area to allow soft feature lighting to key entrance thresholds to become the main focus. Warm white lighting to the public realm will help support the historic character.

Historically appropriate lanterns should be introduced in keeping with each building's style to celebrate the distinct character of each building with staggered post top globe lanterns introduced at street level to provide illumination to pavement and street.

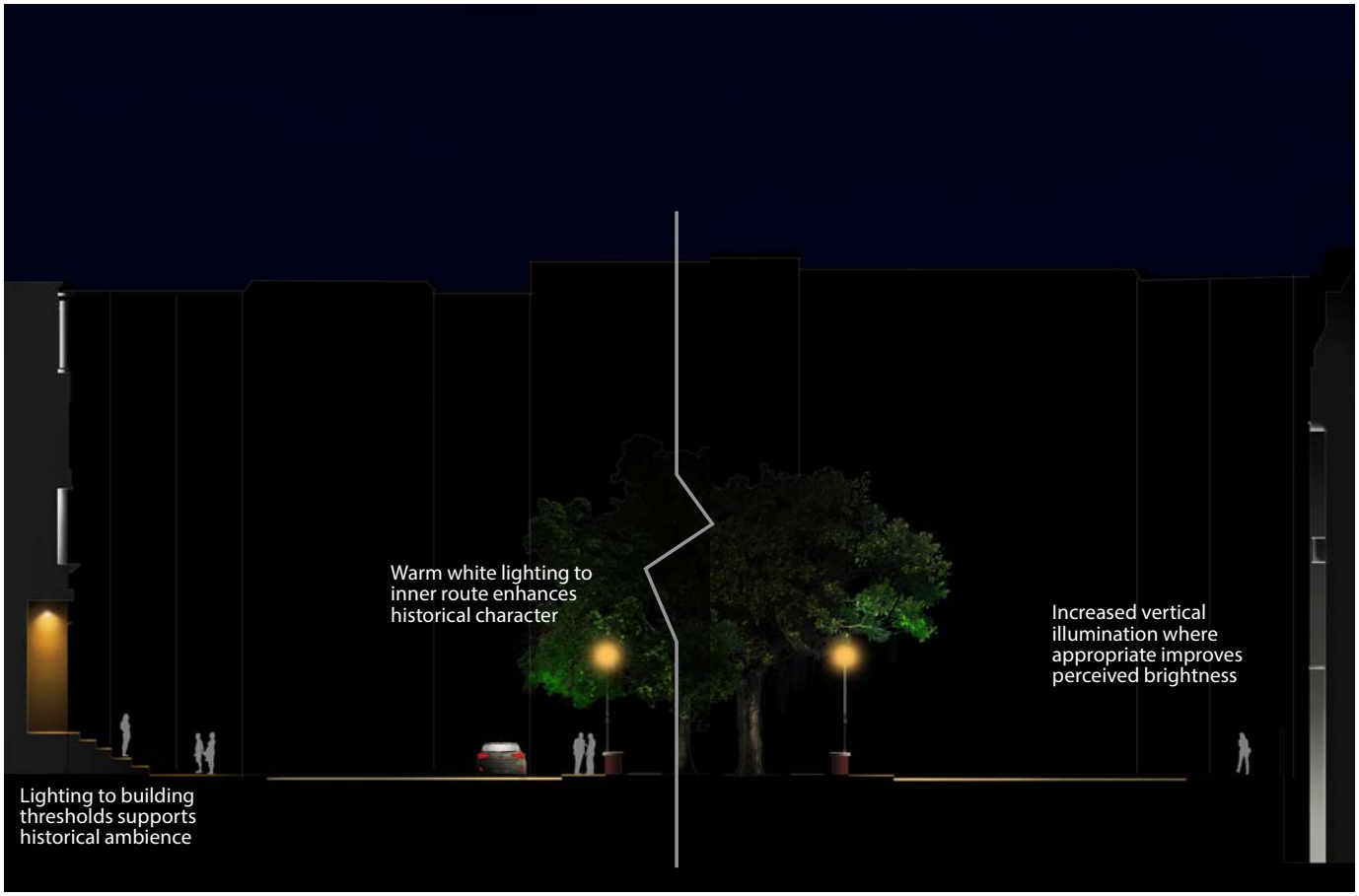
Efforts to reduce visibility of office lighting within buildings must be employed to limit unwanted spill light and views of office lighting after dark.

Recommendations:

- Introduce feature lighting highlighting architectural details to create a unique identity after dark.
- Introduce human scale lighting columns at street level to provide functional lighting reinforcing the historic character of the area.
- Provide sensitive landscape lighting scheme to the main garden at the heart of the space.

Historic lanterns enhance character

Human scale lighting reinforces pedestrian movement



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4.3.11/Middlesex Street

Forming the north-east corner of the City, Middlesex Street is a lively area throughout the day and night. A short walk from Old Spitalfields Market and Brick Lane, the area is characterised by a wide mix of retail, restaurants and bars along narrow passageways. The area is also home to Petticoat Lane Market located at the boundary between City of London and Tower Hamlet which will undergo changes and improvements as a result of an enhancement project currently being developed. This will allow opportunity to review the current lighting and ensure lighting introduces will help support the night time economy of the area.

Wall hung lanterns should be employed throughout these narrow pedestrian routes such as Artillery Lane and Widegate Street in order to introduce lighting at a human scale.

The lighting along key pedestrian routes should be varied and evolve throughout the year attracting visitors and improving the appearance of these unique streets after dark increasing footfall and supporting the night time economy.

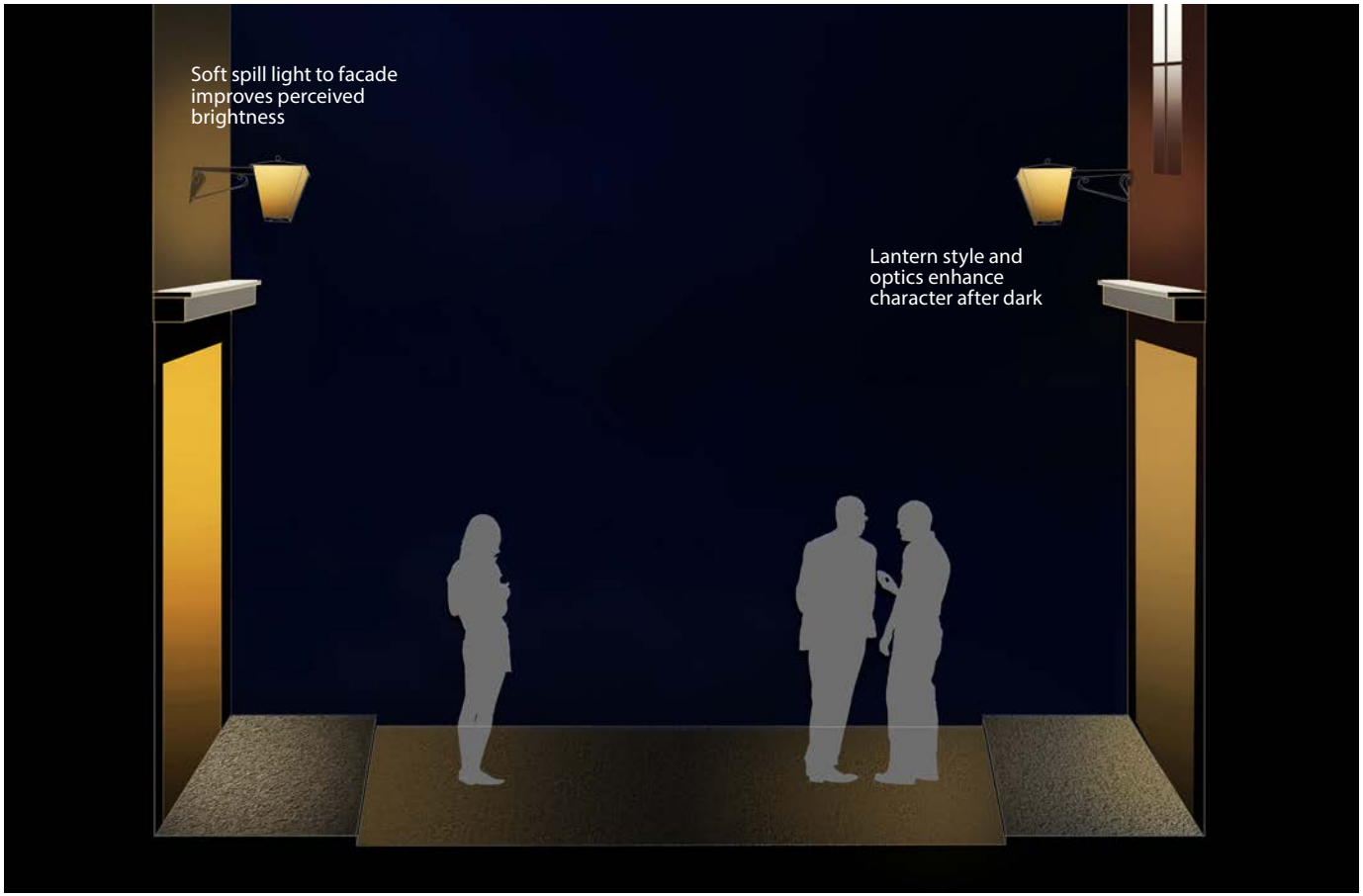
Guidelines to storefront lighting should be introduced to limit obtrusive light and high levels of contrast reinforcing feelings of safety and security throughout the area.

Recommendations:

- Lighting should assist in seamlessly blending the public realm into the adjacent context in order to improve the night time economy and attract pedestrian footfall.
- Opportunity to introduce wall mounted lanterns along selected routes to attract pedestrians from visually busy Bishopsgate corridor and create intimate atmosphere for pedestrians.
- Opportunity to review existing lighting where street and area enhancement projects are undertaken to support night time economy.
- Introduce omnidirectional sources along pedestrian routes to highlight vertical surfaces.
- An overall approach to storefront lighting should be established maintain a high level of perceived brightness throughout the evening reinforcing feelings of safety and security.

Warm white human scale lighting enhances character

Infrastructure allows flexibility for event and festive lighting



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Widegate Street Sketch View

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4.3.12/Eastern City Cluster

Home to London's most recognised skyline, the Eastern City Cluster provides the backdrop for many key monuments throughout the City as well as the wider London context.

Local landmarks such as historic churches or prominent squares should be illuminated with warm white light accentuating their materiality and emphasising their presence after dark. Lighting to smaller local landmarks such as squares and artworks would help reinforce a sense of scale creating a network of reference points within the area supporting way finding and navigation after dark.

Given the fluctuation in footfall during peak and off peak hours, dynamic lighting control should be introduced to increase safety after dark while avoiding over illumination during off peak hours such as weekends and holidays when pedestrian movement is considerably reduced.

A unique opportunity exists to integrate lighting within transport links such as bus shelters and totems introducing human scale lighting throughout major transit areas otherwise lacking human scale markers or landmarks. Integration of light into the totem and location identifier would create a visual marker creating an opportunity to introduce colour and playfulness after dark.

The Easter City Cluster is also home to a successful urban sculpture park 'Sculpture in the City', which showcases a selection of contemporary public artworks installed in the space between buildings of this insurance district of the Square Mile. Considerate and appropriate lighting could enhance this world class set of sculptures after dark, encouraging local workers and visitors to discover the artistic trail. In addition special consideration in areas used for the 'Sculpture in the City' should be taken to ensure artworks are enhanced after dark.

Recommendations:

- Introduce lighting to foreground elements such as landmarks, artworks and wayfinding aids distinguishing them from the background illumination of the high rise towers.
- Illuminate local landmarks in warm white light highlighting buildings and objects of interest at street level reinforcing wayfinding and celebrating heritage.
- Introduce dynamic control to adjust light levels in relation to varying pedestrian movement and varying levels of spill light from private developments reducing contrast.
- Integrate lighting to wayfinding signage throughout major transit areas reinforcing human scale and supporting wayfinding and legibility.
- Improve lighting in areas used for 'Sculpture in the City' to enhance artworks.

Cool white light distinguishes primary routes through the area

Warm white light creates contrast against neutral white light

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Leadenhall Street Sketch View

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4.3.13/Aldgate

Undergoing a series of improvement projects, Aldgate is quickly becoming a sought after destination given its close proximity to Liverpool street and various other transport links.

The introduction of a number of new pocket parks, and planted areas, alongside an emphasis on art and play offers an opportunity to integrate feature lighting to green spaces and public squares accentuating their presence after dark transforming them into destinations for visitors, commuters and local residents supporting the character of the area and improving accessibility. One such space is Aldgate Square which is poised to become a local meeting point and space for social interaction and events.

Key monuments such as the Church of St. Botolph should become landmarks after dark through being bathed in warm light highlighting the ornate windows after dark; exterior lighting introduced in a restrained manner will maintain its historical integrity.

Tertiary routes should be lit to lower lighting levels with mounting heights reduced to 4-6m to avoid unwanted spill light into windows supporting the wellbeing of local residents.

The introduction of a lighting control system will allow light levels to primary and secondary routes to vary during peak and off-peak hours supporting the safety and wellbeing of pedestrians while concurrently supporting an emerging night time economy composed of restaurants, bars and cafes.

Recommendations:

- Light key greenery to celebrate the green character of the area and provide vistas for pedestrians after dark to help improve wayfinding.
- Introduce feature lighting to historical landmarks and artworks to improve legibility of the public realm after dark.
- Human scale mounting heights, controlled light distribution and smart control will reduce light trespass into windows and help improve health and well being of residents after dark.
- Use lighting as a tool to differentiate thoroughfares from local and residential routes and passages improving legibility after dark.
- Introduce flexible lighting around public squares which also serve as event spaces to support activity.

Lighting to greenery creates vibrant backdrop for events

Illuminating pocket parks transforms their appearance after dark

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4.3.14/Riverside Walk

A prominent destination for runners, tourists and Londoners looking to escape the busy roads, the riverbank provides an opportunity to create a unique pedestrian destination.

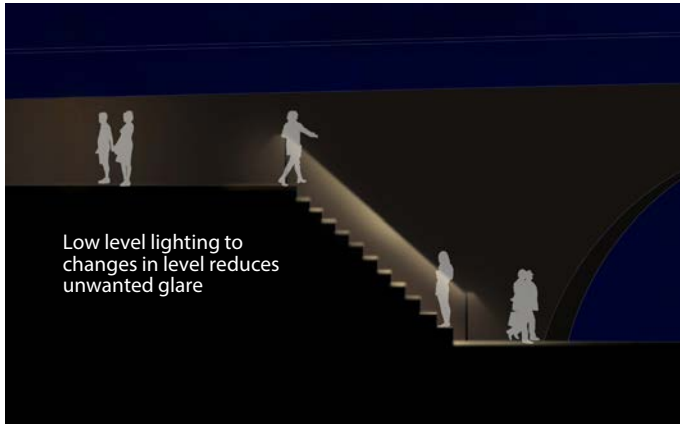
Light levels along the riverbank should remain low yet uniform and be delivered from low level lighting to promote views out across the Thames and reduce impact on the local ecology. Such measures will also help support the local ecology. It is proposed that the iconic 'Sturgeon Lights' be restored and refurbished in order to reduce glare and provide a greater amount of functional light to the path supporting accessibility and promoting feelings of safety and security.

A series of underpasses and overhangs are dotted along the path. The perception of these should be improved by the introduction of lighting to the walls as well as bridge soffits to help create positive thresholds for pedestrians after dark.

The introduction of human scale illumination at key changes in level such as Millennium Bridge would help encourage more activity onto the Riverside Walk. In order to support the running community which regularly use the riverbank for sport the introduction of pavegen or similar smart flooring technology which can harness footsteps to create energy could introduce an analog level of lighting interaction creating ripples of light along riverside festoons triggered by the amount of activity.

The use of existing infrastructure to mount temporary lighting for events such as night walks and runs for charity or to showcase temporary installations or artworks will provide greater flexibility along the Riverside Walk allowing for adaptation and flexibility in the future.

Low level lighting delivers controlled lighting to potential hazards



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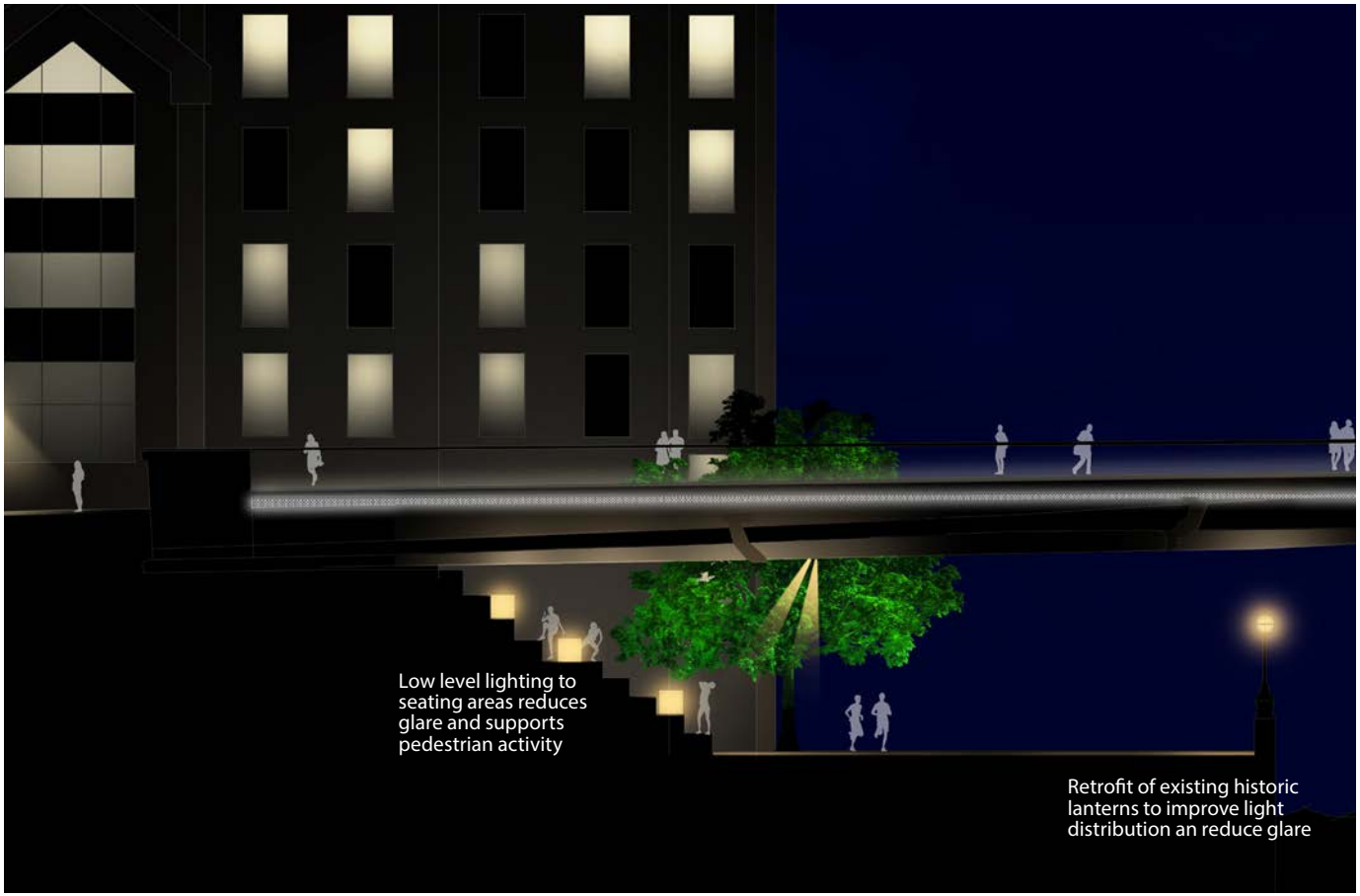

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The lighting of the riverbank will be greatly influenced by the 'Illuminated River' project, the outcome of which must be considered as part of any re-lighting of the area. Human scale, warm white lighting and reduced glare will help promote views of the illuminated bridges and celebrate the panoramic views along the river Thames ensuring the bridges become an integral element of the area's character and image after dark. Consideration must be given to areas where decorative lighting to the bridges and functional light will overlap, such as at changes of level, to ensure the lighting is balanced and the overall effect of the bridges is showcased.

Places of pause such as seating areas and planted pocket parks will be softly illuminated to suit the activities of each space in order to create a welcoming environment after dark which allows flexibility of use and helps showcase notable historic buildings. At selected key junctions along the pathway theatrical lighting to gathering areas will be bold and memorable supporting a diverse and ever changing series of events throughout the year.

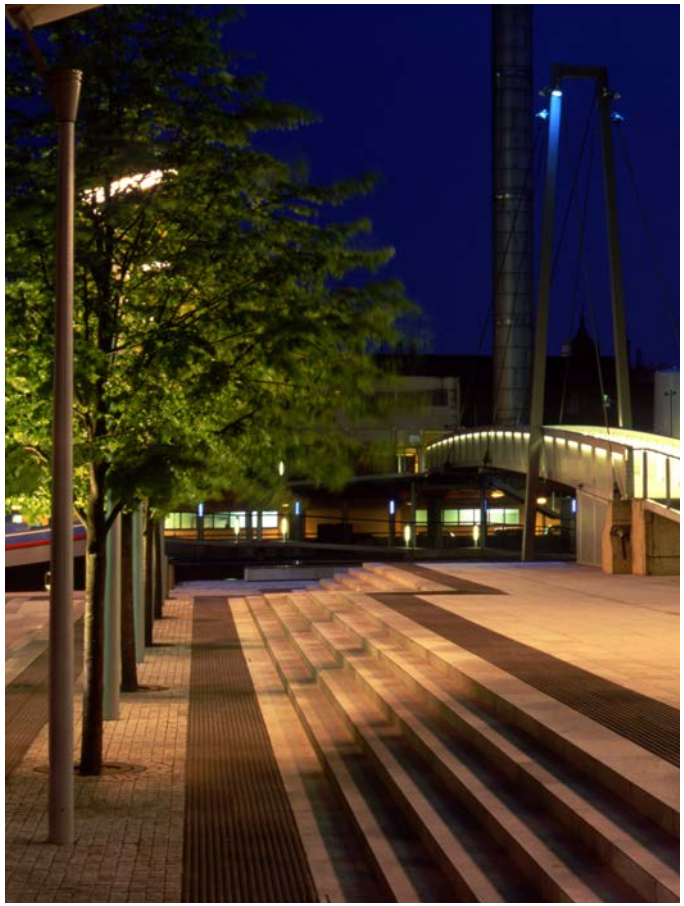
Recommendations

- Introduce uniform low light levels along extent of riverside walk improving accessibility and creating continuity along extent of pathway.
- Provide feature lighting to landscape and seating areas creating a welcoming pedestrian environment after dark.
- Integrate lighting at low level along key changes in level reducing glare and improving the legibility of the space without negatively impacting existing ecology.
- Retrofit existing historic lanterns along waterfront improving light distribution and reducing glare.
- Positively illuminate underpasses to promote pedestrian movements and support safety and security.
- Consider the benefits provided by the Illuminated River project.
- Introduce playful interactive lighting which creates a direct link between pedestrians and activity.
- Promote views of the Illuminated River bridges and views across the river Thames.

Low level lighting promotes views

Illuminated River proposal

Variation in lighting supports a wide range of activities



Human scale lighting enhances public space and supports safety

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