

CENTRE FOR LONDON

Seeing clearly: How lighting can make London a better city

Nicolas Bosetti and Joe Wills



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Foreword

As Night Czar, I work to ensure London thrives when the lights go on. London is a 24-hour city and lighting makes that possible. Without it, our city would grind to a halt. London's 1.6 million night workers could not travel safely and confidently to their jobs. Our supermarket shelves would soon empty, hospitals would shut down after dark and global trade, culture and creativity would wither. Lighting is essential. But are we using the right kind of light in the right places?

Lighting can create welcoming, relaxing, thrilling or beautiful public spaces. It can help local communities and economies to thrive, making the difference between a high street feeling festive – or frightening – at night. Modern, affordable lighting allows us to reimagine our city at night. We can use it to celebrate the art, nature and architecture that we pass by without noticing in the day. The Mayor's new Night Time Strategy guidance includes dozens of inspiring examples of good lighting.

Lighting is a powerful tool but it is often overlooked or misunderstood. This report poses the vital questions: What is happening in our city after dark? Who is out and about, and why? Does our lighting help or hinder those people and London's economy? The report also reveals the ad-hoc way in which much lighting has developed, with competing sources of private and public light, and little coordination.

Across London tens of thousands of people make decisions about lighting every day. The manager who turns the shop lights on, the developer creating a neighbourhood lighting scheme, the local authority lighting engineer purchasing new lampposts for the high street: these are the people who create London's nightscape.

My challenge to everyone who lights London is to join forces and work in partnership. Lighting gives us a unique opportunity to create places where we all feel welcome and included after dark. Let's harness that force and put us – the users of light – at the heart of night-time planning. As this report shows, the benefits for the environment, the wellbeing of Londoners, and the recovery of London's businesses from the devastating COVID-19 pandemic, are waiting to be seized.

Amy Lamé
Night Czar

Foreword

Working on a project devoted to light for the last four years has literally opened my eyes to issues that I had rarely noticed before. Creating the first luminance survey along the central area of the Thames showed us that many buildings were lit well over recommended limits and threw harmful direct light onto the river. Those responsible were unaware of the issues they were creating. When we showed them our data, they were surprised yet eager to change and learn more.

Our discussions with stakeholders during this project raised many other questions. Why do many of our historic landmarks (that are often sensitively lit) disappear at night amongst the glare of over lit office buildings? Why is there no curation of our nightscape in our capital city? Why are those without professional expertise creating lighting effects that dominate the night? Why don't we turn more lights off to save energy – embrace the dark instead of trying to recreate the effect of daytime? Why can't planning regulations and guidance reduce light pollution issues?

This is why we approached Centre for London to conduct this research and are grateful to be joined by like-minded partners who demonstrate leadership in this field. The report alone cannot have the answers but it suggests possible approaches and highlights best practice, thanks to the input of our expert advisory group.

We hope it will start a conversation about what we can all do to help create a thoughtful nightscape in London that is more environmentally friendly, makes the city feel more inclusive, celebrates our historic capital and works better for Londoners and visitors alike.

The quality of artificial light in the built environment affects us all – we need to give its use much higher consideration and work together to improve the city we see at night.

Sarah Gaventa

Director, Illuminated River Foundation

Summary

The aim of this report is to stimulate public debate about how London is currently lit. Our capital has the potential to be one of the best-lit cities in the world, yet for a mix of reasons, it hasn't treated lighting as a priority. This is despite growing evidence of the benefits that good lighting can bring to cities – and the costs if it is ignored.

In what follows, we explore the benefits of better lighting for London, as well as the reasons that the city hasn't given lighting more attention. We also outline some recommendations showing how improvements in London's lighting could be achieved.

The primary focus of this report is on light shining onto public spaces from both public sources (like streetlamps) and private sources (such as shop fronts, office buildings or luminous advertising).

Good lighting can help London solve some of its pressing challenges:

- **Supporting town centres:** Good lighting makes economic sense, since it enables us to spend more time enjoying the city's culture, hospitality, retail and nightlife.
- **Encouraging walking and cycling:** Good lighting makes active journeys easier, safer and more enjoyable, thereby benefiting health, inclusion and decarbonisation. Good lighting also enables us to participate in outdoor sports after dark.
- **Creating opportunities for social interaction:** Good lighting lets people stop outside for relaxation or a chat. This not only has social benefits but also makes local areas feel friendlier and more secure.
- **Broadening access to culture:** Lighting can also be used as public art, to make the city more beautiful, playful and interesting – and to help us to appreciate our heritage after dark.
- **Climate emergency:** Well-planned and adaptable lighting schemes can achieve large cuts in energy use. For example, the City of London's lighting strategy has halved energy consumption from lighting.
- **Reducing light pollution:** Good design can reduce the amount of light that spills into natural environments or the sky.

But London is largely missing out on these opportunities...

- More people are walking or cycling, but our street lighting is intended to light the carriageway first, with footway and pedestrians second.
- Poor lighting creates too much contrast and glare, which can make it hard to feel comfortable in a space or see people's expressions.
- Private sources of lighting are not usually built into town centre lighting schemes, resulting in unnecessary light pollution and wasted energy. In particular, London has recently built many brightly lit skyscrapers which contribute to light pollution.

... although energy use has been taken more seriously:

- To save money and energy, all London local authorities have either begun or completed upgrades to LED streetlamps.

London misses out because it lacks a strategic approach to lighting...

- London does not yet have a citywide strategy on how it will use or regulate lighting, and London Plan policies on lighting are non-specific.
- Only two of 33 London local authorities – the City of London and the City of Westminster – have adopted a comprehensive lighting strategy to guide the use of public and private lighting.
- National government sets street design standards in its *Manual for Streets*, but this was last updated in 2007 before the widespread adoption of LED lighting.
- Instead of leading the way, London has fallen behind other cities on lighting. Glasgow has had an adopted lighting strategy since 2002, Paris has had a citywide lighting strategy since 2000 and Seoul since 2005.

... and good design practice is often ignored or not resourced:

- Lighting is often installed based on simplistic assumptions and without input from people using the space. It is generally assumed that brighter lighting creates safer streets, but the evidence is mixed, and people's experiences vary.
- Lighting design is frequently carried out by people who are not designers – or who don't have the right tools, knowledge and understanding of the place they are designing lighting for.
- Where lighting designers are engaged, they are often brought in late in the process.
- Local authorities' planning departments lack the resources to ensure that new buildings and retrofits meet recommended lighting levels.

Recommendations

Relatively modest changes in policy and practice would hugely improve the quality of London's lighting, as well as supporting economic, civic and cultural activity that will help London recover from the COVID-19 crisis.

Vision, guidance and standards

- London boroughs should develop lighting strategies. Having an overarching framework for lighting in each borough would guide public streetlighting, as well as coordinating and regulating lighting from public and private sources.
- The Mayor of London should provide:
 - A framework that boroughs can build on to develop their lighting strategies (including who they should be engaging, and desirable outcomes).
 - Supplementary Planning Guidance setting out how light should be treated in planning applications.

Design process

- Developers should:
 - Base their lighting interventions on evidence of existing lighting and social conditions. Place audit tools for night-time design can be a useful aid, but public participation should also be incorporated into qualitative research using proven methods such as night walks.
 - Engage lighting designers as early as possible in the design process.
- Design Review Panels should ensure they consider lighting plans when assessing development projects.

Education

- The Mayor of London should create a hub for lighting resources. A publicly accessible library with examples of good (and poor) lighting would help bring knowledge of the field into the mainstream.
- Educational programmes for built environment professionals should upskill on lighting.
- Boroughs should pilot events where lights are dimmed or switched off as a way to create a public conversation about light – possibly aligned with Earth Day or Car Free Day.

Lighting management

- Existing town centre partnerships or Business Improvement Districts (BIDs) should act as lighting “owners” and take responsibility for coordinating lighting across public and private sectors.
- In residential settings, resources should be made available for residents’ or community groups to bid for funding to carry out lighting improvements, with professional support offered as part of the package.

Site-specific ideas

- Heritage Action Zone projects should include sensitive lighting schemes as part of high street regeneration.
- Local authorities and housing associations considering upgrades to the lighting in their housing estates should engage specialist lighting designers at an early stage.

"Good lighting" toolkit

Based on our review of the evidence around lighting scheme design, we here offer a brief guide for communities and decision makers who are working with lighting.

Purpose	The starting point for planning a lighting intervention should be a clear definition of who the users are and what they will be using the light for.
Sustainability	Well-designed lighting reduces impacts on the environment by using energy-efficient lamps, dimming lights when they are not needed, and avoiding light spills into green spaces and the sky.
Evidence	Lighting interventions should be based on quantitative and qualitative evidence. Getting the right evidence first time is more efficient in the long run, as it means failed schemes do not have to be redesigned or reworked.
Participation	Current and potential users of lighting should participate in its design to ensure that the scheme works for all. The process of participation is also a benefit in itself.
Expertise	Lighting is not just a technical exercise, and there needs to be greater recognition that involving lighting designers can transform a scheme without necessarily escalating costs. Routinely involving lighting designers will improve practice in the city.
Flexibility	Good lighting is more than a simple on/off switch – it responds to the complexity of spaces in London, and is flexible enough to change over time as people use space in new ways.
Restraint	Brighter is not necessarily better when lighting a building or helping people see at night. Often a good result can be achieved by dimming lights.
Context	Good lighting should integrate well with its neighbours.
Ownership	Lighting high streets, routes or buildings requires a consistent approach. This improves wayfinding, avoids contrasting light levels or colours, and provides a sense of place. Well-lit places have an organisation playing that coordinating role.

Introduction

From the abandoned streets of early lockdown to the attentive contemplation of our neighbourhoods on daily walks, we have experienced our common spaces in a different way during the pandemic. The step change in prioritising pedestrians across London – and the focus on safe outdoor socialising and eating – has led to much rethinking of the role and value of our public realm. And our increased reliance on public spaces for exercising, socialising, commuting and work has shown how much our experience of the city depends upon its lighting.

In one sense, lighting is straightforward – it is what enables activity after dark. But despite this apparently simple function, the impacts of urban lighting are complex and multifaceted. Light influences all aspects of city life. It affects how we move around the city, and it supports economic, cultural and civic activities as well as sport and exercise. Light can create feelings of joy and warmth – or insecurity and danger.

This complexity is reflected in the range of people and institutions involved in lighting the city. Developers, town planners, highways engineers, lighting designers, housing associations, businesses, individual citizens and community groups all play a role. And like all elements of urban design, we all respond differently to it.

Nonetheless, there is relatively little public discussion about this essential element of city life. Perhaps because lighting is such an integral part of our day-to-day activity, we take it for granted. However, the lack of discussion may also be due to the fact that decisions about lighting are generally made with little or no public input. Individuals can report a broken streetlight or excessive glare, but street lighting schemes are generally not consulted on. For the most part, we treat lighting in a utilitarian way – as a service to be provided to a certain standard, much like water and sewage – rather than as an asset that affects the city’s economy, environment, transport and wellbeing.

The relative lack of attention to lighting seems especially surprising in a city that experiences long winter nights and where so much activity happens after dark.¹ It is all the more curious when we consider what we mean by “night”. The dark hours are not a homogeneous time span. The night has different “shifts”, each with different users and needs across the hours of darkness.²

In winter it is frequently dark from mid-afternoon. To choose but one example: if parks and playgrounds were to prevent children playing at 5pm in the summer, it would be considered arbitrary and possibly even cruel. Yet without proper lighting in winter, this is effectively what happens.

Fortunately, there is a growing recognition among policymakers that activities taking place during the dark hours need as much consideration and nuance as those happening in daylight. Lighting is increasingly recognised as a core pillar of night-time policy, and the Mayor’s Night Time Commission underscored the important role of lighting in helping people feel safe after dark, drawing in visitors, helping them to navigate the city, and supporting the night-time economy.³ The City of London’s lighting strategy – published in 2018 and the first ever written by a London local authority – commits the City to a strategic and deliberate approach to lighting the Square Mile.⁴ At the same time, the Illuminated River – a philanthropic initiative led by The Rothschild Foundation – will light up nine of London’s bridges and transform the way we see the Thames.

It follows that lighting has a central role to play in supporting London’s economic recovery by making high streets attractive and welcoming places. We dedicate much attention to Christmas illuminations that create cheer and drive footfall – yet outside this period, street lighting is not typically used in a creative way. When London’s leisure and cultural venues open again, we must make the experience as joyous, welcoming, and secure as possible so that we are all able to enjoy the city’s nightlife once more. Lighting has a key role to play in doing so.

The last decade has also seen a leap in lighting and electrical technologies. LED technology and Central Management Systems (CMS) allow us to make use of a far wider colour palette and change brightness and intensity in real time across places, all with less intrusive fittings. We now have the ability to control lighting to a much finer degree, and target it to respond to the diversity of London's places, buildings and communities. But the city is not yet making the most of this potential.

The aim of this report is to stimulate public debate about the ways in which London is currently lit and how it could make better use of lighting. We also offer a "Good Lighting" toolkit of basic principles for communities and decision makers who are working with lighting. The primary focus of this report is on light shining onto public spaces from both public sources (such as streetlamps) and private sources (shop fronts, office buildings or luminous advertising).

Research methods

This report is based on an extensive literature review including over 60 academic articles, policy documents and development plans. We have also tested its findings in 15 interviews with policymakers and practitioners in London and other cities. These included senior staff in local authorities, BIDs, environmental bodies, community group representatives and lighting designers. We additionally collated and analysed recent investments into lighting upgrades made by London boroughs.

1. Understanding lighting



A desire to illuminate

A deep, primordial response to light and dark is a constant across humanity. The dualism represented by these different states is at the heart of many philosophies, religions and beliefs. Darkness is commonly associated with danger, death and transgression, whereas light connotes life, salvation and goodness.

Perhaps because of these powerful associations, most of us rarely stop to consider the mechanics of light and dark. Light is something that makes us feel secure, so the idea has often been to provide what we think is “enough” of it. This has been a major motivation for outdoor lighting in London since its beginning.

Safety and lighting in London – a very brief history

The early history of street and public lighting in London reflects the concerns of the time. In the medieval era violence in the city was endemic, and the streets were dangerous places to be after dark.⁵ At times people were simply forbidden from walking the streets at night, but on special occasions like holidays or feasts such restrictions would not be feasible, so lighting was required.⁶

The earliest record of any public decree on lighting dates from 1405, with private citizens who lived on major routes being required to hang lanterns outside their houses on Christmas Day to ensure safe passage. Seasonal winter lighting became a fixture ten years later. In the following centuries, the provision of public lighting continued very much with safety in mind. Kensington Road, along the south side of Hyde Park, was such a notorious spot for robberies by highwaymen that in 1692 it became the first road in Britain to have glazed oil lamps set up along its length.⁷

The advent of gas lighting in the early 19th century, followed by electric lamps in the late Victorian period, would exponentially increase the spread and uptake of street lighting in London. However, despite the vast changes in society and technology across the centuries, the provision of lighting in the public realm is still understood primarily through the lens of safety, much as it was five hundred years ago.

Safety, security and lighting

This section unpicks some commonly held assumptions about the relationship between light, safety and security. Rather than making claims about the efficacy of lighting as a standalone intervention, it discusses, with reference to the evidence, how lighting plays a role as one tool among many in placemaking and management.

Terminological clarity is also important here. There is an intuitive distinction between *safety*, which refers to the danger caused by accidents, and *security*, which refers to danger caused deliberately by other people (of which the most serious incidents could include violence).

Separating these two concepts is important, as the impact that lighting can have on each of them is quite different. The following section discusses how lighting relates to each one, and what all stakeholders should bear in mind when considering a lighting intervention or plan.

Safety

In making places *safer* after dark, attention should be paid to how lighting can make a place more clearly visible and easier to navigate. This means that light should allow people to see changes in walking levels, materials, and other potential trip hazards. Light should also enable people to clearly see “conflict areas” where different users of the road and street come together (such as junctions and crossing points).

Nonetheless, highlighting these different components and areas of the urban fabric is not just about putting spotlights on them and turning the brightness up. For instance, illuminating surfaces vertically or integrating lighting into street furniture can be more effective than lighting from poles, as it can more clearly define the structure or object in question.

Generally, preventing excessive contrast and glare is a more important aid to visibility than the level of brightness. Human vision varies across individuals, but the range of light in which a healthy eye can see is very large, ranging from less than 1 lux under moonlight far from urban light pollution⁸ through to bright sunlight at over 100,000 lux.⁹

Crucially, however, it takes between 20 and 30 minutes for the eye to fully adapt to extreme changes in lighting.¹⁰ This means that having extremely bright lights punctuating darkness at intervals can actually make it harder to see, as the greater contrast is more challenging for the eye. This is especially so for older people, as aging often means greater visual sensitivity to contrast.¹¹

Security

The relationship between light and security is more complex. Both the likelihood of actual harm being caused by another person and one's perception of this likelihood are the result of many different influences.

Establishing causal links between crime and discrete environmental and social influences is notoriously difficult and should be treated with caution. Studies exist showing a relationship between "improved" street lighting and reductions in crime,¹² yet there are also studies which show no such relation.¹³ Such studies generally run up against the difficulty of isolating the impact of lighting interventions from other variables which can influence security.¹⁴

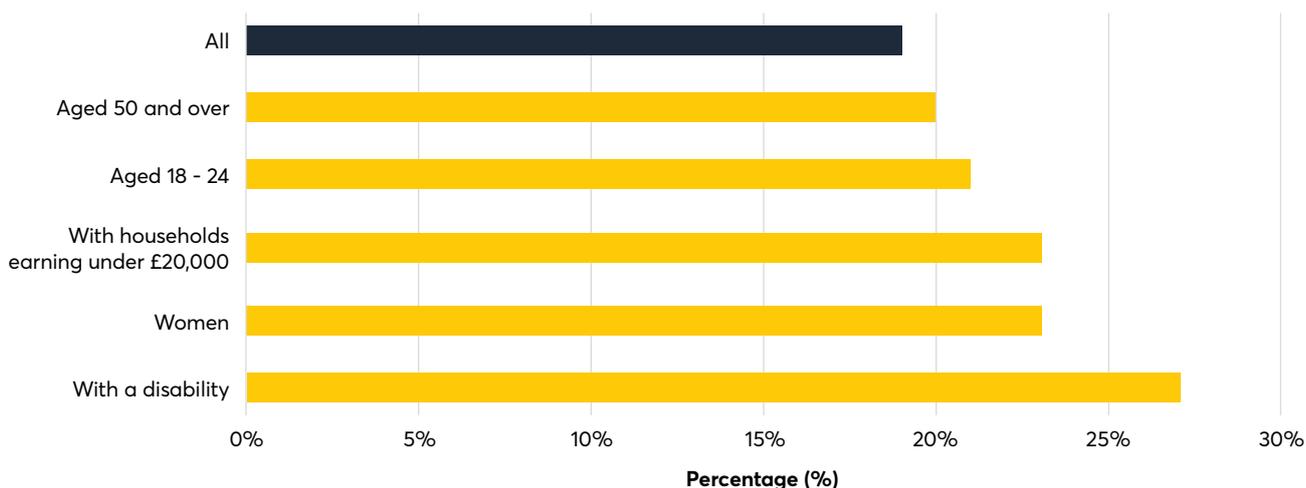
It follows that we need to be cautious when making claims that changes in light will result in changes in social outcomes such as security. One fundamental misconception is that night-time is more dangerous than daytime. A review of the data shows that overall in 2018 there were more recorded crimes during the day than at night-time,¹⁵ and almost 60 per cent of violent crimes against the person happen during the day.¹⁶ However, the types of crime that take place can be different. Though only a small percentage of crimes take place at night, alcohol-related crime is more likely to happen at night, and is also more likely to involve violence or sexual crimes than non-alcohol related crime. Clearly the impacts of violent crime are far worse than the snatching of valuables. Overall, the evidence points to the complexity of the relationship between different types of harm, crime, and night and day.

We also need to consider the diversity of Londoners themselves. As with most aspects of urban life, our experiences and perceptions are shaped by a number of influences, with age, class, gender, geography, ethnicity and disability all playing a role.

There is strong evidence to show that night-time mobility is patterned by these characteristics,¹⁷ so before we can consider the effects of a particular lighting intervention, we have to understand the range of factors that impact whether someone is on the street at night¹⁸ and how they move around. We also know that different demographic groups are thereby more or less likely to be victims of violent crime, broadly defined.¹⁹

Data from the GLA shows how different Londoners perceive their risk of harm at night. While 19 per cent of Londoners overall do not feel "safe" (here the word is used as in the original source, not solely in reference to accidental hazards) at night, this figure rises for women, people on low earnings, people with a disability, Londoners aged over 50, and Londoners aged 18-24. Those living in outer London boroughs also felt less safe at night than those living in inner London. Polling on this question did not record perceptions by ethnicity.

Figure 1: Proportion of Londoners who say they do not feel safe at night



Source: GLA Intelligence Unit (2018). Night Time Commission – Opinion Research: Headline Findings.²⁰

Perhaps related to their perceptions of security, Londoners rank lighting differently among night-time policy priorities. Overall, “better street lighting” ranks fourth on the list of priorities, after “more visible police in public”, “more free and low-cost activities”, and “improved night-time public transport”.²¹ But amongst older Londoners, Outer Londoners, disabled Londoners, women, and those in lower occupational grades, better street lighting is given a higher priority.²² So better lighting can help respond to these perceptions, and enable more residents to participate in city life after dark.

Beyond headline demographic data, there are also other factors at play. In particular, site-specific factors play a large role in determining both the reality and perceptions of security in a place after dark.

For example, during research for this report we spoke with a researcher commissioned as part of a multidisciplinary team to investigate lighting as part of a public safety strategy in an outer London borough. They explained how the council had received requests for increased lighting in one area from local residents. When the team conducted in-depth interviews with residents in response, they found that the request for increased lighting had come from members of one ethnic group who were convinced of the criminality of another, and so were determined to use the lighting as a deterrent. Further, some members of a third ethnic group thought that both of the first two parties were equally the problem.

It is clear in this example that lighting provision in the area is not actually determining fear of crime: rather, it is the problematisation of different communities, and local tensions on the ground. Dealing effectively with these kinds of complex social situation will require more than a change in lighting colour, intensity and positioning. Community-led intelligence and data on how a place and its people interact can be far more useful.

The final point to note is regarding CCTV. Concerns over the ability of CCTV cameras to accurately capture faces can result in over-illumination. However, with a new generation of lighting technology, white lighting and better colour rendering can give clear CCTV footage without increasing overall levels of light too much.

As we have seen, there are a wide range of variables underlying the actual and perceived risk of harm from other people at night. If well-used, lighting can certainly be a tool to improve our experience of the city and reduce inequalities in the use of public space. But lighting should not be treated as the single factor that can determine security at night over and above all other influences at play.

Placemaking after dark

Beyond safety and security, lighting can also make London a more welcoming, accessible, equitable and enjoyable city.

The COVID-19 crisis is bringing new urgency to this agenda. Improving our ability to walk around the city at night, spend time in places and interact with each other could boost London's economic recovery. In the commercial and cultural centres of our neighbourhoods, as well as the city centre, we should make use of every opportunity to support the vitality of London's businesses and boost footfall. There is substantial evidence that increased footfall and improved pedestrian access to commercial areas can support profitability.²³

Night-time legibility

Being able to navigate the city after dark is related to one's ability to "read" a place at night. We find our way in a city by orienting ourselves in relation to paths, intersections or landmarks – yet these are not always recognisable at night.²⁴ So lighting "the right places" – such as entrances, passageways or vistas – is at least as important as brightness in helping us navigate the city at night.

Using lighting to improve wayfinding seems logical, but it does mean focusing our attention on how people find their way on foot, rather than lighting the highway first so that cars can follow the road network. As such, it requires analysis and evidence gathering to learn how people use and navigate a space. Being mindful of mobility impairments is also important when considering navigation at this level of detail.

Enabling social interactions

The ability to recognise faces and expressions contributes to feeling secure when spending time outside at night.²⁵ Again, this is not a simple matter of more lighting being necessarily better. Where light is projected from has a great impact on readability – and even lamps with similar illuminance (the formal measure of the amount of light falling on a surface) can appear more or less bright, or show colours in a different way.²⁶

Who the lighting is attempting to illuminate is also important, as some types of lighting don't work for all skin tones. This is increasingly recognised in photography, cinematography and the creative arts, but not yet in public lighting. If we want good lighting which enables all to see and be seen at night, we need to make sure that colour temperature and rendering are sympathetic to all skin tones.

Activation of a space

Another way that lighting can contribute to the quality of experience in a place after dark is through the activation of a space. A well-established principle of urban design is that having people actively using a space and interacting with each other encourages more people to use it and enhances feelings of security – a principle that the London Night Time Commission has supported.²⁷ The more people spend time in a place after dark, the more social, economic or cultural activity can take place there. Conversely, lighting can also "tell" us to be quiet: dimming or using lower-level lighting in residential areas at specific times would help keep noise levels down.

Here the quality of light is as important as its quantity and positioning. Lighting can make a place feel distinctive and valued, which can in turn increase feelings of security.²⁸

Of course, space activation can be a more challenging task, as cultivating an enhanced "mood" in a place requires the creative and aesthetic sensibilities of a good lighting designer. In the words of an experienced lighting designer: "*Lighting is an art as well as a science*".²⁹

But lighting is also relatively easy to experiment with and adapt based on the public response – making it a quick and affordable way of shaping the look and feel of a space.

Public art

Last but not least, lighting can also be used as public art, to make the city more beautiful, playful and interesting. As set out above, light and darkness trigger deep responses, which is why many artists use light as their material. The combined use of light and sensors also offers huge opportunities for easy public interaction with the artwork.

Interventions can be as simple as helping us to appreciate our heritage after dark. This is well understood by organisations such as Historic England, which works to ensure that we can enjoy heritage buildings at night as well as in the daytime.

Lighting also has the potential to make us see our city differently by night than by day – and some uses of light serve precisely that purpose. The French city of Lyon hosts a renowned Festival of Lights which includes creative and colourful light projections onto the city's building facades. In London, the Illuminated River project presented in the next chapter is transforming the Thames and the City at night by lighting its bridges.

Mood and wellbeing

Safety and security are not the only ways that lighting can impact our wellbeing. People's visceral response to light and dark is no surprise when you consider that humans are a diurnal species, meaning we are typically active in the day and asleep at night. Human biology has evolved a finely-tuned network of systems which work according to our own internal clock – known as circadian rhythms. Light is a key moderator of our circadian rhythms, as our body intends to perform its waking functions in the daytime, when it is bright. Artificial lighting can extend the hours of brightness and expose us to stimuli that interfere with our natural bodily regulation. As such, the global adoption of electric lighting over the last 140 years also has a dark side.

Some of the impacts of excess (or insufficient) light on the body are well known, and the effect that blue light from smartphones and laptops can have in disrupting sleep is well documented.³⁰ In contrast, the phenomenon of Seasonal Affective Disorder (SAD) is linked to reduced exposure to daylight in the winter hours, and the NHS even prescribes light therapy as a treatment.³¹ While it is inaccurate to reduce the complex interaction of multiple biological systems with light to simple mechanical inputs and outputs, lighting should be treated more seriously and sensitively as a potential environmental stressor.

This principle also holds true beyond simple biological responses. The relationship between wellbeing, mood and mental health is complex, but it is recognised that our local environment plays a key role.³² Our environment in turn reflects and reproduces social forces. Having negative responses and stigma attached to a place has been associated with poor physical and mental health.³³

Lighting is no exception here. Research has shown that poor lighting is often installed in places that are assumed to be unsafe.³⁴ Harsh, forbidding light that dissuades people from spending time in a place can result in an intimidating, institutional feel, reinforcing the negative perceptions which informed the lighting in the first place. This approach is often used on housing estates, where floodlights can make spaces uninviting. By way of contrast, consider the relaxing and pleasant atmosphere of a walk through a sensitively lit conservation area at night – or think of the invitation to linger and explore that an artfully lit historic centre of a European city can offer.³⁵

Finally, good lighting supports our wellbeing by encouraging us to be active after dark – for instance by taking up physical activity or engaging in discussion with others. Making sure that all have access to quality of place at night matters.

The natural world

Human beings are not alone in being affected by light and dark. The rest of the natural world has evolved under the same natural lighting conditions as us. Assessing all the impacts of artificial lighting on the natural world would be an impossible task, but there are some key takeaways that we can consider.

One is that artificial light at night covers a substantial portion of the Earth's surface. At the last count, this was close to 25 per cent.³⁶ Globally, it has been estimated that the percentage of the world experiencing direct light emissions at night is increasing by about two per cent every year, including an increase in brightness in already-lit areas. In heavily urbanised areas of the world, the coverage of light at night is far higher. Almost 90 per cent of Europe experiences light pollution at night, and North West Europe is particularly bright.³⁷ The most recent figures show that the UK's night-time light coverage is increasing at around three per cent every year – faster than the global average.³⁸

This encroachment of artificial lighting denies us the romance and numinous beauty of a starry sky, or the otherworldly magic of a walk illuminated by moonlight. It is a loss, but one which must be balanced against the benefits that artificial lighting brings us.

Less well understood is the impact on wildlife. Much of the conversation in the UK has focused on bats, perhaps because they are a totemic nocturnal animal, charismatic and endangered – and hence subject to protection. There are documented negative impacts on bats from light pollution in some instances, including changes in normal movement patterns, disrupted hours of activity, and reduced reproductive success.³⁹ However, these vary across species of bats, and it is hard to disentangle some impacts of light from other areas of human intervention.

Looking at other organisms and habitats, a recent review of evidence finds that artificial lighting has observable impacts across a wide range of organisms – both diurnal and nocturnal. Artificial light has broad impacts on the creation of hormones (such as melatonin) that regulate sleep, on the behaviour of organisms which move towards light, and on their hours of daily activity.⁴⁰ There is less evidence overall of light-induced changes to the balance of different species, or total numbers of species in particular settings. Where this does happen, it is highly contingent on light's impacts on particular key species or groups, which differ substantially.⁴¹ Some places and systems will be more heavily impacted than others.

With wildlife as with human behaviour, accounting for this complexity means treating light with the attention and care it deserves. The range of psychological and physical impacts that artificial light can have are substantial and not to be dismissed. In each particular context and application, we cannot expect all potential impacts to be known in advance – but we can and should commit to asking the right questions if we are to mitigate the effects of over-lighting.

As we have seen, good lighting requires taking a broad range of considerations into account. The next chapter looks at how we make decisions on lighting.

2. Designing and managing lighting



A very wide range of organisations and individuals, own and manage lighting, and the expertise and resources they allocate to it vary greatly. For this reason, there are a number of different plans, permissions and processes that regulate lighting in London, depending on the type of lighting in question. This section maps out the broad processes followed, from design through to management, and discusses the challenges that face those responsible for lighting the city.

Public lighting

Lighting is a public service which local authorities provide and manage, generally as streetlights. From its predecessors centuries ago, the illumination of roads and streets has always been focused on allowing safe passage along a route. However, the dominant method of travel has changed over time, and with it the way lighting is designed.

Lighting for cars

The mass adoption of the car in the 20th century dramatically changed the way we live in and move through cities, as well as how we build and design them. The vast majority of public lighting today is testament to this. Even in older areas built before the car, the prioritisation of road space for vehicles has meant in practice that lighting is designed for them. Since the establishment of the modern boroughs, local authorities in London have been responsible for the majority of both public lighting and highways upkeep. On the Transport for London Road Network, TfL are responsible for street lighting and highways maintenance.

The very first British Standards for street lighting⁴² and central government regulations were developed explicitly to facilitate the safe and smooth flow of traffic.⁴³ Almost a century later, the principles remain the same. The majority of our street lighting is intended to light the carriageway first, with footway and pedestrians second. This is the “classic” light mounted high up on a pole, close to the kerb and overlooking the road. The majority of industry standards and guidelines accord each type of road a category, which is essentially based on how heavy its traffic is. In this sense, design largely follows a functional, prescriptive template – roads are lit to defined levels of light in order to allow visibility for drivers. As such, the potential variables are limited.

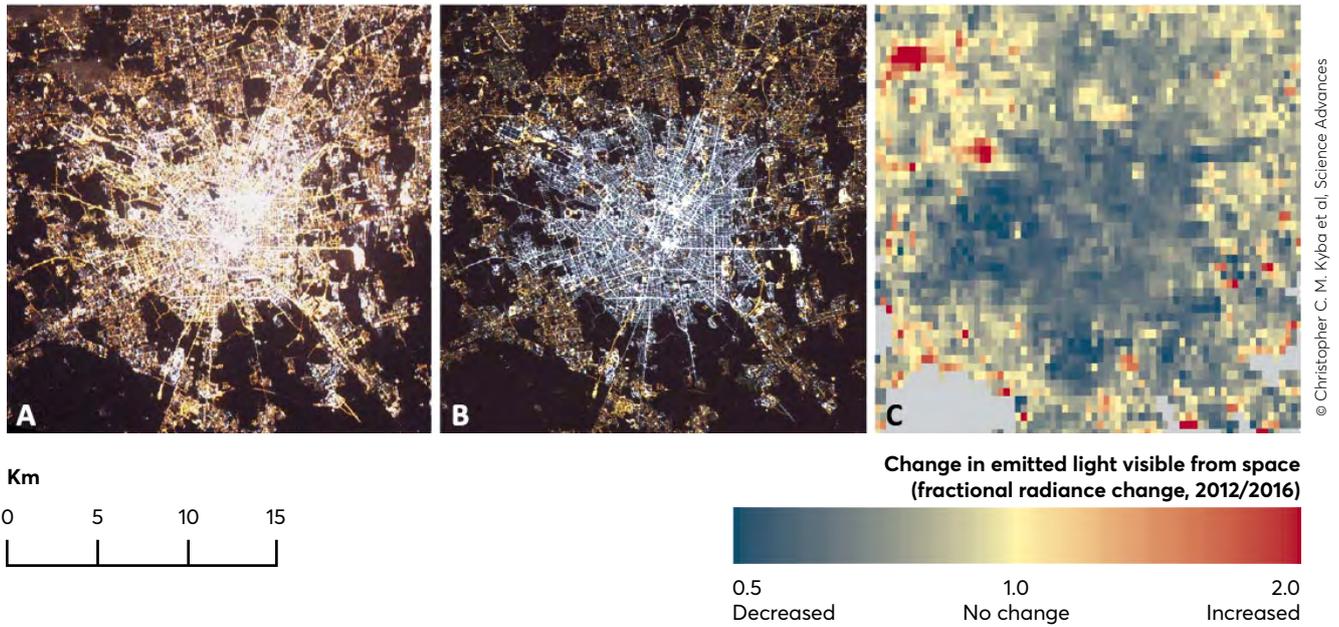
New generation of infrastructure

The biggest changes in recent years have come in the widespread adoption of LED technology. LED lights are more energy-efficient: projected energy savings from switching to LEDs are between 50 and 80 per cent, and they have a much longer life cycle than traditional lamps. It has been estimated that lighting comprises up to 30 per cent of an average local authority’s total energy bill.

The other advantage of LEDs is that they allow for a greater variance of colour and brightness. When paired with a remote Central Management System (CMS), individual fixtures or groups of them can be changed across the evening, in real time. This means that street lighting can be designed to respond more appropriately to the range of different users and needs within a public space – and with the quality of light in mind.

LEDs also allow for better targeting of light, losing less in upwards light pollution. The image below of Milan, before and after wholesale upgrading to LEDs, shows the impact this can have on a citywide scale.

Figure 2: Milan, Italy before and after upgrade to LEDs, and change in emitted light



Source: Christopher C. M. Kyba et al, Science Advances, 22 Nov 2017: E1701528

Where is London in the roll-out of new technologies? In researching this report, we audited all large-scale lighting interventions carried out by local authorities since 2010. We found that all London local authorities had either begun or completed upgrading their older sodium and metal halide lighting to LED lamps, starting in 2011 (two years after LED streetlights were first installed in the UK). Similarly, Transport for London has carried out large-scale replacement of the lighting assets across their road network.

This investment has largely been driven by energy saving concerns, but few London authorities have used this opportunity to take a more strategic approach to their lighting – to consider what type of light is needed, where and at what time of the night. This infrastructure will now be in place for at least 15 years, so we will need to wait until the next round of upgrades to see improvements to most public lighting across London.

One authority that is showing the full potential of what the next generation of public lighting can do is the City of London Corporation (see case study overleaf).

Case study: The City of London Corporation's lighting strategy

The City of London Corporation's lighting strategy goes far beyond simple lighting of the highway for drivers. Making full use of the potential of LEDs and central management technology, the strategy shows how modern urban lighting can be designed to reduce light pollution, enhance the pedestrian experience, improve the public realm, maintain feelings of safety, and enhance accessibility. The implementation of the lighting strategy has enabled a 20 per cent reduction in the number of light fittings and a 50 per cent cut in energy consumption.

The strategy divides the Square Mile into particular “character” areas, with context-specific lighting for the different functions, users and atmospheres of each place. Maximising the particular attributes of each area is an explicit aim of light as a placemaking tool. Light is positioned to help people navigate the streets on foot, with particular attention to the needs of users with reduced mobility. This is done by reducing glare and contrast, and integrating as far as possible with the existing urban fabric. Care is taken to explicitly reduce all types of light pollution by considering reflective surfaces, existing light levels, and avoiding direct sky illumination. Lighting levels respond to how busy a street is at different times throughout the night. The CMS also allows for brighter lighting on demand, for example if needed by emergency services.

The strategy provides direct guidance for the design and management of public lighting, and outlines principles to be adopted for planning documents in order to guide the use of private lighting within the City.



© City of London Corporation

✦ View from Peter's Hill in the City of London, before and after changes to lighting. The scale of the lighting and the overall number of fittings were reduced, introducing lighting at ground level in handrails as well as warmer, lower lighting levels, to create a calmer and more welcoming space.

Resource pressures

However, the City of London Corporation has a vastly different funding arrangement to the rest of local government in England. Pressures on local authority budgets in recent years have impacted the departments responsible for lighting. The chair of the London Lighting Engineers Group – an organisation which convenes the lighting professionals working across the London boroughs – explained that London local authorities receive less funding than is needed to maintain their lighting infrastructure, let alone invest in new material.

Boroughs usually receive funding from TfL via the Local Implementation Plan (LIP) process – under which boroughs demonstrate how they will meet the objectives of the Mayor’s Transport Strategy. However, at time of writing, the LIP process is paused. The huge drop in fare income as a result of changes in mobility due to the COVID-19 pandemic has made TfL reliant on central government funding to continue operations. In the future, alternative sources of funding may be needed to adequately resource lighting in boroughs, such as income generated from development receipts.

The resource pressures faced by local authorities in managing public lighting are not only limited to hard assets. In many authorities there are only one or two experienced lighting engineers, and some have no internal expertise at all. These specialists have a broad remit: beyond core maintenance and upgrading, they may have to respond to issues as wide as incorporating 5G transmitters, electric vehicle charging points, CCTV cameras, weather monitoring sensors, and other technologies. These considerable workloads fall on relatively few staff, who have limited capacity to act in a strategic role and advise on wider changes to how lighting operates – though some of these operations could generate income for lighting infrastructure or reduce maintenance costs.

Input and expertise

The administrative arrangements of councils can also prevent lighting from being taken as seriously as it deserves. Our review of borough lighting interventions shows that 60 per cent of street lighting upgrade programmes were the responsibility of Highways departments, while 15 per cent were the responsibility of what could be grouped together as “Environmental” departments, covering areas with broader remits for neighbourhood management.

Properly integrating transport-related functions with strategic planning is an issue that extends beyond lighting, but applies here too. It is crucial to ensure that lighting is considered alongside other disciplines at an early stage as a core component of good placemaking. Where boroughs have carried out particularly good lighting schemes, there is often a much less siloed approach. For example, the delivery of lighting schemes in Southwark included collaboration with officers responsible for regeneration and urban design, as well as community groups, BIDs and social researchers.⁴⁵ When the City of London was developing its strategy, it convened a Lighting Board to ensure that the relevant stakeholders were around the table and party to discussions from the outset.

Without the expertise of a lighting designer, engineers or architects may refer to guidance documents for assistance. This can bring its own problems. Even guidance documents which are considered to represent good practice in design can fall short when it comes to lighting. The *Manual for Streets* –



© James Newton

➤ Mounting lights at head height emphasises the pedestrian routes, and creates more welcoming and navigable space by lighting the trees.

which does at least discuss the aesthetic qualities of lighting⁴⁶ – was published in 2007, and as such does not consider the adoption of LEDs, which has profoundly changed the potential for street lighting to be used more subtly and creatively.

Another challenge can be found in the way that public lighting is sometimes procured. Across a number of local authorities in London, street lighting is delivered through Private Finance Initiatives. One single company will provide the complete service over a long period, from inception through to maintenance. Depending on contract design, this model may create an incentive throughout to keep the costs down, with good design losing out as it is not considered a priority. Being mindful of the incentives that procurement choices can create will help mitigate such risks.

Private lighting and regulatory frameworks

While municipal lighting might be the most recognisable form of artificial light in the city, it may not be the main source of light by every measure. As public bodies grapple with how to improve lighting within their direct control, a large amount of light in the city is emitted from private sources. Illuminated shop signs, window displays, advertising, interior office lighting, residential security lights, hazard lights on construction hoardings, spotlighting of buildings, stadium lighting and even cars all contribute to direct and indirect illumination of our streets and common spaces – as well as total skyglow and ambient light pollution.

There is currently no estimate of how much private sources of lighting contribute to overall light levels in London or in most cities – which in itself shows we have paid little attention to it. The most comprehensive study, conducted in Tucson, Arizona, examined the contributions of new LED streetlights to total ambient radiance visible from space. It found that streetlights in Tucson contributed between 13 and 18 per cent of total light visible from a satellite,⁴⁷ depending on dimming. Of course, this is merely one way of measuring light pollution, and in many cases direct illumination can be more harmful, but the findings are nonetheless striking.

Closer to home, a study of light sources in Paris found that private sources represent more than half the light shone towards the sky – and therefore a large contribution to “skyglow”. While London is a different city, this finding is a powerful indication that measures to tackle over-illumination should take private lighting far more seriously.

Some consider the lighting of shopfronts or offices when not in use as excessive – creating visual clutter on top of being a waste of energy.⁴⁸ The rapid growth in the number of skyscrapers with significant amounts of glazing is also making an increasing contribution to total lighting levels, without consideration to external impacts. Luminance surveys on the banks of the Thames show how office buildings have come to dominate central London’s nightscape, not just in the late afternoon but throughout the night.

Others see private lighting as an opportunity, adding character and interest to streets that would otherwise only bear the mark of our rather controlled and linear approach to public lighting. London is hardly a cohesive place in design terms by day, and private lights contribute to its “big city” feel by night. We could harness private lighting to a greater degree: sensor technology now even allows public lighting to be dimmed where private sources provide enough illumination in the right place.⁴⁹ As we have seen, private lighting comes in many forms: some large luminous advertisements are often seen as detracting from the character of a place rather than adding to it, although there is a notable exception in Piccadilly Circus. There should be a debate on how permissive London should be in terms of lighting, given the positive impacts of well-considered lighting and the negatives of poorer uses.

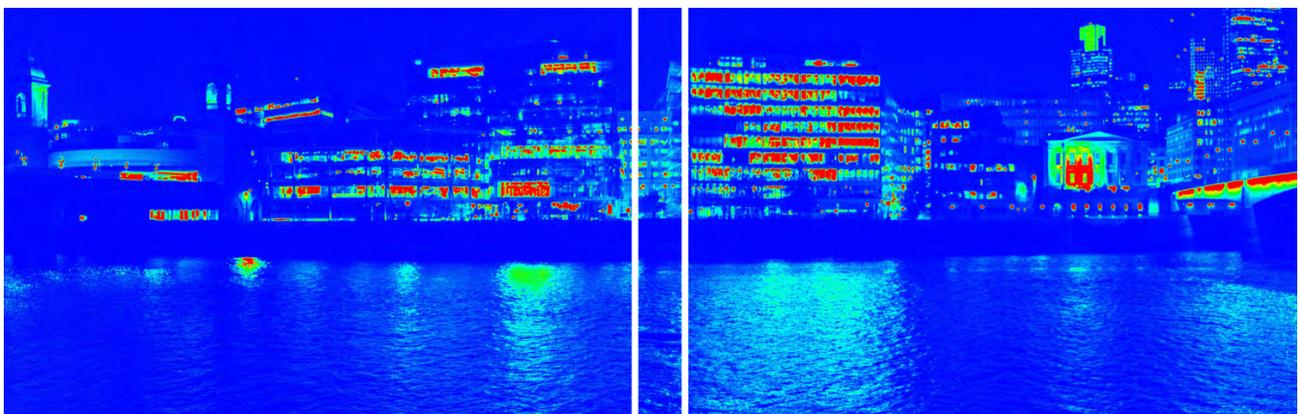
The design of private lighting can be controlled in part through the planning system. As a principle, light itself does not require planning permission.⁵⁰ Whether or not external light fittings require planning

permission varies according to the intensity, positioning, scale, significance, and surroundings of the lighting (and typically, the development of which it forms a part). Stand-alone lighting interventions often do not require planning permission, although some (such as illuminated advertisements) do. Generally, local authorities can shape private lighting at the point of approving development.

As such, one way for planning authorities to shape private lighting would be to create strategic policies on artificial light as part of their local development frameworks. But these are currently lacking. At the national level, the National Planning Policy Framework says little about lighting, talking only in broad terms about the need to avoid light pollution. At the city level, the London Plan does not dedicate a great amount of space to lighting though its Policy D8 on Public Realm requires new developments to reduce light pollution and design public spaces that encourage social interactions after dark. Being a strategic document, the London Plan is not intended to provide the level of detail necessary for practitioners to use in designing a scheme. Nevertheless, lighting is less of a concern than other issues. A word search for “lighting” in the London Plan gives 15 results, whereas “noise” gives 126. In the Mayor’s Environment Strategy, light pollution is mentioned once as something which can be mitigated by land use policy. In contrast, “ambient noise” has an entire chapter dedicated to it.

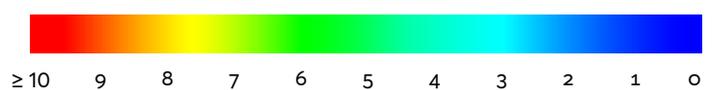
London is falling behind other cities in this regard. Glasgow has had an adopted lighting strategy since 2002, Paris has had a citywide lighting strategy since 2000 and Seoul since 2005. Since 2010, smaller European cities like Eindhoven, Copenhagen and Gothenburg have all developed lighting

✦ Luminance surveys on the banks of the Thames. Red shows over-lighting spilling into public space. Office buildings have come to dominate central London’s nightscape, not just in the late afternoon but throughout the night.



© Jonathan Gittins - Atelier Ten

Luminance bar (cd/m²)



strategies and masterplans. For a pre-eminent global city, London is off the pace. The lack of serious consideration at a strategic citywide planning level is mirrored at the borough level. The City of London's lighting strategy, adopted in 2019, was the first in London.

Without strategic oversight of lighting design feeding into local guidelines, the results at development control stage can be haphazard. For example, in an interview with an experienced lighting and environmental consultant, we were told that the detail required in an external lighting statement for a development differs dramatically across planning authorities. Some planners may want detailed information about light spill; others will defer to industry guidelines and standards, which can be a blunt instrument when not used by specialists.

Accepted professional guidance provides some frameworks for avoiding over-illumination and obtrusive lighting.⁵¹ These are only intended to be a broad outline, as the levels of site-specific detail required to design good-quality lighting cannot be generalised. These are based around suggested illuminance levels for different types of environments called "Environmental Zones". Across a city setting, these range from "Rural" ("relatively dark outer suburban settings") through to "Urban" ("town/city centres with high levels of night-time activity").⁵² The guidance recommends explicitly that a competent lighting designer be engaged when considering any exterior lighting. However, local authority planning officers, who are as overstretched as lighting engineers, may not have the option to consult a specialist.

For heritage buildings, Historic England offers guidelines to help owners of listed buildings design a good lighting scheme that makes the most of landmarks at night.⁵³ Historic England's development advice team also provides advice on lighting strategies and proposals to light Grade I and II* buildings.

A substantial amount of artificial lighting in the city is also provided in situations where there is no design process and no planning framework. This is the case for the illumination of most shopfronts or offices.

Local authorities and the Environment Agency do have powers to deal with excessive light if it is classified as "prejudicial to health or a nuisance". However, these are only powers to tackle individual issues: they cannot provide the strategic oversight that a whole-city approach needs. Where London lacks a coordinating set of principles to manage the operation of its lighting, the responsibility falls on individual actors. This can work for estates in single landownership, so wholesale redevelopment treated well could result in a coherent night-time landscape. But in areas of more diverse ownership and responsibility, like a high street or town centre, the result is hit-and-miss.

The importance of professional expertise

The lack of attention given to lighting in design does not only happen through the planning system. Another issue mentioned by several interviewees was that lighting designers are commonly overlooked as an integral part of a multidisciplinary design team – and on the occasions that they are engaged, it is frequently later in the process. This means that lighting designers' ability to meaningfully impact a scheme can be limited. One lighting designer who works internationally contrasted her experience in the UK with working in the Middle East:

"Over there, lighting designers are at the table right from the beginning of the project. If you want to integrate lighting into the urban furniture, you have to be able to shape it from the beginning. If you come late, you miss opportunities to reduce clutter, integrate servicing and consider things holistically."

Of course, there are good developers and schemes where lighting is taken seriously. These tend to involve the kind of early engagement with specialists

and careful evidence gathering that will create a good result. However, these are typically projects of a particular profile and scale, often involving heritage buildings and important architecture. As well as their architectural and artistic merit, these schemes can also demonstrate the importance of good lighting, and serve as an entry point for wider conversations about improving lighting practice across the city.

These schemes, however, are not the norm. The consultant responsible for the Thames luminance study described above told us that only projects of a certain value would justify the expense needed for this kind of evidence. Even for many sensitive historic buildings, architectural lighting can be poor. A specialist heritage building consultant told us that manufacturers of lighting fixtures are often acting as designers and selling their products as an off-the-shelf “solution”. The limited number of heritage specialists who can advise or intervene on lighting means that often, buildings of particular interest and importance end up poorly lit – and Londoners miss out on what should be beautiful additions to the city at night.

Detailed design issues

On residential streets with lighter traffic – away from town centres and where cars should be a lower priority – other aspects of lighting could in theory be foregrounded. However, good lighting design usually struggles to get a look in. One experienced lighting designer told us that in practice this rarely happens, and non-specialists are left to make the decisions.

Other aspects of our urban design and built fabric can pose a challenge for good lighting in and of themselves. Dense apartment blocks that face onto a common area can be at higher risk of light intrusion into flats, which can be a nuisance for residents. Specific design features of some building typologies can also create challenges. Deck access blocks pose a particular problem. One interviewee, an experienced lighting designer with a focus on housing estates, told us that these are commonly over-lit, in part due to housing officers deferring to inappropriate standards:

“The standards don’t recognise that these “corridors” are external, and outside people’s windows. One resident on an estate I was working on had to black out her window with cardboard as the glare was so strong it was keeping her awake at night!”

Hard-wearing fixtures, designed for resilience due to a perceived danger of vandalism, also diminish the ability to tailor the angle of lighting and fit shields to prevent this kind of light pollution.

Special attention needs to be paid to facilitate navigation where buildings do not follow a traditional street pattern. Having lamps positioned so that pedestrians can “read” the space, as described above, is especially necessary where there is divergence from the classic layout of a continuous line of houses fronting onto a street. Similarly, designing an appropriate lighting scheme for a pedestrianised space with both a place and movement function requires a proper understanding of its specific dynamics. According to the same interviewee, this also rarely happens:

“The problem is that this kind of data is not easily quantifiable – having qualitative analysis doesn’t tick the council’s boxes of consultation. They want numbers they can say agreed to a yes or no question.”

Again, proper evidence gathering and genuine local engagement are necessary to design a well-functioning lighting scheme. As public bodies move from upgrading the bulk of their lighting infrastructure on highways, they should consider their remaining lighting infrastructure on estates as an opportunity to improve their practice.

Case study: Illuminated River

Illuminated River is a landmark public art installation across the river Thames. The installation involves lighting up nine major bridges across a two-mile stretch of the river over the course of two years. Inspired by the life of the river and the communities alongside it, the project demonstrates how light can transform some of our cities' greatest assets – in London's case, the river. By referencing the shades of light across both day and night on the river, as well as the ebb and flow of the river itself, the lighting works with elements already present to create a new, beautiful way of experiencing one of the city's most important public spaces.⁵⁴

However, the project is not only groundbreaking in its design. Sensitively integrating new lighting into an already heavily lit urban context means paying close attention to existing conditions. A luminance study was carried out along the length of the site – an unprecedented scale for such a study and the first to be done along the Thames. It measured light levels along the bridges to be included in the project, as well as the banks. Beyond demonstrating the extent of light pollution from the bridges themselves – which the new lighting will reduce by 75 per cent – it also showed that a significant amount of light pollution came from streetlights and over-lit buildings. The impact on wildlife, in what is a sensitive habitat for marine life, bats and birds, was thoroughly researched in partnership with conservation organisations. The changes to the design as a result will mean new lighting that creates a better environment for wildlife.



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✗ **Top:** the former lighting on London Bridge. **Bottom:** Improved lighting as part of Leo Villareal's Illuminated River artwork. Improvements also include more considerate lighting of the Bridge and its structure to reduce light spill into the River, and dimming of street lights on the Bridge.

Case Study: Shadwell Estate

Shadwell Estate is a Peabody estate in Tower Hamlets that demonstrates the difference good lighting can make in housing estates, as well as the value of public engagement. As part of a programme by the landlord to improve the public realm across their estates, the new lighting of Shadwell Estate focuses on giving its residents a better outdoor experience while also complementing landscaping improvements.

The project was carried out following resident engagement. Through one-to-one interviews, observations, focus groups, group events, and presentation of sketches and ideas in conjunction with the landscape architect, the desires and needs of residents shaped the final design. This included fitting lighting suspended on wires to retain the maximum amount of usable floorspace.

The estate, which was previously illuminated using floodlights, has undergone a complete transformation. Accent lighting to the main entrances, lighting integrated into wayfinding signage, and uplighting on trees have all helped to create a welcoming environment and introduced a new sense of pride among residents and visitors.

"The light is great, now the children can play outside in the evening."

Resident

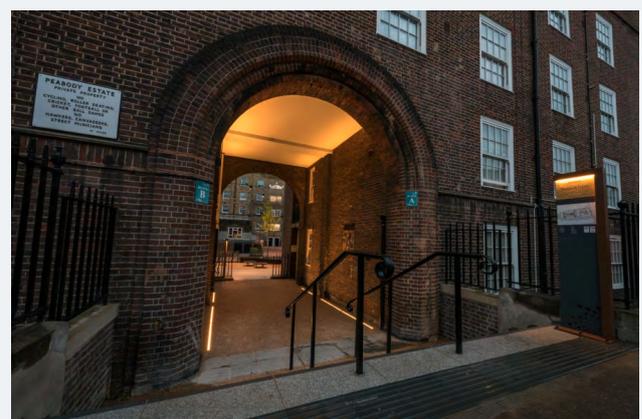
"Everything looks so good. We're coming here now, because we prefer it to our house!"

Visitor

↳ Low level lighting reduces contrast, improves legibility of space, and reduces light spills into residents' homes.



↳ Soft lighting around seating areas creates a welcoming environment.



↳ Considerate lighting of entrances and signs improves wayfinding, and vertical illumination also enhances character and identity.

← Lighting of playground enables use after dark.

3. Recommendations: What needs to change?



In the foregoing we have explored the wide range of benefits that come with taking a more considered approach to lighting – and the opportunities that the city has missed out on. In this chapter we set out recommendations to make London one of the best-lit cities in the world. To recover from the COVID-19 crisis, we will need to encourage Londoners to make use of their city at night again – so we must use every possible measure to improve their experiences of the city in the darker hours.

The good news is that the needs of the city at night-time are being taken more seriously. The Night Czar, the Night Time Commission of 2019 and the Women’s Night Safety Charter have all played a role in developing policy that improves the night-time experience, including lighting. The Night Time Commission also encouraged local authorities to think more about these issues in its *Think Night* report, which called for all boroughs to put Night Time Plans in place.

Guidance and standards

The Mayor has recently published detailed guidance for boroughs on both how to develop night time strategies and how to encourage the recovery of nightlife after the COVID-19 crisis. In both documents, the role of understanding the public realm and making it more welcoming, safe and navigable after dark is central. Lighting has a key role to play in achieving this.

Developing a comprehensive lighting strategy to sit alongside broader night-time strategies makes sense, as there is significant overlap between these processes. Understanding the current and potential users of an area at night is necessary to develop a good lighting strategy, and there is an opportunity to align both concerns. Once a borough has a lighting strategy in place, it should shape the direct provision of municipal lighting – but crucially, a strategy can also become the basis of supplementary planning documents that shape how private illumination works.

Local authority budgets have been severely reduced by austerity and the recent recession. But aside from the benefits highlighted in Chapter 1, a strategic approach to lighting is an investment that could deliver savings in the long term. For example, in creating its lighting strategy, the City of London identified that up to 20 per cent of its lighting fixtures were redundant, and halved its energy costs for street lighting.⁵⁵

Developing a lighting strategy does not need to be a costly exercise. Boroughs could also choose to develop a strategy jointly with others, or with support from existing partnerships, such as Cross River Partnership. When doing so, boroughs should appoint a Lighting Board to bring stakeholders around the table and foster the multidisciplinary approach that lighting requires.

London boroughs should:

- Develop lighting strategies, with the Mayor providing guidance on how to do so. The City of London’s lighting strategy is very much an exemplar here, as is the recently released lighting strategy for the Royal Docks.

The strategic approach to lighting in the city would be improved by amending a number of complementary guidance and standards documents that practitioners currently use in their work. Embedding good lighting principles in highways design is key.

Similarly, the “Environmental Zones” set out in guidance from the Institution of Lighting Professionals could offer practitioners more detail on how to adapt lighting to local environments – which currently aren’t covered by the broad typologies.

The Mayor of London should provide:

- A framework that boroughs can build on to develop their lighting strategies (including who they should be engaging, and desirable outcomes).
- Supplementary Planning Guidance setting out how light should be treated in new developments and public realm improvements.

The Department for Transport should:

- Incorporate good lighting principles based on urban legibility for pedestrians in its new Manual for Streets.

The Institution of Lighting Professionals should:

- Create guidelines for a more nuanced typology of places, based on evidence that includes collaborative design workshops with members of the public.

The design process

Making changes to lighting practice is not just a matter of guidance documents and official standards, however. Improving practice on the ground will require giving greater attention to lighting in urban development throughout the whole design process – from definition and briefing through to use. This should include evaluating the actual use of a space before designing lighting for it. Centring lighting as a key part of design and development also means treating lighting designers as key members of multidisciplinary design teams.

Developers should:

- Base their lighting interventions on evidence of existing lighting and social conditions. Place audit tools for night-time design can be a useful aid, but public participation should also be incorporated into qualitative research using proven methods such as night walks.

Developers and architects should:

- Engage lighting designers as early as possible in the design process.

Design Review Panels should:

- Ensure they consider lighting plans when assessing development projects

Education

Achieving widespread recognition of the importance of lighting will require a step change in professional and public opinion. Training should be offered to non-specialists to enable this.

Learning about lighting should not be limited to professionals, however. Community groups and civil society should be involved in the public debate, with pilot events and projects used as a forum for participation and knowledge exchange. This could be via individual schemes, or at a larger scale, through one-off events used to stimulate a public discussion through a shared experience.

Educational programmes for built environment professionals should:

- Upskill on lighting. This should occur in collaboration with bodies like Urban Design London or New London Architecture, or specialist professional societies like the Institution of Lighting Professionals and the London Lighting Engineers Group.

The Mayor of London should:

- Create a hub for lighting resources. A publicly accessible library with examples of good (and poor) lighting would help bring knowledge of the field into the mainstream.

Boroughs should:

- Pilot events where lights are dimmed or switched off as a way to create a public conversation about light – possibly aligned with Earth Day or Car Free Day.

Managing light

Good lighting across a complex urban environment requires coordination. Ensuring that there are groups or individuals who can mediate between different sources of lighting is crucial.

As we have set out previously, there are currently limited ways for residents to have a say in how their area is lit. Offering community groups the chance to define and plan for schemes locally would address this issue in a way that complements local authority duties. But empowering residents to make a meaningful impact on their local area often means providing resources for their projects.

Existing town centre partnerships or BIDs should:

- Act as lighting “owners” and take responsibility for coordinating lighting across public and private sectors. In areas with a less diverse mix of light sources – typically residential areas – this role could be played by community or residents’ groups.
- In residential settings, resources should be made available for residents’ or community groups to bid for funding to carry out lighting improvements, with professional support offered as part of the package.

Site-specific ideas

Some current programmes and schemes represent an opportunity to improve lighting practice across the city. Heritage Action Zones are a programme aimed at high street regeneration with dedicated funding for public realm improvement works. This is an opportunity to capitalise on.

Government and Historic England should:

- Include sensitive lighting schemes as part of high street regeneration funds, such as Heritage Action Zones.

In recent years local authorities have upgraded many of their lighting assets to LEDs, and are unlikely to invest again until the current infrastructure is nearing the end of its life cycle. However, some local authorities are now looking at another substantial presence of municipal lighting – that on housing estates. This represents an opportunity to upskill local authorities on lighting practice while also improving the quality of lighting in historically poorly lit areas. Ensuring this is well executed will require specialist input.

Local authorities and housing associations should:

- Engage specialist lighting designers at an early stage when considering upgrades to the lighting in their housing estates.

This report has shown how important lighting is to our experience of the city after dark. It can alter our mood, change our feelings towards a neighbourhood or a building, influence where we choose to spend time, and even determine whether we can participate in city life equally. We have also shown how lighting can have a profound and fundamental impact on the natural world and the environment. Yet curiously, it is an issue that has been overlooked for many years.

In response, we have identified relatively modest changes in policy and practice that would hugely improve the quality of London's lighting. These would also support economic, civic and cultural activity that will help London recover from the COVID-19 crisis. Now is the right time to begin making London a more sustainable, equitable and liveable place after dark.

Case Study: Rotherhithe Illuminated!

A group of Rotherhithe residents have worked to highlight the maritime history of the neighbourhood. The group felt that despite the area's rich heritage, it was invisible after dark, particularly from the river, and they worked up a project to address this. Their plans include illuminating specific details of five heritage buildings, including the church spire and clocks, the Thames Tunnel Mills chimney and the figurines on the Old School House, as well as soft lighting in the trees in a nearby public riverside space.

The group has been working with a team of conservation architects and lighting designers. The night-time audit of the existing public lighting in the area found that it was often provided in excess and not always in the right places. This audit was used to inform the lighting design for the participating buildings. The group organised public meetings to demonstrate the proposals and two trials of the proposed lighting scheme. A small minority of people had concerns that the lighting would be intrusive, but according to project leaders the public lighting trials changed the minds of those residents who were sceptical:

"It was magical to reveal architectural details you wouldn't see otherwise on the church spire and clocks and the Thames Tunnel Mills chimney. If you highlight something of interest, it creates more interest in the locality and more people want to be involved in local heritage."

"A couple of people in the community thought that we would be turning Rotherhithe into Disneyland. Some people still think of lighting as floodlights. But modern technology allows you to install subtle lighting which consumes very little energy and which complements the local surroundings."

The feasibility study was made possible thanks to crowdfunding via Spacehive and a £20,000 contribution from the Mayor of London. The group is fundraising for the installation of the lighting scheme, and several major river-based corporate stakeholders have donated generously. As part of the installation process agreements on maintenance and associated costs will be negotiated with the building owners.

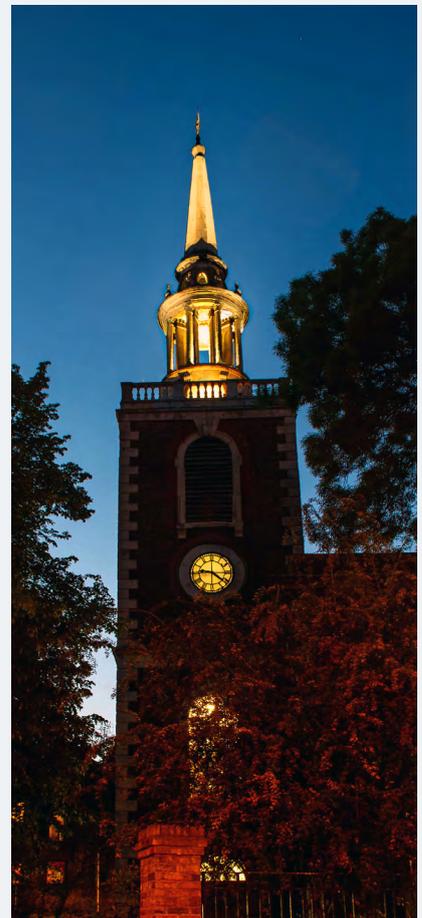
Further discussions with the London Borough of Southwark are under way to adjust the public lighting in the area, so that it can be tailored to complement the aesthetic lighting on the participating buildings. Project leaders believe that this will reinforce the local heritage and make the public realm more pleasurable and inviting, and that it will promote wellbeing and pride of place.



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← An example of chimney illumination as inspiration for lighting of the Thames Tunnel Mills chimney.

→ Demonstration of lighting on St Mary's Church, Rotherhithe. Architectural lighting to landmarks after dark improves their presence.



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Appendix: Toolkit for lighting design

This toolkit is an educational resource for non-specialists in lighting who nonetheless have an interest in (or responsibility for) the built environment and lighting scheme design. The principles outlined below should aid thinking at the early stages of a project and help practitioners pay attention to the full range of considerations that go into good lighting design. The toolkit is also designed to be general enough for applicability to a wide range of people and settings.

Purpose

The starting point for planning a lighting intervention should be a clear definition of who the users are and what they will be using the light for.

For example, scheme promoters should consider whether the purpose is wayfinding, creating a particular mood, a demarcation of space, or a combination of these. Deliberately stating at the outset what the end goal is will help avoid relying on assertions and crude standards.

Sustainability

Well-designed lighting reduces impacts on the environment by using energy-efficient lamps, dimming lights when they are not needed, and avoiding light spills into green spaces and the sky.

Lamps and lighting infrastructure also have “embodied carbon” – although at present there is little data on whole-life carbon emissions from raw materials, manufacturing, maintenance or disposal. Lighting interventions should consider those embodied emissions as carbon labelling becomes available.

Evidence

Lighting interventions should be based on quantitative and qualitative evidence. Getting the right evidence first time is more efficient in the long run, as it means failed schemes do not have to be redesigned or reworked.

Good lighting schemes need an audit of baseline conditions in the proposed area to understand the existing space and context. These audits can be relatively straightforward and cheap. They should include a luminance study of existing levels of light in order to avoid over-illumination. Importantly, they should also incorporate qualitative evidence. This should include detailed analysis of how people use the site, with direct input from users. Getting the right evidence first time is more efficient in the long run, as it means failed schemes do not have to be redesigned or reworked.

Participation

Current and potential users of lighting should participate in its design to ensure that the scheme works for all. The process of participation is also a benefit in itself.

Obtaining the rich qualitative data needed to truly understand a place can only be done with the participation of users. This will require surveys, interviews and participatory active learning through site visits in the dark (“night walks”), all of which are proven, effective tools for embedding social research in lighting design.⁵⁶

The process of participation is also a benefit in itself. Engaging people in conversations about lighting can be a way to share understanding of how light works, what it does, and what it could do.

Expertise	Lighting is not just a technical exercise, and there needs to be greater recognition that involving lighting designers can transform a scheme without necessarily escalating costs. Routinely involving lighting designers will improve practice in the city.
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The knowledge exchange that takes place in participatory research and design can help to educate both the public and professionals about the skill and complexity involved in designing good lighting. Achieving greater recognition of the fact that lighting is not a strictly mechanical utility is key in changing popular understandings of lighting. This should mean greater prestige afforded to lighting designers, a seat at the table, and ultimately improved practice.

Flexibility	Good lighting is more than a simple on/off switch – it responds to the complexity of spaces in London, and is flexible enough to change over time as people use space in new ways.
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Once evidence has been gathered, designers should have a better idea of the social complexity of each individual site. Accommodating this complexity requires flexibility in responding to different users and interpretations of space, as well as different functions and moments of the night. Building in flexibility over the long term leaves room for how use of the space might change.

Restraint	Brighter is not necessarily better when lighting a building or helping people see at night. Often a good result can be achieved by dimming lights.
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Keeping this principle at the forefront of design means avoiding the worst impacts of over-lighting and light pollution. It is important to make explicit the idea that brighter is not necessarily better: the aim is to think only about what is necessary for a space. Being informed by the evidence around lighting and safety is also important here.

Context	Good lighting should integrate well with its neighbours.
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Considering the complexity of uses (and users) within different spaces will aid holistic thinking about a site. One effect of interrogating how a site works is to consider its relationship with neighbouring sites and spaces, and how light works and integrates beyond site boundaries. This is crucial to avoid standalone, overlapping projects which result in over-illumination. It also helps ensure that lighting serves to improve the legibility of urban space rather than detract from it.

Ownership

Lighting high streets, routes or buildings requires a consistent approach. This improves wayfinding, avoids contrasting light levels or colours, and provides a sense of place. Well-lit places have an organisation playing that coordinating role.

A longer-term aspiration is for this coordinating role to be played by the adoption of comprehensive lighting strategies in each borough. More immediately, it could be played by existing groups and bodies without requiring formal regulation or planning. For a housing estate, this could be the landlord or a Tenants and Residents Association – but in a more commercial area like a high street or town centre, the responsibility could fall to existing town centre partnerships such as Business Improvement Districts.

Endnotes:

1. 1.6 million Londoners work at night. See London Night Time Commission (2019). Think Night: London's neighbourhoods from 6pm to 6am. London: Mayor of London. Retrieved from: https://www.london.gov.uk/sites/default/files/ntc_report_online.pdf
2. Arup (2015). Cities Alive: Rethinking the Shades of Night. Retrieved from: <https://www.arup.com/perspectives/publications/research/section/cities-alive-rethinking-the-shades-of-night>
3. London Night Time Commission (2019). Think Night: London's neighbourhoods from 6pm to 6am. London: Mayor of London. Retrieved from: https://www.london.gov.uk/sites/default/files/ntc_report_online.pdf
4. City of London Corporation (2018). Lighting Strategy. Retrieved from: <https://www.cityoflondon.gov.uk/assets/Services-Environment/public-realm-city-lighting-strategy.pdf>
5. Ackroyd, P. (2012). London: The Concise Biography. London: Vintage.
6. de Beer, E. S. (1941). The Early History of London Street Lighting. *History*, 25(100), March 1941, 311-324.
7. Ibid.
8. Kyba, C., Mohar, A., & Posch, T. (2017). How bright is moonlight? *Astronomy & Geophysics*, 58(1), 1st February 2017, 1.31-1.32.
9. National Optical Astronomy Observatory (2015) Quality Lighting Teaching Kit, Recommended Light Levels. Retrieved from: https://www.noao.edu/education/QLTkit/ACTIVITY_Documents/Safety/LightLevels_outdoor+indoor.pdf
10. Major, M. (2015). "London", in Isenstadt, S., Petty, M. M., & Neumann, D. (eds.) *Cities of Light: Two Centuries of Urban Illumination*, 152-158. London: Routledge.
11. Owsley, C. (2011). Aging and vision. *Vision Research*. 51(13), 1610-1622.
12. Welsh, B. C., & Farrington D. P. (2008). Effects of improved street lighting on crime.
13. Campbell Systematic Reviews. DOI: <https://doi.org/10.4073/csr.2008.13>
14. Perkins, C. et al. (2015). What is the effect of reduced street lighting on crime and road traffic injuries at night? A mixed-methods study. *Public Health Research*, 3(11). Retrieved from: https://www.ncbi.nlm.nih.gov/books/NBK316503/pdf/Bookshelf_NBK316503.pdf
15. Cozens, P. M., Saville, G., & Hillier, D. (2005). Crime prevention through environmental design (CPTED): a review and modern bibliography. *Property Management*, 23(5), 328-356.
16. GLA Economics (2018). London at night: an evidence base for a 24-hour city. Retrieved from: <https://www.london.gov.uk/business-and-economy-publications/london-night-evidence-base-24-hour-city>
17. Ibid.
18. Transport for London (2019). Travel in London: Understanding our diverse communities. Retrieved from: <http://content.tfl.gov.uk/travel-in-london-understanding-our-diverse-communities-2019.pdf>
19. Smeds, E., Robin, E., & McArthur, J. (2020). Night-time mobilities and (in)justice in London: Constructing mobile subjects and the politics of difference in policy-making. *Journal of Transport Geography*, 82.
20. Office for National Statistics (2019). The nature of violent crime in England and Wales: year ending March 2018. A summary of violent crime from the year ending March 2018 Crime Survey for England and Wales and police recorded crime. Retrieved from: <https://www.ons.gov.uk/releases/thenatureofviolentcrimeinenglandandwalesyearendingmarch2018>
21. GLA Intelligence Unit (2018). Night Time Commission – Opinion Research. Headline Findings. Retrieved from: <https://data.london.gov.uk/dataset/night-time-commission-consultation-2018>

22. Ibid.
23. Ibid.
24. See Living Streets (2018). The Pedestrian Pound: The business case for better streets and places. Retrieved from: <https://www.livingstreets.org.uk/media/3890/pedestrian-pound-2018.pdf>; and Transport for London (n.d.), Economic benefits of walking and cycling. Retrieved from: <https://tfl.gov.uk/corporate/publications-and-reports/economic-benefits-of-walking-and-cycling>
25. Institution of Lighting Professionals (2012). Professional Lighting Guide 03: Lighting for Subsidiary Roads. Retrieved from: <https://theilp.org.uk/publication/plg03-lighting-for-subsidiary-roads-using-white-light-sources-to-balance-energy-efficiency-and-visual-amenity/>
26. Ibid.
27. London Night Time Commission (2019). Think Night: London's neighbourhoods from 6pm to 6am. London: Mayor of London. Retrieved from: https://www.london.gov.uk/sites/default/files/ntc_report_online.pdf
28. Cozens, P. M., Saville, G., & Hillier, D. (2005). Crime prevention through environmental design (CPTED): a review and modern bibliography. *Property Management*, 23(5), 328-356.
29. Major, M. (2015). "London", in Isenstadt, S., Petty, M. M., & Neumann, D. (eds.) *Cities of Light: Two Centuries of Urban Illumination*, 154. London: Routledge.
30. West, K. E. et al. (2011). Blue light from light-emitting diodes elicits a dose-dependent suppression of melatonin in humans. *Journal of Applied Physiology*, 110(3), 619-26.
31. NHS (2018). Overview: Seasonal Affective Disorder (SAD). Retrieved from: <https://www.nhs.uk/conditions/seasonal-affective-disorder-sad/>
32. The Health Foundation (2018). What makes us healthy? An introduction to the social determinants of health. Retrieved from: <https://www.health.org.uk/publications/what-makes-us-healthy>
33. National Institute for Health Research (2019). Area reputation and health inequalities – scoping the evidence. Retrieved from: <https://www.clahrc-nwc.nihr.ac.uk/media/Info%20Hub/Area%20reputation%20and%20health%20inequalities%20scoping%20the%20evidence.pdf>
34. Sloane, M., Slater, D., & Entwistle, J. (2016). Tackling social inequalities in public lighting. London: LSE. Retrieved from: <http://eprints.lse.ac.uk/66626/>
35. Lighting Community International (2020). Exploring city nightscapes. Retrieved from: <https://www.luciassociation.org/exploring-city-nightscapes/>
36. Falchi, F. et al. (2016). The new world atlas of artificial night sky brightness. *Science Advances*, 2(6). DOI: 10.1126/sciadv.1600377
37. Ibid.
38. Royal Commission on Environmental Pollution (2009). Artificial Light in the Environment. Retrieved from: <https://www.gov.uk/government/publications/artificial-light-in-the-environment>
39. Stone, E. L. (2013). Bats and lighting: Overview of current evidence and mitigation. Bristol: Bristol University. Retrieved from: <http://www.batsandlighting.co.uk/downloads/lightingdoc.pdf>
40. Sanders, D. et al. (2020). A meta-analysis of biological impacts of artificial light at night. *Nature Ecology & Evolution*, 5, 74-81.
41. Ibid.
42. Jolley et al (1930). British Standard Specification No.307, 1927, For Street Lighting. In Jolley et al, *The Theory and Design of Illuminating Engineering Equipment*. London: Chapman and Hall. Extract reproduced at: <http://www.simoncornwell.com/lighting/publications/standards/bs307-1.pdf>
43. Ministry of Transport (1937). Departmental Committee on Street Lighting: Final Report. Digitisation retrieved from: <http://www.simoncornwell.com/lighting/publications/standards/mot1937-1.pdf>
44. Green Investment Bank (2014). Low Energy Streetlighting: Making the Switch, a market report by the UK Green Investment Bank. Retrieved from: <https://thehea.org.uk/hea-content/uploads/2019/10/Green-Investment-Bank-Low-Energy-Streetlighting.pdf>
45. London Borough of Southwark (n.d.). Great Estates Guide Version 1.0: Case Studies to inform Estate Improvement Plans. Retrieved from: <http://moderngov.southwark.gov.uk/documents/s81127/Appendix%201%20Great%20Estates%20Guide.pdf>

46. Department for Transport (2007). Manual for Streets. Retrieved from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/341513/pdfmanforstreets.pdf
47. Kyba, C. C. M. et al. (2020). Direct measurement of the contribution of street lighting to satellite observations of nighttime light emissions from urban areas. *Lighting Research & Technology*, October 2020. DOI: <https://doi.org/10.1177/1477153520958463>
48. Unpublished interview with senior London Highways engineer.
49. Unpublished interview with urban designer.
50. Ministry of Housing, Communities and Local Government Planning Portal (n.d.). Do you need permission? Lighting. Retrieved from: https://www.planningportal.co.uk/info/200130/common_projects/35/lighting
51. Institution of Lighting Professionals (2020). Guidance Note 01/20 for the reduction of obtrusive light. Retrieved from: <https://theilp.org.uk/publication/guidance-note-1-for-the-reduction-of-obtrusive-light-2020/>
52. Ibid.
53. Historic England (n.d.). External Lighting of Historic Buildings. Retrieved from: <https://historicengland.org.uk/advice/technical-advice/building-services-engineering/external-lighting-of-historic-buildings/>
54. See the Illuminated River Foundation's website at <https://illuminatedriver.london/>
55. Interview with City of London Corporation.
56. Arup (2015). Cities Alive: Rethinking the Shades of Night. Retrieved from: <https://www.arup.com/perspectives/publications/research/section/cities-alive-rethinking-the-shades-of-night>

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