



# Street Hub Noise Management Plan

Version 2



# Background

As one of many features, Street Hubs provide free phone calls via a speaker and microphone system. The following document identifies the steps we are able to take to ensure that these calls, like all the features of the Street Hub, help improve the amenity of a local area whilst also respecting the expectations of local community over time. Please note: this noise management plan refers specifically to the noise from the Street Hub. Noise from pedestrians, users of the Street Hub, or from other nearby sources are not included and would typically be considered matters for the Police and other authorities who have the appropriate and relevant powers to act on such issues if necessary.

We have designed our Street Hub so that they create a 'sound cloud' for the person making a call with noise levels sufficient to make calls with background noise for the surroundings. Whilst this generates a reasonable conversational volume in proximity to the Street Hub, it is intended to result in minimal to no noise being noticeable further away. The average volume settings are 65dB average at 3m distance from each Street Hub. Users may also choose to use headphones when making calls or using the tablet, which deactivates the speaker for the duration of their use.

It is worth noting that the Street Hub are situated on public streets, in the most part close to roads where high volumes of traffic will be seen, examples of background noise experienced on streets are details below:

Noise Level, dB	Example
60-70	Conversational Speech
70-80	Average traffic on Street Corner
80-90	Heavy lorries at 6m

## Noise Management Plan

### Daytime (07:00 – 21:00)

Street Hub have controllable volume levels. This will default to 50% at the start of any user activity during the day and can be increased and decreased based on the preferences of the user.

### Night Time (21:00 – 07:00)

Between the hours of 21:00 to 07:00 all Street Hub will be governed so that the volume cannot be increased to greater than 60% of the maximum volume.

### 999 Calls

It should be noted that when the 999 is called through the tablet or the emergency button is pressed by a user the volume of calls is set to 100% to ensure that any user is able to effectively communicate with the emergency services. This volume can be lowered as requested by the user.



# Exceptional Circumstances

We manage noise by exception based on feedback from users and the local community. If we receive any feedback that the Street Hub may be causing detrimental environmental impact, we take the following actions:

1. Understand the reason for the issue and any extenuating circumstances. At this point we will separate out any Police or community safety matters and work directly with the relevant authorities, and support the local residents in raising these issues through official channels where appropriate.
2. We will then verify the evidence provided against the Street Hub's call history and other operational data as required. This will allow us to understand the number, time, and frequency of outbound calls being made and better understand the severity of the reported situation.
3. Once we have verified the situation, we will typically look to apply local bespoke volume governor controls appropriate to the situation. We have found that reducing the Street Hub 's maximum volume to 40% during relevant periods tends to resolve issues where they have been identified.
4. We will continue to monitor the situation and listen to ongoing feedback from the community as we do take matters seriously. We continue to learn as part of our roll out how Street Hub are fitting in to the community.



## Noise Testing

We have conducted 2 separate tests on the Street Hub, the initial test are to simulate typical operating temperatures (Test Scenario 1), with the secondary test simulating the worst case operating temperature (fans setting at max speed; Test Scenario 2). Each test involved 16 different test points taking part at 1.5m above floor level, with 3 readings being taken at each location, resulting in over 48 readings per test condition (96 in total). The equipment used to conduct the tests was the ANENG-GN101 Decibel Monitor. The average results in test scenario 1 was 50.5dB (55.9dB without factoring in background noise), in test scenario 2 the average result was 59.1dB (60.4dB without factoring in background noise).

## NOISE TEST REPORT

<b>DATE OF ISSUE</b>	16/11/2021
<b>DEVICE UNDER TEST</b>	BT STREET HUB 2 – MODEL BTSH-01
<b>TEST EQUIPMENT USED</b>	Decibel meter (ANENG-GN101), tripod, spirit-level, measuring tape

<b>SUMMARY OF TESTS PERFORMED</b>	
1	NOISE LEVELS UNDER TYPICAL OPERATING CONDITIONS
2	NOISE LEVELS UNDER WORST CASE OPERATING CONDITIONS

<b>TEST 1 : NOISE OUTPUT UNDER TYPICAL OPERATING CONDITIONS</b>	
EQUIPMENT SET-UP	OPERATING UNDER THERMAL MANAGEMENT SYSTEM AT AMBIENT TEMPERATURE
AMBIENT TEMPERATURE DURING TEST	17.8°C
BACKGROUND NOISE LEVEL	54.4dB

<b>RESULTS</b>			
		Average	55.9
		<b>Factor for Background Noise</b>	<b>50.5</b>

<b>TEST 2 : NOISE OUTPUT UNDER WORST CASE OPERATING CONDITIONS</b>	
EQUIPMENT SET-UP	OPERATING WITH ALL EQUIPMENT RUNNING AT MAXIMUM LOAD
AMBIENT TEMPERATURE DURING TEST	17.8°C (simulated to 35°C by setting fans to max. speed)
BACKGROUND NOISE LEVEL	54.4dB

<b>RESULTS</b>			
		Average	60.4
		<b>Factor for Background Noise</b>	<b>59.1</b>

## Further information

We want each Street Hub to provide the best possible experience for users and the communities around them, and will continue to work with councils, police, and the wider community to make sure they do. For more information on Street Hubs and how they are managed contact [streethub@bt.com](mailto:streethub@bt.com)



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# Street Hubs Beyond connection

Supporting local councils with  
digital street communication



# Street Hub product statement

v1.0 | February 2021

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# Beyond connection

BT is moving public connectivity forward. We're evolving the payphone estate further with a move from InLink to Street Hubs, a sleek modern answer to the demands of a digitally connected, converged-media society.

Councils across the UK used the InLink units to meet key challenges head-on, upgrading local infrastructure, tackling the digital divide, and freeing the high street from unnecessary furniture.

With Street Hubs, we're further transforming the payphone estate – it brings all the existing benefits of InLink but with 75" screens, better Wi-Fi range, environmental monitoring and expanded mobile network coverage with 5G enablement.

We're making streets smarter, with ultrafast Wi-Fi, public messaging and better mobile connectivity. We're making them safer, with ready access to public and emergency services. And we're making them more sustainable, with sensors allowing for 'smart city' planning and reduced street clutter.

Serve your citizens and gain greater insights into your streets for targeted improvements – all at no extra cost.

## What is a Street Hub?

**Street Hubs are free to use, fully accessible community assets connecting and improving local streets in urban areas.** At no cost to taxpayers or end users, Street Hubs provide communities with an unprecedented suite of essential urban tools:

- **Ultrafast public and encrypted Wi-Fi**
- **Access to public services**
- **Multiple accessibility options**
- Powered by **100% renewable carbon-free energy**
- **Inspected weekly and cleaned at least every two weeks**, monitored 24/7
- Secure power-only USB ports for **rapid device charging**
- **Free phone calls**
- **Direct 999 call button**
- **Display community and emergency** (i.e. police) awareness messaging
- **Environmental sensors** to measure air quality, noise, traffic and more.





## Contributing to the community

We are committed to ensuring that Street Hubs make a positive contribution to the public realm as well as the communities they are in.

- With a **footprint of just 0.42m<sup>2</sup>** Street Hubs are smaller than comparable street furniture, and their installation facilitates and **funds the removal of up to two existing BT payphone kiosks**, giving back 1.58m for each installation
- **876 hours of free council advertising** per unit per year
- Direct **access to charities** through the use of the dedicated charity icon on the fully accessible interactive tablet
- **Community notice board** with over 1,000 hours of content per year – the Street Hub team can work with local groups to promote events and activities
- **Discount advertising for local business groups** (such as BIDs and Chambers of Commerce) and their members through our Street Hub Partners Programme
- Business rates for each location are paid when requested by the council, ensuring Street Hubs **make an ongoing financial contribution to the local area.**

## Community feedback

Street Hubs are helping to improve streets and public spaces across the UK, as well as helping to better connect local communities.

*"We have always been a city with an eye for opportunity and believe the range of free services the InLinks provide is a significant contribution to the Greater Manchester Digital Strategy. As a city, we plan to continue to encourage and support digital innovation which strengthens businesses and investment."*

**Sir Richard Leese**

Leader of Manchester City Council

*"By providing facilities for people to make free calls, access free WiFi and information and charge their phones, we move one step closer to becoming an attractive modern city where people are proud to live and work."*

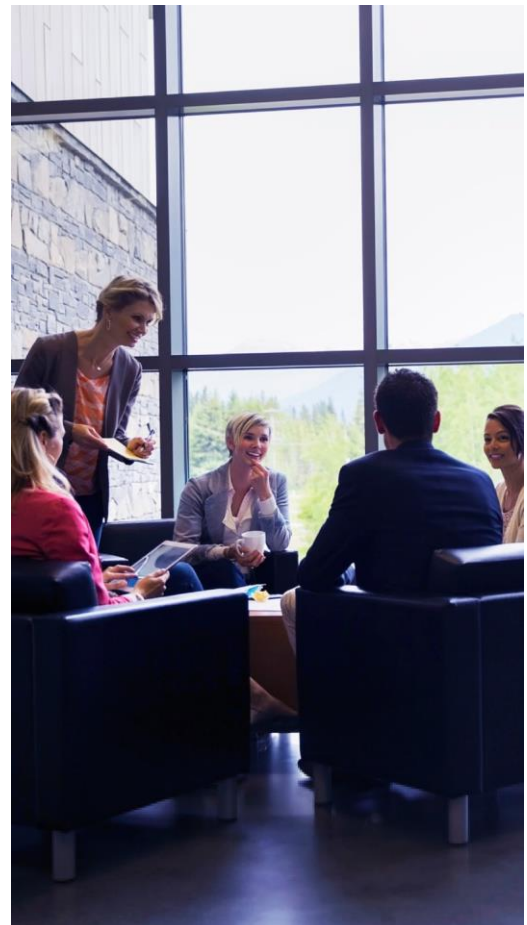
**Councillor Chris Hammond**

Leader of Southampton City Council and Cabinet Member for Clean Growth & Development

*"We're delighted to be on InLinks. At Childline we're always looking at new ways to increase our reach and help as many young people as we possibly can."*

**Grania Hyde-Smith**

National Services Communications Manager for Childline



## Our approach

Our approach to planning is to be collaborative with councils wherever possible, working closely with relevant stakeholders to identify suitable sites for Street Hubs and to select which payphones are to be removed.

Once the appropriate permissions have been gained we progress with removals and installations with the minimal possible disruption to residents and businesses.

Activation is as automated as possible to minimise the time our engineers spend setting-up and checking the units are ready for service.

We welcome the opportunity to collaborate on all stages of the rollout in an area wherever possible.

# Street Hub design and specifications

Street Hubs are free-standing structures featuring a fully accessible tablet interface and digital HD display screens on two sides. Overall Street Hub dimensions are 35cm deep and 123.6cm wide (reduced tapered footprint is 120.1cm), with a height of 298cm to maximise the Wi-Fi range without dominating the street. A narrow base limits the footprint while ensuring access to wheelchair users.

The screens display content at 10-second intervals, both the commercial content that funds the service as well as a wide range of local community and council content.

The two screens automatically dim at night to 600cd/m<sup>2</sup>, following daylight hours and in accordance with the levels set for this type and size of screen (those under 10m) by the Institute of Lighting Professionals, Professional Lighting Guide 05 2015:

The Brightness of Illuminated Advertisements.

This minimises disturbances to residents in the evening.

There is a video camera above each screen, as well as built into the tablet. These are not currently connected or used in the UK but are ready to deliver community benefits, after consultation and notifying the public and stakeholders through multiple channels.

## Accessible for all types of users

Street Hubs have been designed to be accessible to all users, regardless of their physical or technological capabilities, including:

- Tablet interface placed at 1m to provide easy access for wheelchair users
- Easy-touch 999 call button to ensure it can be used regardless of mobility restriction
- High-contrast large type labels
- TalkBack functionality facilitates full access to the tablet for all users
- Hearing induction loops integrated into each unit
- Intuitive touch screen interface.

**Next Generation Text Relay** makes Street Hubs even more accessible to those who are deaf, hard-of-hearing or speech impaired. Using the tablet callers can type words for a Relay Assistant to then speak to the call recipient. The Relay Assistant types back any responses to the caller, allowing for an effective two-way conversation.



## Our Wi-Fi in detail

Street Hubs connect their communities to the fastest and most robust free public Wi-Fi service in the UK, 1Gbps within 150m. Full fibre connectivity enables speeds up to 13.9<sup>1</sup> times faster than standard fixed line home broadband and can handle large numbers of connected users without any reduction in speed.

An omnidirectional outdoor Wi-Fi access point at the top of each Street Hub is connected directly to the fibre broadband network, with co-channel interference mitigated by directing Wi-Fi signals away from neighbouring access points. Our full fibre solution allows capacity upgrades by orders of magnitude (e.g. 1Gbps to 10Gbps) without street works.

Signing up is simple – a one-time email address registration allows automatic connection whenever a user is in range of an active Street Hub. Our customer-first policy means we don't sell email addresses on, and have no pop-up adverts when users reconnect. Content filtering also prohibits access to adults-only websites.

Where a 'superconnected cities' public Wi-Fi service is already provided to the council by BT, this signal can also be broadcast from all Street Hubs in that city at no additional charge.

## Interactive tablet

Every Street Hub includes a fully accessible interactive tablet that provides a series of icons that give users access to:

- Local council services
- BT's phone book
- Maps and wayfinding
- One touch connection to four national charities for support
- Local weather information
- FAQs and instructions.

Sessions timeout after 30 seconds of inactivity or when selected, wiping all user sessions clean. The ring-fenced system **does not allow open web browsing.**

<sup>1</sup> May 2020 figures revealed that the average fixed line internet download rate is now 71.8 Mbit/s (up 7.8 Mbit/s in November 2019) – [Ofcom's annual study of fixed line home broadband ISP speeds across the United Kingdom.](#)

## Free calls for everyone

Street Hubs allow users to make free calls using two different methods:

- **Directional speaker and built-in microphone**, with noise-cancelling technology and adjustable volume allowing calls to rival a traditional handset in clarity and quality
- **Plugging in a standard headset or earphones** into the built-in headphone jack.

Calls aren't time-limited, but almost all have lasted no more than a few minutes as people use them to call friends, family, local services, taxis, etc.

The tablet and speaker are set back and sheltered from the sides, allowing privacy for personal communications. In addition, **the speaker volume is automatically reduced at night** (except for emergency calls).

Unlike payphones, Street Hubs don't include or need a handset, nor accept incoming calls.

## Providing capacity and mobile coverage with small cells

Small cell mobile infill meets the increasing demand for connectivity in the UK, particularly useful in busy urban areas where it's needed most and installing mobile antennae is difficult.

Street Hubs boost 4G and 5G with installed small cells, improving coverage and capacity. Residents, local businesses and visitors get a fast, reliable connection for calls and internet access. Your citizens can enjoy mobile gaming, virtual reality and video streams wherever they are.

## Secure fast charging

**Two marine grade, waterproof USB ports** with Quick Charge 2.0 connected directly to a power source. They cannot exchange data.

These are compatible with all mobile devices, but **also support the next generation of phones** with 20x the charging speed, a great service to tourists and those in an emergency.

## Maps and wayfinding

Every Street Hub provides access to maps giving directions to nearby landmarks and services – a valuable resource for visitors or those without access to a smartphone.

They also act as wayfinding boards, giving walkers and cyclists clear directions.

Local advertisers are encouraged to give simple directions to their businesses.

## Useful real-time information

We are currently running real-time information from a range of sources, including local weather and transport information. LBC content displayed on the unit shares up-to-the-minute news with local communities, enhancing the outdoor experience.

In the future we're looking to create relevant community content with open APIs. Similarly, we happily work with local authorities, transport

providers, and others to determine what real-time information is most useful to the area and how it can be integrated.

For example, in London we display real-time Transport for London (TfL) tube status information. We're also working with TfL to explore how to incorporate other transport information to help people get around the city.

## A platform for community and council content

The rotating content on each Street Hub includes a ring-fenced allocation for community content provided by the local council and community.

**Each local authority is provided with 5% of screen time** on each Street Hub to promote and educate, equivalent to 876 hours per unit or 438 hours per screen.

This content would be scheduled and (where needed) developed in partnership with BT and Global, and can tell residents and visitors about local services, local events and news, as well as warnings and public notices.

Street Hubs designers also create 'house content' throughout the year relating to key events and holidays. Recent examples include supporting the local council elections through encouraging residents to register to vote, free events during school holidays, London Pride, Black History Month and a diverse editorial calendar throughout the year, supporting our vision for a 21st century community noticeboard.

Street Hubs are more than an advertising screen – they're a key point of reference for local information and **an asset to the community**.

## Advertising for businesses of all sizes

Street Hubs represent **the latest in advertising platforms** – an affordable, accessible digital advertising solution that specifically targets Street Hubs close to small businesses.

The Global sales team (responsible for all 'paid for' messaging on Street Hub screens) is set up to **work in partnership** with small and medium-sized enterprises, letting them use the screens to reach audiences and drive business growth.

This advertising revenue lets us provide all our services free of charge, and further rollout of Street Hubs.

Our Global team have increased the accessibility of Street Hubs in two ways:

### Programmatic connection

Global have connected Street Hub to DAX, their programmatic platform. This allows Demand Side Platforms (DSPs) to purchase individual ad slots automatically.

### Automated scheduling

Global are connecting the scheduling of Street Hub directly to their inhouse booking system. This allows key business partners who use API-enabled platforms to easily book and execute complex and flexible schedules.

Global's award-winning Data Planning team manages G-IQ, a data management platform that is used to ingest first and third-party data to prove the efficacy of our products and the value of the audience. Using trusted data sources and intelligent mapping tools we can plan effective campaigns.

Their unique position as a media owner of channels like Outdoor, Radio and Online allows for more creative scope. For example, it's seen innovative multiple-media campaigns deliver both digital Outdoor messaging in sync with Radio commercials.

## Content standards

Street Hubs are funded through the display of advertising in conjunction with other council and community content.

Our Global team coordinate with advertisers, brands and specialists on commercial content, guided by:

- Committee of Advertising Practice (CAP) Code of Practice
- Guidance for Digital Roadside
- Advertising and Proposed Best Practice from Transport for London
- Non Broadcast Advertising and Direct Promotional Marketing (CAP) Self Regulation Guidelines
- and resources from other authorities as necessary.

For full specifications of our screens please refer to page 15, 'Digital Display Screen Technical Specification'.

## Safer communities

Every Street Hub includes a direct **999 call button** that **automatically shares its location** with the authorities, improving safety in an area and helping in the reporting of crime and disorder.

A two-push approach reduces the chance of accidental calls, with a voice prompting users to push the button a second time to confirm.

Street Hubs can also support campaigns with local police and other authorities. For more information see the communities section.

## Emergency messaging

Back-end systems allow us to control screens dynamically through our head office. Groups such as the police can quickly display emergency and community awareness messaging – see our case study from Camden for an example.

In the event of an emergency or major event, regular content can be replaced with urgent, useful messaging alerting the public to major incidents and offering advice.

As each Street Hub is addressable, we can give specific instructions on individual screens steering people away from a particular area or providing alternatives to travel.



# Combating anti-social behaviour

Street Hubs are operated in accordance with the Street Hub Anti-Social Behaviour Management Plan that was developed with assistance from the police and a number of local authorities.

Automatic anti-social call blocking technology uses anonymised data to identify suspicious call patterns and phone numbers. Identified numbers are blocked on Street Hubs across the UK, while still allowing genuine users to benefit from the free phone call service.

Depending on circumstances, other measures can be taken including further reducing call volumes, restricting calls at certain times, or only allowing headset calls.

Recommendations from groups like the police may mean quicker implementation of measures, for example temporarily restricting mobile calls

As BT is designated by OFCOM as a Universal Service Provider of public call boxes, any decision to restrict phone service will need to be made exclusively by BT. Decisions to change any service will be based on details provided by police and local authorities:

- A description of the issue and when it occurred / occurs
- Location of the Street Hub(s) involved and how they contributed.

Changes will be viewed as temporary (typically 3 months, or 12 in high-risk areas) and reviewed later.

where a Street Hub has been misused to buy illegal drugs. Subject to internal processes, the police can 'whitelist' a specific number where there is an operational need, i.e. involved in an active investigation.

People can contact [StreetHub@bt.com](mailto:StreetHub@bt.com) to report technical issues, antisocial behaviour involving a Street Hub, or to claim their number has been flagged in error. Their case will be considered in

consultation with the police and local council where appropriate. This option will be highlighted on the screen when a call is attempted to a restricted number. Emails sent from [police.uk](mailto:police.uk) or [.gov](mailto:.gov) email addresses will be treated as a priority.

Should it not be possible or convenient to send an email, it's possible to call the Street Hub helpline on 0800661610 (open 24 hours 7 days).

# Environmental performance

All Street Hubs are **powered by 100% renewable carbon-free energy**, with energy efficiency prioritised throughout the design process.

- A state-of-the-art LED-backlit LCD screen that consumes approximately 60% less power than Cold Cathode Fluorescent Tubes
- Screen filters reflect light reducing the need for high power, noisy cooling systems typically seen in competing solutions
- Industrial-grade components designed to function at high temperatures lower the need for cooling without compromising performance
- Passive design for cooling, i.e. aluminium casing for better thermal dissipation
- High-efficiency power supplies providing 80% or better efficiency, compared to 65-70% of typical components.
- Noise from cabinet and equipment should not exceed: 41dB at a distance of 3 metres during day, 35 dB at a distance of 3 metres during night, Operational volume should not exceed 60dB at a distance of 1 metre.

## Air quality monitoring

Across the UK, we're trialling air quality monitoring equipment within Street Hubs. The information from these sensors could be used by participating (and interested) councils and researchers to complement other data sources and improve local decision making.

**Councils adopting Street Hub are invited to express interest in being involved in this trial.** Feedback from participants will guide how the data is communicated and used.

Initially, we're looking at the potential measurement of the following elements of air pollution:

- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Nitric Oxide (NO).

Further work is being undertaken on the possible measurement of:

- Ground Ozone Level (O<sub>3</sub>)
- Particles (PM<sub>2.5</sub>)
- Particles (PM<sub>10</sub>)
- Sulphur Dioxide (SO<sub>2</sub>).

Measurement for each of the above are being assessed on their individual merits, and a decision of which to include in a given Street Hub and when has not yet been made.

*"We are excited to be working with BT to equip their street furniture with our innovative technology to monitor and reduce carbon emissions. This will help local authorities monitor their carbon footprint in real-time, identify the best opportunities to cut emissions, and access new funding for the necessary investments. At scale, the UK could become the first nation to continuously monitor carbon emissions over its entire territory. This would boost its goal of net zero by 2050."*

**Mathieu Carlier**  
CEO of Everimpact



## Additional smart city sensors and data collection for community benefit



Street Hubs collect and display useful, real-time data and insights from communities to help government officials and local decision makers get more from the space around them.

As with the air quality trial highlighted above, the modular nature of Street Hubs lets us improve, evaluate and invest in tools and techniques to collect meaningful insights, i.e.:

- Counting pedestrian numbers
- Measuring traffic congestion
- Bike and vehicle counting
- Environmental factors like sound and light.

Continued investment allows 'smart cities' to improve public well-being and health with data. This kind of **data is most powerful when shared**, so we would look to make these insights available to communities as permitted by law and within our Privacy Notice and Terms of Use.

# Installing a Street Hub

Several steps are involved in the installation of a Street Hub once approval is obtained from the relevant local authority:

**1. Preparation works**

Before work starts each site is surveyed to identify services and other underground infrastructure (e.g. water or gas pipes) so our teams do not disrupt services.

**2. Safety comes first**

Our deployment teams will set up barriers to restrict access to the work area. These are based on permits obtained from the local authority.

**3. Payphone removals**

Street Hubs are often installed on the same location as an existing BT payphone so the first works you may see are teams disconnecting and removing existing kiosks.

**4. Preparation of foundations**

Each Street Hub sits on a metal base plate, part of a concrete foundation, 30-40cm below ground level with ducting to allow connection to fibre and power. It's designed to easily withstand being pushed by individuals or high winds, and fall slowly if struck by a vehicle – with internal sensors notifying us of the event.

**5. Connecting services**

Power is connected by the Distribution Network Operator (DNO). Fibre is connected by Openreach. Both may need ducting run from nearby infrastructure, such as broadband cabinets. The teams responsible for this work will typically receive work permits from the local authority in accordance with an area identified at survey.

**6. Lifting the Street Hub into place**

Each Street Hub is typically lifted by small crane from a flatbed truck onto the metal baseplate about 1-3 days after the building of the foundation. At this time any remaining barriers are removed.

**7. Connecting services**

Once installed, our engineering teams do the necessary testing and configuration to go live – typically within two weeks of installation, but sometimes longer.



## Materials

Maintainability and durability were key considerations in the design, with regular cleaning and servicing planned – please see 'Management, maintenance and operational strategy' section below. High-quality materials ensure longevity, holding up to abuse and diminishing scratches.

- Galvanised mild steel structure, powder coated external grade aluminium exterior
- Painted powder coated aluminium main casing – attractive, durable, easy to service, and cooling
- Displays fronted by tempered and laminated glass to reduce glare
- RF transparent radio compartment

The modular design of exterior and interior components makes servicing simple and economical.

## Digital display screen technical specification

The technical specification of the two digital display screens are as follows.

Screen Panel Type:	LCD
Screen Dimensions:	95cm wide x 167cm high (75 inch in portrait)
<b>Screen Area:</b>	<b>1.586m<sup>2</sup></b>
Resolution:	3840 x 2160 UHD
Maximum Daytime Brightness:	2500 cd/m <sup>2</sup> (Typ.)
<b>Maximum Night-time Brightness:</b>	<b>600 cd/m<sup>2</sup> (Typ.)</b>
Contrast Ratio:	1200:1 (Typ.)
Display Colours:	10bit (D) 1.07 Billion Colours
Viewing Angle:	178/178 degrees
Lamp Type:	LED
Operating Temperature:	0~50°C
Sunlight Readable:	Yes

The proposed usage for the screens has been set in accordance with Transport for London's (TfL) policy document 'Guidance for Digital Roadside Advertising and Proposed Best Practice – 2013'.

In addition to the above conditions, each Street Hub location has been assessed against and would comply with the following additional criteria from the TfL guidance.

- There would be no conflict with any traffic signs, signals, crossing points, schools, hospitals or low bridges.
- No sightlines or clearances would be affected.
- The TfL guidance states that 'Static digital advertising is likely to be acceptable in locations where static advertising exists or would be accepted.' There are existing traditional advertisement on similar sections of the respective roads in many cases.
- The geometry of the roads is not complicated and the driving conditions are not considered to be demanding or complicated.
- The advertisements would not be experienced by a driver in conjunction with any other similar digital advertisements.
- As per the TfL guidance, the advertisements would be located as close to the driver's natural eyeline as possible and facing as head-on to the traffic as is practical.

The lighting levels noted above are within the levels set for this type and size of screen (those under 10m<sup>2</sup>) as set by the Institute of Lighting Professionals, Professional Lighting Guide 05: The Brightness of Illuminated Advertisements.

# Management, maintenance, and operational strategy

BT is responsible for the management of Street Hub services with each unit physically inspected weekly across the estate.

## Inspection regimes

The Street Hubs are visited every two weeks for cleaning, by hand and with pressure washers. The materials used make this process easy with defined materials and processes. Whilst cleaners are on site, they check for damage and ensure the tablets and screens are working.

In addition, our in-field quality inspection teams visit at least every two weeks on an alternative schedule to our cleaning team, performing several checks including (but not limited to):

- Full walk-around with supporting photos to check for damage, graffiti and black screens
- Functionality checks on the tablet to test calls, maps, 999 and USB charging.

We can also send out emergency visits if reported as necessary by internal sensors.

## Monitoring and repair management

Street Hubs are monitored remotely 24/7, our primary mechanism to spot faults with the above local inspections ensuring the effectiveness of this monitoring.

Once identified, we have processes to resolve issues within agreed service levels. Most will be resolved within three working days, with safety and power issues having a more rapid resolution target than cosmetic issues like graffiti.

## Future upgrades

We plan to make changes as needed to address identified faults or to improve services. Whilst some may involve physical attendance at the unit, the majority will be done remotely via software upgrades. All updates are rigorously quality assured before release.

# Appendices

The below case studies are from implementation of the current InLink units. With the improved functionality of Street Hubs, we would expect greater results across a larger number of areas, e.g. environmental protection and traffic monitoring with the additional sensors.

## Case study

# COVID-19 messaging

Millions of people in UK towns and cities saw public health information during the pandemic, thanks to the street transformation team's support of three key information initiatives.

### Public Health England campaign (PHE)



We **doubled screen time** for the PHE Stay at Home campaign, regularly updating guidelines into short, digestible snippets on Street Hubs across the UK.

### Local council support



We **collaborated with local councils** to offer support for localised messaging.

### London Mayor's Office (GLC)



We supported GLC messaging for consistent communication across **14 London boroughs** with the **Stay at Home** and **London Together** campaigns.

Case study

# Restoring pavements across the UK

Brixton is a key transport interchange, entertainment and shopping precinct, and civic centre in south London. This role means in the past there was strong demand for payphones with many previously provided by BT still in the area.

The InLink on Coldharbour Lane opposite the Town Hall has replaced existing payphones that were associated with a range of anti-social activities.

On this site we reclaimed 3.78m<sup>2</sup> of pavement space for the community, allowing for the future expansion of nearby bicycle parking racks.

Before



After



Case study

# Working with local police

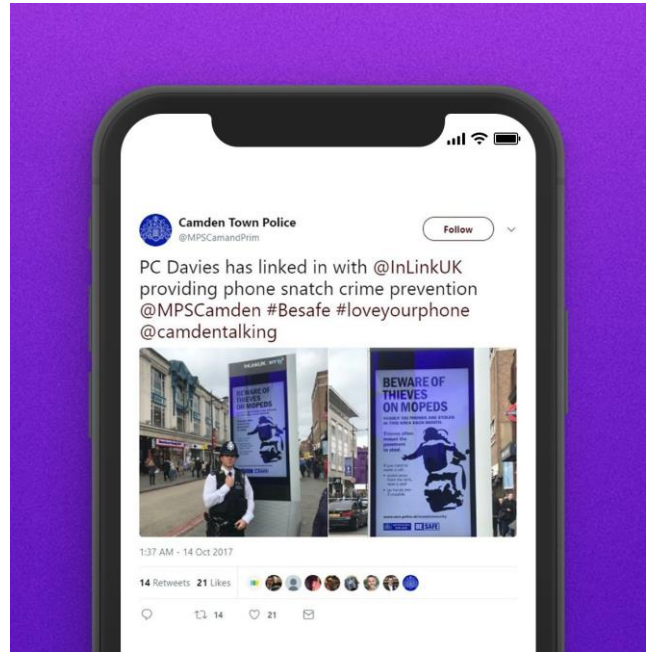
The InLinkUK team partnered with the Camden Town Police in north London to help raise awareness of the threat posed by phone snatchers on mopeds.

Content was created for the campaign and included on InLinks in the Camden area, as seen on this one with PC Davies just by Camden Town Tube.

Over the course of the campaign there was a significant reduction in the number of phones reported stolen. Our team is now looking to roll this and similar campaigns out in other areas.

InLinks have also been used to promote local neighbourhood meetings, such as the example shown here from a trial with the Safer Neighbourhood team in the London Borough of Southwark.

Similar content was shown on screens in the specific ward area to help raise awareness among the local community and to encourage those interested to attend.



Case study

# Supporting democracy

As local community infrastructure each InLink can act as a local notice board for its area, with this functionality proving particularly useful in the lead up to and during elections.

During the 2018 local government elections InLink screens throughout the UK encouraged voters check and update their voter registrations.

Screens were also used to promote government campaigns against voter intimidation, including this example from the London Borough of Tower Hamlets in conjunction with CrimeStoppers and the Electoral Commission that was presented in a range of different languages.





Case study

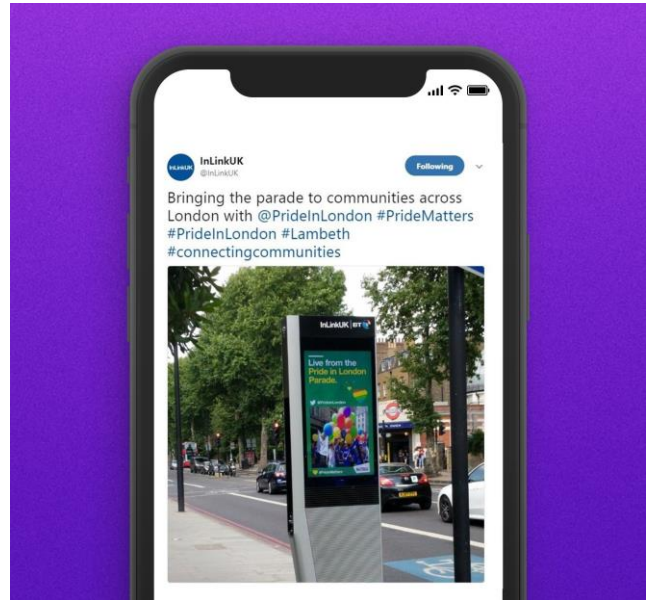
# Live content from London Pride

In 2018 InLinkUK were an official media partner for Pride in London with the InLink screens used in the lead up to and during major events to highlight the occasion.

Ahead of the major events, creative content was displayed to promote Pride Month across the entire InLink estate in the UK.

A range of special 'Did you know?' facts were also shown on InLink screens throughout London highlighting the challenges still faced by the LGBT+ community and the work of volunteers delivering Pride in London.

An estimated 30,000 people took part in the Pride March and more than one million came into the city to watch in person, with those in other parts of London able to see highlights that were being shown on the InLink screens.



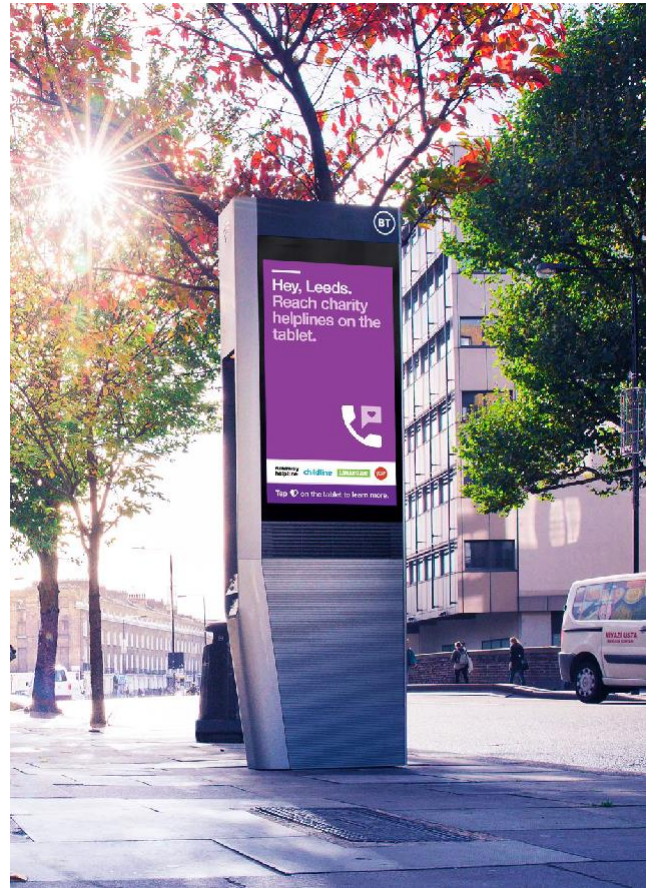
Case study

# Helped local and national charities

InLinkUK worked with a range of charity stakeholders to support their work in the community, with a 'Charity Tile' on the InLink tablet that provides access to a range of key organisations.

Childline, End Youth Homelessness, Runaway Helpline and Samaritans teamed up with InLinkUK to provide users with direct access to their services.

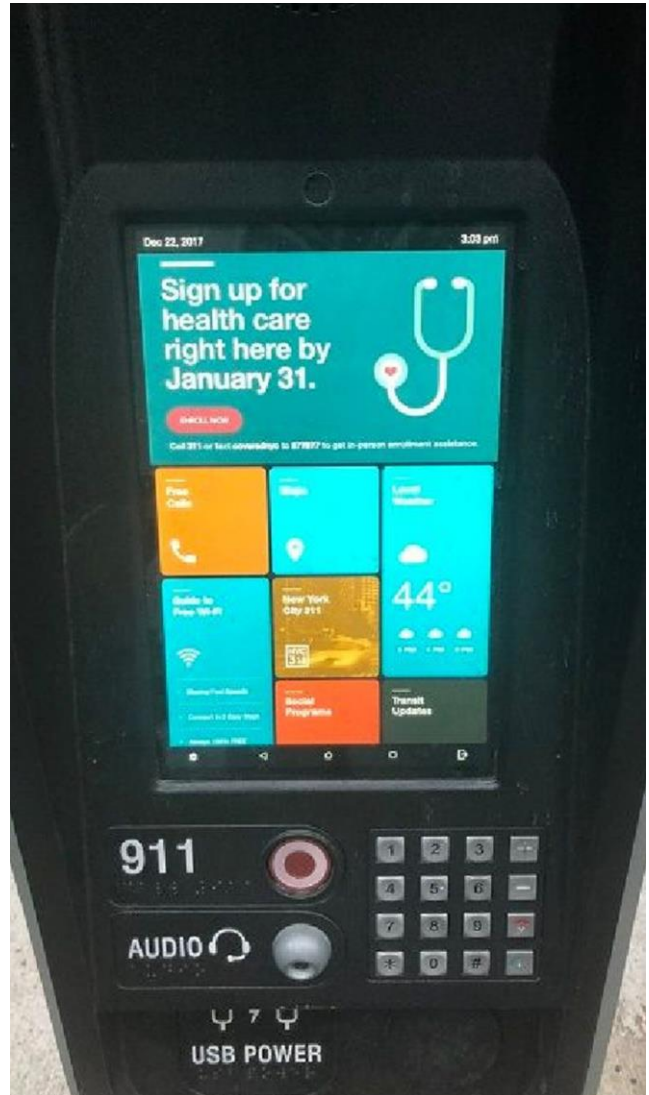
This was complemented by a range of content included on the screens to raise awareness and support the work of local and national charities.



Case study

# Helping rough sleepers

During the 'Beast from the East' storms in April 2018 InLinks were used to display content from StreetLink that provided those nearby with information on how to help rough sleepers who were still outside during the bad weather.





**Offices Worldwide**

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**February 2021**



# Street Hubs Beyond connection

Supporting local councils with  
digital street communication



# Street Hub product statement

v1.0 | February 2021

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# Beyond connection

BT is moving public connectivity forward. We're evolving the payphone estate further with a move from InLink to Street Hubs, a sleek modern answer to the demands of a digitally connected, converged-media society.

Councils across the UK used the InLink units to meet key challenges head-on, upgrading local infrastructure, tackling the digital divide, and freeing the high street from unnecessary furniture.

With Street Hubs, we're further transforming the payphone estate – it brings all the existing benefits of InLink but with 75" screens, better Wi-Fi range, environmental monitoring and expanded mobile network coverage with 5G enablement.

We're making streets smarter, with ultrafast Wi-Fi, public messaging and better mobile connectivity. We're making them safer, with ready access to public and emergency services. And we're making them more sustainable, with sensors allowing for 'smart city' planning and reduced street clutter.

Serve your citizens and gain greater insights into your streets for targeted improvements – all at no extra cost.

## What is a Street Hub?

**Street Hubs are free to use, fully accessible community assets connecting and improving local streets in urban areas.** At no cost to taxpayers or end users, Street Hubs provide communities with an unprecedented suite of essential urban tools:

- **Ultrafast public and encrypted Wi-Fi**
- **Access to public services**
- **Multiple accessibility options**
- Powered by **100% renewable carbon-free energy**
- **Inspected weekly and cleaned at least every two weeks**, monitored 24/7
- Secure power-only USB ports for **rapid device charging**
- **Free phone calls**
- **Direct 999 call button**
- **Display community and emergency** (i.e. police) awareness messaging
- **Environmental sensors** to measure air quality, noise, traffic and more.



# Contributing to the community

We are committed to ensuring that Street Hubs make a positive contribution to the public realm as well as the communities they are in.

- With a **footprint of just 0.42m<sup>2</sup>** Street Hubs are smaller than comparable street furniture, and their installation facilitates and **funds the removal of up to two existing BT payphone kiosks**, giving back 1.58m for each installation
- **876 hours of free council advertising** per unit per year
- Direct **access to charities** through the use of the dedicated charity icon on the fully accessible interactive tablet
- **Community notice board** with over 1,000 hours of content per year – the Street Hub team can work with local groups to promote events and activities
- **Discount advertising for local business groups** (such as BIDs and Chambers of Commerce) and their members through our Street Hub Partners Programme
- Business rates for each location are paid when requested by the council, ensuring Street Hubs **make an ongoing financial contribution to the local area.**

# Community feedback

Street Hubs are helping to improve streets and public spaces across the UK, as well as helping to better connect local communities.

*"We have always been a city with an eye for opportunity and believe the range of free services the InLinks provide is a significant contribution to the Greater Manchester Digital Strategy. As a city, we plan to continue to encourage and support digital innovation which strengthens businesses and investment."*

**Sir Richard Leese**

Leader of Manchester City Council

*"By providing facilities for people to make free calls, access free WiFi and information and charge their phones, we move one step closer to becoming an attractive modern city where people are proud to live and work."*

**Councillor Chris Hammond**

Leader of Southampton City Council and Cabinet Member for Clean Growth & Development

*"We're delighted to be on InLinks. At Childline we're always looking at new ways to increase our reach and help as many young people as we possibly can."*

**Grania Hyde-Smith**

National Services Communications Manager for Childline





## Our approach

Our approach to planning is to be collaborative with councils wherever possible, working closely with relevant stakeholders to identify suitable sites for Street Hubs and to select which payphones are to be removed.

Once the appropriate permissions have been gained we progress with removals and installations with the minimal possible disruption to residents and businesses.

Activation is as automated as possible to minimise the time our engineers spend setting-up and checking the units are ready for service.

We welcome the opportunity to collaborate on all stages of the rollout in an area wherever possible.

# Street Hub design and specifications

Street Hubs are free-standing structures featuring a fully accessible tablet interface and digital HD display screens on two sides. Overall Street Hub dimensions are 35cm deep and 123.6cm wide (reduced tapered footprint is 120.1cm), with a height of 298cm to maximise the Wi-Fi range without dominating the street. A narrow base limits the footprint while ensuring access to wheelchair users.

The screens display content at 10-second intervals, both the commercial content that funds the service as well as a wide range of local community and council content.

The two screens automatically dim at night to 600cd/m<sup>2</sup>, following daylight hours and in accordance with the levels set for this type and size of screen (those under 10m) by the Institute of Lighting Professionals, Professional Lighting Guide 05 2015:

The Brightness of Illuminated Advertisements.

This minimises disturbances to residents in the evening.

There is a video camera above each screen, as well as built into the tablet. These are not currently connected or used in the UK but are ready to deliver community benefits, after consultation and notifying the public and stakeholders through multiple channels.

## Accessible for all types of users

Street Hubs have been designed to be accessible to all users, regardless of their physical or technological capabilities, including:

- Tablet interface placed at 1m to provide easy access for wheelchair users
- Easy-touch 999 call button to ensure it can be used regardless of mobility restriction
- High-contrast large type labels
- TalkBack functionality facilitates full access to the tablet for all users
- Hearing induction loops integrated into each unit
- Intuitive touch screen interface.

**Next Generation Text Relay** makes Street Hubs even more accessible to those who are deaf, hard-of-hearing or speech impaired. Using the tablet callers can type words for a Relay Assistant to then speak to the call recipient. The Relay Assistant types back any responses to the caller, allowing for an effective two-way conversation.



## Our Wi-Fi in detail

Street Hubs connect their communities to the fastest and most robust free public Wi-Fi service in the UK, 1Gbps within 150m. Full fibre connectivity enables speeds up to 13.9<sup>1</sup> times faster than standard fixed line home broadband and can handle large numbers of connected users without any reduction in speed.

An omnidirectional outdoor Wi-Fi access point at the top of each Street Hub is connected directly to the fibre broadband network, with co-channel interference mitigated by directing Wi-Fi signals away from neighbouring access points. Our full fibre solution allows capacity upgrades by orders of magnitude (e.g. 1Gbps to 10Gbps) without street works.

Signing up is simple – a one-time email address registration allows automatic connection whenever a user is in range of an active Street Hub. Our customer-first policy means we don't sell email addresses on, and have no pop-up adverts when users reconnect. Content filtering also prohibits access to adults-only websites.

Where a 'superconnected cities' public Wi-Fi service is already provided to the council by BT, this signal can also be broadcast from all Street Hubs in that city at no additional charge.

## Interactive tablet

Every Street Hub includes a fully accessible interactive tablet that provides a series of icons that give users access to:

- Local council services
- BT's phone book
- Maps and wayfinding
- One touch connection to four national charities for support
- Local weather information
- FAQs and instructions.

Sessions timeout after 30 seconds of inactivity or when selected, wiping all user sessions clean. The ring-fenced system **does not allow open web browsing.**

<sup>1</sup> May 2020 figures revealed that the average fixed line internet download rate is now 71.8 Mbit/s (up 7.8 Mbit/s in November 2019) – [Ofcom's annual study of fixed line home broadband ISP speeds across the United Kingdom.](#)

## Free calls for everyone

Street Hubs allow users to make free calls using two different methods:

- **Directional speaker and built-in microphone**, with noise-cancelling technology and adjustable volume allowing calls to rival a traditional handset in clarity and quality
- **Plugging in a standard headset or earphones** into the built-in headphone jack.

Calls aren't time-limited, but almost all have lasted no more than a few minutes as people use them to call friends, family, local services, taxis, etc.

The tablet and speaker are set back and sheltered from the sides, allowing privacy for personal communications. In addition, **the speaker volume is automatically reduced at night** (except for emergency calls).

Unlike payphones, Street Hubs don't include or need a handset, nor accept incoming calls.

## Providing capacity and mobile coverage with small cells

Small cell mobile infill meets the increasing demand for connectivity in the UK, particularly useful in busy urban areas where it's needed most and installing mobile antennae is difficult.

Street Hubs boost 4G and 5G with installed small cells, improving coverage and capacity. Residents, local businesses and visitors get a fast, reliable connection for calls and internet access. Your citizens can enjoy mobile gaming, virtual reality and video streams wherever they are.

## Secure fast charging

**Two marine grade, waterproof USB ports** with Quick Charge 2.0 connected directly to a power source. They cannot exchange data.

These are compatible with all mobile devices, but **also support the next generation of phones** with 20x the charging speed, a great service to tourists and those in an emergency.

## Maps and wayfinding

Every Street Hub provides access to maps giving directions to nearby landmarks and services – a valuable resource for visitors or those without access to a smartphone.

They also act as wayfinding boards, giving walkers and cyclists clear directions.

Local advertisers are encouraged to give simple directions to their businesses.

## Useful real-time information

We are currently running real-time information from a range of sources, including local weather and transport information. LBC content displayed on the unit shares up-to-the-minute news with local communities, enhancing the outdoor experience.

In the future we're looking to create relevant community content with open APIs. Similarly, we happily work with local authorities, transport

providers, and others to determine what real-time information is most useful to the area and how it can be integrated.

For example, in London we display real-time Transport for London (TfL) tube status information. We're also working with TfL to explore how to incorporate other transport information to help people get around the city.

## A platform for community and council content

The rotating content on each Street Hub includes a ring-fenced allocation for community content provided by the local council and community.

**Each local authority is provided with 5% of screen time** on each Street Hub to promote and educate, equivalent to 876 hours per unit or 438 hours per screen.

This content would be scheduled and (where needed) developed in partnership with BT and Global, and can tell residents and visitors about local services, local events and news, as well as warnings and public notices.

Street Hubs designers also create 'house content' throughout the year relating to key events and holidays. Recent examples include supporting the local council elections through encouraging residents to register to vote, free events during school holidays, London Pride, Black History Month and a diverse editorial calendar throughout the year, supporting our vision for a 21st century community noticeboard.

Street Hubs are more than an advertising screen – they're a key point of reference for local information and **an asset to the community**.

## Advertising for businesses of all sizes

Street Hubs represent **the latest in advertising platforms** – an affordable, accessible digital advertising solution that specifically targets Street Hubs close to small businesses.

The Global sales team (responsible for all 'paid for' messaging on Street Hub screens) is set up to **work in partnership** with small and medium-sized enterprises, letting them use the screens to reach audiences and drive business growth.

This advertising revenue lets us provide all our services free of charge, and further rollout of Street Hubs.

Our Global team have increased the accessibility of Street Hubs in two ways:

### Programmatic connection

Global have connected Street Hub to DAX, their programmatic platform. This allows Demand Side Platforms (DSPs) to purchase individual ad slots automatically.

### Automated scheduling

Global are connecting the scheduling of Street Hub directly to their inhouse booking system. This allows key business partners who use API-enabled platforms to easily book and execute complex and flexible schedules.

Global's award-winning Data Planning team manages G-IQ, a data management platform that is used to ingest first and third-party data to prove the efficacy of our products and the value of the audience. Using trusted data sources and intelligent mapping tools we can plan effective campaigns.

Their unique position as a media owner of channels like Outdoor, Radio and Online allows for more creative scope. For example, it's seen innovative multiple-media campaigns deliver both digital Outdoor messaging in sync with Radio commercials.

## Content standards

Street Hubs are funded through the display of advertising in conjunction with other council and community content.

Our Global team coordinate with advertisers, brands and specialists on commercial content, guided by:

- Committee of Advertising Practice (CAP) Code of Practice
- Guidance for Digital Roadside
- Advertising and Proposed Best Practice from Transport for London
- Non Broadcast Advertising and Direct Promotional Marketing (CAP) Self Regulation Guidelines
- and resources from other authorities as necessary.

For full specifications of our screens please refer to page 15, 'Digital Display Screen Technical Specification'.

## Safer communities

Every Street Hub includes a direct **999 call button** that **automatically shares its location** with the authorities, improving safety in an area and helping in the reporting of crime and disorder.

A two-push approach reduces the chance of accidental calls, with a voice prompting users to push the button a second time to confirm.

Street Hubs can also support campaigns with local police and other authorities. For more information see the communities section.

## Emergency messaging

Back-end systems allow us to control screens dynamically through our head office. Groups such as the police can quickly display emergency and community awareness messaging – see our case study from Camden for an example.

In the event of an emergency or major event, regular content can be replaced with urgent, useful messaging alerting the public to major incidents and offering advice.

As each Street Hub is addressable, we can give specific instructions on individual screens steering people away from a particular area or providing alternatives to travel.



# Combating anti-social behaviour

Street Hubs are operated in accordance with the Street Hub Anti-Social Behaviour Management Plan that was developed with assistance from the police and a number of local authorities.

Automatic anti-social call blocking technology uses anonymised data to identify suspicious call patterns and phone numbers. Identified numbers are blocked on Street Hubs across the UK, while still allowing genuine users to benefit from the free phone call service.

Depending on circumstances, other measures can be taken including further reducing call volumes, restricting calls at certain times, or only allowing headset calls.

Recommendations from groups like the police may mean quicker implementation of measures, for example temporarily restricting mobile calls

where a Street Hub has been misused to buy illegal drugs. Subject to internal processes, the police can 'whitelist' a specific number where there is an operational need, i.e. involved in an active investigation.

People can contact [StreetHub@bt.com](mailto:StreetHub@bt.com) to report technical issues, antisocial behaviour involving a Street Hub, or to claim their number has been flagged in error. Their case will be considered in

consultation with the police and local council where appropriate. This option will be highlighted on the screen when a call is attempted to a restricted number. Emails sent from [police.uk](mailto:police.uk) or [.gov](mailto:.gov) email addresses will be treated as a priority.

Should it not be possible or convenient to send an email, it's possible to call the Street Hub helpline on 0800661610 (open 24 hours 7 days).

As BT is designated by OFCOM as a Universal Service Provider of public call boxes, any decision to restrict phone service will need to be made exclusively by BT. Decisions to change any service will be based on details provided by police and local authorities:

- A description of the issue and when it occurred / occurs
- Location of the Street Hub(s) involved and how they contributed.

Changes will be viewed as temporary (typically 3 months, or 12 in high-risk areas) and reviewed later.

# Environmental performance

All Street Hubs are **powered by 100% renewable carbon-free energy**, with energy efficiency prioritised throughout the design process.

- A state-of-the-art LED-backlit LCD screen that consumes approximately 60% less power than Cold Cathode Fluorescent Tubes
- Screen filters reflect light reducing the need for high power, noisy cooling systems typically seen in competing solutions
- Industrial-grade components designed to function at high temperatures lower the need for cooling without compromising performance
- Passive design for cooling, i.e. aluminium casing for better thermal dissipation
- High-efficiency power supplies providing 80% or better efficiency, compared to 65-70% of typical components.
- Noise from cabinet and equipment should not exceed: 41dB at a distance of 3 metres during day, 35 dB at a distance of 3 metres during night, Operational volume should not exceed 60dB at a distance of 1 metre.

## Air quality monitoring

Across the UK, we're trialling air quality monitoring equipment within Street Hubs. The information from these sensors could be used by participating (and interested) councils and researchers to complement other data sources and improve local decision making.

**Councils adopting Street Hub are invited to express interest in being involved in this trial.** Feedback from participants will guide how the data is communicated and used.

Initially, we're looking at the potential measurement of the following elements of air pollution:

- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Nitric Oxide (NO).

Further work is being undertaken on the possible measurement of:

- Ground Ozone Level (O<sub>3</sub>)
- Particles (PM<sub>2.5</sub>)
- Particles (PM<sub>10</sub>)
- Sulphur Dioxide (SO<sub>2</sub>).

Measurement for each of the above are being assessed on their individual merits, and a decision of which to include in a given Street Hub and when has not yet been made.

*"We are excited to be working with BT to equip their street furniture with our innovative technology to monitor and reduce carbon emissions. This will help local authorities monitor their carbon footprint in real-time, identify the best opportunities to cut emissions, and access new funding for the necessary investments. At scale, the UK could become the first nation to continuously monitor carbon emissions over its entire territory. This would boost its goal of net zero by 2050."*

**Mathieu Carlier**  
CEO of Everimpact

## Additional smart city sensors and data collection for community benefit



Street Hubs collect and display useful, real-time data and insights from communities to help government officials and local decision makers get more from the space around them.

As with the air quality trial highlighted above, the modular nature of Street Hubs lets us improve, evaluate and invest in tools and techniques to collect meaningful insights, i.e.:

- Counting pedestrian numbers
- Measuring traffic congestion
- Bike and vehicle counting
- Environmental factors like sound and light.

Continued investment allows 'smart cities' to improve public well-being and health with data. This kind of **data is most powerful when shared**, so we would look to make these insights available to communities as permitted by law and within our Privacy Notice and Terms of Use.



# Installing a Street Hub

Several steps are involved in the installation of a Street Hub once approval is obtained from the relevant local authority:

**1. Preparation works**

Before work starts each site is surveyed to identify services and other underground infrastructure (e.g. water or gas pipes) so our teams do not disrupt services.

**2. Safety comes first**

Our deployment teams will set up barriers to restrict access to the work area. These are based on permits obtained from the local authority.

**3. Payphone removals**

Street Hubs are often installed on the same location as an existing BT payphone so the first works you may see are teams disconnecting and removing existing kiosks.

**4. Preparation of foundations**

Each Street Hub sits on a metal base plate, part of a concrete foundation, 30-40cm below ground level with ducting to allow connection to fibre and power. It's designed to easily withstand being pushed by individuals or high winds, and fall slowly if struck by a vehicle – with internal sensors notifying us of the event.

**5. Connecting services**

Power is connected by the Distribution Network Operator (DNO). Fibre is connected by Openreach. Both may need ducting run from nearby infrastructure, such as broadband cabinets. The teams responsible for this work will typically receive work permits from the local authority in accordance with an area identified at survey.

**6. Lifting the Street Hub into place**

Each Street Hub is typically lifted by small crane from a flatbed truck onto the metal baseplate about 1-3 days after the building of the foundation. At this time any remaining barriers are removed.

**7. Connecting services**

Once installed, our engineering teams do the necessary testing and configuration to go live – typically within two weeks of installation, but sometimes longer.



## Materials

Maintainability and durability were key considerations in the design, with regular cleaning and servicing planned – please see 'Management, maintenance and operational strategy' section below. High-quality materials ensure longevity, holding up to abuse and diminishing scratches.

- Galvanised mild steel structure, powder coated external grade aluminium exterior
- Painted powder coated aluminium main casing – attractive, durable, easy to service, and cooling
- Displays fronted by tempered and laminated glass to reduce glare
- RF transparent radio compartment

The modular design of exterior and interior components makes servicing simple and economical.

## Digital display screen technical specification

The technical specification of the two digital display screens are as follows.

Screen Panel Type:	LCD
Screen Dimensions:	95cm wide x 167cm high (75 inch in portrait)
<b>Screen Area:</b>	<b>1.586m<sup>2</sup></b>
Resolution:	3840 x 2160 UHD
Maximum Daytime Brightness:	2500 cd/m <sup>2</sup> (Typ.)
<b>Maximum Night-time Brightness:</b>	<b>600 cd/m<sup>2</sup> (Typ.)</b>
Contrast Ratio:	1200:1 (Typ.)
Display Colours:	10bit (D) 1.07 Billion Colours
Viewing Angle:	178/178 degrees
Lamp Type:	LED
Operating Temperature:	0~50°C
Sunlight Readable:	Yes

The proposed usage for the screens has been set in accordance with Transport for London's (TfL) policy document 'Guidance for Digital Roadside Advertising and Proposed Best Practice – 2013'.

In addition to the above conditions, each Street Hub location has been assessed against and would comply with the following additional criteria from the TfL guidance.

- There would be no conflict with any traffic signs, signals, crossing points, schools, hospitals or low bridges.
- No sightlines or clearances would be affected.
- The TfL guidance states that 'Static digital advertising is likely to be acceptable in locations where static advertising exists or would be accepted.' There are existing traditional advertisement on similar sections of the respective roads in many cases.
- The geometry of the roads is not complicated and the driving conditions are not considered to be demanding or complicated.
- The advertisements would not be experienced by a driver in conjunction with any other similar digital advertisements.
- As per the TfL guidance, the advertisements would be located as close to the driver's natural eyeline as possible and facing as head-on to the traffic as is practical.

The lighting levels noted above are within the levels set for this type and size of screen (those under 10m<sup>2</sup>) as set by the Institute of Lighting Professionals, Professional Lighting Guide 05: The Brightness of Illuminated Advertisements.

# Management, maintenance, and operational strategy

BT is responsible for the management of Street Hub services with each unit physically inspected weekly across the estate.

## Inspection regimes

The Street Hubs are visited every two weeks for cleaning, by hand and with pressure washers. The materials used make this process easy with defined materials and processes. Whilst cleaners are on site, they check for damage and ensure the tablets and screens are working.

In addition, our in-field quality inspection teams visit at least every two weeks on an alternative schedule to our cleaning team, performing several checks including (but not limited to):

- Full walk-around with supporting photos to check for damage, graffiti and black screens
- Functionality checks on the tablet to test calls, maps, 999 and USB charging.

We can also send out emergency visits if reported as necessary by internal sensors.

## Monitoring and repair management

Street Hubs are monitored remotely 24/7, our primary mechanism to spot faults with the above local inspections ensuring the effectiveness of this monitoring.

Once identified, we have processes to resolve issues within agreed service levels. Most will be resolved within three working days, with safety and power issues having a more rapid resolution target than cosmetic issues like graffiti.

## Future upgrades

We plan to make changes as needed to address identified faults or to improve services. Whilst some may involve physical attendance at the unit, the majority will be done remotely via software upgrades. All updates are rigorously quality assured before release.

# Appendices

The below case studies are from implementation of the current InLink units. With the improved functionality of Street Hubs, we would expect greater results across a larger number of areas, e.g. environmental protection and traffic monitoring with the additional sensors.

## Case study

# COVID-19 messaging

Millions of people in UK towns and cities saw public health information during the pandemic, thanks to the street transformation team's support of three key information initiatives.

### Public Health England campaign (PHE)



We **doubled screen time** for the PHE Stay at Home campaign, regularly updating guidelines into short, digestible snippets on Street Hubs across the UK.

### Local council support



We **collaborated with local councils** to offer support for localised messaging.

### London Mayor's Office (GLC)



We supported GLC messaging for consistent communication across **14 London boroughs** with the **Stay at Home** and **London Together** campaigns.

Case study

# Restoring pavements across the UK

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The InLink on Coldharbour Lane opposite the Town Hall has replaced existing payphones that were associated with a range of anti-social activities.

On this site we reclaimed 3.78m<sup>2</sup> of pavement space for the community, allowing for the future expansion of nearby bicycle parking racks.

Before



After



Case study

# Working with local police

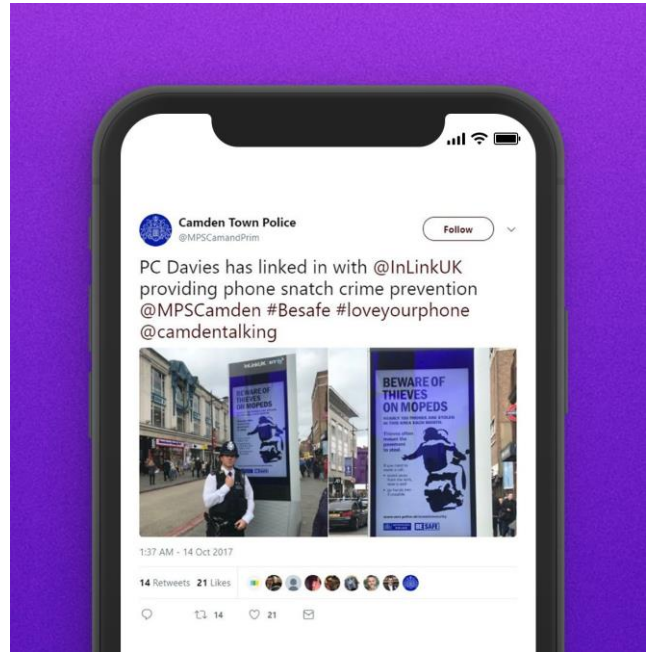
The InLinkUK team partnered with the Camden Town Police in north London to help raise awareness of the threat posed by phone snatchers on mopeds.

Content was created for the campaign and included on InLinks in the Camden area, as seen on this one with PC Davies just by Camden Town Tube.

Over the course of the campaign there was a significant reduction in the number of phones reported stolen. Our team is now looking to roll this and similar campaigns out in other areas.

InLinks have also been used to promote local neighbourhood meetings, such as the example shown here from a trial with the Safer Neighbourhood team in the London Borough of Southwark.

Similar content was shown on screens in the specific ward area to help raise awareness among the local community and to encourage those interested to attend.



Case study

# Supporting democracy

As local community infrastructure each InLink can act as a local notice board for its area, with this functionality proving particularly useful in the lead up to and during elections.

During the 2018 local government elections InLink screens throughout the UK encouraged voters check and update their voter registrations.

Screens were also used to promote government campaigns against voter intimidation, including this example from the London Borough of Tower Hamlets in conjunction with CrimeStoppers and the Electoral Commission that was presented in a range of different languages.



Case study

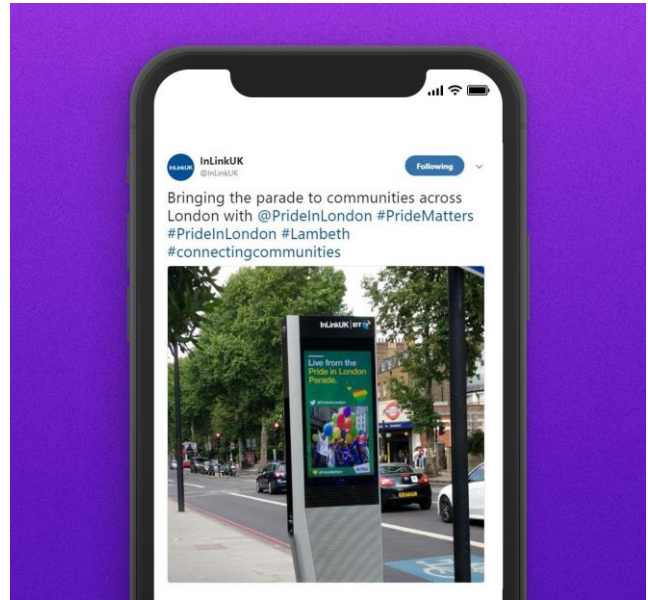
# Live content from London Pride

In 2018 InLinkUK were an official media partner for Pride in London with the InLink screens used in the lead up to and during major events to highlight the occasion.

Ahead of the major events, creative content was displayed to promote Pride Month across the entire InLink estate in the UK.

A range of special 'Did you know?' facts were also shown on InLink screens throughout London highlighting the challenges still faced by the LGBT+ community and the work of volunteers delivering Pride in London.

An estimated 30,000 people took part in the Pride March and more than one million came into the city to watch in person, with those in other parts of London able to see highlights that were being shown on the InLink screens.





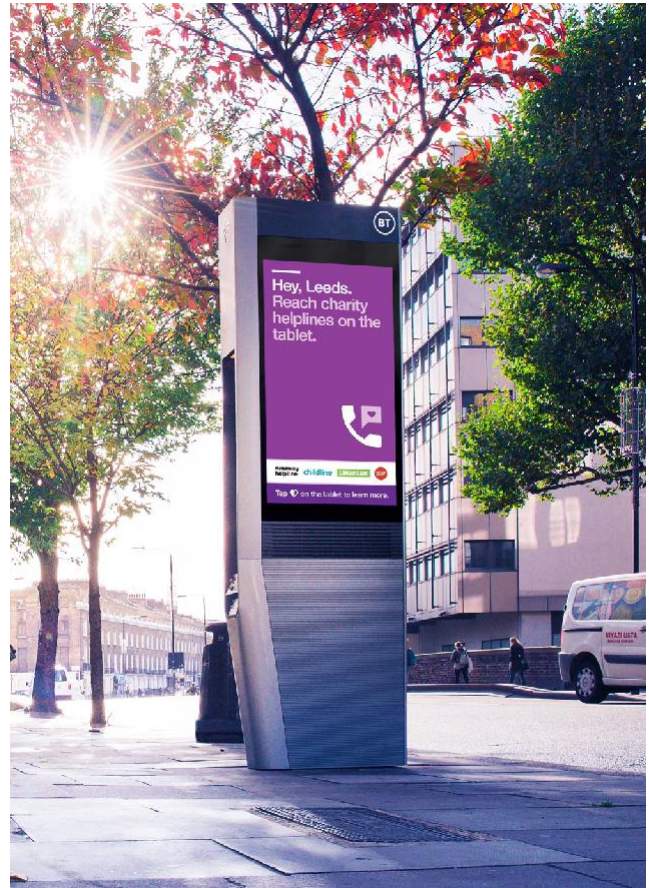
Case study

# Helped local and national charities

InLinkUK worked with a range of charity stakeholders to support their work in the community, with a 'Charity Tile' on the InLink tablet that provides access to a range of key organisations.

Childline, End Youth Homelessness, Runaway Helpline and Samaritans teamed up with InLinkUK to provide users with direct access to their services.

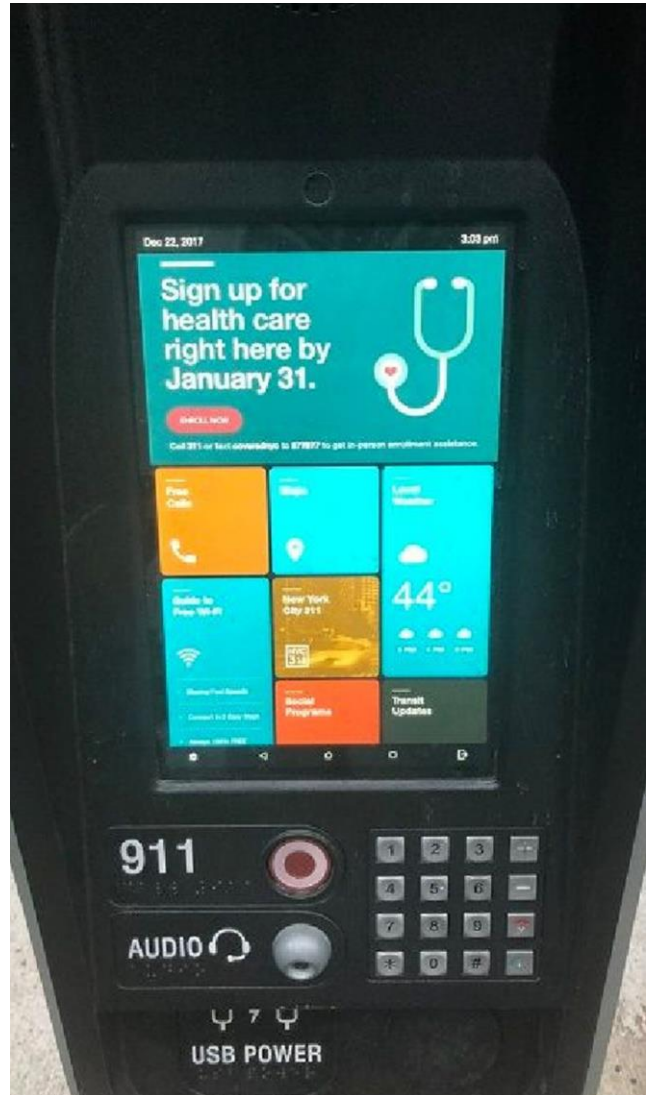
This was complemented by a range of content included on the screens to raise awareness and support the work of local and national charities.



Case study

# Helping rough sleepers

During the 'Beast from the East' storms in April 2018 InLinks were used to display content from StreetLink that provided those nearby with information on how to help rough sleepers who were still outside during the bad weather.





**Offices Worldwide**

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**February 2021**



# Street Hub Anti-Social Behaviour Management Plan

Version 2



# Beyond connection

BT are working to reduce digital inequality and help make communities better connected. From the iconic red phone boxes to the modern glass units, we've always been at the forefront of technology that brings people closer.

In today's digitally enabled world many phone boxes are sitting unused, prime sites for anti-social behaviour and vandalism. Following the success of our InLink programme where we brought free digital services to high streets across the UK, we're further transforming our legacy payphones into state-of-the-art, fibre-connected digital community hubs – called Street Hubs.

Not only does this remove old payphones, freeing-up space and reducing anti-social behaviour, but each Street Hub gives entire communities access to an unprecedented suite of essential free services. This includes ultrafast Wi-Fi, phone calls, wayfinding, device charging, a dedicated 999 call button and public messaging capabilities. It's also a platform for future technologies – air quality monitoring, emergency messaging, 4G / 5G mobile coverage and more.

Since June 2017, hundreds of first generation Streets Hubs (formerly InLinks) have gone live in cities throughout the UK, connecting over a million unique devices to Wi-Fi every month, with tens of thousands of tablet sessions and free calls each week.

Wherever a Street Hub is installed we work with local stakeholders like councils and the police to ensure they're a positive contribution to the area. We're committed to addressing the few users in limited locations who abuse this service.

## Automatic anti-social call restriction

The advanced nature of Street Hubs and our investment in quality systems means we can quickly identify and solve issues.

Working with local stakeholders has already led to significant technical and process advances that further help each Street Hub contribute positively to the local area.

A small number of locations drew attention to local drug issues, with those involved misusing free call services. Following this we invested significantly in developing call restriction capabilities. These were first used to prevent calls to mobiles on select Street Hubs in problem areas – identified with the help of police and council community safety teams.

**The automatic recognition of possible misuse and blocking of identified numbers is based on a proprietary algorithm and technical process developed in consultation with the police and councils from across the UK.** These consider a range of factors, including but not limited to the frequency of attempted and connected calls, the length and distribution of such calls, and insights provided by relevant stakeholders.

Once numbers are identified, their call data is continuously assessed and our algorithm always applied. When a blocked number is flagged by the algorithm this restriction is permanent. In some cases, on request, we may restrict numbers over a set period.

Should someone believe a number has been wrongly flagged, they can contact our team at [streethub@bt.com](mailto:streethub@bt.com) who will consider the case, consulting with the police and local council where appropriate. This option will be shown on the Street Hub screen as part of the warning notification when a restricted number is dialled.

This automatic anti-social call restriction technology is a dynamic feature of Street Hubs that can be adapted over time as further insights are gained or as patterns of misuse change.

# Identification of anti-social behaviour issues

We take our responsibility towards community wellbeing and anti-social behaviour seriously, as evidenced by our above investment. Where possible we address any concerns before (or as part of) the planning application process which every Street Hub must go through.

Unfortunately this is not always possible, and pre-existing or emerging concerns around misuse may need to be addressed once a Street Hub is active, if not picked up by the automatic anti-social call restriction technology.

In deciding the best course of action, advice from police, other emergency services and local authorities will always take precedence, followed by feedback from other government bodies and input from residents and businesses.

To best identify issues and how to address them, we need:

- a description of the issue and when it occurred(s)
- the location of the Street Hub(s) involved and how they contributed.

Supporting evidence is also important, where legally possible, to help us understand the issue (i.e. data or images) so that the appropriate action can be considered.

Each Street Hub is remotely monitored for service compliance 24 hours a day 7 days a week, and physically inspected and cleaned at least every two weeks. As such, any issues are likely to be quickly reported to us directly.

Where a police officer, member of the public or council officer identifies a possible anti-social behaviour issue, we can be contacted in a number of ways to take appropriate action.

Sending an email to [streethub@bt.com](mailto:streethub@bt.com) is the main method for reporting an anti-social behaviour issue associated with a Street Hub. This will automatically raise a ticket on our system, which is actively reviewed and managed by the Street Hubs team.

Emails sent from police.uk or .gov email addresses will be treated as priority.

Technical issues like display screen failures, graffiti, etc. should be reported to [streethub@bt.com](mailto:streethub@bt.com).

Should it not be possible or convenient to send an email, the Street Hubs helpline is open 24 hours a day, 7 days a week on [08003890917](tel:08003890917).

Although we're committed to working closely with communities to address concerns around anti-social behaviour, suspected criminal behaviour may need to be managed through official police channels by contacting [101](tel:101) or [999](tel:999) in an emergency.



# Assessment and determining the suitability of technical changes

After receiving a police crime risk assessment or report from a local authority suggesting a Street Hub may be contributing to crime or anti-social behaviour, we will assess the technical solutions available to minimise / reduce this.

The location of each Street Hub means the way they are used and experienced varies, and so the solution will need to be bespoke.

Where a temporary or interim technical change to a Street Hub may be considered, we work with the local council and police wherever possible to gather timely evidence and information so we understand what is happening and how best to respond. This could include:

- reviewing the information provided from any previous tickets
- visiting the location and meeting with local stakeholders
- speaking with the local police and council to understand any reports they have received and what they are already doing to tackle similar issues in the area
- collating relevant media reports, historic records, and similar
- assessing Street Hubs data such as anonymised call information, Wi-Fi usage, etc.

Situations that follow a similar pattern may be handled more quickly based on recommendations from groups such as the police. For example, temporarily restricting the ability to call mobile numbers where it has been proven that a Street Hub is being misused to buy illegal drugs.



# Implementing available technical changes

Street Hubs are actively monitored and adaptable, with a range of temporary and interim technical measures available to help manage anti-social behaviour issues. These were part of the original design or developed as part of our dedication to community wellbeing.

These include but are not limited to:

- using the displays to include warnings and relevant information
- further reducing the Street Hub's call speaker volume
- disabling the USB port to prevent loitering around the unit
- preventing calls to types of phone numbers, such as mobile, landline or freephone
- blocking calls to specific numbers (only when agreed with the police, in addition to those captured under automatic anti-social call restriction).

We prefer to make changes in collaboration with relevant stakeholders to minimise any unintended social impact. For example, a local council or police command providing additional street teams in the area.

Our anti-social behaviour portal has advanced since the roll-out of InLink. As well as our algorithm, the portal now lets us block suspicious behaviour in real time so we can tackle any anti-social behaviour request without delay. We also have greater insight into reporting and numbers where thresholds are exceeded. These technical advances help reduce crime and allow us to work better with the police and community.



## Sign off and implementation

Any change made to how a Street Hub is configured at a hardware or software level will require our agreement.

As an OFCOM-designated Universal Service Provider of public call boxes for the provision of a publicly available telephone service, any decision to restrict provision of phone calls will need to be made exclusively by us. This will be based in part on detail provided by the police and local authority, and pay due regard to the evidence presented.

We would always seek to balance any requirement to restrict Street Hub services to manage anti-social behaviour with the desire to make them available to all, as part of our work to help make communities better connected and reduce digital inequality.





## Review process

Our approach to addressing anti-social behaviour associated with a Street Hub is to be collaborative. The success of any intervention relies on the police and / or councils taking reasonable steps to help address the underlying issues and the review process being tailored to each local situation.

In the small number of cases where the need for an operational change (such as restricting phone calls) has been identified, it will be considered temporary and applied for a limited period (typically three months but up to twelve months in high-risk locations). This temporary period allows police and the local council to investigate and take appropriate action.

## Further information

We want each Street Hub to provide the best possible experience for users and the communities around them, and will continue to work with councils, police and the wider community to make sure they do.

For more information on Street Hubs and how they are managed contact [streethub@bt.com](mailto:streethub@bt.com).



**Offices Worldwide**

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**April 2021**



# Street Hubs maintenance plan



## Noise management

For detail on our noise management please refer to our specific *Noise Management Plan*.

## Anti-Social behaviour management

For detail on our anti-social behaviour management, including call management and blocking, please refer to our specific *Anti-Social Behaviour Management Plan*.

## Light levels

Our Street Hub 2.0 units include an automated dimming feature. Screens are automatically dimmed down to 600cd/m<sup>2</sup>, between dusk and dawn, in accordance with guidelines from Institute of Lighting Professionals, Professional Lighting Guide 05: The Brightness of Illuminated Advertisements. Our state-of-the-art LED-backlit LCD screens also come with reduced glare.

## Fault detection and action

**There are four ways faults are reported:**

1. Remote diagnostics (if unit is offline, Wi-Fi shows alerts, tilt sensor activated, internal computers show alerts)
2. Our cleaning team spot a problem and report it
3. An employee spots a problem and reports it
4. A member of the public spots a problem and reports it (via the 'Report a Problem' app on the tablet)

**How are they then actioned?**

Faults are managed and resolved by our helpdesk team.

For all technical faults a ticket will be raised within 1 business day, and we aim to repair by 3 business days. For physically damaged units, we'll make the unit safe within 6 hours. Repair works will be carried out as soon as possible after that.

Technical issues (like display screen failures and graffiti) should be reported to [streethub@bt.com](mailto:streethub@bt.com).

If you can't send us an email, give our helpline desk a call. We're open 24/7 and you can call us at: 0800 389 0917.

## Routine inspection

**Inspection regimes**

Our Street Hubs are visited every two weeks for cleaning. Whilst cleaners are on site, they check for damage and ensure the tablets and screens are working as they should be. Our in-field quality inspection teams visit at least every two weeks on an alternative schedule to our cleaning team, performing several checks including (but not limited to):

- Full walk-around with supporting photos to check for damage, graffiti and black screens
- Functionality checks on the tablet to test calls, maps, 999 and USB charging.

We can also send out high priority visits if reported as necessary by internal sensors.

### **Electrical safety**

In line with 18<sup>th</sup> edition regulations, periodic checks are carried out on the units on an annual basis.

## **Further information**

We're committed to ensuring our Street Hubs provide the best possible experience for the public, businesses and wider communities. And we'll continue to do this in partnership with local councils, police forces and community representatives.

For more information or if you'd like to make an enquiry, you can contact us at:  
[streethub@bt.com](mailto:streethub@bt.com)



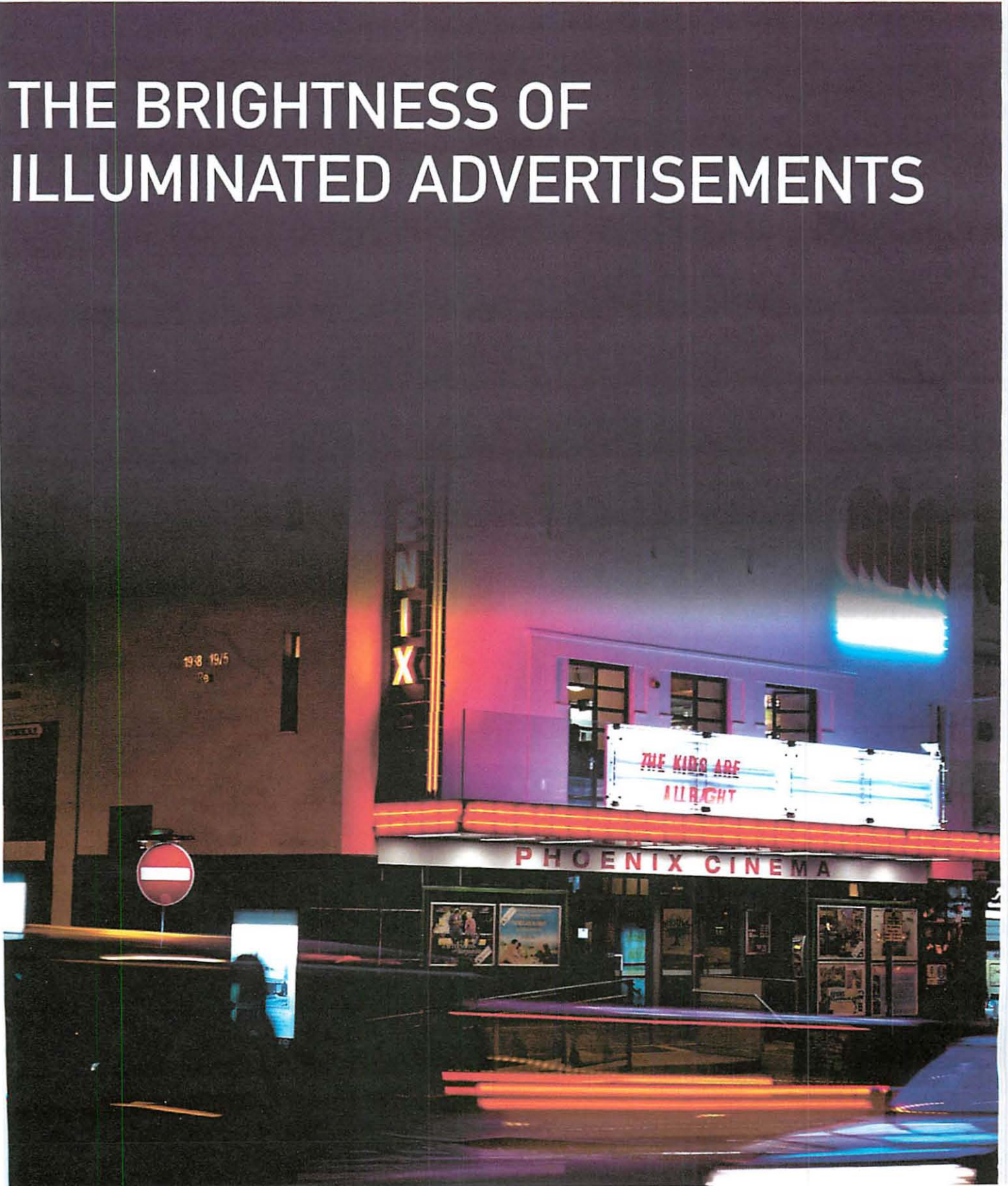
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**October 2021**

# THE BRIGHTNESS OF ILLUMINATED ADVERTISEMENTS



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# Professional Lighting Guide

## PLG 05

# The Brightness of Illuminated Advertisements

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## 1 Introduction

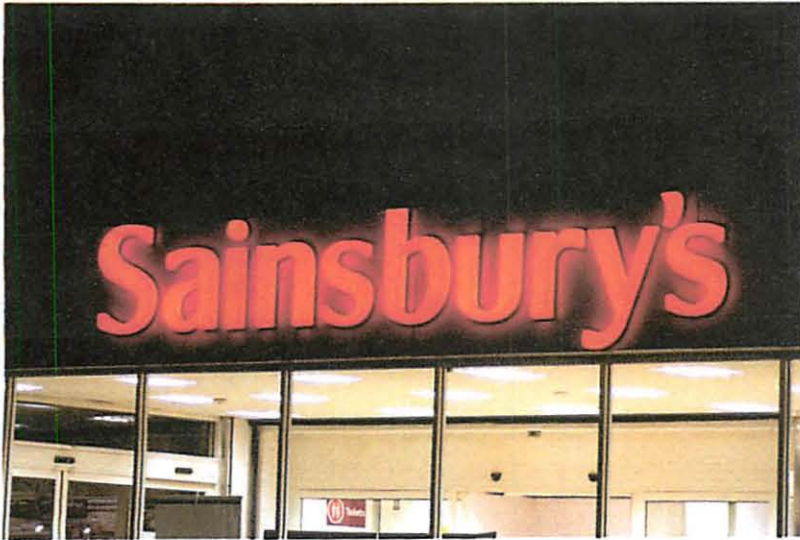
This publication has been prepared on behalf of the ILP Technical Committee for study and application. The document reports on current knowledge and experience within the specific fields of light and lighting described and is intended to be used by the ILP membership and other interested parties. It should be noted, however, that the status of this document is advisory and not mandatory. The ILP should be consulted regarding possible subsequent amendments. Any mention of organisations or products does not imply endorsement by the ILP. Whilst every care has been taken in the compilation of any lists, up to the time of going to press, these may not be comprehensive. Compliance with any recommendations does not itself confer immunity from legal obligations.

This document is intended to provide pragmatic guidance to all people involved with exterior illuminated advertisements. This document supersedes *TR05: Brightness of Illuminated Advertisements* published in 2001 and has been updated to reflect changes in lighting practice, technology and legal framework.

The scope of the guide is to cover installations of advertisements within the British Isles, however, the planning regulations vary from country to country and whilst the key requirements are given in Section 3.1 it is not possible in a document like this report to exhaustively cover every law applying to advertisements and signs in each country. Moreover, in many sections of this guide the processes follow a template derived from English planning regulations.

Illuminated signage and advertisements have become an integral part of our street scene and they are designed to have an impact. The aim of this document is to provide guidance on how to assess the impact of any additional signage. When considering any application for additional signage, thought should be given to how it is to be viewed within the street scene. One sign on its own may have a minimal impact on the street scene however many signs may have a negative impact on the street scene confusing the visual task or visual amenity.

This document provides clear guidance on individual illuminated signs. However it is the duty of the competent designer to apply this document with regard to the constraints of each application and the environment the application refers to.



## 2 Definitions

The definitions in this section are practical definitions of terms based on the various regulations that impact on the use of signs and day to day practice.

### **Advertisement**

Any word, letter, model, sign, placard, board, notice, awning, blind, device or representation, whether illuminated or not, in the nature of, and employed wholly or partly for the purposes of advertisement, announcement or direction, and (without prejudice to the preceding provisions of this definition) including any hoarding or similar structure used, or designed or adapted for use, and anything else principally used, or designed or adapted principally for use for the display of advertisements.

Note:

1. A range of modern devices for outdoor are within this definition. These include rotating poster panels, and advertisements displayed on permanently fixed blinds.
2. The definition excludes anything employed as a memorial or railway signal.

### **Amenity**

This includes visual amenity. The visual amenity includes general characteristics of the locality including features of historical, architectural, cultural, townscape, landscape or similar interest.

## **Illuminated advertisement**

An advertisement which is designed or adapted to be illuminated by artificial lighting, directly or by reflection, and which is so illuminated (whether continuously or from time to time).

## **Business premises**

Any building or part of a building normally used for the purpose of any professional, commercial or industrial undertaking, or for providing services to members of the public or of any association, and includes a public restaurant, licensed premises and a place of public entertainment. It excludes the following:

- A building designed for use as one or more separate dwellings. This is unless
  - It has been used in each of the 10 preceding years for the purpose of any professional, commercial, or industrial undertaking, or for providing services to members of the public or any association, or
  - It has been adapted for business purposes by the construction of a shop front or the making of a material alteration of a similar kind to its external appearance,
- A building used as an institution of a religious, educational, cultural, recreational, or medical or similar character,
- Any forecourt or other land forming part of the curtilage of a building, and
- Any fence, wall or similar screen or structure, unless it forms part of the fabric of a building.

## **Halo illumination**

Illumination of the background text of the advertisement, where the light source cannot be viewed directly from any angle.

## **Lasers, search lights, beams of light, projected illuminated advertisements**

Under the Advertisement Regulations all illuminated advertisements projected onto buildings, landscapes and into the sky require express consent.

## **Local Planning Authority (LPA)**

The authority with local jurisdiction in determining an application for the display of advertisements. This may include a district council, a national park, the Department of Environment in Northern Ireland and the Council of the Isles of Scilly and similar authorities.

## **Media façade**

A media façade is the envelope of a building in which a number of light emitting components have been incorporated so that they are visible to people outside the building. These components may be able to change intensity and colour, and may be addressed individually and controlled together. If these components are sufficiently close together and are furnished with appropriate control such that they may be resolved by the human eye to display a recognisable image and/or alphanumeric text then the façade will be considered a media screen for the purposes of this guidance.

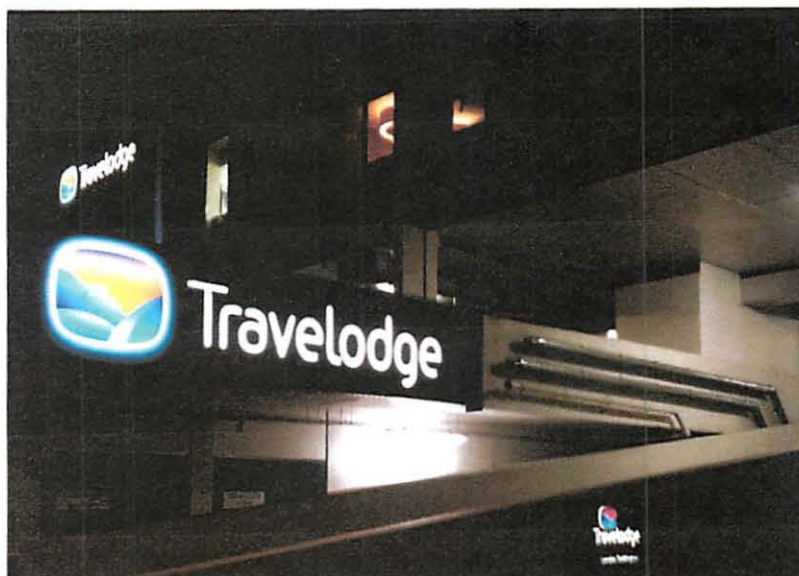
## **Media screen**

A media screen is a surface composed of components that emit light. These components may be able to change intensity and colour, and may be addressed individually and controlled together. The components are sufficiently close together and are furnished with appropriate control such that they may be resolved by the human eye to display a recognisable image and/or alphanumeric text. These images may be static or change dynamically. If changed frequently then these images can be read as video or film.

## **Retail park**

A group of three or more retail stores, at least one of which has a minimum internal floor area of 1,000 square metres and which:

- are set apart from existing shopping centres but within an existing or proposed urban area;
- sell primarily goods other than food; and
- share one or more communal car parks.



## 3 Planning

### 3.1 Statutory regulations/controls

In this and subsequent sections the terms regulations and controls are used interchangeably as they have similar meanings. This section gives an overview of the regulations that impact on advertisements across the UK; however it does not address all aspects of the advertisement controls. Therefore this guidance must be used with caution and reference made to the regulations themselves.

#### Statutory Requirements for Advertisements

##### England

The Town and Country Planning Act 1990<sup>1</sup> provides powers for the Secretary of State to make regulations 'restricting or regulating the display of advertisements so far as appears to the Secretary of State to be expedient in the interests of amenity or public safety'. This power is under sections 220-224 of the Town and Country Planning Act 1990.

The Town and Country Planning (Control of Advertisements) (England) Regulations 2007<sup>2</sup> have been in force since 6 April 2007. These Regulations revoked and replaced the earlier versions issued in the 1990s. Section 336(i) of the T&P Act 1990 (as amended by section 24 of the Planning and Compensation Act 1991<sup>3</sup>) provides a comprehensive definition of the term advertisement (see above) of which there are 3 types. Firstly there are many advertisements which are outside any control. The Regulations automatically support a second group of advertisements as '**deemed consent**' under Part 2. These advertisements do not require the LPA's consent. This is subject to a compliance with specified 'Conditions and Limitations' which are explored below and include some illuminated signs. Thirdly where such advertisements

<sup>1</sup> *et seq*: See Section 11 References



cannot be installed as 'deemed consent' these signs will require the 'express consent' of the LPA.

A wide range of advertisements featuring illumination can be displayed under 'deemed consent' including following Classes of Advertisement:

- Class 1: Functional Advertisements – Government, Local Authorities etc;
- Class 2B: Professional, Personal, Trade;
- Class 2C: Miscellaneous Temporary Advertisements;
- Class 4A: Illuminated Advertisements on Business Premises;
- Class 4B: Other Illuminated Advertisements Excluded from Class 4A;
- Class 5: Other Advertisements on Business Premises;
- Class 8: Advertisements on Hoardings;
- Class 13: Advertisements on Sites Used for the Preceding 10 Years for the Display of Advertisements without Express Consent, and
- Class 14: Advertisement Displayed after the Expiry of Express Consent.

It is not feasible or within the remit of this publication to refer to the specified 'Constraints and Limitations' of each class. However, there are some common themes which control the illumination of advertisements under Classes 2B, 2C, 4A, 4B and 8. These include the need to comply with 'deemed consent' and therefore such advertisements do not require 'express consent'. The advertisements should comply with the following features:

- Static
- No intermittent light sources, flashing lights, moving parts or features, exposed cold cathode tubing, animation or retroreflective material
- Illumination in a manner reasonably required to fulfil the purpose of advertisement, and
- Maximum permitted luminance levels are given in Table 1.

Note: See Table 2 for luminance levels outside England

<b>Table 1: Luminance limits in England</b>	
<b>Illuminated area</b>	<b>Maximum luminance (cdm<sup>-2</sup>)</b>
More than 10 m <sup>2</sup>	300
Not more than 10 m <sup>2</sup>	600

The calculation of luminance is based on 2 criteria:

- No unilluminated part of the advertisement is to be taken into account, and
- Each advertisement (or in the case of double-sided projecting advertisements) each side of the advertisement is to be taken into account separately.

For classes 4A and 4B for Illuminated Advertisement on Business premises there are additional controls:

- Halo Illumination, or
- 'So long as no part of the background of the advertisement is illuminated, by illumination of each character or symbol of the advertisement from within'.

#### Areas of Special Control (ASC)

These restrict the type of advertisement which can be installed over the normal 'deemed consent' criteria. The 2007 Regulations and those applicable to Wales and Scotland enable designation by a LPA with subsequent approval by the Secretary of State. These can be revoked or modified and require review every 5 years. Often ASC are in Areas of Outstanding Natural Beauty or National Parks.

The 2007 Regulations preclude the installing of Classes 4A, 4B, 8, 13 and 14 and therefore illuminated advertisements without 'express consent'. This gives the LPA opportunities to consider whether it is appropriate to give consent to such advertisements in the interests of amenity and public safety. Due to the sensitive special requirements associated with ASC there may be robust amenity reasons why such illuminated signage should be restricted. In Scotland there is no opportunity to display such signs whatsoever.

#### Regulations in countries other than England

##### *Wales*

The 1992 Regulations, amended in 1996, are applicable. This is in conjunction with Welsh Office Circular 14/92<sup>4</sup> and TAN7<sup>5</sup> Technical Advice Note 'Outdoor Advertisement Control'. There are differences between the 1992/1996 Regulations and the 2007 Regulations. The different luminance limits for Wales are given in Table 2.

<b>Illuminated area</b>	<b>Maximum luminance (cdm<sup>-2</sup>)</b>
More than 10 m <sup>2</sup>	400
2 to 10 m <sup>2</sup>	600
0.5 to 2 m <sup>2</sup>	800
Less than 0.5 m <sup>2</sup>	1,000

### *Scotland*

The basis of advertisement control are the Town and Country Planning (Control of Advertisements) (Scotland) Regulations 1984. The approach to advertisement control has common ground with the 2007 Regulations relevant to England. However, there are some differences, including luminance levels and no parallel to Advertisement Class 4A which covers illuminated advertisements for 'Retail Parks'. The regulations are complimented by Circulars 10/1984, 22/1986, 10/1992 and 31/1992.

Note: In Scotland an Advertisement is defined under section 277 of the Town & Country Planning (Scotland) Act 1997<sup>6</sup>

### *Northern Ireland*

Control is exercised through the Planning (Control of Advertisements) Regulations (NI) 1992<sup>7</sup> (amended 1998). This is through the Department of Environment for NI. These regulations have common ground with the 2007 Regulations relevant to England Regulations complimented by Planning Policy Statement 17<sup>8</sup>. In Northern Ireland the Luminance limits are the same as those for Wales see Table 2.

Note: In Northern Ireland an Advertisement is defined under article 2(2) of the Planning (NI) Order 1991<sup>9</sup>, as amended by article 24 of the Planning (Amendment) (NI) Order 2003<sup>10</sup>.

### *Republic of Ireland*

Advertising is defined through the Planning and Development Act 2000<sup>11</sup>. A range of exempt developments (advertisements) are identified as classes under the Planning and Development Regulations 2001<sup>12</sup>. These classes have parallels to the 2007 Regulations relevant to England, but with a range of noticeable variations. With regard to illuminated advertisements, there is no equivalent 'deemed consent' for Class 4 Illuminated Advertisements on Business Premises under the 2007 Regulations.

### *Isle of Man*

This is subject to the Control of Advertising Regulations 2005<sup>13</sup>. It is set against the Town and Country Planning Act 1999, with greater control than the 2007 Regulations relevant to England.

### *Guernsey*

There is very tight control over advertisements.

### *Jersey*

The Planning and Building (Display of Advertisements) (Jersey) Order 2006<sup>14</sup>. This has parallels to the 2007 Regulations with a stricter control over 'approved advertisements'.

## **Standard Conditions and Maintenance**

The Regulations in England also provide conditions of installation that impose conditions upon the installation requiring maintenance throughout its life.

With the exception of one type of advertisement all that are displayed are required to comply by five Standard Conditions of the Regulations. Those that directly relate to maintenance are:

### **Condition 2**

No advertisement shall be sited or displayed so as to

- a) Endanger persons using the highway, railway, waterway, dock harbour or aerodrome (civil or military);
- b) obscure, or hinder the ready interpretation of, any traffic sign, railway signal or aid to navigation by water or air; or
- c) hinder the operation of any device used for the purpose of security or surveillance or for measuring the speed of a vehicle.

### **Condition 3**

Any advertisements displayed, and any site used for the display of advertisements, shall be maintained in a condition that does not impair the visual amenity of the site.

### **Condition 4**

Any structure or hoarding erected or used principally for the purpose of displaying advertisements shall be maintained in a condition that does not endanger the public.

### **Condition 5**

Where an advertisement is required under these Regulations to be removed, the site shall be left in a condition that does not endanger the public or impair visual amenity.

The display of an advertisement which fails to comply with any of the Standard Conditions will be unauthorised under the Regulations. This is because it is an offence 'to display an advertisement in contravention of the Regulations' and can result in a prosecution by a LPA.

## **Maintenance Amenity and Public Safety**

Maintenance of an advertisement(s) in the interests of amenity and public safety is absolutely fundamental to the Regulations in England. Failure to comply has accordingly an inbuilt legal mechanism to rectify unauthorised display of advertisements.

The approach to the application of Standard Conditions is very similar in Wales, Scotland and Northern Ireland.

## **Other Conditions**

If an advertisement is installed without compliance to other conditions imposed under express consent (see 'Planning Procedures' section 3.2) the sign will be unauthorised.

### **3.2 Planning procedures: where express consent is necessary**

#### **Amenity and Public Safety**

Control is limited to the following considerations:

##### **Amenity**

This addresses the relationship of the advertisement with the prevailing environment, as referred to by the definitions. The LPA's assessment may include very sensitive environments such as conservation areas, the setting of listed buildings, ancient monuments, Areas of Outstanding Natural Beauty and national parks. It is common for these to coincide with designated ASCs which preclude the display of some advertisements normally allowed under 'deemed consent'.

##### **Public Safety**

Crime prevention has recently been added to the longstanding list of public safety issues – road, railway, air and transport implications. Illuminated signs (flashing or static lighting), brightness and colour are identified as key in assessing the structured approach to maintained public safety.

##### **The Development Plan**

In England since 2007 there is a requirement for LPAs to take account development plan policies in their decisions. This is so far as they relate to amenity and public safety.

The concepts of 'amenity' and 'public safety' are comprehensively addressed in DCLG Circular 03/2007<sup>15</sup>.

### **3.3 Conditions when Express Consent is granted by a LPA**

The imposition of conditions in addition to the standard 5 conditions can be imposed so long as they are in the interests of amenity and public safety. These should only be imposed if they are:

- a) necessary;
- b) relevant to advertisement control (i.e. amenity and public safety);
- c) relevant to the proposed advertisement;

- d) enforceable;
- e) precise, and
- f) reasonable in all other respects.

Such conditions can include luminance, type (static/flashing/non-flashing lights/no animation) and limiting the hours of use. Restricting overnight illumination will reduce energy consumption.

### **3.4 Details required for advertising application submitted to an LPA for Express Consent**

These are explained in Appendix A of DCLG Circular 03/2007<sup>16</sup> and should include:

- a) Details of the proposed location, positioning and dimensions of the sign face;
- b) Type of illumination; internal or external, static, intermittent or moving;
- c) Details of the luminaires, lamp type, including details of any baffles, louvres or cowls;
- d) Mounting height of the luminaire(s)/lamp(s);
- e) Location and orientation of the luminaire(s) and
- f) Design maximum luminance/factory measurements.

In England, Scotland and Wales the Regulations enable the LPAs to request further information..

### **3.5 Associated Matters**

#### **Other Consents for Advertisements**

Listed building consent will be required from the LPA for an advertisement attached to or within the curtilage of pre-1948 objects and structures. Scheduled Ancient Monument Consent will be necessary from the Secretary of State before any work can be carried out which might affect a monument.



## 4 Brightness and luminance

The fundamental relationship on which the recommendations contained within this report are based, is that between luminance and brightness.

Luminance is a characteristic of the sign, dependent on the position of the observer, but independent of the surrounding conditions. Generally a sign face is non uniform and the luminance will vary across it. The luminance will also vary with the direction of viewing, being a maximum for direct frontal observation. The highly diffusing plastic materials normally used in signs result in the luminance remaining near the maximum over a fairly wide range of viewing angles, falling off steeply for very oblique viewing.

Brightness is the visual sensation associated with luminance, experienced by an observer. It depends on four main factors:

- a) luminance
- b) size
- c) contrast
- d) the observer

In addition, other factors, which may affect brightness, are the position of the sign with respect to the observer's field of view, particularly when it appears on the periphery; the effect of phototropism, and the uniformity of luminance across the sign face.

The difficulties associated with the problem of sign luminance may be appreciated by considering two identical signs in different settings. If one is placed in a well lit shopping area it will appear to be considerably less bright than its counterpart in a dark country lane. The one may be attractive and the other offensive, although the signs themselves are identical. The luminance is the same for both signs but the

contrast between the sign and its surroundings and therefore the brightness is quite different.

The LPA is concerned primarily with brightness, whilst the manufacturer is able to control luminance only. It is possible to set upper limits of luminance for defined types of location and graded size of sign, such that compliance with them will minimise the number of illuminated advertisements that are subjectively too bright yet will permit them to be adequately bright for their purpose.

During the preparation of this report many observations and measurements have been taken of illuminated advertisements in a variety of locations including Central London, provincial cities, suburban areas, mixed residential and shopping areas, retail parks, pedestrian precincts and areas of special historical and architectural interest. The measured luminance has been related to acceptable degrees of subjective brightness for many sizes of illuminated advertisements in widely different environments.

The measurements taken on signs and fascias cover maximum luminance and average luminance. There is always some variation of luminance over a sign and the average, even after several measurements have been made, can only be estimated approximately. Therefore the recommendations within this report deal with limits on the maximum luminance of a sign. This has the advantage that:

- a) Where, as often happens, the brightest area can be selected by eye, only one measurement is required and the maximum is a definite figure.
- b) Signs with large variations of brightness are more likely to infringe limits imposed upon the maximum luminance than upon the average.

The uniformity of luminance across a defined illuminated area must be kept within reasonable limits so as to ensure a pleasing and effective result (see section 8). It may be of help to designers and manufacturers of signs to consider the luminance gradient of illuminated advertisement signs. A method for testing both luminance and luminance gradient is described in Section 9.

In setting upper limits for the luminance of signs it is important to take account of the considerable reduction in brightness which may occur during the life of the installation. The overriding consideration must be that it should not present a hazard when the lighting is



*Internally illuminated sign with good uniformity*



commissioned. In practice, design calculations would normally be set at a datum point of 100 hours after the initial light source lumen output, and therefore measurements should not be taken before the light sources have been in commission for 100 hours. In practice, it is considered that installations are likely to have a luminance between 50% and 80% of the initial value for a major part of their life, depending on maintenance.

Large format media screens pose additional problems when trying to assess brightness, this is because the luminance of the sign varies with both time and position on the sign. For this reason it is recommended that the sign be set to a full output white when it is being measured to ensure that the maximum luminance of the sign is measured.



## 5 Limiting the luminance of illuminated advertisements

In all cases the limit of luminance should be determined by relating the details of the installation to Table 4 of this report, taking into account its method of illumination, size, location, and orientation.

Consideration should be made to introducing a system of control that imposes a limit on the maximum luminance and time of operation of an advertisement. Any system of control must be easy to understand, interpret, apply and enforce within the present Regulations. It is essential that any luminance limits specified should have regard to amenity and public safety. At the same time, account must be taken of the amenities to which good illuminated advertisement installations contribute and of the commercial interests involved.

For externally illuminated advertisements the provisions of the ILP Guidance Notes<sup>17</sup> for the Reduction of Light Pollution should be applied. In particular:

- a) Luminaires should be positioned such that the light source itself is not directly visible from any usual viewing angle (e.g. to road users or residents).
- b) Luminaires should be adequately secured and positioned such that they light away from adjacent properties or highways. Diffusers, shields or louvres should be incorporated where necessary to control spill light.
- c) Illumination should be switched off when not required – e.g. during the day and after agreed curfews.
- d) Light should be directed downwards. If there is no alternative to up-lighting, then specifically designed lighting equipment – that once installed minimises the spread of light near to, or above the horizontal



*A large media screen during the day*

complete with all necessary shields and baffles to minimise sky glow – should be used.

Media screens that may be effective during the day are likely to exceed the night time luminance limits. They will require a system that controls luminance accordingly and takes into account any curfews, and the changing time of sunset, and dawn throughout the year.

The limit of luminance to be imposed as a condition of consent should be determined by relating the details of the application to Table 4 of this Report.

The recommended limits of luminance also apply to externally illuminated advertisements and such lighting should be examined to ensure that luminaires are positioned such that the light source itself is not directly visible from any usual viewing angle (e.g. to road users or residents).

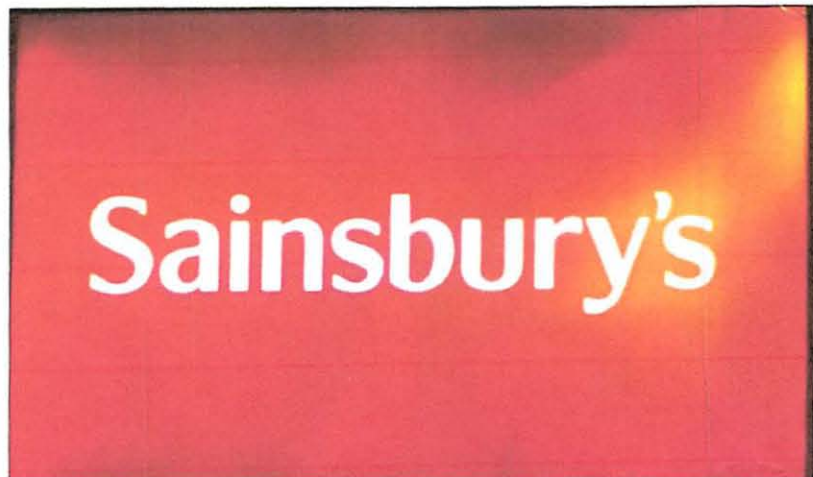
The ILP has produced Guidance Notes for the Reduction of Light Pollution and the general principles contained therein are worthy of consideration for all lighting installations. In particular the Guidance Notes detail a number of ways which may be used to reduce the problems of unnecessary, obtrusive light:

- a) Switch off illumination when not required – one possible solution is a curfew with further limitations on lighting levels between agreed hours (e.g. off between 23.00hr and dawn).
- b) For signs with external illumination direct light downwards whenever possible. If there is no alternative to up-lighting, then the use of shields and baffles to help reduce light spill. Use specifically designed lighting equipment that once installed minimises the spread of light near to, or above the horizontal.
- c) Do not “over” light.
- d) For large self luminous signs consider louvres or shields above the sign, this will also reduce the amount of daylight falling on the sign.



## 6 Definition of illuminated areas

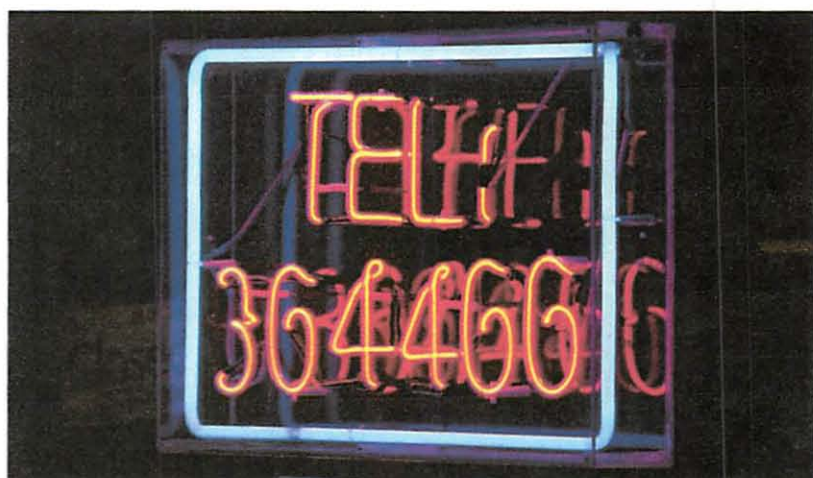
Where the illuminated advertisement consists of an illuminated background upon which a legend, words or symbols have been superimposed, the illuminated area is defined as the overall area of the panel.



*Example of an illuminated box advertisement*

Where the illuminated advertisement consists of fret cut, individual letters or individual elements such as exposed light sources (e.g. cold cathode tubes) the illuminated area shall be defined as the background of the advertisement. That is the area of the background in a simple geometric shape or a combination of such shapes in which the letters or elements are completely contained.

In the case of double sided illuminated advertisements, the areas of both faces should be treated as summed.



*Example of a cold cathode "Neon" advertisement*

However, for the purposes of the maximum limits specified in Table 4, the illuminated area will relate to one side only.

In the case of those illuminated advertisements containing dished panels or those with two panels at an angle to each other the illuminated area should be defined as the area capable of being viewed at one time at any angle not exceeding 40 degrees to the normal.



*Figure 1: Example of a "halo" type advertisement*

"Halo" advertisements shall be designed so that the light source cannot be viewed directly from any angle. The illuminated area is defined as the background of the advertisement. This is the area of the background in a simple geometric shape or a combination of such shapes in which the letters or elements are completely contained, rather than the letters or

elements themselves, which would be seen in silhouette.

In the case of media screens, if only a part of the screen is planned to be illuminated at time of application, the illuminated area should be defined as the maximum area of the screen installed that potentially could be illuminated.



## 7 Definition of zones

An area may be zoned according to general level of illumination. There are five zones, which have been defined in accordance with the definitions in the ILP Guidance Notes for the Reduction of Light Pollution and CIE documents<sup>18</sup>. These zones are as follows:

Zone	Surrounding	Lighting Environment	Examples
E0	Protected	Dark	UNESCO Starlight Reserves, IDA Dark Sky Parks
E1	Natural	Intrinsically dark	National Parks, Areas of Outstanding Natural Beauty etc
E2	Rural	Low district brightness	Village or relatively dark outer suburban locations
E3	Suburban	Medium district brightness	Small town centres or suburban locations
E4	Urban	High district brightness	Town/city centres with high levels of night-time activity

In addition to the above environmental zones there are Areas of Special Control of Advertisements, see section 3.1.



## 8 Recommendations

The maximum value of luminance anywhere on the surface of an advertisement at any time during the night is given in Table 4. This guide makes no recommendations about the luminance distribution across the advertisement as this is a matter of design and the message that the sign has to convey.

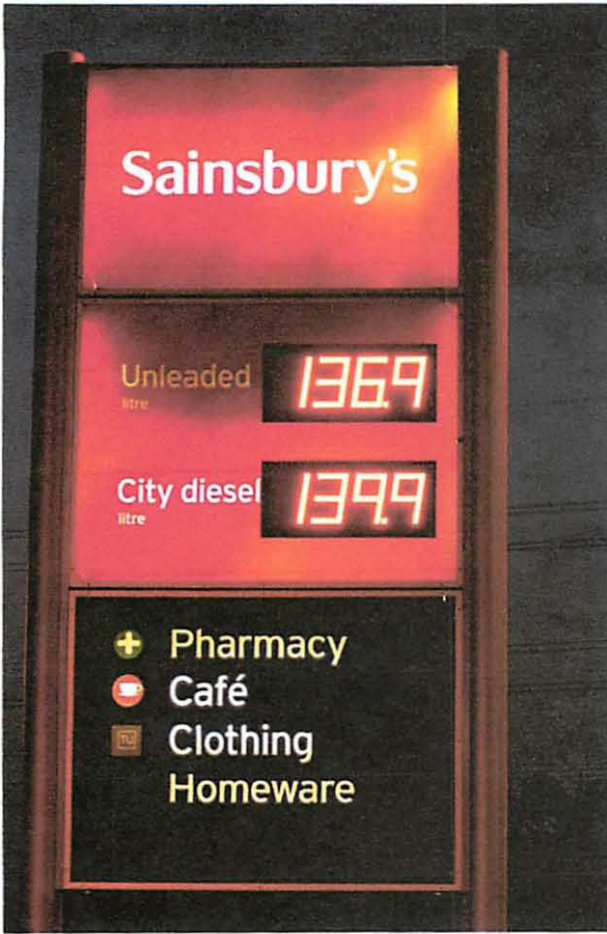
<b>Illuminated area (<math>\text{m}^2</math>)</b>	<b>Zone E0</b>	<b>Zone E1</b>	<b>Zone E2</b>	<b>Zone E3</b>	<b>Zone E4</b>
Up to 10	0	100	400	600	600
Over 10	0	n/a	200	300	300

Note:

1. For digital signs when the content may change then the rate of change should be limited to once every five seconds. Moving images, animation, video or full motion images should not be displayed at locations where they could present a hazard for example if they could be seen by drivers in moving traffic. During the daytime sign luminance should never exceed  $5,000\text{cdm}^{-2}$ .
2. LPAs may wish to impose additional controls by setting limits on the times when the illuminated advertisement may be lit.
3. The above recommendations for maximum luminance may not apply to recognised display centres, such as Piccadilly Circus, which must be considered as special cases. Recognised display centres usually exhibit the following features:
  - a. concentration of illuminated advertisements, some of which do not relate to the business premises on which they are erected.
  - b. extensive use of animation.

4. Mounting of illuminated advertisements well above the building frontage height. In such instances an approach based on advertisements with an illuminated area greater than  $10\text{m}^2$  having a maximum luminance of  $1000\text{cdm}^{-2}$  would be a reasonable starting point, depending on the precise nature and extent of the installation.





## 9 Testing and verification

The maximum recommended levels of luminance contained within this report are intended to be used in order to satisfy the requirements of all parties and on the basis of sound engineering judgement and amenity considerations. It may be necessary to include other areas within particular zones, such as areas of particular architectural and historical interest within zone E1, so as to ensure that the illumination of advertisements is in keeping not only with its purpose, but also with the environment. Such an example would be a Dark Landscape Park within an otherwise Zone E3 or E4 location.

The checking of luminance levels to ensure compliance with the Advertisement Consent, or for the purposes of measurements in those cases when dispute or doubt arises, requires the use of a suitable reliable instrument capable of direct measurement. It is possible that the local authority's lighting engineer will already possess a suitable instrument, but if this is not the case it is recommended that one should be acquired for the express purpose of obtaining luminance measurements of illuminated advertisements. It is recommended that any luminance meter used should comply with the requirements for a Type F meter as defined by *BS 7920:2005 Luminance meters. Requirements and test methods*.

Whenever a performance measurement is carried out there are a number of factors that may impact upon the performance of the lighting installation being tested. There are a number of issues associated with the lighting equipment and others that relate to the environment.

It is important to ensure that the output of the lamps is stable. In general this requires that they have been run for at least 100 hours and they have had time to run up a reach thermal stability, which may take half an hour or so. Also if the lamps have been in use for a long time then their output may be lower than the nominal output. Similarly if the sign has been running for a long time the build up of dirt on the surfaces may be reducing the light output. Many lamp types are sensitive to changes in temperature so it is important to record the temperature when taking readings. The supply voltage can significantly change the output of some lamps so it is a good idea to measure the supply voltage. As there can be a voltage drop in the supply cabling it is best to measure the voltage in the supply network as close to the luminaires as possible.

For media screens it is necessary to set the whole sign to display white as this is the colour with the highest luminance.

Signs using exposed light sources (e.g. cold cathode tubing) should be measured at right angles to the sign at a distance such that the shortest dimension of the lit area fills a diameter of the viewing circle.

Internally illuminated signs would usually have the maximum value of luminance in the white portion; coloured portions would generally have a luminance value of between 0.02 and 0.80 of the value of the white portion, assuming a uniform illumination and depending on the colour and transmission characteristics of the coloured portions.

Readings should be taken only at night to avoid any contribution from daylight and care should be taken to avoid any misleading readings, such as might be caused by or from other light sources in the measurement field of a luminance meter.

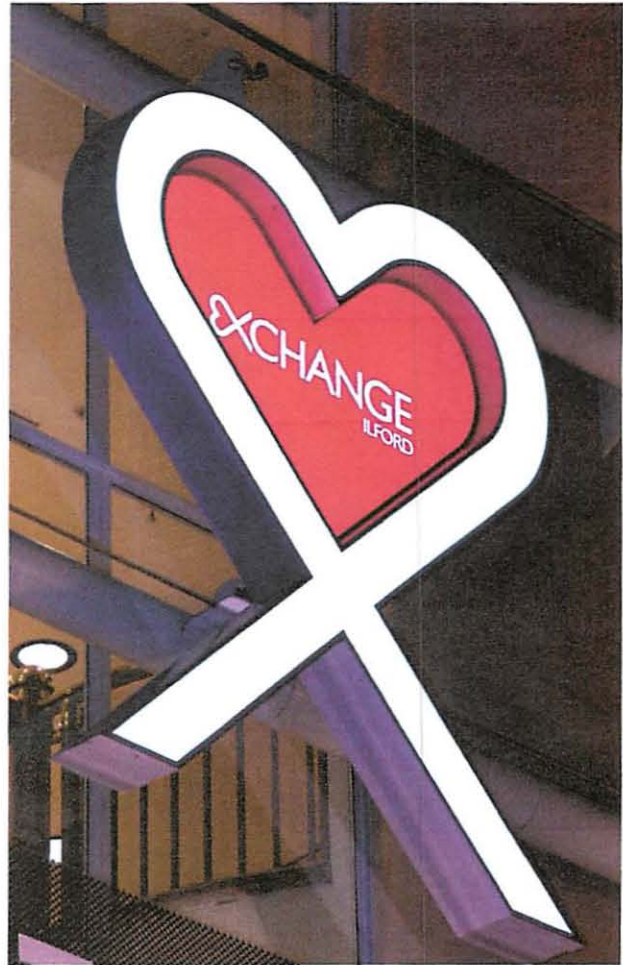
The number of points to measure on is a function of the size of the sign. It is normal to measure the luminance on a regular grid of points with the maximum distance between the points ( $p$ ) being given by the formula below where  $d$  is the distance of

$$p=0.2 \times 5^{\log d}$$

the longest side of the sign. The number of points in this dimension should be selected so that the distance between them is  $p$  or slightly less. Then in the other direction select the number of points necessary to give a similar distance between points thus giving an almost square grid. Table 5, below, gives information on the spacing of measurement points for a range of sign sizes. The points are laid out uniformly across the whole sign with the edge points being a half spacing in from the edge of the sign.

<b>Table 5: Grid point requirements</b>					
<b>Sign Size [m]</b>		<b>Points in Width</b>		<b>Points in Height</b>	
<b>Width</b>	<b>Height</b>	<b>No. Points</b>	<b>Spacing [m]</b>	<b>No. Points</b>	<b>Spacing [m]</b>
0.6	0.4	5.0	0.120	3	0.133
1.0	0.6	5.0	0.200	3	0.200
1.5	0.9	6.0	0.250	4	0.225
2.0	1.3	7.0	0.286	5	0.260
3.0	1.9	7.0	0.429	4	0.475
5.0	3.1	9.0	0.556	6	0.517
7.0	4.4	9.0	0.778	6	0.733
10.0	6.3	10.0	1.000	6	1.050

Measurements shall be taken with the luminance meter as close to the normal of the centre of the sign as practically possible and at a distance from the sign such that the diameter of the measurement patch of the meter on the sign is less than half the spacing between measurement points.



## 10 Maintenance

There are examples of poorly maintained illuminated advertisements in most areas resulting in, at best, a non-uniform unpleasant appearance and at worst the exposing of the light sources.

For any signage to deliver best value, it needs to be maintained throughout its life, although there is no duty to ensure that the illumination is operational unless this is a requirement of the original consent. However, if it is, it should be maintained to ensure that it operates within the design parameters, delivering the expected design performance (illumination and uniformity) throughout the installations life, in accordance with original consent, ensuring that public safety is assured.

With advances in technologies the sign design should consider the use of low energy, low maintenance solutions and perhaps with advanced control to ensure that the sign can be adapted in the future. By applying this approach the installation can optimise maintenance obligations and manage energy use responsibly, thereby reducing the carbon impact of the installation.

Sign maintenance and regular sign servicing plays an essential role; if managed properly and effectively, can deliver the benefits of enhanced sign performance and extend the design life thus saving money in the long run.

Illumination Maintenance Services (IMS) available include preventative, proactive and emergency programs.

When it comes to maintenance, preventative or planned maintenance will ensure all sign components are as reliable as possible, maintaining brand image and integrity. This would include all aspects of cleaning, inspection; testing, re-lamping and reporting are performed on a routine basis.

Reactive maintenance responds when signs fail and therefore revenue is lost in site closures while remedial work takes place within critical response times.

### **Planned sign maintenance**

- A strategic sign maintenance programme that will significantly reduce the possibility of complete sign replacement in the long-run.
- Sign maintenance work is planned around site activity, and can be completed while premises remain fully operational (critical for sites that operate 24hrs).
- Aimed at preventing sign/illumination failure and ensuring an unfaltering corporate image.
- Minimises site disruption as signage work can be scheduled to commence during quieter periods. Site closures may be necessary for safety reasons; however, it will be at a time to suit you and your business.
- Is significantly less expensive than emergency corrective action for failed sign illumination/promotional price changes.
- Ensures that all sign components covered by mandatory health and safety regulations are inspected and replaced as necessary.
- Reduces costs in travel as work can be co-ordinated with other jobs in the surrounding areas.
- Engineers will become familiar with the sites and parochial problems associated with them.
- May appear pricey as an upfront cost is often incurred.
- Allows more reliable, long-term financial planning and forecasting, rather than surprise expense.

## Reactive sign maintenance

- A sign maintenance solution that relies entirely on an emergency call-out basis.
- May lead to sites having an unkempt image.
- Each site visit is less cost-effective and will often lead to re-visits, as plans cannot be made for the required signage and servicing kit to be pre-loaded onto vehicles.
- Can sometimes cost less because you only spend what is necessary at the time.
- In the case of a site accident due to faulty or unregulated equipment, the legal and financial repercussions could be crippling.
- Relies entirely on the customer to keep up-to-date with any health and safety requirements.
- Can lead to sudden failure of signage or a decrease in component quality/performance over a period of time.
- Can be used in response to sign failure caused by vehicle impact, vandalism, storm damage etc.

## 11 References

1. See <http://www.legislation.gov.uk/ukpga/1990/8>
2. See <http://www.legislation.gov.uk/uksi/2007/783/contents/made>
3. See <http://www.legislation.gov.uk/ukpga/1991/34/contents>
4. See <http://wales.gov.uk/topics/planning/policy/circulars/welshofficecirculars/circular1492/?lang=en>
5. See <http://wales.gov.uk/topics/planning/policy/tans/tan7/?lang=en>
6. See <http://www.legislation.gov.uk/ukpga/1997/8/section/277>
7. See [http://www.planningni.gov.uk/index/advice/advice\\_legislation/advice\\_all\\_legislation/sub-legislation-1992-448.pdf](http://www.planningni.gov.uk/index/advice/advice_legislation/advice_all_legislation/sub-legislation-1992-448.pdf)
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10. See <http://www.legislation.gov.uk/nisi/2003/430/article/24/made>
11. See <http://www.irishstatutebook.ie/2000/en/act/pub/0030/index.html>
12. See <http://www.irishstatutebook.ie/2001/en/si/0600.html>
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14. See <http://www.jerseylaw.je/Law/display.aspx?url=lawsinforce/htm/ROFiles/R&OYear2006/R&O-068-2006.htm>
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16. See <http://www.communities.gov.uk/publications/planningandbuilding/circulartown>
17. ILP Guidance Notes for the Reduction of Obtrusive Light GN01:2011 see: <https://www.theilp.org.uk/documents/obtrusive-light/>
18. CIE 150: 2003 Guide on the Limitation of the Effects of Obtrusive Light from Outdoor Lighting Installations ISBN: 978 3 901906 19 0 See: [http://www.cie.co.at/index.php/Publications/index.php?i\\_ca\\_id=425](http://www.cie.co.at/index.php/Publications/index.php?i_ca_id=425)



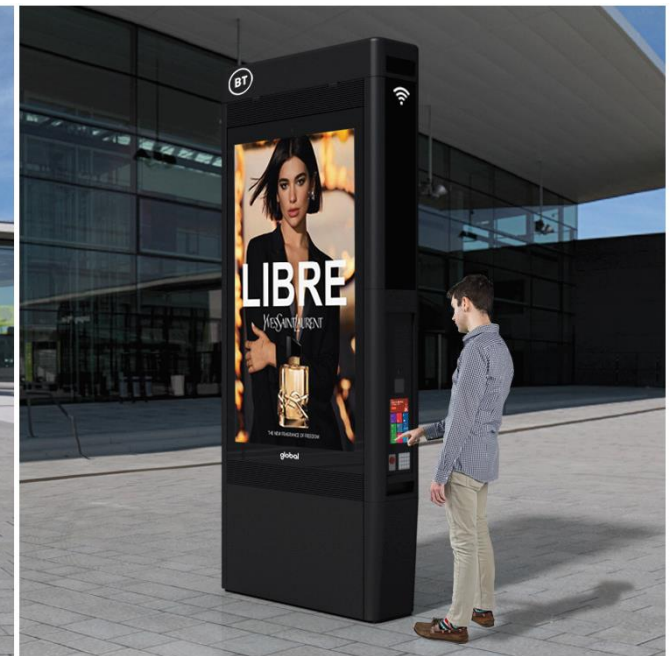
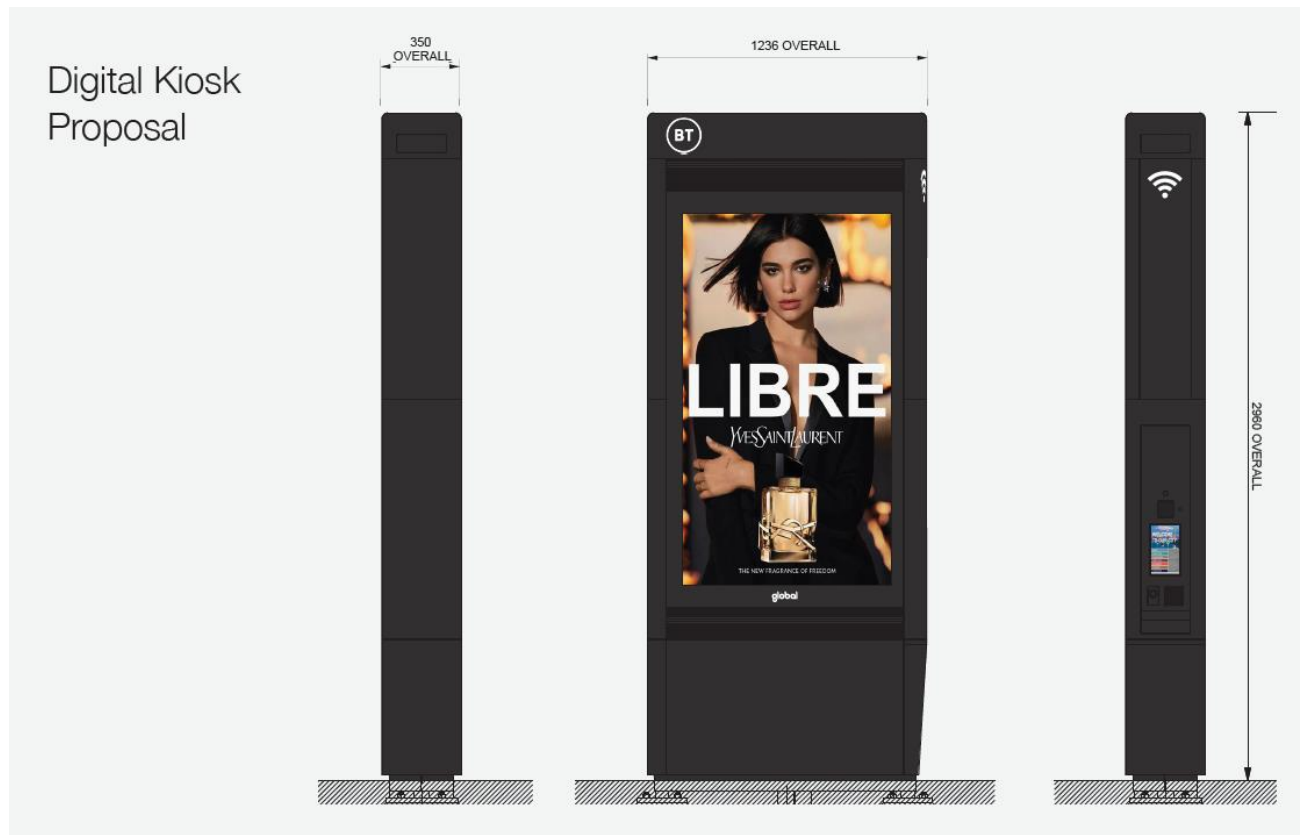
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Rugby, CV21 2PN  
T: 01788 576492  
[www.theilp.org.uk](http://www.theilp.org.uk)



BT Street Hub  
Proposal Renders  
2021



mono#





Existing



**Solutions30**  
Solutions for New Technologies

**Site Existing vs Site Proposed Photomontage**

<b>SITE ADDRESS</b>	Pavement o/s 111 Brunswick St, Edinburgh EH7 5HR
<b>KIOSK PHONE NO.</b>	01315576267 & 01315556470
<b>GOOGLE STREET VIEW LINK</b>	<a href="#">LINK HERE</a>
<b>LAT / LONG</b>	55.96096, -3.18082



Proposed