Hyperconnected London

Improving digital connectivity
– a guide for London's boroughs

bai communications

Introduction

This paper provides a guide to London boroughs on the role they can play to improve digital connectivity for the benefit of their residents and local businesses.

The recommendations contained within this guide are based on research undertaken by BAI Communications (BAI) with a number of London boroughs, that looked at the challenges boroughs face in enabling new digital infrastructure and innovation. This guide summarises the insight and findings of the full research report, "Hyperconnected London – How can London boroughs enable digital connectivity for today's challenges".

This guide is designed to provide a simple overview of the steps boroughs can take to create the conditions that ensure inclusive connectivity and avoid areas being left underserved by the market.

Digital connectivity provides the foundation for innovation that can make places better for residents and local businesses. In today's challenging environment, it has never been more important for local government to support local communities with great connectivity.

A combination of high speed mobile and fibre connectivity needs to come together, to create a foundation of digital hyperconnectivity that is inclusive for residents as well as businesses.

In summer 2022, BAI spoke to lead practitioners within five boroughs – Westminster, Lewisham, Newham, Hounslow and Tower Hamlets – to find out how connectivity challenges are being addressed, as well as where the biggest opportunities are for improving connectivity and innovation to improve services for residents and businesses.

The steps proposed in this guide aim to highlight best practice, identify potential opportunities for London boroughs, and reflect the challenges experienced by people working at the forefront of digital transformation in local government and how barriers can be overcome.

The importance of better connectivity

Digital connectivity provides the foundation for innovation that can make places better for residents and local businesses. In a cost of living crisis and potential recession, ensuring access to high speed digital connectivity is paramount. It ensures residents' access to education and economic opportunity, and helps local businesses to thrive. London's boroughs have the power to drive improvements in connectivity that create better places to live, work and visit.

London's own economy is at an inflection point, with changes in the way Londoners work, commute and shop. The increased use of local high streets and the huge need for new housing in some boroughs is creating opportunities for local commercial regeneration projects. A new digital economy is increasing the need for reliable fixed and wireless connectivity, from delivery riders and drivers who need always-on connection, to market-traders who need to take contactless payments, to schools who need to make materials available for families without broadband. All these factors are creating changes in the way people use the city.

Whether it's fibre broadband or good mobile signal, Londoners need good, high-speed connectivity to access public services, education and economic opportunities. More and more London boroughs are exploring ways to help connect their local businesses and their communities. But inclusive growth and digital inclusion means getting affordable digital infrastructure to all communities, especially to those who need it most.

A political priority

Digital connectivity remains central to London's Recovery Programme, and the Mayor of London has recognised the importance of advanced digital infrastructure, harmonised across boroughs, to maintain London's role as a centre for research and development, and innovation activity. Beyond the imperative for growth and innovation, the increasing importance of connectivity for work and essential services means that affordable connectivity is a vital component of social inclusion. Digital Access for All is one of nine Recovery Programme missions, reflecting City Hall's increased emphasis on digital inclusion post-pandemic. Our analysis of the 2022 local election found a commitment to digital inclusion or connectivity in nine of the political manifestos of the controlling parties.

The role of boroughs

London boroughs have different populations, resources and priorities – and very different levels of connectivity.

Full fibre availability by Borough

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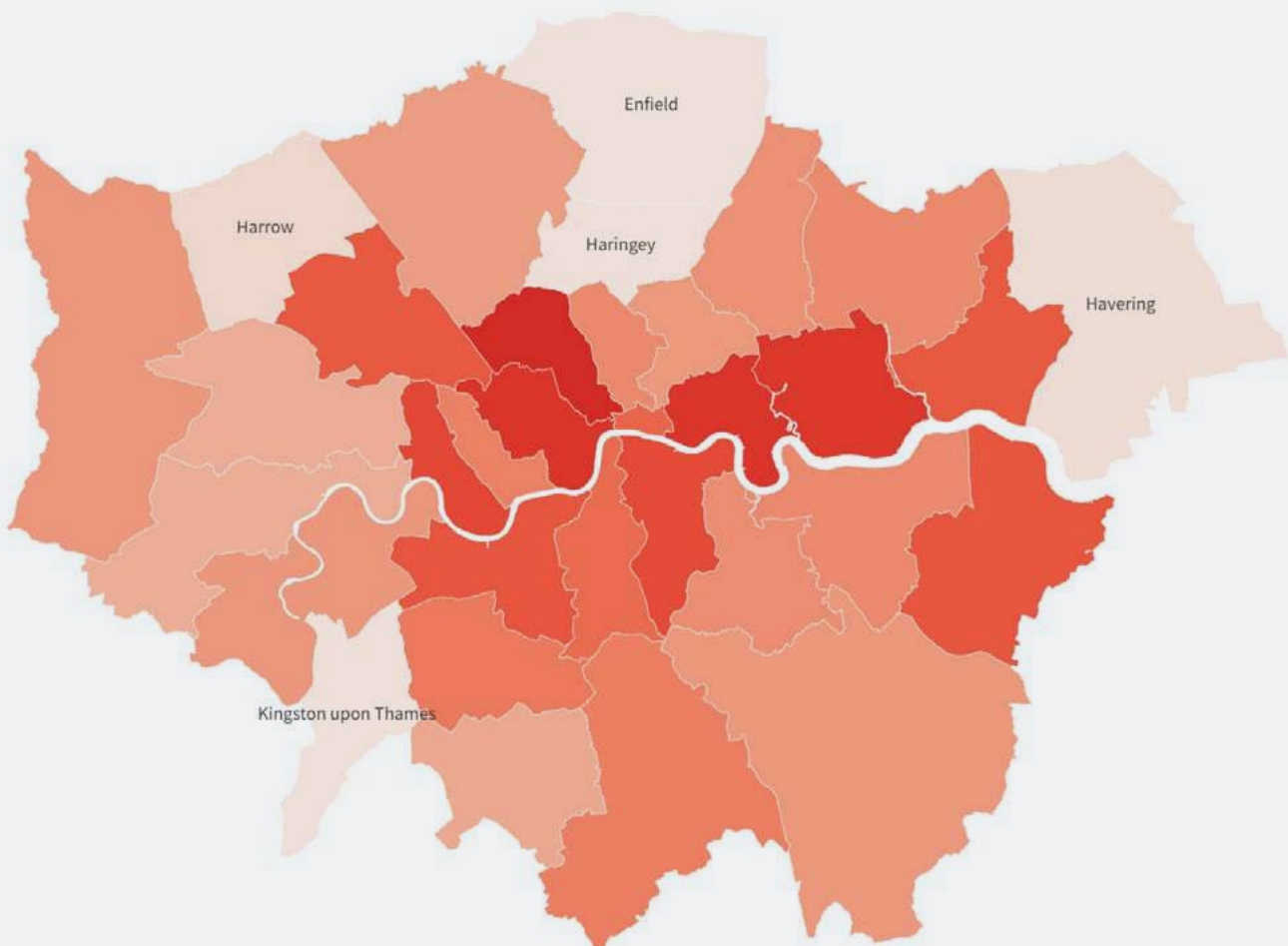
Source: Ofcom Connected Nations update Autumn 2022

There are powerful drivers for boroughs to be actively involved in improving connectivity including: an awareness that relying solely on the market to deliver connectivity infrastructure could leave some areas under-served; a recognition that lack of connectivity could limit residents' access to education and economic opportunities; greater expectation from residents that they should be able to access council services and get more done online; and a growing need for cost savings and efficiencies at council level.

The role of boroughs

Examples of what's working well

In Westminster, Digital Place policy focuses on creating the right conditions for the market to invest. For fibre connectivity, the team created Wired Westminster, a group of council departments, broadband providers, mobile network operators and fibre providers, property owners and housing associations to understand barriers to deployment.

Barriers ranged from legal challenges around wayleaves, the right of a provider to access council land and property to build or maintain communications infrastructure, to the cost of parking bay suspensions.

The Smart Cities team in Westminster sees the council's role as convening the telecoms sector, identifying barriers and coordinating the borough's response. Reducing the cost of parking bay suspensions and stimulating demand with vouchers to help businesses and residents connect to fibre, were key to helping fibre providers develop their business cases to invest.

In the Royal Docks in Newham, the scale of public land available for housing redevelopment created an opportunity for a different, more interventionist, approach. New structures and boards were established, chaired jointly by the council and the Greater London Authority (GLA). The size of the regeneration area in the Royal Docks allowed the team to assess the capacity for infrastructure and utilities to service the circa 30,000 planned new homes.

Sub-regional partnerships

London's four sub-regional partnerships have a key role to play in bringing together boroughs, businesses, and communities to deliver improved digital connectivity.

West London Alliance launched its 5G West Project in 2021. This maps local authority assets that have the potential to host telecoms infrastructure, making it easier for mobile operators to plan deployments and accelerate the take-up of 5G across West London.

Elsewhere, South London Partnership is running a £4 million InnOvaTe Project, where new Internet of Things (IoT) use case pilots are being deployed across its partnership of five London boroughs.

Central London Forward has established a regional digital strategy to support its boroughs in the delivery of their digital ambitions.

Local London recently ran nine procurements to support the upgrading of public sites, and to secure wider investment across its boroughs. £5m of digital infrastructure investment was contracted across the sub-region that has extended the footprint of wholesale fibre; and resulted in reduced costs to boroughs, additional commercial investment, economic development and social benefits.

Access to borough assets is key

Our interviews and wider research found that many boroughs are already using wayleaves to help network operators get infrastructure into social housing, and want to use their own street assets and ducting networks to extend fibre and mobile networks across their boroughs. But boroughs want to make sure use of assets is done in a sustainable long-term way that delivers value for residents and businesses.

Access to borough assets plays a very important part in improving connectivity. This can be achieved in multiple ways. For street assets such as lamposts, etc. we believe the continuing pursuit of open access agreements with suitable third parties is an effective way to support the small cells deployment needed to maintain high speed mobile connectivity. For fibre duct assets a concession model, with a wholesaler in place to ensure tighter security, structural integrity as well as commercial benefit, is likely to be the most effective option for asset monetisation and improved fibre connectivity. A concessionaire, as a long-term strategic partner, can take on the responsibilities of any fibre network build as well as building the interconnections to other fibre backbones.

Transport for London's (TfL's) Telecommunications Commercialisation Project (TCP)

Long-term partnerships with a trusted private sector partner are one way for boroughs to ensure that assets are being developed and monetised properly. The TCP provides the key framework for boroughs to participate in a London-wide project to build a fibre and wireless connectivity backbone for London.

In 2021, Transport for London (TfL) entered a 20-year partnership with BAI Communications to use TfL assets to improve connectivity across London. It includes introducing 4G and 5G ready mobile coverage to ticket halls, platforms, and tunnels on the Tube network by the end of 2024. BAI will also deliver a new high capacity fibre network that will bring fibre directly into London's neighbourhoods, creating new opportunities to serve homes and businesses with gigabit-capable speeds and improve digital inclusion. The concession agreement allows TfL to provide its assets to BAI for telecoms use. The model benefits TfL and allows BAI to make those assets available to its telecoms partners and customers. The boroughs were included in this procurement and can use the concession in the same way on a non-exclusive basis.

Works funded by grant

The TCP concession agreement also allows TfL to deliver connectivity on the behalf of boroughs using funds granted to TfL from a variety of sources. TfL manages the full capital delivery of fibre upgrades allowing the borough to benefit from improved fibre provision and more cost effective high speed connections.

One example of boroughs participating for grant funded work is Kingston and Sutton. See case study on next page.

How boroughs can get involved

Boroughs can raise their interest in working with TfL and BAI with their sub-regional connectivity leads or get in touch with the Connected London Team at the GLA directly.

The GLA will then organise an introductory meeting with the team within TfL. TfL representatives will engage with BAI and agree the best way of working together to achieve the outcomes the borough is looking for. TfL will either instruct BAI to engage directly with the borough or set up a three-way introductory meeting.

All arrangements using the TCP concession agreement are non-exclusive.

Case study:
Kingston and Sutton

Upgrading public safety with gigabit capable CCTV

In response to the economic impact of COVID-19 the Mayor of London was allocated funds from the Government's Getting Building Fund to finance a package of projects to boost economic growth, and fuel local recovery and jobs. This followed a submission coordinated by the GLA, working with London Councils, and London's local authorities.

For their allocation from the GLA, London Boroughs of Kingston and Sutton resolved to improve public safety by updating their existing CCTV columns with direct high-capacity fibre connectivity. The existing CCTV sites were poorly served by connectivity resulting in poor image quality which was often inadmissible as evidence in courts.

THE CHALLENGE:

To deliver a single, robust network over massive dozens of sites is a complex project, and the boroughs faced three main challenges:

- Having the project funded by grant meant that any plan which generated high future operational costs would have made the project unviable.
- The system needed to be scalable and future proof to accommodate future bandwidth requirements
- The private network needed to be highly secure

THE SOLUTION:

To achieve the required connectivity the Head of Digital Strategy and Connectivity Project Managers worked with BAI and TfL to develop a single gigabit capable solution which will connect 63 sites across the two boroughs (21 CCTV columns and the police station in Sutton and 40 CCTV columns and the police station in Kingston).

The hub-and-spoke network, which connects all cameras to local Police control centres (see figure 1), utilised existing dark fibre to lower upfront investment and ongoing operational costs to the borough.

FIGURE 1

As dark fibre has the capability of bandwidths far more than 1Gbps, the boroughs will have the benefit of future scalability without additional costs to the passive infrastructure. In addition, a pair of dark fibres will be delivered to each location. The spare fibre (one will be needed for the CCTV apparatus) will enable future applications such as sensors and small cells which would improve local connectivity and provide a valuable income stream to the boroughs.

Working with a neutral host like BAI in partnership with TfL, the team at Kingston and Sutton were able to develop a single solution which will deliver a robust network within the strict budget and timeline demands.
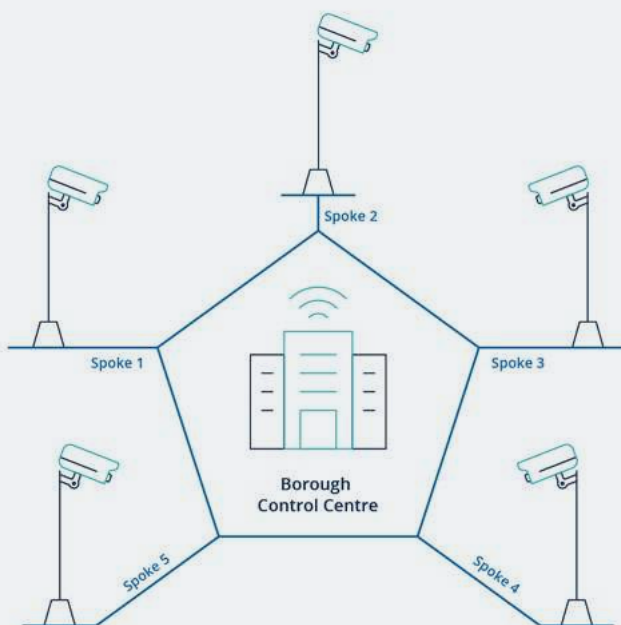
The role of the Mayor

The Mayor of London and the GLA recognise the importance of digital infrastructure and support its development with the boroughs. This is being done through the Connected London programme which include the TfL TCP mentioned above and additionally;

The Chief Digital Officer

Theo Blackwell was appointed as London's first Chief Digital Officer, by the Mayor of London, in September 2017, to lead on London-wide digital transformation, data and smart city initiatives at City Hall.

The Connected London team

The Connected London team, established in Autumn 2017, seeks to pave the way for investment in London's digital infrastructure networks. They work with London's sub-regional partnerships and boroughs to help share information and better co-ordinate with digital infrastructure providers to enable investment into fibre and mobile infrastructure in underserved areas in London. The team works with TfL, sub-regional working groups, and service providers, sharing best practice and resources, ensuring strong planning policies in the London Plan and championing London to be the best-connected city in Europe.

Sub-regional digital leads

In October 2019, the Mayor of London approved grant funding for digital champion roles at each of London's four sub-regions to assist boroughs with maximising investment in digital connectivity and infrastructure. Given the substantial contribution the sub-regional digital champions have made in supporting their boroughs, the Mayor extended their funding earlier this year.

Grant funding

The Mayor of London allocated £10m from the Strategic Investment Fund and £6m from the Getting Building Fund to upgrade public sites to deliver new or improved digital services for Londoners. Connectivity improvement works that are funded by grant can be procured via TfL's TCP, simplifying and speeding up the process, and maximising inward investment through economies of scale.

London Plan policy

The new London Plan policy SI 6 represents an important step in realising good connectivity for every Londoner. It asks for new developments to have full fibre and mobile connectivity from day one. The Mayor will be producing guidance to support the implementation of this planning policy.

The London Office of Technology and Innovation (LOTI)

LOTI was launched on 10 June 2019 at London Tech Week and started its formal operations on 15 July 2019. It supports a coalition of London boroughs who want to work together, bringing the best of digital, data and innovation to improve public services for Londoners.

There is a current focus on people, technology data and methods. Initiatives include:

People: Building a range of recruitment services to help boroughs have access to people with the right skills and experiences, to support digital transformation opportunities.

Tech: Helping boroughs develop better relationships with good technology providers. It's vital that boroughs have the right tech tools for the job as technology powers every public service and council back office function.

Data: Helping to speed up the process of creating data sharing agreements that can enable vital public services to be delivered and innovation to take place more rapidly and providing guidance on data ethics.

Methods: This theme is dedicated to helping boroughs realise the full potential of digital innovation in its broadest sense. This includes making better use of tech and data, but starts with the assumption that bold changes are also needed to councils' business models, ways of working, culture, mindset, policies and partnerships.

This focus relates directly to the challenges facing boroughs that we found in our research. It places LOTI uniquely as a centre of excellence to support boroughs in the exploitation of the digital innovation opportunity that can be built on the underlying foundation of great digital connectivity.

Recommendations for boroughs & how BAI can help

More and more London boroughs are exploring ways to help improve digital connectivity but face considerable challenges:

- Risk of either under-using or under-monetising council assets.

- Limited capacity in borough's legal and planning departments to make progress.

- Expertise with a clear asymmetry of information with the private sector.

- Risk of committing to technology that proves inappropriate in the long term.

- Organisational structure as responsibility for connectivity and networks often fall across different departments within councils – for example: IT services, economic development, social inclusion, housing, adult social care and transport. Departmental siloes can mean that innovation doesn't get shared between different council services.

Our 7 recommendations on the next page are designed to help address these issues of asset availability, resource capacity, expertise, and organisational structure. We present them as potential areas for discussion and would very much welcome the opportunity to discuss their applicability to particular boroughs and how they could be developed and implemented.

Recommendations	How BAI can help
1 Provide access to borough assets Borough assets play an important part in improving connectivity, as the critical foundation for smart innovation. For street assets such as lamposts, etc. we recommend the continuing pursuit of open access agreements with suitable 3rd parties. We see this as an effective way to supporting the small cell deployments needed to maintain high speed mobile connectivity. For duct assets a concession model, is likely to be the most effective option for asset monetisation and improved fibre connectivity. A concessionaire, as a long term strategic partner, can take on the responsibilities of any fibre network build as well as building the interconnections to other fibre backbones. The non-exclusive nature of the TCP concession agreement allows the boroughs to use the concession agreement for both of these recommendations.	BAI has direct experience of both open access and concessionaire models and can share insights and experiences gained to-date. We believe that with a combination of private and public assets, the opportunity to drive private sector investment in connectivity is maximised. Boroughs can use the TCP concession agreement directly with limited procurement activity in a non-exclusive manner.
2 Boroughs should consider the neutral host model for improving mobile connectivity With a neutral host mobile connectivity solution one set of infrastructure can support connectivity to all mobile operators. Neutral host infrastructure can help boroughs monetise public assets while supporting broader borough objectives like digital inclusion. Digging and installing telecoms equipment only once, means less disruption for residents and traffic, less cost through a common open access wholesale shared infrastructure.	With a neutral host mobile connectivity solution, one set of infrastructure can support connectivity to all mobile operators. Neutral host infrastructure can help boroughs monetise public assets while supporting broader borough objectives like digital inclusion. Digging and installing telecoms equipment only once, means less disruption for residents and traffic and less cost through a common, open access, wholesale shared infrastructure. BAI is a very experienced neutral host provider and can advise on the appropriateness of such an approach.
3 Boroughs should engage with the GLA and TfL to explore how works funded by grant and the Telecommunications Commercialisation Project (TCP) can support their digital inclusion strategies, and help commercialise their assets. London Boroughs were included as part of the original OJEU TCP procurement and can use the contract using the original terms and conditions, simplifying the process for the delivery of connectivity by grant funding.	BAI is delivering a new fibre network through TfL's underground tunnels and ducts, bringing fibre directly into London's neighbourhoods. This backbone of connectivity can link in with boroughs' plans to use their own assets to improve connectivity. BAI is also working via TfL to deliver connectivity improvement works, funded by grant, for boroughs.
4 Undertake public infrastructure mapping to help remove barriers to economic activity Planning mobile and fixed network development is far easier with established infrastructure mapping, and helps leverage more public assets for connectivity, and increased economic activity.	Mapping assets in order to negotiate access agreements can be onerous for boroughs. BAI can offer borough's assistance in this area based on its own developments. As part of its activities to commercialise TfL's assets BAI has developed significant data analytics capability that incorporates 2D and 3D digital twin modelling. This can overlay mobile coverage mapping and bring in data from multiple sources to ensure optimum solutions are leveraged for fibre and mobile connectivity. BAI are also supporting the national adoption of asset platforms. These combine data from multiple assets owners to enable easier access for mobile operators and neutral hosts to deliver fixed and mobile connectivity.
5 Digital connectivity should be designed into planning developments early on to ensure digital inclusion Mobile and fixed connectivity shouldn't be left as an after-thought, similar strategies that are applied to energy, for instance, should be applied to digital infrastructure. Fibre, ducts and suitable telecoms assets should be built into to specifications for developments. Boroughs can then monetise and work with industry to overlay the connectivity.	BAI can help deliver neutral host connectivity through our access network, ensuring that new developments can be built "On Net". For large developments BAI can deliver inbuilding connectivity to compliment the outdoor layer, ensuring indoor mobile traffic needs are met.
6 Digital Champions should be formalised and funded The Department for Digital, Culture, Media and Sport (DCMS) recommends that local authorities appoint a digital champion at a senior level to lead digital infrastructure strategy, minimise the barriers to rollout broadband and mobile networks and support engagement with network operators. Digital champions and sub-regional collaborations offer a way to address some of the asymmetries of expertise and resource between boroughs and network providers / technology companies.	BAI can support with sessions to share our expertise and knowledge on digital connectivity and smart city innovation. Last year BAI entered into a long term partnership with Sunderland City Council to jointly develop an advanced smart city that is now developing a wide range of digital innovation use cases for the Council, its residents, businesses and public sector organisations. This work is bringing together connectivity, IoT sensors, city data and applications to improve places across the City and services to residents. BAI would be very happy to share insights gained in Sunderland together with those from delivering digital infrastructure in major cities around the world.
7 Innovation boards for connectivity To help address organisation challenges, an innovation board can capture best tech practice and help boroughs tackle barriers to drive investment at a faster pace, leveraging public and private sector knowledge. We recommend them being established in every borough. Innovation boards should include council officials with knowledge of connectivity, networks, and borough-owned assets as well as those interested in emerging technologies and service provision.	BAI can support with consultation and as for recommendation 6 above, BAI would welcome the opportunity to share its considerable knowledge and insights around digital infrastructure and innovation via a series of seminars/webinars.

About BAI Communications

BAI Communications is a world leader in shared communications infrastructure, pioneering solutions that empower our customers to advance their services, accelerate their networks and amplify their reach in the most efficient and cost-effective ways possible.

Having long been at the forefront of network advancement, BAI is harnessing fibre, spearheading the transition from 4G/LTE, accelerating 5G and preparing for 6G – and beyond. We collaborate closely with our customers in telecommunications, government, transit, enterprise, broadcasting, and venues to realise their communications vision, focusing not just on the immediate future, but on the possibilities that exist over long-term partnerships.

Our global operations span the United States, the United Kingdom, Ireland, Italy, Hong Kong, Canada and Australia. Our BAI Group companies include Mobilitie, Signal Point, Transit Wireless and ZenFi Networks in the United States, and Vilicom in the United Kingdom and Ireland. Together, we're creating smarter communities for all.

Learn more at our
LinkedIn, Twitter and YouTube channels.

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