Hyperconnected London

How can London boroughs enable digital connectivity for today's challenges?

bai communications

Contents

Executive summary

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 communities with great connectivity. 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.

The promise of the connected smart city is a safer, cleaner, more sustainable one that improves lives for its residents and businesses, but the journey from policy buzzword to delivering real-world outcomes is challenging. Key to the journey is comprehensive, ubiquitous digital 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. This report looks at how the concept of connected smart places is understood and delivered in London and the challenges boroughs face in delivering smart innovation and the digital connectivity which underpins any smart city innovation.

In compiling this report, we spoke to lead practitioners within five boroughs to find out how connectivity challenges are being addressed, as well as where they see the biggest opportunities for improving connectivity and using smart city solutions to deliver services for residents and businesses. The report also examines political priorities at various levels of government to understand what is driving and motivating leaders to prioritise digital transformation, and how different boroughs are approaching common problems.

The report aims 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 they are overcoming those barriers.

We found:

- London boroughs are ambitious for technology to improve their public services, but the more immediate first step is improving connectivity and addressing digital exclusion.
- Councils want to work with the private sector but are worried about getting locked into inappropriate technology that doesn't solve real-world problems.
- Boroughs have a huge opportunity to improve connectivity by making full use of their own assets – including ducting and street assets, but want to make sure this is done in a sustainable, long-term way that delivers value for residents and businesses.
- Another opportunity for boroughs is working with the private sector to improve connectivity in social housing and housing association properties. Relatively straightforward measures like wayleaves can incentivise private sector investment and support efforts to get better fixed and mobile connectivity.
- While government has recently updated regulations to ensure new homes include gigabit capable broadband as minimum, mobile connectivity is often an afterthought.
- When working with the private sector, trust and commitment are key. Long term partnerships could help boroughs monetise their assets without the risk of building and operating networks.
- Neutral host technology is a potential opportunity for improving mobile connectivity in boroughs, where one set of infrastructure can improve wireless connectivity for all mobile operators.
- The Connected London* project with Transport for London (TfL) is a huge opportunity for boroughs. The project will see BAI Communications (BAI) deliver a 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. However, awareness of Connected London and the opportunity it provides for grant funded connectivity improvement was low at borough level.

*tfl.gov.uk/info-for/business-and-advertisers/creating-a-connected-london

As a result, the report makes the following recommendations for boroughs, the Greater London Authority (GLA) and central government:

1. Innovation boards can capture best tech practice and help teams tackle problems - we recommend them being established in every borough.
2. The Digital Champion role as recommended by the Department for Digital, Culture, Media and Sport should be formalised and funded.
3. Boroughs should understand the neutral host model opportunity for improving mobile connectivity, where one set of infrastructure can support all mobile operators.
4. Boroughs should engage with Connected London to explore how the project can support their digital inclusion strategies, and help commercialise their assets. TfL, the GLA and BAI should continue helping boroughs better understand the opportunities.
5. Wayleaves can increase investment. We recommend the GLA explores opportunities for wayleaves in housing associations.
6. Infrastructure mapping is key. The GLA should continue its work on infrastructure mapping for the whole of greater London, incorporating emerging digital twin technology.
7. Mobile connectivity is vital to ensuring digital inclusion and should be designed into developments, not left as an after-thought. Updating regulations would mean best practice becomes standard practice.
8. Government should improve the quality of data that Ofcom holds on utilities to help leverage more assets for connectivity.
9. Social value tariffs for mobile connectivity - not just broadband - are essential to widen access to opportunity and promote growth.

Introduction

Technology and data have the ability to transform local communities.

A lack of connectivity limits residents' access to education and economic opportunity, whilst making it harder for businesses to thrive. Better connectivity stimulates digital innovation which in turn stimulates investment and economic growth and allows local authorities to deliver improved services more efficiently. In a world of cost of living pressures, and budget constraints, it is critical that places and communities within our cities are not left behind. The insights and recommendations of this report lay out the opportunity for London's boroughs to enable digital connectivity improvements.

Over the last decade, the promise of the connected smart city that embraces such localised connectivity improvement and digital innovation, has captured the imagination of policy-makers and city leaders worldwide. Fast, reliable digital connectivity has the potential to help cities make use of powerful new tools, including Internet of Things (IoT) technology, Artificial Intelligence (AI), and real-time data-driven decisions, to address urban challenges from energy usage to traffic congestion to delivering virtual health and social care.

The promise of the connected smart place is a safer, cleaner, more sustainable one that improves lives for its residents without leaving under-served communities behind.

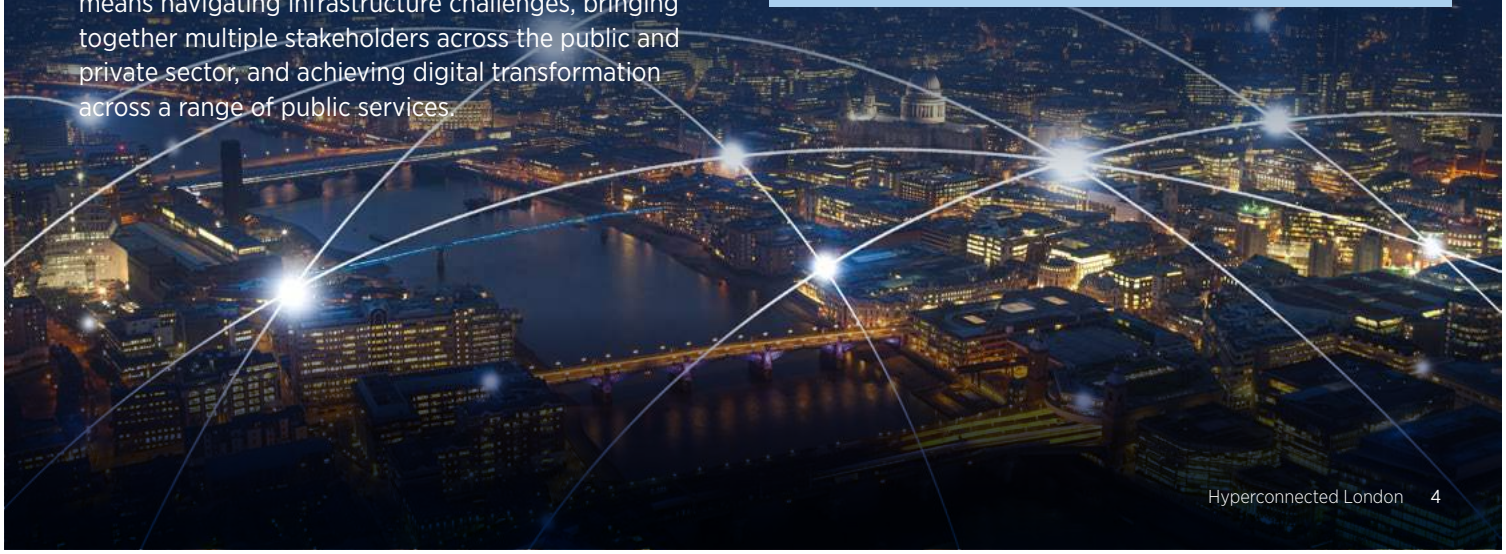
Yet the journey from policy buzzword to delivering real-world outcomes is complex and long term. Delivering on the promise of a connected smart place means navigating infrastructure challenges, bringing together multiple stakeholders across the public and private sector, and achieving digital transformation across a range of public services.

The starting point is comprehensive, ubiquitous digital 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.

This report looks at how the concept of smart cities is understood and delivered in London. It also looks at how London boroughs are improving the digital connectivity which would underpin any smart city innovation, together with the challenges faced in delivering connectivity improvement. We wanted to examine approaches to connectivity and smart city solutions at different levels of city government, from the Greater London Authority (GLA) to local authorities and the sub-regional partnerships of boroughs. We spoke to lead practitioners within five boroughs to find out how connectivity challenges are being addressed, as well as where they see the biggest opportunities for improving connectivity and using smart city solutions to deliver services for residents. We looked at political priorities at various levels of government to understand what is driving and motivating leaders to prioritise digital transformation, and identified how different boroughs are approaching common problems.

Our aim is to highlight best practice, identify potential opportunities for London boroughs, and to understand the challenges experienced by people working at the forefront of digital transformation in local government and how they are overcoming those barriers.

Throughout this report, we use the term smart city technology to refer very broadly to high-speed connectivity infrastructure, and projects that use connectivity, IoT technology, sensors or real-time data to address urban challenges.



Political challenges for the London boroughs

The Local Government Association (LGA) has highlighted[1] the impact of inflation on the delivery of essential services in adult social care, schools, housing, waste collection and other community services. The related cost-of-living crisis is likely to increase demand for these services[2] just as cost pressures rise, with adult social care under particular stress given the UK's aging population.

At the same time, rapid population shifts during the pandemic will have drastic impacts on funding levels for boroughs. The 2021 census figures[3] suggest that boroughs like Westminster and Camden may have populations 25% lower than 2018 projections for 2021, while the population of Tower Hamlets grew by 22%. It is not yet clear whether these population shifts reflect short term behaviour change during the pandemic, or whether we are seeing a longer-term shift in demographics caused by multiple factors - including the growth in working from home and whether this results in fewer people choosing to live in cities.

Away from social and financial pressures, long-term public concerns over air quality and climate change have pushed councils into political commitments on active travel, low traffic neighbourhoods (LTNs) and School Streets. Twenty eight of the thirty two boroughs have declared a climate emergency and all have published or will be publishing a Climate Action Plan.

London's own economy is at an inflection point, with changes in the way Londoners work, commute and shop. Lower passenger numbers threaten the long-term funding model for Transport for London (TfL), but 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.

Digital connectivity remains central to London's Recovery Programme,[4] and the Mayor of London has recognised the importance of advanced digital infrastructure, harmonised across boroughs, to maintaining London's role as a centre for research and development and innovation. 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[5] of the political manifestos of the controlling parties, while our interviews showed that councils increasingly saw a role for themselves in creating the right conditions for the private sector to invest in under-served areas.

The research

Against this backdrop, we spoke to digital connectivity leads within councils to understand:

The different approaches taken by councils to deliver better connectivity and smart city technology

Where boroughs see opportunities to improve connectivity for their businesses and residents and deliver smart city technology

Barriers to progress on delivering connectivity or smart city technology

[1] Local Government Association analysis on inflation impact https://www.local.gov.uk/about/news/inflation-and-national-living-wage-pressures-add-ps36-billion-extra-costs-council

[2] Open Democracy analysis on care bills https://www.opendemocracy.net/en/cost-of-living-social-care-bills-people-cant-pay-exclusive-england/

[3] ONS First Results from Census 2021, England and Wales https://www.ons.gov.uk/releases/initialfindingsfromthe2021censusinenglandandwales

[4] London Recovery Programme, GLA, 2021 https://www.london.gov.uk/sites/default/files/recovery_programme_overview.pdf

[5] Barnet, Hackney, Hammersmith and Fulham, Islington, Kingston Upon Thames, Lambeth, Richmond Upon Thames, Southwark, Westminster

What does the term smart city mean to boroughs?

Many of the boroughs we spoke to had examples of smart or connected devices solving real-world problems for residents, including using connected devices to support adult social care, or using networked sensors to detect flood risk, monitor air quality, or to inform operations like road-gritting in the winter months.

This was also seen at a sub-regional level, with the South London Partnership’s InnOvaTe programme rolling out IoT sensors across its four boroughs, as a means to address key community challenges and drive economic growth.

However, many individuals we spoke to acknowledged that there were risks in councils themselves owning and developing technological solutions. There was a general view that connectivity was the more immediate priority for residents and businesses, and that improved connectivity could support boroughs’ broader delivery challenges as well as create the infrastructure for smart services to develop. The more powerful drivers for boroughs to be actively involved in improving connectivity included: 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.

In 2022, the term smart city is broadly understood within local government to mean the improvement of the digital infrastructure within boroughs to create an enabling environment for the public and private sector, as well as the direct use of connectivity, networks and IoT devices by councils to improve the lives of residents and deliver better municipal services.

How boroughs are approaching connectivity and smart city technology

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.

Our interviews revealed different organisational structures and levels of resourcing that reflected each council's political priorities and objectives.

Many interviewees told us that departmental siloes meant that innovation wasn't being shared between different council services.

"They are so far ahead of the game when looking at independent living and the use of 5G – but no one in the rest of the council knows anything about it." [6]

"Bins would have been done by the waste team. Air quality would be dealt with by the air quality team. It's very piecemeal." [7]

[6] Independent digital connectivity consultant

[7] Digital connectivity lead at inner London borough

In Westminster Council, leaders realised that "smart things were happening in different parts of the organisation that weren't necessarily joined up" and decided to restructure.

A dedicated smart cities team now covers connectivity, inclusion and the smart cities strategy, which defines its themes as "empowering people, extraordinary experiences, clean tech city, and innovation ecosystem". Previously Westminster shared IT services with neighbouring borough Kensington, but these have now been brought in-house within the finance department. As part of the strategy to foster an innovation ecosystem, the council wants to develop its own smart city operating system, aggregating open-source data with data from council-owned IoT assets. An in-house team of data scientists and data engineers will be tasked with generating actionable insights for service delivery teams, spotting opportunities to automate processes and building the necessary applications.

On top of this, the team see their function as understanding emerging technologies and readying the council to implement them. In adult social care, for instance, they were interested in exploring HoloLens, a "mixed reality technology" from Microsoft, to support home visits and create more consistency for residents.

This approach involves political leadership, centralisation of services and, crucially, funding. In Westminster the core team are generally funded by the council precisely because they see value, ultimately, in an invest-to-save approach. For other boroughs, connectivity and smart city innovation were more siloed and not as well resourced. In the absence of a dedicated central team, some boroughs were exploring "innovation boards" as a way to share ideas and knowledge across the organisation.

But for many boroughs, the bar for the council deciding to deliver its own smart city technologies was high.

"There's so much stuff out there, it's a question of what's got a real-life business case. What's the actual reason for doing Internet of Things?" [8]

And while many of the individuals we spoke to were excited about the possibilities of smart city innovation, there was a sense that pilot funding applications were resource intensive, not suited to boroughs' timescales, and that innovation funding was not as readily available as it had been pre-pandemic and was not a sustainable route for councils.

"We have to put the savings up front as soon as we put forward the capital funding. And during the pandemic it was difficult to get any smart city applications approved." [9]

For many boroughs, the more immediate priority was improving connectivity.

"Our ability to respond and keep up to date with smart city innovations is fairly limited. If you have a great idea for smart city technology, it's a complete waste of time if you haven't got the digital capacity to enable it." [10]

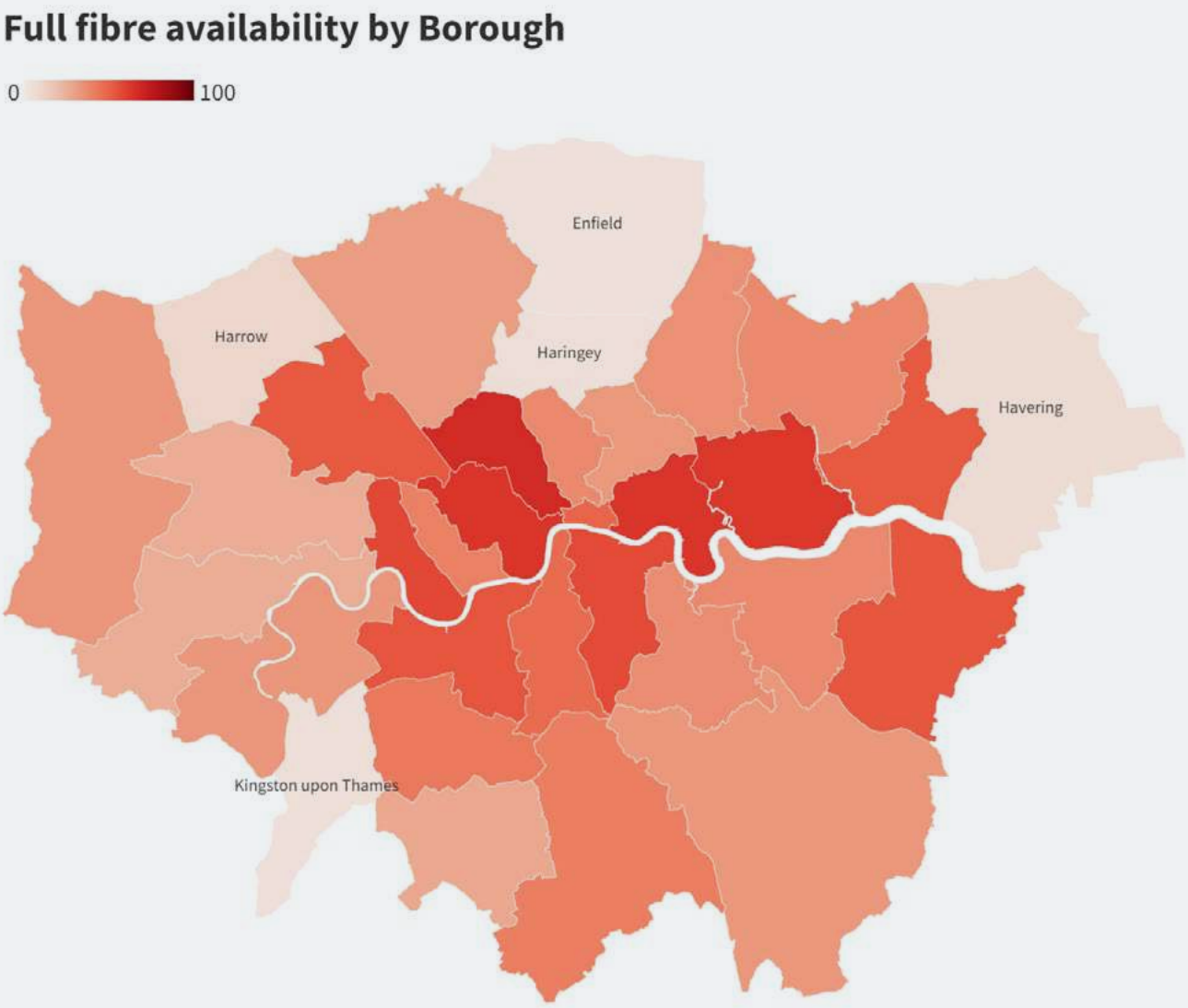
And for other boroughs, their priority was creating the right conditions for the market to invest, believing private sector investment would predominantly be responsible for the roll out of smart city technologies.

"We know that, whether it's a university or SME, there are businesses that are going to come over and implement smart city technologies and IoT. So our key thing is to allow them to do that in as unfettered a way as possible." [11]

[8] Digital infrastructure lead at outer London borough
[9] Digital infrastructure lead at outer London borough
[10] Digital infrastructure lead at outer London borough
[11] Paul Creed, Head of Development and Placemaking at Royal Docks

Connectivity

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



Source: Ofcom Connected Nations update Autumn 2022

A major factor influencing boroughs' approaches to connectivity was the scale of new housing development need and investment in town centres.

Case studies: Westminster

In Westminster, Digital Place policy focuses on creating the right conditions for the market to invest. On 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.

"When we changed to the citywide wayleave approach we saw a huge uptick in our fibre deployment. It doesn't just make the case to invest in our stock, it makes it easier to invest in the surrounding areas." [12]

Other barriers were around demand and new infrastructure competing with existing infrastructure. One of the least connected places in Westminster is the West End, a significant economic centre but one characterised by small shops and businesses. Providers were not incentivised to invest in cheaper fibre products that would reduce their revenue from existing leased lines.

Historic buildings, directly buried cable where there is no ducting serving properties, and roads with expensive surfaces significantly added to build costs. For example, cobbled mews that characterise the streets surrounding residential housing in central London are very difficult and expensive places to lay fibre:

"The density there isn't great enough and there's no ducting to use; if you were to serve it you would get complaints because the cobbles had been put back in different places." [13]

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 case to invest.

Royal Docks, Newham

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.[14] Their conclusion was that there was a coordinating function for the Royal Docks to ensure developers and mobile operators were talking to each other at an earlier stage, and to make sure current and future needs were designed in.

The speed and scale of the multi-phase developments at Royal Docks meant that operators would have to respond more quickly.

"Normally, the quality of a signal strength in an area gradually goes down as more and more people move there. At some point, the mobile operator will put in a new mast. If that happens over a long period, there is time to resolve it. But when there are multiple sites going up in a short period, your investment must be a lot more intense." [15]

---

[12] David Wilkins, Head of Digital Place at Westminster City Council

[13] Digital infrastructure lead at outer London borough

[14] Digital infrastructure lead at inner London borough Royal Docks and Beckton Riverside: Engagement Opportunity Area Planning Framework, GLA, 2020 Royal Docks and Beckton Riverside: Engagement Opportunity Area Planning Framework

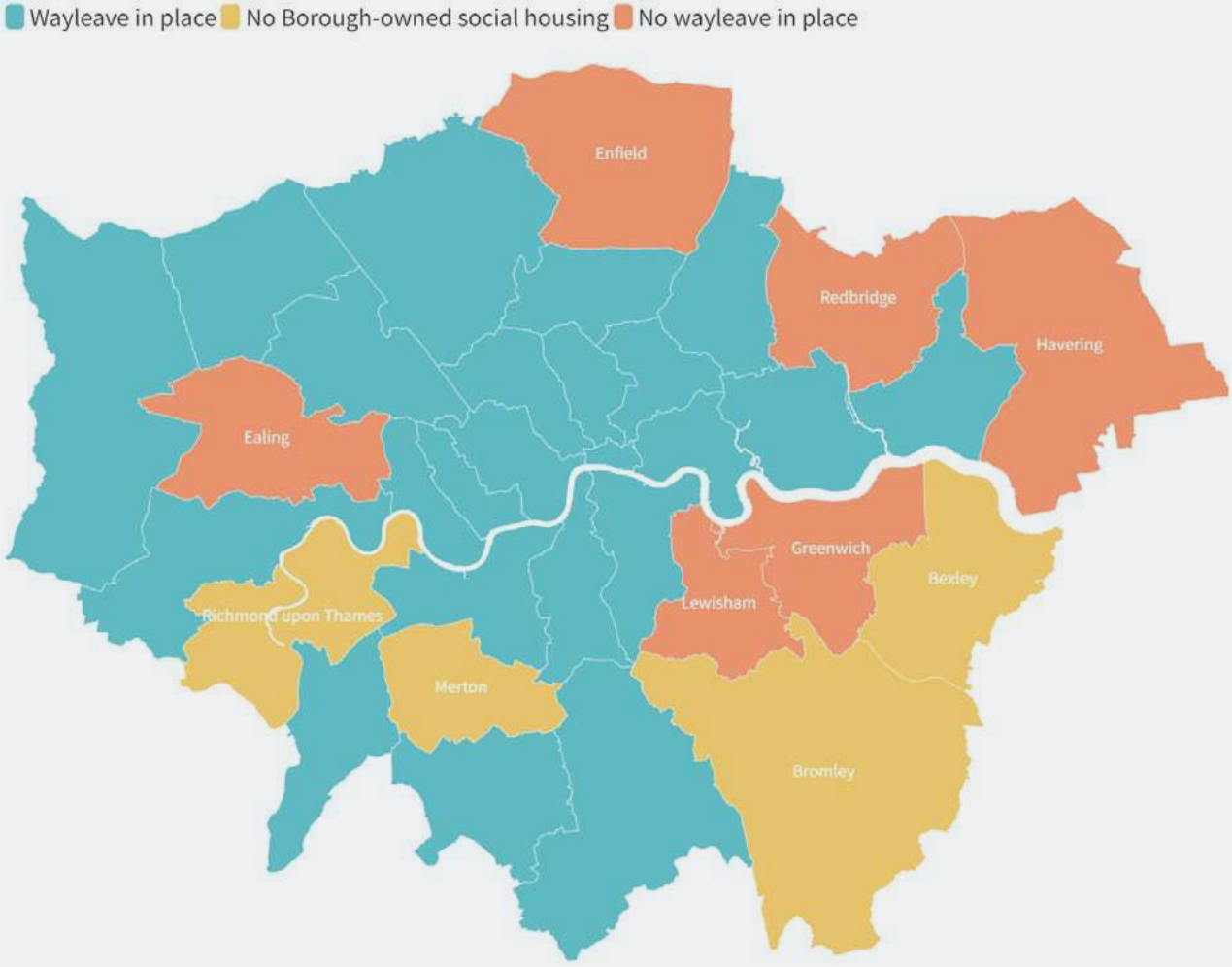
[15] Paul Creed, Head of Development and Placemaking at Royal Docks

The Barriers

Wayleaves

Wayleaves, agreements that allow a network provider to access land to install communications infrastructure, are a key part of the GLA's strategy for digital inclusion. They are making a difference within the boroughs we spoke to – not just in social housing, but in the surrounding stock. But not all boroughs have been able to implement them yet; and other boroughs have no borough-owned social housing.

Boroughs with Wayleaves in place, October 2022



Source: Greater London Authority

One borough said that progress on implementing a borough-wide wayleave had been so challenging that the team brought in external legal support, passing on costs to suppliers and providers.

Another borough, where a city-wide wayleave was already in place for social housing, identified housing associations as the next priority, and that there may be value in the GLA or sub-regional partnerships exploring these opportunities further.

The Barriers

Council structures and political commitment

Boroughs which were able to make progress on connectivity and innovation often mentioned the importance of leadership – from councillors and officials. But many boroughs noted cautiousness at both political and official level.

"There's a hesitancy... because there is a huge danger of tech that can promise everything and deliver nothing. No council member, no senior leader, no director would want that." [16]

Some of the problem was a lack of expertise.

"A lot of leaders have said that they don't always understand the technology. Legal services also don't enjoy engaging because it can take up a lot of their time to understand the terminology." [17]

Another problem cited was internal capacity, particularly when projects required coordination with various internal teams and external stakeholders.

One solution to this is the idea of Digital Champions. 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. While some boroughs have implemented this recommendation effectively, the role is poorly understood and not given long-term resource at borough level.

"We've had people champion certain aspects of it, but there was never anything formalised, and then they will be transferred to other projects so it just faded." [18]

In some boroughs the job is given to someone with responsibility for Digital Inclusion, while elsewhere it sits within the ICT function. In many cases, Digital Champions were worried that commercial operators could exploit their lack of experience.

"I get the market telling me all sorts of things, and I don't know whether to believe it or not, because it's not my bag of tricks." [19]

An asymmetry of power between under-resourced councils and network providers can lead to low levels of trust, and in at least one borough we heard that this was delaying progress on 5G.

"You've got departments trying to push 5G, but the asset management team with their agent makes it so difficult for the mobile operators to get on council-owned assets." [20]

Formalising and funding the Digital Champion role may be one way to make more progress, and the government has an opportunity in the next Spending Review to consider the LGA's request that Digital Champions are funded in every local authority.

Capability at borough level remains important. As well as appointing a senior Digital Champion focused on delivering connectivity, boroughs can increase their capability by buying in external legal support when it can help make progress on connectivity and digital inclusion and when it can be charged to private sector partners.

---

[16] Digital infrastructure lead at inner London borough

[17] Digital infrastructure lead at outer London borough

[18] Digital infrastructure lead at inner London borough

[19] Outer London borough quote via independent digital connectivity consultant

[20] Outer London borough quote via independent digital connectivity consultant

London's sub-regional partnerships

Sub-regional partnerships have a key role to play in bringing together local authorities, businesses, and communities to deliver improved digital connectivity. In London, each regional partnership represents several boroughs within a sub-region of London, covering West, East, South and Central.

The Mayor's latest London Plan strongly supports partnership-based, cross border working to address infrastructure challenges, particularly on issues that span multiple boroughs such as Opportunity Areas, which require more public investment. [21]

An effective sub-regional collaboration of boroughs can achieve some of the aims of a Digital Champion. In July 2021 the Mayor approved Strategic Investment Fund (SIF) funding for two Digital Connectivity officers in each of the four sub-regions, and boroughs said that these roles and partnerships were working well.

"We found that, particularly for mobile connectivity, it was best to work with the West London Alliance, as bidding for funding pots is much more effective. The partnership group of boroughs had more credibility with central government." [22]

West London Alliance, the sub-regional partnership of the seven West London boroughs, 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 IoT use case pilots are being deployed across its partnership of five London boroughs. The IoT pilots seek to manage and mitigate local challenges, drive economic recovery, and pilot solutions to help people live better and healthier lives.

There have been challenges for some sub-regional partnerships in recent years. One team we spoke to outlined that the intention had been for a joint smart cities project across some boroughs in East London, but competing priorities during the pandemic put this on hold.

Digital Champions and sub-regional collaborations offer a way to address some of the asymmetries of expertise and resource between boroughs and network providers or technology companies. Long-term partnership approaches with the private sector may also help to address some of the issues of trust. Overall, boroughs felt more comfortable working with long-term partners on an outcomes basis, minimising the risks of inadvertently buying in tech "for the sake of it" – tech that did not solve a real world problem.

21 London Plan, GLA, 2021 https://www.london.gov.uk/what-we-do/planning/london-plan/past-versions-and-alterations-london-plan/london-plan-2016/london-plan-chapter-two-londons-places/policy-25

22 Nick McCarthy, Head of Digital Services at London Borough of Hounslow

Case study:

South London Partnership and the InnOvaTe Project

The South London Partnership – which includes Kingston, Sutton, Merton, Croydon and Richmond - provides a unique and important example of how boroughs can work effectively within sub-regional partnerships to deliver improved digital connectivity and smart city solutions.

The partnership launched its InnOvaTe project in 2019, setting up a network of IoT sensors to help its boroughs manage and mitigate new challenges arising from COVID-19, drive economic recovery, and pilot solutions to help people live better and healthier lives.

One example is the trial being run in Kingston. The borough is working with AI company Vivacity Labs to monitor the impact of road and pavement changes in high footfall areas, aimed at improving 'active travel' routes. The council said the project data will help them to understand more about travel behaviours and patterns and improve the impact of any changes.

If the pilot is successful there will be an option to expand the scheme further, into the neighbouring boroughs of Merton, Croydon and Richmond.

The Barriers

Existing Planning Process

The team at Royal Docks noted that communications infrastructure is less regulated than utilities like energy and water. Planning for digital connectivity is often left as an after-thought in developments.

"You can't ignore digital connectivity in the 21st century, but it's not taught at architecture school – certainly it wasn't taught 10 or 20 years ago. If you are doing a big development you have to submit a load of strategies around how you're going to deliver energy to the site. But it hasn't in my experience ever come up that digital connectivity is part of the design review process." [23]

On large-scale developments it is more likely that developers will anticipate the need to design in connectivity.

"We're lucky that some of our sites are 5,000 to 6,000 homes. Developers don't want people in the last phase to be looking at Facebook reviews saying the connectivity is bad and not being able to get a signal in the marketing suite." [24]

The government recently updated building regulations to ensure that new developments have access to gigabit capable infrastructure, but regulations do not yet cover mobile connectivity.

"One of the challenges is that if you put this in the planning system, you've got to have regular updates and almost by definition, by the time you've written it and adopted it, it's probably out of date." [25]

The Mayor of London is addressing this through the London Plan guidance which will be consulted on next year. Policy SI6 sets a minimum standard for every new home and business in London to be able to receive full fibre broadband connections. The policy will require developers to work with mobile network operators and make sure a new building has the signal it needs, and that the building will not block signal to the surrounding area.

"The provision of digital infrastructure is as important for the proper functioning of development as energy, water and waste management services and should be treated with the same importance." [26]

The government should update planning regulations to encourage developers, mobile operators and councils to work together early in the planning process, to ensure that mobile infrastructure provides good connectivity to the whole building and works with the existing infrastructure in the local area.

---

[23] Paul Creed, Head of Development and Placemaking for Royal Docks

[24] Paul Creed, Head of Development and Placemaking for Royal Docks

[25] Paul Creed, Head of Development and Placemaking for Royal Docks

[26] Paragraph 9.6.1, The London Plan, GLA, 2021 https://www.london.gov.uk/what-we-do/planning/london-plan/past-versions-and-alterations-london-plan/london-plan-2016/london-plan-chapter-two-londons-places/policy-25

Opportunities

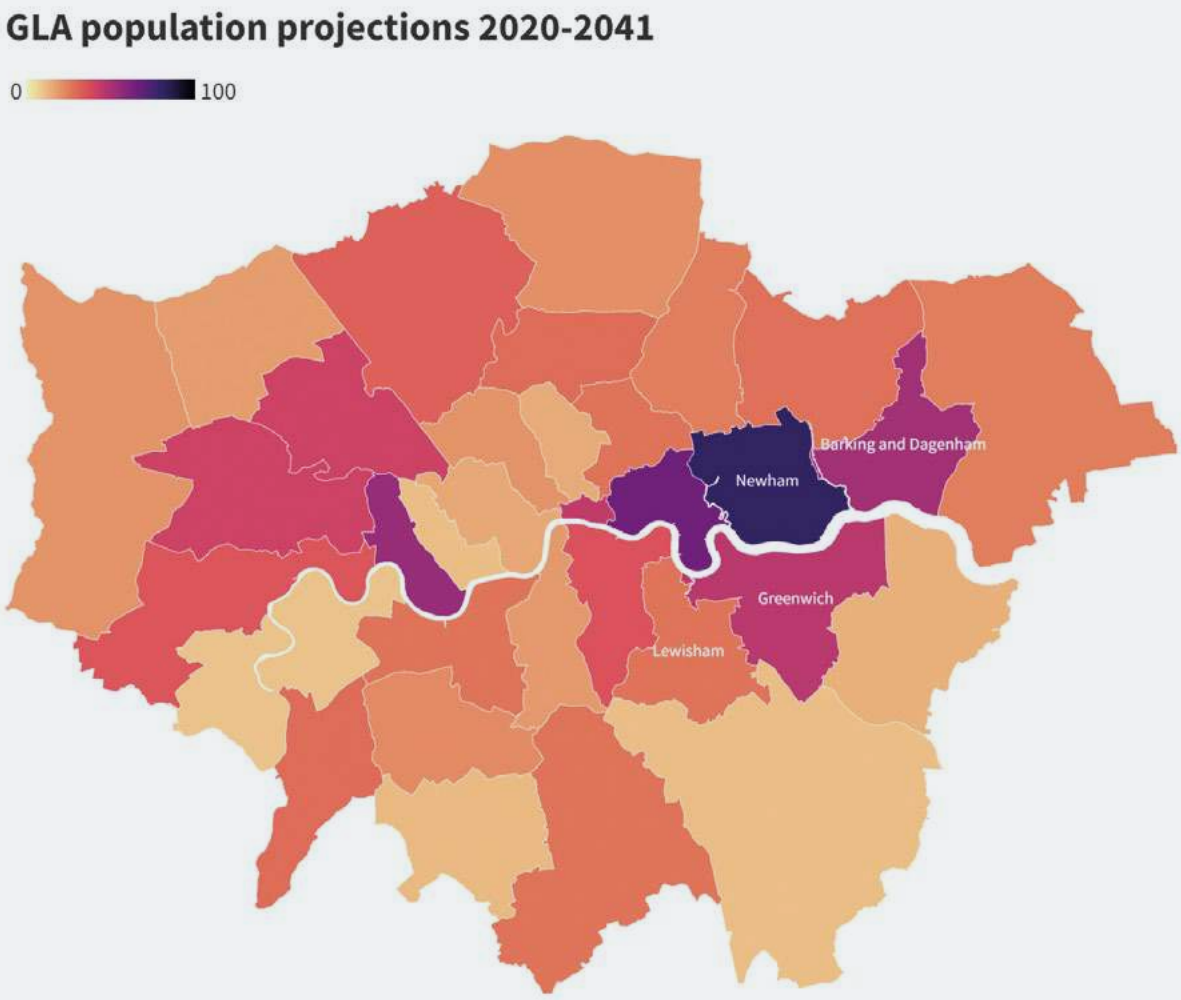
Housing

As with barriers, opportunities are sometimes specific to boroughs' priorities and politics, but consistently we heard that councils are focusing resources where they can deliver digital inclusion and where they can make savings.

"Housing is the best area for us to tackle. It's where we can get our best payback." [27]

For some boroughs this meant making further progress on wayleaves for social housing, while others were already moving on to housing association properties, but most saw this as a way to broaden access to fixed fibre rather than mobile broadband. Social housing development or regeneration plans provide an opportunity for boroughs to convene developers and providers, understand the barriers to investment and where the council can help.

"We plan to work with developers on what it would look like to have connectivity on social housing and how it would change costs." [28]



Source: Greater London Authority Housing target projections 2020

[27] Nick McCarthy, Head of Digital Services at London Borough of Hounslow

[28] Nick McCarthy, Head of Digital Services at London Borough of Hounslow

Opportunities

Ducting

Twenty years ago, central government released funding to councils to expand public space CCTV. Some councils decided that it would be cheaper to build their own ducting and fibre network than to outsource it, with the result that Hackney now owns around 90 miles of properly-laid telecoms ducting linking CCTV columns, while Newham has around 72 miles.

"The council realised that this is a massive opportunity to provide digital services to link all their assets, whether it's town halls, libraries, leisure centers and social housing in particular." [29]

But ducting networks were not always well known or understood within boroughs, and poor record keeping of connectivity infrastructure, where providers are expected to self-report to Ofcom, means that planners are often working with incomplete information.

Some boroughs were able to undertake mapping exercises to find out where the council-owned assets could be used more effectively. Hounslow is currently in the process of asset mapping through a West London Alliance project funded by DCMS, and the GLA's ambitious Infrastructure Mapping Application aims to help planners find opportunities for collaboration, but the quality of information provided to Ofcom remains a problem. [30]

Some boroughs are thinking ahead to how to commercialise ducting assets.

"If there was a commercial advantage, we would think about commercialising it, although that gets quite complicated. You're taking on an obligation. How do you structure that?" [31]

"The example that Transport for London have done with BAI is a potential case study to look at. That may be the best way of making sure that they can use it to the maximum." [32]

---

[29] Paul Creed, Head of Development and Placemaking at Royal Docks

[30] Towards and Common Approach to Data, Theo Blackwell - Chief Digital Officer at GLA, 2019, https://smartlondon.medium.com/towards-a-common-approach-to-data-2d72375c82a

[31] Digital infrastructure lead at outer London borough

[32] Digital infrastructure lead at outer London borough

Opportunities

Neutral host

New Code powers introduced in 2017 were designed to lower the barriers for the private sector to develop 4G and 5G infrastructure. Previously, landowners including local authorities had been incentivised to seek income from high rents, which was having a perverse effect on service provision and leaving the UK behind other countries in terms of 4G and 5G availability and take up.

Boroughs and developers were most likely to see opportunities for neutral host infrastructure (where one set of infrastructure can support all mobile operators) in big new developments where it can minimise street disruption and support digital inclusion.

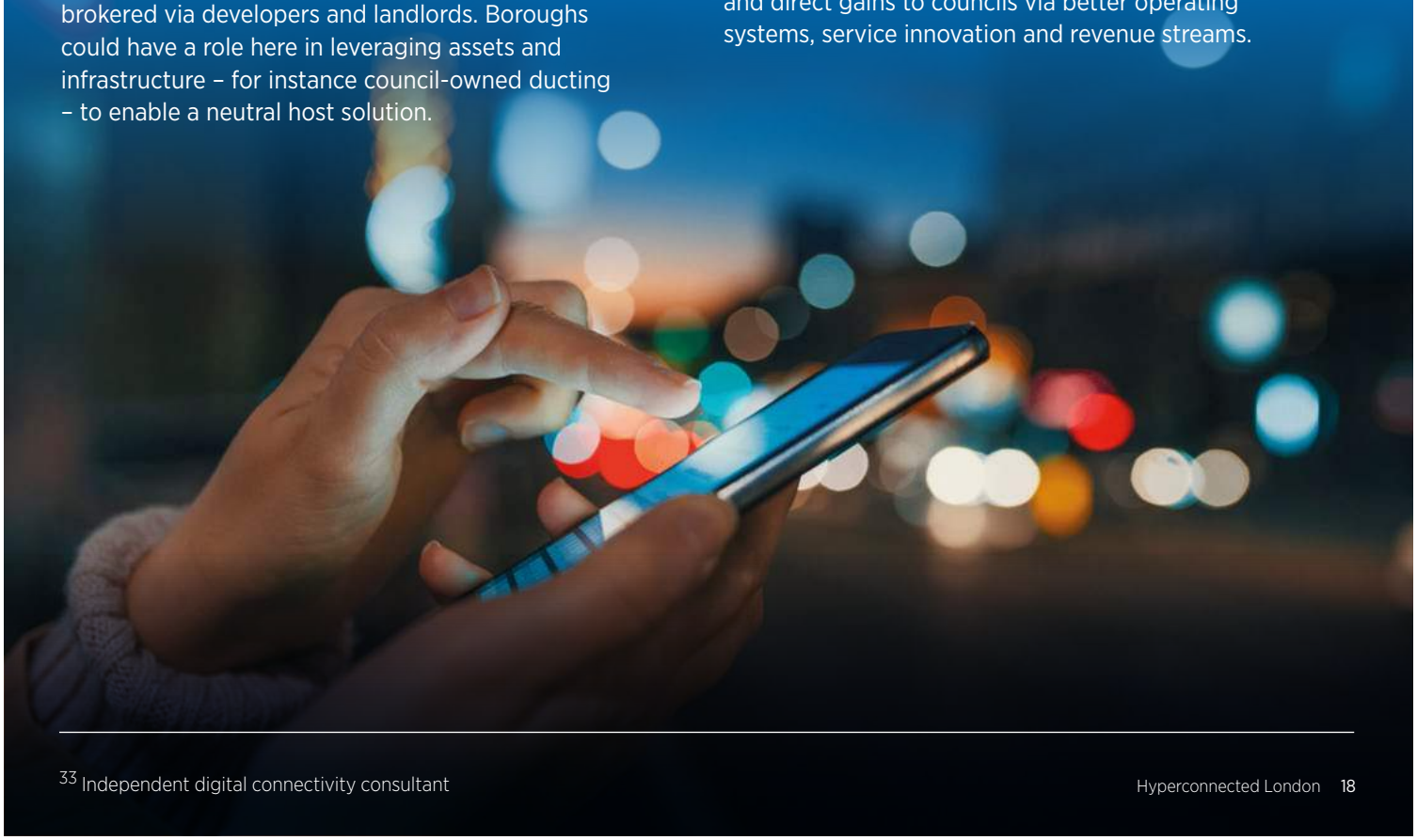
In-building neutral host solutions, not just for council owned premises like libraries and leisure centres, but for high-density developments, should be attractive opportunities, but these will largely be brokered via developers and landlords. Boroughs could have a role here in leveraging assets and infrastructure – for instance council-owned ducting – to enable a neutral host solution.

One consultant told us that boroughs felt that;

"they shouldn't be owning a network because they take on all the liability" [33]

Instead they needed long-term private sector partners who could offer **"a vision and a solution"** for managing and monetising assets while supporting broader borough objectives like digital inclusion. A longer time horizon increased trust between local government and the private sector and allowed the partner to build up expertise in the issues that commonly slowed down projects, like time-consuming asset mapping, standardising procurement processes, legal support and wayleaves. Long-term partnerships also helped both parties secure sustainable revenue streams and helped to future-proof technology, while adapting to national government policy designed to increase the pace of 4G and 5G adoption.

For some boroughs, the benefits of a neutral host model, whether that is outdoors, in-building, mobile or fixed, is still not well understood. The biggest opportunities are in council owned buildings, but the sharing of best practice case studies would help demonstrate a broader range of potential gains to councils: economic growth, digital inclusion, and direct gains to councils via better operating systems, service innovation and revenue streams.



[33] Independent digital connectivity consultant

Opportunities

Social value and social tariffs

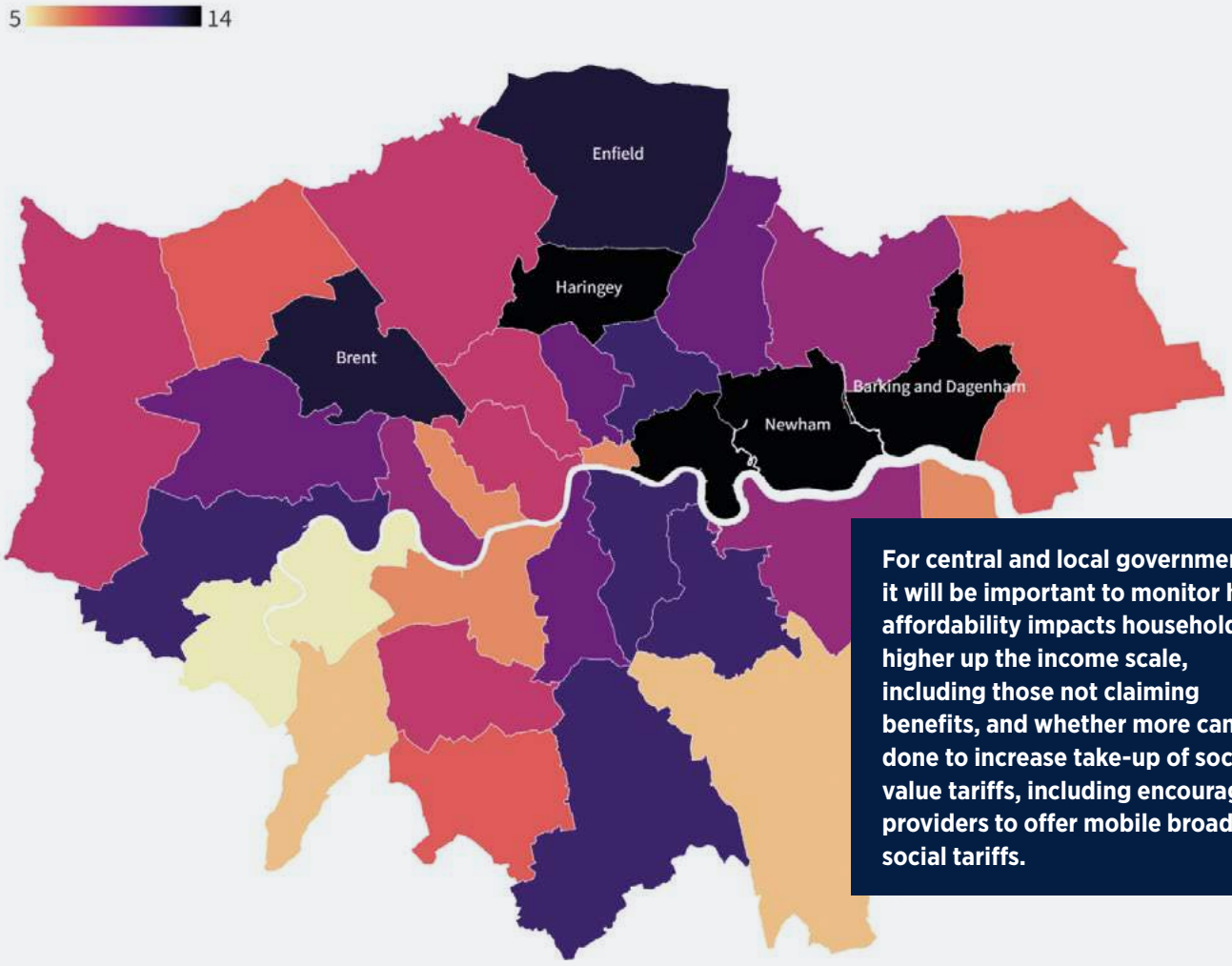
The London Office for Technology and Innovation (LOTI) [34] identifies different approaches to digital exclusion in boroughs. These range from offering digital skills training and increasing digital capacity at council level, to giving people access to the internet in their own homes or on their own devices.

The Get Online London initiative, supported by the Mayor of London and LOTI and delivered by the Good Things Foundation, aims to provide services to improve digital inclusion, including providing devices, providing free mobile connectivity to people who need it, and improving digital skills.

Another important lever for widening access is via social tariffs – subsidised broadband or mobile packages for people claiming benefits. Some boroughs raised concerns about levels of take-up among eligible households, and whether they are correctly positioned in terms of need. 5% of households can only access the internet via a mobile device,[35] but Ofcom found that provision of mobile broadband social tariffs is limited, and there is currently only one on the market.[36]

Only an estimated 1.2% of eligible households have so far taken up a social tariff,[37] with Ofcom calling for mobile operators to boost awareness and make applications more straightforward. A National Databank, launched in November 2021 by the Good Things Foundation, promises to offer free data packages to 500,000 people in low-income households across the UK, but it will be important to monitor availability of packages compared to the level of eligibility.

People on Universal Credit as a proportion of population, February 2022



For central and local government, it will be important to monitor how affordability impacts households higher up the income scale, including those not claiming benefits, and whether more can be done to increase take-up of social value tariffs, including encouraging providers to offer mobile broadband social tariffs.

34 Digital Inclusion in London, LOTI, February 2022 https://loti.london/wp-content/uploads/2022/02/LOTI-Digital_Inclusion_Report.pdf

35 Affordability of Communications Services, Ofcom, 2022 https://www.ofcom.org.uk/__data/assets/pdf_file/0016/232522/Affordability-of-Communications-Services.pdf

36 Affordability of Communications Services, Ofcom, 2022 https://www.ofcom.org.uk/__data/assets/pdf_file/0016/232522/Affordability-of-Communications-Services.pdf

37 Affordability of Communications Services, Ofcom, 2022 https://www.ofcom.org.uk/__data/assets/pdf_file/0016/232522/Affordability-of-Communications-Services.pdf

Opportunities

The Connected London project with TfL

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.

As the TfL partner for the project, BAI Communications will also deliver a fibre network through TfL's underground tunnels and ducts. The new high-capacity fibre network will bring fibre directly into London's neighbourhoods, creating new opportunities to serve homes and businesses with gigabit-capable speeds and supporting digital inclusion. Boroughs like Lewisham see a potential opportunity for linking Connected London to their own strategies.

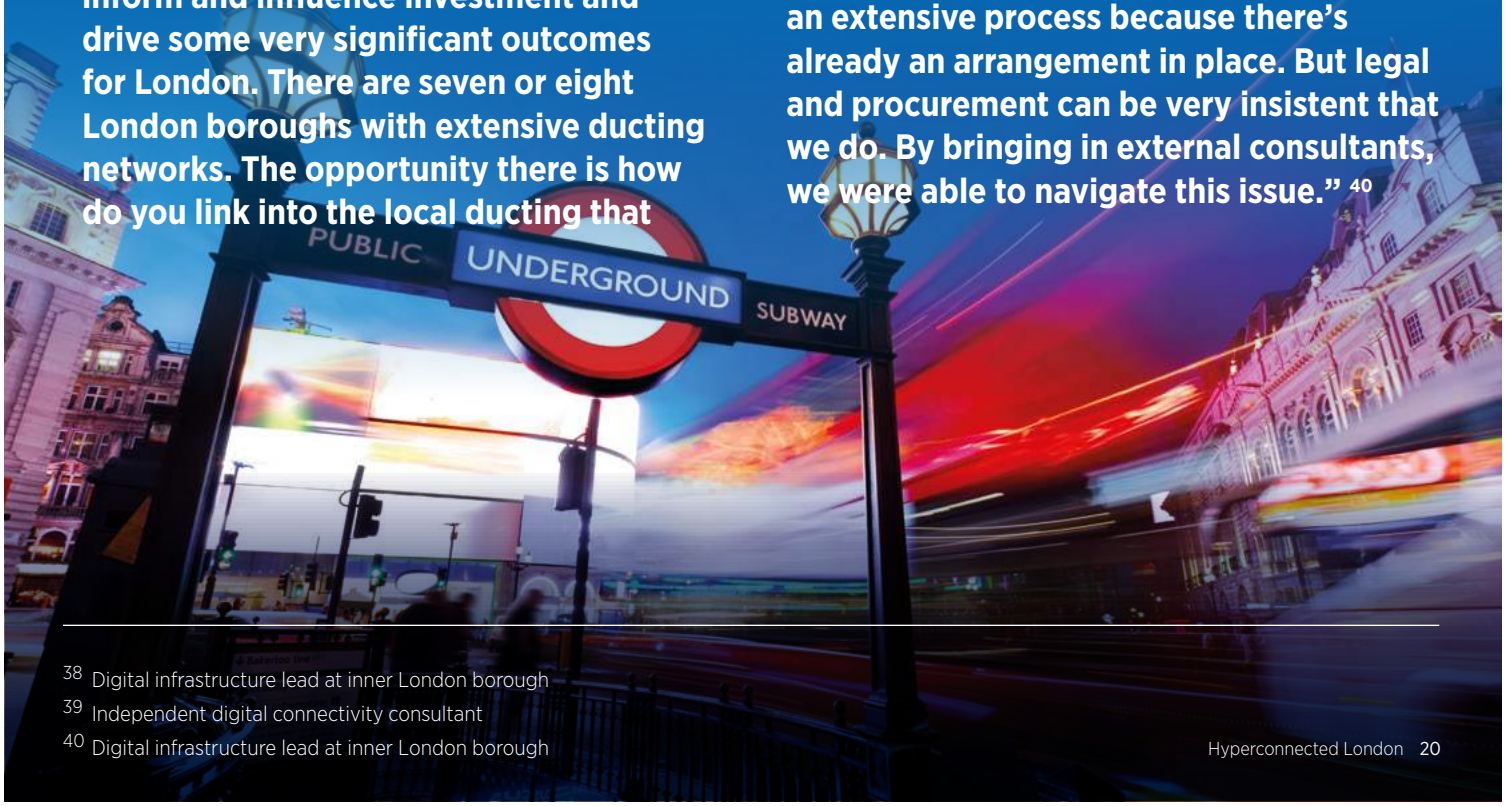
"A lot of the areas that they're looking to go into align with our red route plans as well." [38]

"The project with TfL could really positively inform and influence investment and drive some very significant outcomes for London. There are seven or eight London boroughs with extensive ducting networks. The opportunity there is how do you link into the local ducting that goes into social housing estates. The underground tunnels could be your motorway and the ducting could be the slip roads going off into local authorities. It could accelerate investment to social housing. It could support IoT as their fibre backhaul, it could be around small cell, it could be around rooftop sites for mobile, because you're delivering that backbone." [39]

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.

The concession agreement also allows TfL to deliver connectivity on the behalf of boroughs using funds granted to TfL from a variety of sources. All arrangements using the concession agreement are non-exclusive. 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. But some boroughs found that this was not well understood within the council.

"When I've brought these projects in, I can state that we don't need to go through an extensive process because there's already an arrangement in place. But legal and procurement can be very insistent that we do. By bringing in external consultants, we were able to navigate this issue." [40]



[38] Digital infrastructure lead at inner London borough
[39] Independent digital connectivity consultant
[40] Digital infrastructure lead at inner London borough

Opportunities

Small cells

Some boroughs were more focused on fixed fibre than on small cells, which are needed to maintain good mobile coverage.

"Small cell take-up doesn't seem to be that quick. I think because there's still a lot of skepticism in terms of 5G rollout. At the moment, it is unclear just how much better it is than 4G." [41]

Some of this stemmed from earlier unrealistic projections of the growth of small cells.

"The projection in London in 2014 for small cells was something in the order of between 2000 to 3000 small cells in the London boroughs. Most of them have got 50." [42]

However, this situation seems to be changing. The lower capital cost meant boroughs saw an opportunity for private sector investment and some boroughs are already enabling providers to install small cells following open access agreements. The Connected London project also provides a unique opportunity to rapidly scale small cell roll-out by utilising and connecting some of the 80,000 streetscape assets owned by TfL, including bus shelters, stations, fascias and camera poles.

As with ducting and other infrastructure, mapping assets in order to negotiate access agreements can also be onerous for boroughs, but projects like the DCMS-funded Outcomes Accelerator with the West London Alliance can speed up progress.

Private networks

Most boroughs were not yet seriously exploring private networks, either because their strategy did not require it because the business case wasn't clear, or because they had doubts about it in terms of social inclusion.

"We've had a few discussions about it but it's unlikely to have the same payback in London, particularly in town centres. From an inclusion point of view: most people can't afford 5G." [43]

There is scope here for developing case studies to demonstrate where private networks can support local government priorities, particularly in terms of digital inclusion.

---

[41] Digital infrastructure lead at inner London borough

[42] Independent digital connectivity consultant

[43] Digital infrastructure lead at outer London borough

Recommendations

Based on our discussions with boroughs' digital leads and wider research, it is clear that political priorities in London are now focusing on supporting residents through a cost-of-living crisis, supporting inclusive economic recovery, growth and jobs. Connectivity is key to these objectives: as well as underpinning economic growth, it can provide the platform for innovative smart solutions to tackle broader problems and service delivery. We believe there are a number of steps boroughs, sub- regional partnerships, the GLA and central government can take to help improve connectivity, including smart innovations that can help boost growth, facilitate post-pandemic recovery and secure good outcomes for citizens.

Boroughs and sub-regional collaborations

- **Innovation Boards:**
  Increasing pressure on budgets has led boroughs to scale back ambitions on smart city innovation and focus on improving connectivity. Innovation Boards should be established at borough or sub-regional level to ensure that in this shift, expertise is not lost. 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.

- **Developing the sub-regional role:**
  The Digital Champion role should be formalised and funded by central government, as a cost-effective way for local authorities to drive progress on connectivity and smart cities. In London, the GLA supports digital roles at a sub-regional level and this function could be developed into a shared resource to manage, for instance, broadband programmes, smart city innovation or projects that come under the remit of GLA grant funded works.

- **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. Boroughs should consider whether the Connected London concession may be a good route to achieve this.

- **Neutral host:**
  It's important boroughs are aware of the neutral host model for mobile connectivity and understand the opportunities within the borough for its deployment. Both to expand mobile coverage into new developments and for improving indoor coverage in appropriate borough owned buildings.

- **Connected London**:
  Through its 20-year partnership with TfL, BAI will deliver a fibre network through TfL's underground tunnels and ducts. The new high-capacity network will bring fibre directly into London's neighbourhoods, providing an opportunity to link in with boroughs' plans to use red route assets as well as council-owned ducting. Boroughs should engage with the Connected London team at the GLA, TfL and with BAI Communications to explore opportunities through the Connected London project and through the GLA's grant funded works programme. The latter being designed to encourage the availability of connectivity with gigabit-capable speeds for homes and businesses and support digital inclusion.

Recommendations

Greater London Authority

- **Wayleaves for housing associations:**
  Wayleaves for social housing have been effective in boroughs where they have been implemented. Some councils are already exploring whether wayleaves can be used for housing associations, particularly in boroughs with no council-owned social housing. The GLA should explore this further with sub-regional bodies, including looking into providing a shared resource that could, for instance, help manage a broadband programme on behalf of a housing association and ensure that their assets are protected.

- **Infrastructure mapping:**
  The GLA already offers support to boroughs via the London Infrastructure Mapping Application, and DCMS has funded asset mapping in the West London Alliance through the Outcomes Accelerator. The GLA should examine if more can be done to coordinate infrastructure mapping for the whole of greater London alongside the Connected London programme, such as utilising new technologies like the digital twin technology being pioneered by BAI as it builds out new fibre and small cell networks across London.

- **Promoting opportunities to boroughs:**
  Awareness of some opportunities was low at borough level. TfL, the GLA and BAI should continue working to show boroughs how the Connected London programme can support them.

Central government

- **Planning regulation**:
  DCMS has showed its commitment to updating planning regulations to incentivise investment in connectivity and ensure that new homes have high quality broadband,[44] but government should now take the same approach to wireless connectivity, given the importance of 4G and 5G to economic development and digital inclusion. The GLA is already looking at developing its own guidance,[45] but formal national regulation would ensure that best practice becomes standard practice.

- **Data quality:**
  Central government should play a bigger role in improving the quality of data shared by regulated utilities with Ofcom as part of its ongoing work on the National Data Strategy.

- **Digital inclusion:**
  Digital inclusion policy will become even more salient as the cost of essential utilities – including the cost of being online - increases. In particular, interventions on social value tariffs for mobile connectivity should be designed to incentivise investment in connectivity in under-served areas, supporting the government's stated objective to accelerate growth through better connectivity.

---

[44] New build developments: delivering gigabit-capable connections, DCMS https://www.gov.uk/government/news/next-step-in-plans-for-gigabit-broadband-in-new-build-homes

[45] The London Plan, GLA, 2021 https://www.london.gov.uk/sites/default/files/the_london_plan_2021.pdf

To learn more visit
baicommunications.com

bai communications