



## **Roadmap to 5G**

Achieving world class  
digital connectivity in  
London

September 2018

## **INTRODUCTION**

For London to lead the digital revolution it needs fast, reliable, and universal mobile and broadband connectivity. To achieve this, London's government, borough councils and operators need to be in alignment around a shared goal to improve digital connectivity,

The private sector delivers London's digital connectivity. 5G roll-out will require significant investment by private telecoms operators, but London is a challenging environment to make city-wide investment in digital infrastructure.

There is both a physical challenge, due to the complex and historic nature of the capital's urban geography, and a coordination challenge, arising from the different approach to applying the rules and permits relating to digital roll-out which are applied by the 32 borough councils and the City of London.

London First and Mobile UK, with the help and expertise of Gowling WLC, have come together to explore how to improve digital roll-out in London. We have focused on setting out what operators, London's government and boroughs need to do improve digital connectivity.

We believe a digital roll-out toolkit for London is needed, which would be a critical resource for local authorities and operators.

### **London presents unique challenges to digital roll-out**

London is a unique and challenging environment to deliver world-class connectivity.

The capital is a historic city with listed buildings, archaeological artefacts and a multitude of underground structures, including transport infrastructure, street ventilation and utilities. All these factors create significant challenges for digital roll-out.

In addition to these challenges, high demand for mobile connectivity during peak times in train stations and in public places where large crowds gather puts pressure on the network. 98.8% of premises in London are covered by 4G, but tall buildings, narrow streets and the greater use of reflective glass and steel make it difficult for mobile signals to penetrate. As a result, London's 4G indoor premises coverage is 90% across all mobile providers, which is significantly lower than in other parts of the country.<sup>1</sup>

On both mobile and broadband our European neighbours are improving speeds and connectivity on average faster than Britain.<sup>2</sup> This could lead to London missing out on the consumer, business, and social benefits of faster connectivity.

As the UK looks to reposition itself after Brexit, improving digital infrastructure will incentivise the investment and innovation needed to raise productivity and deliver economic growth for the whole country.

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<sup>1</sup> Ofcom (2018), Connected Nations Report Spring Update 2018

<sup>2</sup> EU Commission, European Digital Progress Report, 2016

## The future is digital

More than four in every five adults owns a smartphone and nearly three-quarters use a mobile to access the internet.<sup>3</sup> A study by Giffgaff mobile network found that in 2011 the average customer used 450Mb each; today, average usage is four times that, at 1.9GB each month.<sup>4</sup> This is expected to rise to over 90GB per month by 2025.<sup>5</sup>

Four in five businesses see broadband and mobile connectivity as critical to their company's growth. Research suggests that the British economy could grow by an extra £17 billion by 2024 if broadband speeds are increased.<sup>6</sup> The combined value of 4G and 5G connectivity is expected to add an additional £18.5 billion to the economy in less than a decade.<sup>7</sup>

Digital connectivity also enables cities to deploy smart technologies which can help them plan services more efficiently. Everything from water and energy consumption to air quality and waste increasingly depend on data that needs to be transferred in real time for analysis.

To meet rising demand for data, operators expect to introduce the fifth generation (5G) of mobile technology from late 2019. 5G is expected to directly contribute an additional £7 billion a year to the UK economy in just six years from roll-out.<sup>8</sup>

5G will be more than 20 times faster than video streaming on 4G mobiles. The benefits of 5G will be incremental, initially overcoming some of the existing capacity constraints with more transformative benefits delivered over time.

As well as an enhanced consumer experience, in the future 5G will provide a new level of underlying connectivity to transform services and improve the lives of Londoners:<sup>9</sup>

- **Healthcare** – 5G connectivity will enable the widescale adoption of telehealth video conferencing, allowing people to see their GPs on smartphones or devices. It will also provide the reliable and secure connectivity that will enable the widescale adoption of health monitoring devices.
- **Transport** – Commuters will benefit from 5G-enabled road systems that will reduce traffic congestion by 10%, saving the economy £880 million a year, while sensors on the railways will cut unplanned train cancellations.

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<sup>3</sup> UK 5G infrastructure to outstrip economic benefits of fibre broadband by 2026, <https://news.o2.co.uk/press-release/uk-5g-infrastructure-outstrip-economic-benefits-fibre-broadband-2026/>

<sup>4</sup> The Amount Of Mobile Data We Are Using Will Blow Your Mind. Available at [https://www.huffingtonpost.co.uk/entry/mobile-data-usage-uk-statistic-2017\\_uk\\_58e24719e4b0c777f788cb39?guce\\_referrer\\_us=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvLnVrLw&guce\\_referrer\\_cs=3DHHlboZMBUmbX5femlTNg&gucounter=2](https://www.huffingtonpost.co.uk/entry/mobile-data-usage-uk-statistic-2017_uk_58e24719e4b0c777f788cb39?guce_referrer_us=aHR0cHM6Ly93d3cuZ29vZ2xlLmNvLnVrLw&guce_referrer_cs=3DHHlboZMBUmbX5femlTNg&gucounter=2)

<sup>5</sup> Three UK continues 5G network preparation, Available at <http://www.threemediacentre.co.uk/news/2018/sse-unbundling-announcement.aspx>

<sup>6</sup> UK Broadband Impact Study: Impact Report, SQW (November 2013)

<sup>7</sup> UK 5G infrastructure to outstrip economic benefits of fibre broadband by 2026. Available at <https://news.o2.co.uk/press-release/uk-5g-infrastructure-outstrip-economic-benefits-fibre-broadband-2026/>

<sup>8</sup> Ibid

<sup>9</sup> The value of 5G for cities and communities. Available at <https://d10wc7q7re41fz.cloudfront.net/wp-content/uploads/2018/03/Smart-Cities-Report.pdf>

- **Local services** – Local councils will potentially save £2.8 billion annually thanks to the introduction of smart lighting and smart refuse collection, as well as improved residential care.

### **The private sector delivers London’s digital connectivity**

Mobile and broadband operators in the private sector are investing in London’s digital future.

Mobile operators are investing over £2bn per annum in connectivity, a large part of which is spent in London.<sup>10</sup> Virgin Media has committed £3bn to its fibre programme Project Lightning<sup>11</sup>, and Openreach is investing £3bn in its fibre broadband network.<sup>12</sup> Other operators, such as Hyperoptic and Community Fibre, are also investing heavily in the UK’s full fibre network with a significant presence in London.

### **Digital roll-out in London is more expensive than other parts of the UK**

Operators are committed to developing their networks to enhance coverage and capacity to meet rising demand, but London is a complex and expensive place to invest at city-wide scale.

Many of the costs and delays to digital roll-out arise out of a coordination challenge. The 32 boroughs and the City of London grant the planning permissions and prior approvals that relate to digital roll-out, but each can have a different approach to applying rules and permits.

Even where boroughs have set digital connectivity as a strategic priority, this doesn’t always filter down to local planning and highways authorities. For example, local policies aimed at decluttering public spaces are often at odds with the installation of new cabinets or mobile equipment such as masts and poles.

Every borough sets its own street works and parking charges, and as a result the cost to operators varies considerably across London. In some cases, application fees, parking charges and road closure fees have been used to maximise revenue in the face on year-on-year funding cuts to local authority budgets.<sup>13</sup>

The net effect is that the ability to roll out infrastructure rapidly and cost effectively in London can vary widely – and even across streets, as one borough neighbours another. Inconsistency across the capital adds time and cost, and creates investor uncertainty, which only adds to the complexity of digital deployment. There is a need to level the playing field with other utility providers and give operators in digital deployment certainty over the way permits, wayleaves and street works will be treated.

High demand has resulted in high rents charged by landlords for digital assets, which has undermined the economic viability of some investments. The government’s reform of the Electronic Communications Code (ECC), introduced at end of 2017, recognises

<sup>10</sup> Mobile in the UK: 10 key facts, Mobile UK. Available at <http://www.mobileuk.org/mobile-facts.html>

<sup>11</sup> Virgin Media struggles to keep up £3bn network expansion Project Lightning. Available at <https://www.telegraph.co.uk/business/2017/07/02/virgin-media-struggles-keep-3bn-network-expansion-project-lightning/>

<sup>12</sup> Openreach ups investment plans: Will shoot out full fibre to 3 million premises. Available at [https://www.theregister.co.uk/2018/02/01/openreach\\_ups\\_full\\_fibre\\_investment\\_plans\\_to\\_3\\_million/](https://www.theregister.co.uk/2018/02/01/openreach_ups_full_fibre_investment_plans_to_3_million/)

<sup>13</sup> National Audit Office, The Impact of Funding of Reductions on Local Authorities, 2014

this challenge. It aims to reduce costs to the telecoms sector while ensuring that landowners receive fair payment. However, as this will generally lower rent revenues for landlords, it has resulted in severe delays in negotiations between mobile operators and landlords. Given the short timeline to 5G deployment, this delay presents a significant challenge.

London is the most expensive place in Britain to roll out new digital investment. Up to 85% of the costs of expanding the digital network in the capital are so-called ‘civil’ costs, such as planning regulations and other red tape.<sup>14</sup> When combined with high rents, this means London risks missing out on the investment needed to meet rising demand and lagging behind its rivals in the roll-out of 5G.

Operators may reasonably choose to invest in cities and regions that are more digital friendly. For example, the City of York has been working with operators at the city scale to create common rules, as well as using its traffic light network to roll out a fibre network. Likewise, both Bristol and Essex County Councils have made public assets available to improve the city’s connectivity. Norfolk County Council promoted the use of ECC allowing operators to commit to new sites.<sup>15</sup>

### **Denser and more complicated networks will be required**

London needs to get a grip on this challenge now, because denser and more complicated networks than currently exist will be needed to meet future demand.

5G has a shorter range of high-frequency radio waves, therefore to achieve the levels of indoor coverage needed, network capacity will increasingly rely on a large volume of smaller cells, situated nearer to the ground on lampposts, bus stops and other street furniture, in addition to rooftop and ground-based masts.

Furthermore, mobile networks are integrated entities made up of cell sites, switches, and backhaul. Backhaul is the cables that link up the cell sites to the switches that transmit data quickly around the network. Making London ready for 5G also means making it easier to roll out full-fibre connections underground.

Currently the UK lags behind other countries for full-fibre coverage. The Middle East and Asia have superior fibre coverage, compared to North America and Europe. Those countries with advanced fibre coverage are better positioned to realise the economic benefits of 5G.<sup>16</sup>

Meeting the scale of the 5G and digital roll-out challenge in a relatively short period of time will require a considerably more joined-up approach than is currently the case. This means a complete alignment of London’s government, local authorities and operators around a shared goal to improve digital connectivity, focused on meeting the specific challenges of rolling out 5G.

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<sup>14</sup> London has the worst broadband in Britain, government statistics show, The Guardian, 2015. Available at <https://www.theguardian.com/technology/2015/feb/09/london-has-the-worst-broadband-in-britain-government-statistics-show>

<sup>15</sup> Delivering change – how cities can make the most of digital connections, Centre for Cities, 2018. Available at <http://www.centreforcities.org/reader/delivering-change-cities-can-make-digital-connections/>

<sup>16</sup> OPINION: The UK Is Lagging In The Global Race To 5G, Digit. Available at <https://digit.fyi/uk-lagging-5g-race/>

## Improving digital connectivity in London

We cannot allow London to fall behind its domestic and international rivals. A more joined-up and ambitious approach to roll-out is needed. There are several key issues to be addressed:

- **Political leadership** – we welcome the Mayor’s manifesto commitment ensuring better access to public-sector property for digital infrastructure and treating digital infrastructure with the same status as other key public utilities. The same level of political will is required consistently across the boroughs that champions connectivity as a first principle.
- **Standardisation and sharing of best practice** – The standardised wayleave developed by the City of London Corporation was a critical step forward, and we look forward to the standardised mobile agreement being developed by the GLA with the British Standards Institute for operators, local authorities and private landlords. These would give operators, business, landlords and developers the documentation they need to deliver digital infrastructure in a fast and effective way.
- **Public intervention** – Without public investment the commercial operators will focus investment in areas that are the most commercially attractive. London’s government, working in partnership with operators and boroughs, needs to make full use of government schemes such as the Local Full Fibre Network Challenge Fund (LFFN) and the 5G Urban Connected Communities Project.
- **Leveraging public assets** – Local authorities should lead the way in promoting the Electronic Communications Code rates, acting as trailblazer and ensuring that public assets are economically viable places to invest in digital infrastructure.

## Recommendations

London’s government, operators and boroughs each have their part to play and should work in partnership to improve digital connectivity. We have set out below an approach which identifies the key commitments and responsibilities of each party.

The next step is to condense these into a shorter and sharper set of calls to action. In the coming months we will be convening operators and businesses and working with the GLA and the Chief Digital Officer.

We believe a digital roll-out toolkit for London is needed, which would be a resource for local authorities and operators. We recognise that some of this work is already underway.

The Connected London Team at the GLA are working to improve coordination between boroughs and promote standardisation where possible. Operators have

come together to publish *Councils and Connectivity*, which outlines the crucial need for partnership in rolling out mobile connectivity.<sup>17</sup>

London First and Mobile UK are ready to work with all these parties and other stakeholders in any way we can to support the ultimate shared goal of ensuring world-class digital connectivity in London.

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<sup>17</sup> Councils and Connectivity: How local government can help to build mobile Britain, Mobile UK, 2018. Available at <http://mobileuk.org/20180905%20-%20Mobile%20UK%20%E2%80%93%20Councils%20and%20Connectivity%20%E2%80%93%205%20Sep%202018%20Web.pdf>

## **WHAT THE MAYOR AND THE GREATER LONDON AUTHORITY CAN DO TO IMPROVE MOBILE CONNECTIVITY IN LONDON**

1. The Mayor will provide strategic support, through the London Plan, to facilitate the delivery of mobile connectivity.
  - a. Planning policies under consideration in the draft London Plan include requiring new development across London to provide full-fibre connectivity to the home and meet expected demand for mobile connectivity. These provisions can support mobile and wireless connectivity, such as rooftop access.
  - b. Boroughs should address connectivity issues through a Local Connectivity Plan, which allows for more flexibility in their approach to prior approval applications, especially in areas where there is evidence of the need for improvement in digital connectivity – for example, where broadband speed is unacceptably slow or where there is the need for more capacity to satisfy local demand for connections.
2. The Mayor can ensure public assets are deployed to support connectivity.
  - a. Local authorities should lead the way in promoting the Electronic Communications Code (ECC) rates, acting as trailblazer and ensuring that public assets are economically viable places to invest in digital infrastructure.
  - b. The GLA's Connected London Team worked with TfL to develop a successful bid to the LFFN Challenge Fund, winning an £8.5m Full Fibre Network grant in March 2018. TfL will be deploying fast digital connectivity along key transport corridors by securing significant investment in fibre capability in the London Underground. By using the LFFN funding to link 50 public buildings to the fibre network on the Tube, this will provide extra local connectivity to the surrounding area. It also presents excellent opportunities for other boroughs to link assets into the network in future, particularly where there are current black spots (for example, the Old Street area).
  - c. TfL should be encouraged to go further and review their 250 miles of Underground tunnels and street furniture (bus shelters, traffic lights, street signs, etc.), with a view to using these assets to roll out additional fibre capacity and install small cells to improve mobile coverage.
3. The GLA's Connected London Team should develop a common set of policies and tools, and support their implementation through guidance and training. We note that much of this work is underway and we look forward to the Standardised Mobile Agreement later in the year.

## **WHAT CAN MOBILE NETWORK OPERATORS AND THEIR CONTRACTORS DO TO IMPROVE MOBILE CONNECTIVITY IN LONDON?**

To continue to drive this progress in London mobile operators are committed to following the [Code of Best Practice for Mobile Network Development](#), in particular:

1. Sharing suitable existing mobile digital connectivity infrastructure sites where this meets network objectives.
2. Engaging with local planning authorities at both the pre-application and planning stages, working together to solve the continuing demand for mobile connectivity.
3. Communicating appropriately with communities and other stakeholders about network developments, in accordance with the Code of Best Practice.
4. Using documentation for planning submissions that is standardised in the Code of Best Practice.
5. Proposing appropriate design solutions whilst achieving technical objectives in line with national and local policy.

## WHAT CAN LOCAL AUTHORITIES DO TO IMPROVE DIGITAL MOBILE CONNECTIVITY INFRASTRUCTURE IN LONDON?

**Local planning authorities can support improved access to mobile connectivity in London through:**

- 1. Local development plan documents and economic plans:** ensuring documents recognise the public benefit of reliable connectivity and include actions to be taken at local level to enhance mobile connectivity.
- 2. Facilitating connectivity:** taking a 'joined-up' approach to the telecommunications planning process, and nominating Digital Champions at a senior level, especially taking into account local economic development, digital connectivity, sustainability, and social inclusion considerations.
- 3. Local Authority-owned buildings:** ensuring local authority-owned buildings are made available for the location of equipment needed to improve mobile connectivity on standard terms and ECC based values.
- 4. Pre-application:** respond positively to requests for pre-application consultation; provide a clear point of contact; provide planning feedback on proposed locations, designs for new sites and upgrades on existing sites; be willing to work with mobile operators to find solutions to connectivity issues and ensure pre-application fees, when charged, are based on a cost-recovery basis only.
- 5. Planning applications:**
  - a. ensure statutory requirements are met in terms of acknowledging receipt and validation of applications
  - b. raise issues sufficiently early to allow mobile operators time to provide information and work together to find solutions
  - c. aim to give approval to applications for new base stations and upgrades to existing ones in line with national planning policy, the London Plan and local plans
  - d. ensure timely decisions on planning applications; have appropriate delegation agreements to ensure applications are dealt with promptly
  - e. ensure conditions are applied appropriately and proportionately and do not duplicate conditions already imposed by statutory instruments
- 6. Training:** Maintain an appropriate level of knowledge on telecommunications planning, including permitted development rights, for their planning officers and members of planning committees. Consider appointing specialist officer(s) who are familiar with the special operational and technical considerations for mobile infrastructure to be the main point of contact.