NEW CITY COURT

Telecommunication Network Impact Assessment

G Tech

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GTech Surveys Limited

GTech Surveys Limited is a Midlands based broadcast and telecommunications consultancy conducting projects throughout the entire UK. We undertake mobile phone network, television and radio reception surveys (pre- and post-construction signal surveys), conduct broadcast interference and reception investigations, and support telecommunications planning work for wind energy developers, construction companies, architects, broadcasters and Local Planning Authorities.

In addition to radio interference modelling services and television reception surveys, we produce EIA and ES Telecommunications Chapters (also known as an 'Electronic Interference Chapter'); satisfying the requirements of Part 5, Regulation 18 (Parts 5a and 5b) of The Town and Country Planning EIA Regulations 2017. We peer review ES and EIA work, liaising with telecommunications providers (Arqiva, BT etc.) and advise developers with respect to associated Section 106 (Town and Country Planning Act 1990) and Section 75 (Town and Country Planning (Scotland) Act 1997) agreements.

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Professional broadcast trained project engineers deliver, and supply QBE insured technical products to support planning applications, discharge planning conditions (including S106 Agreements) and for due diligence. For more information about GTech Surveys Limited please visit our website - www.gtechsurveys.com

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Executive Summary

Impact assessments have been undertaken to determine the potential effects on the operations of local telecommunication infrastructure arising from the proposed redevelopment of New City Court, 4-26 St Thomas Street, London, SE1 9RS '('the Site'). Impacts to the operations of fixed radio and microwave telecommunications links have been the primary focus of this study. Impacts to the reception of television and radio broadcast services have been addressed in an accompanying report; GTech Surveys Limited; *Television and Radio Reception Impact Assessment, New City Court*, dated 15th April 2021.

Through assessment from Ofcom held information, several fixed point-to-point microwave radio links have been identified near to the Site. The links were mapped with respect to the Site and due to acceptable clearance distances between the Site and link paths, no adverse impacts on link operations are considered possible.

Arqiva (who own and manage the majority of the UK's broadcast and transmission infrastructure) indicated on email in January 2019 that the previous application on the Site (for a development of a similar scale and nature) would not have any impact or adverse effect on the functioning of any of their broadcast sites or any radio links passing between transmission sites (known as rebroadcast links (RBLs)). A review of that assessment, their RBL network and other local transmission infrastructure concludes that the Proposed Development will not have any impact or adverse effect on the operations of any local or regional Arqiva owned broadcast networks or transmission infrastructure.

Transport for London (TfL) were contacted with respect to telecommunication technologies in use at London Bridge Station but have not commented yet on the proposal. Whilst no official confirmation has been received from TfL that the Proposed Development will not impact the functioning of any of their radio networks or operations, the Proposed Development is likely to have a neutral effect on TfL radio networks due to the location (separation distance) of the Site and the station and the lack of any radio links emanating to or from the station. This report will be updated once feedback from TfL has been received.

With respect to other fixed links and radio communications channels in the study area, no impacts have been identified to the operations of any radio, telecommunications network or wireless link.

Overall, it is considered that the Proposed Development would have a neutral effect on local telecommunications systems and networks. No mitigation is required because no adverse impacts or effects exist for any local radio or telecommunications network.

1 - Introduction

This report details the findings of investigations to determine the potential impacts to existing fixed point-to-point radio and microwave links from the proposed redevelopment of New City Court, 4-26 St Thomas Street, London, SE1 9RS ‘(‘the Site’). National and regional planning guidelines exist requiring developers investigate potential impacts to existing local telecommunications networks and wireless infrastructure. These are presented in the Appendix, but Policy SI 6 (Digital connectivity infrastructure) of the London Plan (March 2021) has been considered in particular;

A) To ensure London's global competitiveness now and in the future, development proposals should:

3) take appropriate measures to avoid reducing mobile connectivity in surrounding areas; where that is not possible, any potential reduction would require mitigation

Modern telecommunications networks rely on both physical methods of connecting transmission infrastructure (cables, fibre optic cables, broadband etc.) and through various wireless technologies. Whilst it is understood that the development proposal will not adversely affect existing underground cabling around the Site, the taller elements of the Proposed Development and other tall structures used during the construction phase (tower cranes in particular) can cause unwanted interference if located on or near to a radio link path, which may be used to link other local telecoms masts and infrastructure together. This assessment considers the possible impacts to existing radio and microwave links and paths which connect basestations and masts together, but not the possible changes in mobile phone coverage around the Site resulting from the Proposed Development. It is not possible to model all the possible variables, signal interactions and the ongoing changes to the existing 4 generations of mobile networks (2G, 3G, 4G and 5G) from the UK’s 4 mobile network operators. It is also considered that any proposed new development will be well enabled for robust internal mobile and Wi-Fi coverage, as policy now requires.

The Proposed Development comprises of redevelopment to include demolition of the 1980s office buildings and erection of a 26-storey building (plus mezzanine and two basement levels), restoration and refurbishment of the listed terrace (nos. 4-16 St Thomas Street), and redevelopment of Keats House (nos. 24-26 St Thomas Street) with removal, relocation and reinstatement of the historic façade on a proposed building, to provide office floorspace, flexible office/retail floorspace, restaurant/café floorspace and a public rooftop garden, associated public realm and highways improvements, provision for a new access to the Borough High Street entrance to the Underground Station, cycling parking, car parking, service, refuse and plant areas, and all ancillary or associated works. Figure 1 shows the location of the Site.

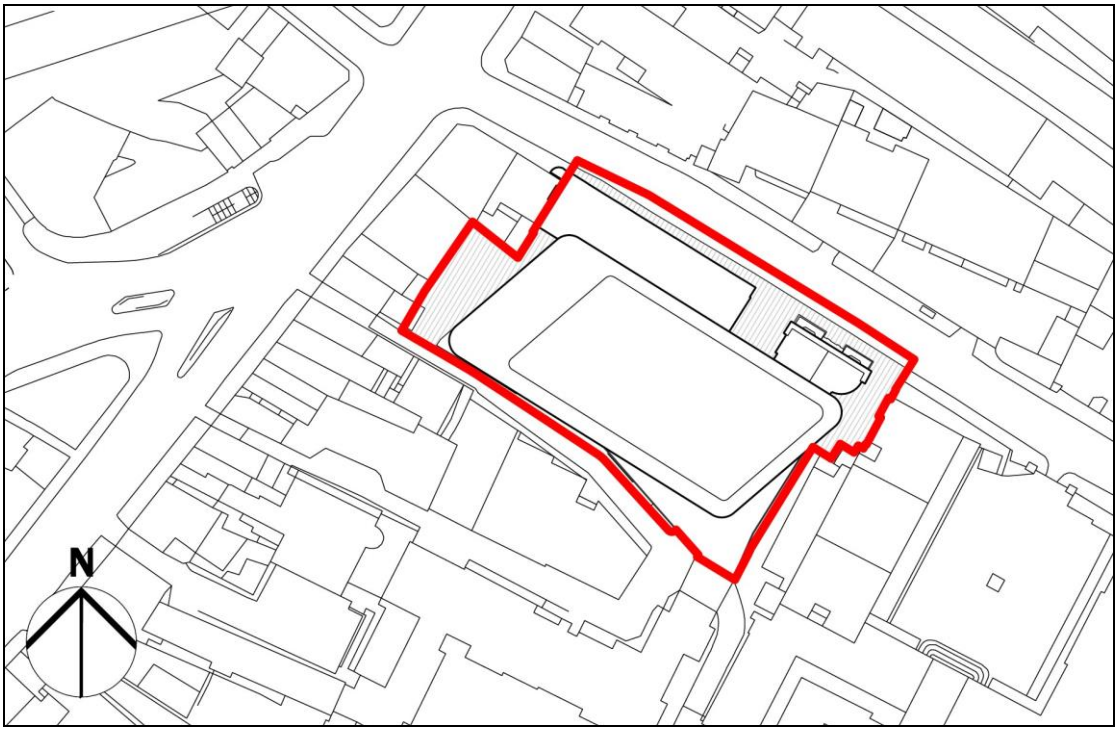

Figure 1 - The Title Boundary of the Site

This report follows the following structure:

Chapter 1 introduces the work

Chapter 2 discusses the wireless links and technologies identified in the study area

Chapter 3 provides an initial impact assessment of the likely impacts and effects to the identified local wireless links and radio networks, and discusses any feedback from potentially affected telecommunication network operator

Chapter 4 presents the conclusion

This assessment was undertaken during March and April 2021 to investigate if the Proposed Development could cause interference to local telecommunications services and systems. The report can be used to support the planning application submission if required.

2 - Local Fixed Point-to-Point Radio and Microwave Links

Within this assessment, consideration has been given to impacts to fixed point-to-point radio and microwave links. A fixed point-to-point microwave link is a wireless / radio link (a radio communication system which normally forms part of a more extensive telecommunication network), which can be explained as follows.

Microwave is a line-of-sight wireless communication technology that uses high frequency beams of radio waves to provide high speed wireless connections that can send and receive voice, video, and data information. Microwave links are widely used for point-to-point communications because their small wavelength allows conveniently sized antennas to direct them in narrow beams, which can be pointed directly at the receiving antenna. This allows nearby microwave equipment to use the same frequencies without interfering with each other, as lower frequency radio waves do. Another advantage is that the high frequency of microwaves gives the microwave band a very large information-carrying capacity; the microwave band has a bandwidth 30 times that of all the rest of the radio spectrum below it. Microwave links carry vital data for all modern communications systems including military and national infrastructure needs for communications, emergency services and government.

Microwave links can be adversely affected by physical obstructions on and near to their transmission path such as construction cranes, wind turbines, tall buildings and trees. In general, the directional nature of microwave links means that interference can be avoided by defining clearance zones beyond which any degradation will be insignificant, or by moving the link to avoid the obstruction. Disruption or interference caused to a microwave link’s operation will cause degradation to the voice, video or data carried over the link. This would result in the overall efficiency and reliability of the microwave link to be reduced and could impact the operations of the wider telecommunications network the microwave link is part of. As microwave links are integral parts of some listed UK Critical National Infrastructure, microwave link owners will be required to ensure link performance remains optimal. A methodology to calculate clearance zones for wind turbines has been defined in a paper published by Ofcom (Bacon, 2002) and this is also applicable for any other physically tall structure.

If unwanted interference is expected as a result of a Proposed Development or through the use of tower cranes etc. normal practice is for the radio network's owner to investigate engineering solutions to ensure the continued operation of the radio circuit. Depending upon the nature of the communications channel and the availability of other suitable sites, such mitigation may include;

relocating antennas to new locations on the mast where the Proposed Development / tower crane will no longer cause unwanted obstructions;

using another local mast / radio tower to bounce (dogleg) the affected radio link around the unwanted obstruction;

using a wired / fibre connection rather than a radio link to complete the affected circuit; and

using a temporary location near to the Site to mount antennas whilst the Proposed Development is under construction and then relocating antennas to positions on the Proposed Development once construction is complete.

Radio and microwave links can be many kilometers long and consequently, a site visit is not sufficient to determine their presence. GTech Surveys Limited consulted with Ofcom and radio link owners to determine the possible impacts on local existing wireless communications channels. A search of Ofcom's Spectrum Information System (SIS) database indicated that there were a number of existing fixed point-to-point radio links that passed near to the Site. Ofcom's SIS database was interrogated, with information provided from other sources, to determine the start and end points of each link. These were then plotted with respect to the Site and the location of the Proposed Development. The situation can be seen in Figure 2, where the Site delineated in red and the microwave links are in shown blue.

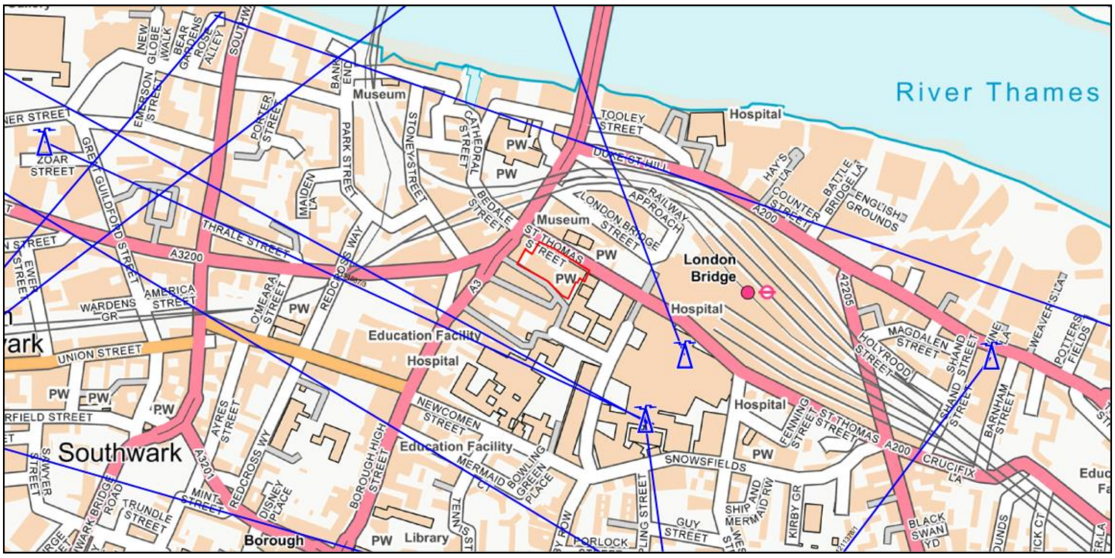

Figure 2 - Local Fixed Point-to-Point Radio and Microwave Links (in blue) crossing in proximity to the Site

An adverse impact on a microwave or radio link's operation may exist only if the link is directly blocked by an unwanted obstruction (tall building, tower crane etc.), or the obstruction is in close proximity to the link (a factor dependent upon the link's operating frequency and Fresnel Zone[1]). Due to the distances from the Proposed Development to the links identified within the study area, no links require further or additional analysis to determine if any adverse effects exist for the reliable operation of the identified links. For completeness, the closest links to the Site and Proposed Development are identified in Chapter 3 and shown in Figure 3 with their corresponding Ofcom designated link ID.

1 A Fresnel zone, is one of a series of confocal prolate ellipsoidal regions of space between and around a transmitter and a receiver. The primary wave will travel in a relative straight line from the transmitter to the receiver. Aberrant transmitted radio waves which are transmitted at the same time can follow slightly different paths before reaching a receiver, especially if there are obstructions or deflecting objects between the two. The two waves can arrive at the receiver at slightly different times and the aberrant wave may arrive out of phase with the primary wave due to the different path lengths. Depending on the magnitude of the phase shift relative to the two waves, the waves can interfere constructively or destructively. The size of the calculated Fresnel zone at any particular distance from the transmitter and receiver can help to predict whether obstructions or discontinuities along the path will cause significant interference.

3 - Impact Assessment

An adverse impact on the operation and reliability of a wireless link may exist only if a link is situated directly over the Site / Proposed Development, or near it; a complex frequency dependent factor. Whilst a number of links pass near to the Site, with the majority emanating from the adjacent Guy's Hospital, none pass directly over or unacceptably close to the Site. Consequently, no further impact assessments are required. The closest four links to the Site are detailed in Table 1 and shown in Figure 3.

Link ID	Link Owner	Interference Likely	Further Impact Analysis Required?
0936280/1	Rapid Computers Ltd	No	No
1113200/1	Airwave Solutions Limited	No	No
1154887/3	MBNL	No	No
1196994/1	Port of London Authority	No	No

Table 1 - Identified Local Links

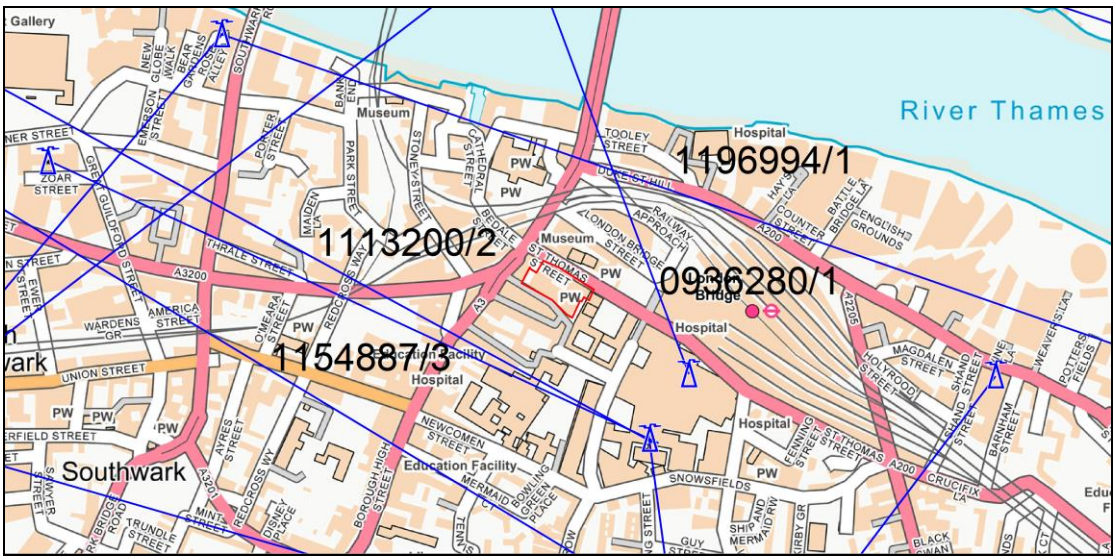

Figure 3 - Local Fixed Point-to-Point Radio and Microwave Links (in blue) crossing in proximity to the Site

As previously requested by the LPA, Arqiva and TfL were contacted to determine if it was likely that the Proposed Development would impact the operation of any of their existing radio links or wider telecommunication networks.

A site plan and building elevations were presented in order to assist their initial impact assessments. A summary of effects and impacts to all fixed point-to-point radio, microwave links and local telecommunications networks is presented in Table 2.

Arqiva

Arqiva is a British telecommunications company which provides infrastructure and broadcast transmission facilities in the United Kingdom and the Republic of Ireland. Its main customers are broadcasters and mobile phone network operators, and its main asset is a network of over 1,000 radio and television transmission sites.

The digital terrestrial television (DTT - Freeview) relay network uses rebroadcasting links (RBLs) to pick up the television multiplexes. The relay stations take the incoming DTT broadcast signal from the nearest parent transmitter (for London this is the Crystal Palace transmitter), amplify it, and rebroadcast to the target coverage area. These links connect transmission masts together and also provide an alternative source of programme content should a main feed fail.

With respect to a previous application on the Site for a development of a similar scale and nature, Arqiva confirmed on email 7th January 2019 that the previous application would not impact the operation of any of their rebroadcast links. During April 2021, the RBL impact assessment was reviewed, and the same conclusions were drawn. The center of the Site is approximately 760m from the main Crystal Palace television transmitter to Hertford TV relay RBL path (the RBL signal path presented in blue, passing to the east of the Site as shown in Figure 4). Arqiva require a 500m clearance from a potential obstruction to an RBL path. Consequently, with a clearance distance of 760m, the Proposed Development would not impact the operation of the identified RBL.

Arqiva further confirmed on email 10th January 2019 that no Arqiva owned transmission sites nearby would be adversely impacted by the previous application. During April 2021, the assessment was reviewed, and the findings were reconfirmed because no additional or new Arqiva owned fixed point-to-point radio or microwave links have been identified in the study area.

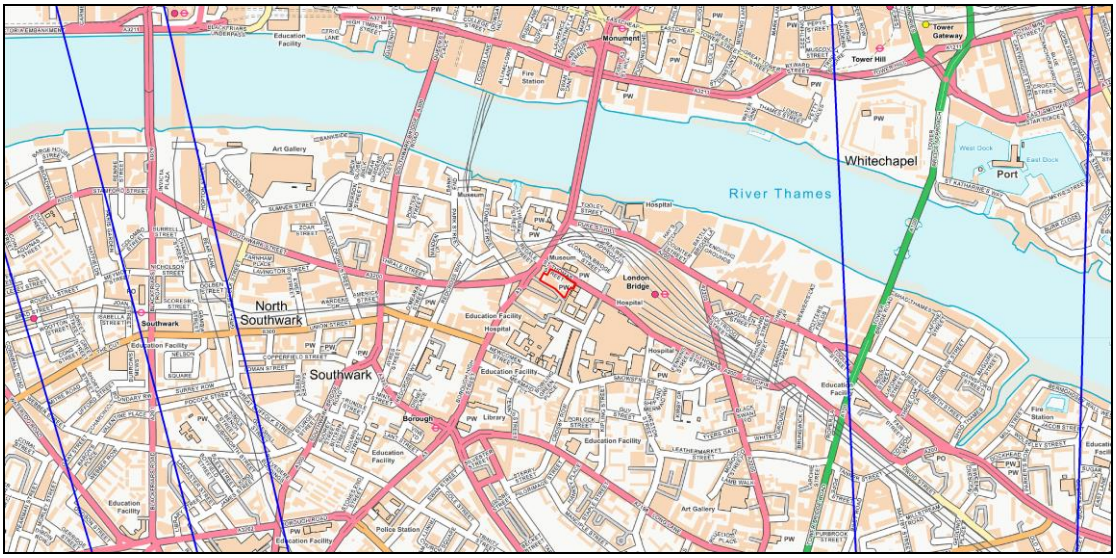

Figure 4 - The Crystal Palace transmitter to Hertford TV relay RBL path (the path in blue, passing to the east of the Site). Other RBL paths are also shown

TfL

At the time of writing TfL has not responded to our enquires regarding the Proposed Development and the possibility of interference to radio systems in use at London Bridge Station. However, due to the separation distance between the Site and the station, the lack of radio links emanating from the station and the nature of the radio systems considered to be in use at the station, no interference is likely. Furthermore, between the Site and the station, several significant tall and wide structures are located; The Shard and Guy's Hospital, effectively already dominating local reception conditions and physically separating (in radio transmission terminology) the Proposed Development from London Bridge Station.

If TfL reply to enquiries, the report will be updated to reflect any findings, however it is expected that TfL will consider the Proposed Development to have a neutral effect upon radio operations in and around London Bridge Station.

Link ID (if any)	Link Owner	Interference Likely	Further Impact Analysis Required?
0936280/1	Rapid Computers Ltd	No	No
1113200/1	Airwave Solutions Limited	No	No
1154887/3	MBNL	No	No
1196994/1	Port of London Authority	No	No
No ID	Arqiva	No	No
No ID	TfL	No, but need verification from TfL	Unlikely

Table 2 - Summary of Impacts to Fixed Point-to-Point Radio, Microwave Links and Local Telecommunications Networks

4 - Conclusions

Ofcom, telecommunications operators and other wireless infrastructure users have been contacted to determine the possible impacts to existing radio communications infrastructure arising from the proposed redevelopment of New City Court. Tall buildings can cause disruption to telecommunications network operations by creating physical obstructions between transmit and receive locations. It is a requirement under the current London Plan and NPPF that developers investigate the potential impacts to local telecommunications networks and systems from proposed developments.

Several existing microwave / radio links were identified that crossed near to the Site and impact assessments were undertaken to determine the magnitude and effects of any possible interference. Due to the acceptable separation distances from the Site and the radio links, no adverse impacts upon radio link operations are expected.

Arqiva who manage the majority of the UK's broadcast and transmission infrastructure previously indicated by email that the previous application on the site for a development of a similar scale and nature would not impact either the operation of any of their transmission sites or would impact the functioning of any of their rebroadcast link network (RBLs – used to provide alternative source of programme content to transmission sites should a main feed fail). A review of the impact assessment has been undertaken and the same outcomes have been reached; the Proposed Development would not adversely impact the optimal functioning of any Arqiva transmission site, radio link or RBL.

With respect to other telecommunication technologies, particularly radio networks owned and managed by TfL in use at London Bridge Station, whilst no official confirmation has been received from TfL that the Proposed Development will not impact any of their radio networks or operations, the Proposed Development is likely to have a neutral effect on TfL radio networks due to the location (separation distance) of the scheme and the station and the lack of any radio links emanating from or going to the station. This report will be updated once feedback from TfL has been received.

Based on impact assessments and the replies to date, it is considered that the Proposed Development is unlikely to impact local telecommunications and radio networks. No links have been identified that cross the Site and Arqiva has indicated their networks and communications channels would not be adversely affected by the scheme. Once a reply from TfL has been received regarding their radio networks in use at London Bridge Station, this report would be updated to reflect any findings, however, is expected that TfL will not identify any possible interference risks.

APPENDIX

Assessment Limitations

Planning Policies – National Planning Policies

Planning Policies – Regional Planning Policies

Local Plans and Frameworks

Assessment Limitations

Telecommunications networks are continuously modified, updated, and changed in order to meet new coverage demands; to better / re-route signal paths; or to deliver new services. Radio base stations and transmission sites may also be added or removed from the various networks as and when required. The analysis based in this report is that regarding the existing operational networks, not any future planned modifications or changes. The analysis is based on information received from Ofcom's Wireless Telegraphy Act Register (WTR) during early April 2021. Any physical or licence changes made to any site considered in the report after that time may require new impact assessments. As such, GTech Surveys Limited cannot accept liability for omissions in the analysis provided, or its currency however so arising. These data are provided without any representation or endorsement made and without warranty of any kind, whether express or implied, including but not limited to the implied warranties of satisfactory quality, fitness for a particular purpose, non-infringement, compatibility, security and accuracy.

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This assessment has not included the possible impacts or effects of additional mobile phone sets in use in the area on mobile phone networks as a result of the operational phase of the Proposed Development. Each mobile phone operator would need to assess their coverage and data bandwidth provision through their own network monitoring and KPI metrics.

Planning Polices - National Planning Policies

National Planning Policy Framework (NPPF), Ministry of Housing, Communities & Local Government, February 2019

10. Supporting high quality communications

114. Local planning authorities should not impose a ban on new electronic communications development in certain areas, impose blanket Article 4 directions over a wide area or a wide range of electronic communications development, or insist on minimum distances between new electronic communications development and existing development. They should ensure that:

a) they have evidence to demonstrate that electronic communications infrastructure is not expected to cause significant and irremediable interference with other electrical equipment, air traffic services or instrumentation operated in the national interest; and

b) they have considered the possibility of the construction of new buildings or other structures interfering with broadcast and electronic communications services

Planning Policies - Regional Planning Policies

London - The London Plan - The Spatial Development Strategy for Greater London, March 2021, The Greater London Authority (GLA)

The London Plan 2021 (March 2021) - Spatial Development Strategy for Greater London, discusses at length the need for robust digital connectivity and that new development must not cause interference to telecommunications networks and local connectivity. Two policies and associated text relating to telecommunications, broadcast reception and digital connectivity are presented below;

Policy SI 6 Digital connectivity infrastructure

A) To ensure London's global competitiveness now and in the future, development proposals should:

1) ensure that sufficient ducting space for full fibre connectivity infrastructure is provided to all end users within new developments, unless an affordable alternative 1GB/s-capable connection is made available to all end users

2) meet expected demand for mobile connectivity generated by the development

3) take appropriate measures to avoid reducing mobile connectivity in surrounding areas; where that is not possible, any potential reduction would require mitigation

4) support the effective use of rooftops and the public realm (such as street furniture and bins) to accommodate well-designed and suitably located mobile digital infrastructure.

B) Development Plans should support the delivery of full-fibre or equivalent digital infrastructure, with particular focus on areas with gaps in connectivity and barriers to digital access.

9.6.3 Better digital connectivity with a focus on capability, affordability, security, resilience and the provision of appropriate electrical power supply should be promoted across the capital. The specific requirements of business clusters, such as a symmetrical-capable service with the same upload and download speeds, should also be met.

9.6.4 Given the fast pace at which digital technology is changing, a flexible approach to development is needed that supports innovation and choice. Part R1 of the Building Regulations 2010 requires buildings to be equipped with at least 30 MB/s ready in-building physical infrastructure, however new developments using full fibre to the property or other higher-grade infrastructure can achieve connectivity speeds of 1GB/s. Developers should engage early with a range of network operators, to ensure that development

proposals are designed to be capable of providing this level of connectivity to all end users. Mechanisms should also be put in place to enable further future infrastructure upgrades. Innovation is driving reductions in the size of infrastructure, with marginal additional unit costs, but greater digital connectivity is needed in more locations.

9.6.5 Development proposals should also demonstrate that mobile connectivity will be available throughout the development and should not have detrimental impacts on the digital connectivity of neighbouring buildings. Early consultation with network operators will help to identify any adverse impact on mobile or wireless connectivity and appropriate measures to avoid/mitigate them.

9.6.6 Access for network operators to rooftops of new developments should be supported where an improvement to the mobile connectivity of the area can be identified. Where possible, other opportunities to secure mobile connectivity improvements should also be sought through new developments, including for example the creative use of the public realm.

9.6.8 The Mayor will work with network operators, developers, councils and Government to develop guidance and share good practice to increase awareness and capability amongst boroughs and developers of the effective provision of digital connectivity and to support the delivery of policy requirements. The Mayor will also help to identify spatial gaps in connectivity and overcome barriers to delivery to address this form of digital exclusion, in particular through his Connected London work. Boroughs should encourage the delivery of high-quality / world-class digital infrastructure as part of their Development Plans.

9.6.9 Digital connectivity supports smart technologies in terms of the collection, analysis and sharing of data on the performance of the built and natural environment, including for example, water and energy consumption, waste, air quality, noise and congestion. Development should be fitted with smart infrastructure, such as sensors, to enable better collection and monitoring of such data. As digital connectivity and the capability of these sensors improves, and their cost falls, more and better data will become available to improve monitoring of planning agreements and impact assessments, for example related to urban design. Further guidance will be developed to make London a smarter city.

Policy D9 Tall buildings

Definition

A) Based on local context, Development Plans should define what is considered a tall building for specific localities, the height of which will vary between and within different parts of London but should not be less than 6 storeys or 18 metres measured from ground to the floor level of the uppermost storey.

2) functional impact

f) buildings, including their construction, should not interfere with aviation, navigation or telecommunication, and should avoid a significant detrimental effect on solar energy generation on adjoining buildings

Local Plans and Frameworks

Draft New Southwark Plan - Southwark Council's Proposed Changes to The Submitted New Southwark Plan 2018 to 2033, August 2020

P43 Broadband and digital infrastructure

Major development must:

1. Enable the delivery of fibre to the premises (FTTP) broadband or equivalent technology for future occupants and users of the proposed development, with superfast speeds being the minimum offered; and

2. Provide FTTP, or equivalent, connections to existing, poorly serviced properties in the vicinity of the development where there is an identified need; and

3. Engage with UK mobile network operators (MNOs) and digital infrastructure providers regarding the installation of wireless broadband and telecommunications aerials.

Digital infrastructure development must:

1. Be designed and sited to avoid harmful impacts on public amenity or unacceptable street clutter in the public realm; and

2. Avoid harm to the significance of heritage assets or their settings and support local distinctiveness; and

3. Demonstrate an absence of alternative sites, including, but not only, the possibility of sharing of existing masts and sites; and

4. Provide self-certification to the effect that a mobile phone base station when operational will meet the International Commission on Non-Ionising Radiation Protection (ICNRP) guidelines; and

5. Provide a statement for each site indicating its location, the height of the antenna, the frequency and modulation characteristics and details of power output and where a mobile phone base station is added to an external mast or site, confirmation that the cumulative exposure will not exceed the ICNRP guidelines.

Reasons

Digital connectivity is an important utility. Effective communications networks are vital in the efficient operation of business and home life, and have benefits for safety and security. Ofcom currently defines superfast broadband as being a minimum download speed of 30 megabits per second (Mbit/s), which is a measure of data transfer speed. The government is prioritising creating and funding demand for full fibre broadband networks which will greatly enhance business opportunities. High speed broadband can help businesses, including SMEs, to increase efficiencies and work in partnership with others, thereby realising their full economic potential and driving jobs and economic growth. They can also help residents to access information, products and services more easily. Southwark has some areas with low or poor digital connectivity: according to Ofcom's 'Connect Nations Update: Summer 2019 7% of Southwark premises are unable to receive a minimum download speed of 30Mbit/s (9923 premises, compared with 5% nationally. We seek to improve these statistics and promote Southwark as a digitally inclusive borough. This is important for social regeneration as it benefits residents and businesses. Applicants should work with the council, MNOs and broadband delivery partners to find an appropriate solution for delivering FTTP broadband or equivalent connections to occupiers of new development and the surrounding existing properties where necessary and feasible. However, poorly sited digital infrastructure installations can be unsightly in particular when situated close to historic buildings or places.

DISCLAIMER

This Report was completed by GTech Surveys Limited on the basis of a defined programme of work and terms and conditions agreed with the Client. We confirm that in preparing this Report we have exercised all reasonable skill and care taking into account the project objectives, the agreed scope of works, assumed prevailing site conditions and the degree of manpower and resources allocated to the project.

The UK's fixed wireless link networks are highly complex engineering systems and are constantly being modified, re-designed, upgraded and maintained. The links identified in this report are only those present at the time of writing. Any impact analysis undertaken was done so using any data provided by the link's owners or operator, and the developer at the time of writing. Whilst every effort was made to accurately assess any potential impacts, GTech Surveys Limited cannot assume that any of the provided data was factually and technically correct. Although best practice has been applied in understanding the potential impacts, due to the complex nature of the subject, GTech Surveys Limited is not accountable in anyway whatsoever if unexpected impacts occur at any location anywhere in the study area to any wireless radio network or system.

As a site survey has not been undertaken for this work, any impacts or assumptions are derived from modelling and may not accurately reflect actual transmission and reception conditions in the study area during either the pre or post-construction phases. Additionally, local construction work, within the study area may also degrade the quality and reliability of any existing fixed wireless links, yet these unknowns cannot be factored into any impact modelled due to the complexity and unknowns of any potential interference. Adverse impacts on local telecommunication channels and radio systems arising from the use of tower cranes have not been considered in this assessment but will cause similar impacts to those identified by the proposed development.

Telecommunications networks are continuously modified, updated and changed in order to meet new coverage demands, to better / re-route signal paths or deliver new services. Radio base stations and transmission sites may also be added or removed from the various network as and when required. The analysis based in this report is that regarding the existing operational network, not any future planned modifications or changes. The analysis is based on information received from Ofcom during April 2021 via their webportal. Any physical or licence changes made to any site considered in the report after that date may require new impact assessments. As such, GTech Surveys Limited cannot accept liability for omissions in the analysis provided, or its currency however so arising. These data are provided without any representation or endorsement made and without warranty of any kind, whether express or implied, including but not limited to the implied warranties of satisfactory quality, fitness for a particular purpose, non-infringement, compatibility, security and accuracy.

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