

Telecommunications Connectivity

Fixed Network and Mobile Coverage Assessment

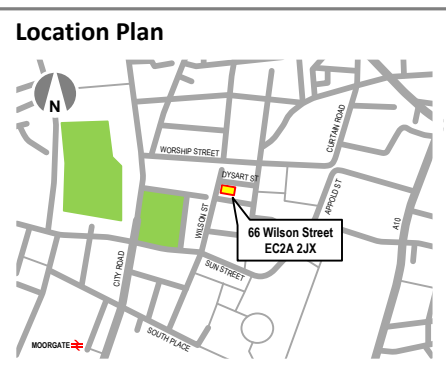
66 Wilson Street
London
EC2A 2JX



STRUCTURE

66 Wilson Street is an established, recently refurbished office building located in central London. The building is over five floors affording approximately 11,893 sq ft (1,105 sqm) of Grade A office accommodation over predominantly rectangular floor plates, with raised floors and suspended ceilings and good riser access throughout. The building is constructed of concrete and steel with glazed elevations and stone facades. 66 Wilson Street is located at the junction of Wilson Street with Dysart Street and sits within an environment of similar commercial buildings of varying height in all directions.

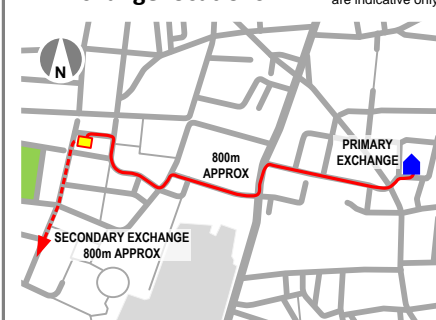
TOPOGRAPHY



BT Exchange Information

Primary Exchange (800m approx)	BISHOPS GATE (CLBIS) E1 6NJ
Secondary Exchange (800m approx)	MOORGATE (CLMOO) EC2Y 5EJ

BT Exchange locations



BT SUMMARY

66 Wilson Street is located approximately 800m from the BT Bishops Gate Exchange, which is situated to the east of the building. Bishops Gate Exchange provides excellent services including ADSL, ADSL+, SDSL, 21CN WBC and FTTC (to some areas) plus the availability of LLU services from AOL, O2/Be, C&W, Talk Talk, Tiscali and Zen Internet all over BT infrastructure. Based on the existing standard copper services, Bishops Gate Exchange can offer broadband speeds of around 17Mbps at this time. However, this exchange does not currently provide BT Infinity services to this address and is at a status of being 'under review' (Data via the BT website). Moorgate Exchange to the south west affords a similar range of services at present but could provide a level of diversity and resilience across BT business services should it be required.

TELECOMS CARRIERS

Telecommunications carriers with owned infrastructure located within easy reach of the building are listed below for information. In addition to these, there are a number of alternative carriers that can provide service, albeit over a third party network such as BT. It must be noted that the presence of infrastructure within the search area does not guarantee availability of service at the building location.

British Telecom Tel: 0800 800 152 www.bt.com
Virgin Media Tel: 0845 6000789 www.virginmedia.com
Vodafone Tel: 020 7111 0047 www.vodafone.co.uk
Interoute Tel: 0800 4683 7681 www.interoute.com
Colt Telecommunications Tel: 020 7390 3900 www.colt.net
Zayo Tel: 020 7220 3822 www.zayogroup.co.uk

EU Networks Tel: 020 7952 1300 www.eunetworks.com
Verizon Tel: 0800 6000789 www.verizonenterprise.com/uk

SUMMARY

The BT services available at Bishops Gate Exchange, and added resilience of a second exchange afford 66 Wilson Street an excellent level of services to meet today's business needs. The future roll-out of BT Infinity services will afford significant financial benefits to smaller business's requiring a premium product over other fibre services when available. The presence of multiple carriers infrastructure over and above that of BT from Virgin Media, Vodafone, Interoute, Colt Telecommunications, Zayo, Eu Networks and Verizon adjacent to the building and in its environs is one that affords tenants a level of alternative services and resilience, albeit with minimal need for civil infrastructure.

RATING

BT / LLU

4

CARRIERS

4

BT / LLU

1

2

3

4

- 1 Limited services available from BT only
- 2 Good BT services, limited by LLU Operators
- 3 Good BT/LLU services now, or planned
- 4 Excellent BT/LLU services now, with diversity

CARRIERS

1

2

3

4

- 1 Limited infrastructure available / no infrastructure
- 2 Moderate level of infrastructure with limited access issues
- 3 Good level of infrastructure with limited access issues
- 4 Excellent level of infrastructure with no access issues

GLOSSARY OF TERMS

ADSL (Asymmetric Digital Subscriber Line) Asymmetric line speed, the speed from the internet to the user, and the user to the internet are different. Feed over copper cable, governed by distance from exchange to user. (co-exists with voice services)

ADSL+ (Asymmetric Digital Subscriber Line+) Asymmetric line speed as above, but with faster connections both downstream and upstream over similar distance following roll-out of BT's 21CN Wholesale Broadband Connect (WBC).

SDSL (Symmetric Digital Subscriber Line) Symmetric line speed, the speed between the user and the internet are the same in both directions but cannot co-exist with voice services over the same line.

FTTC (Fibre to the Cabinet) Provides fibre to the cabinet, shortening copper cable length requirements to enhance speed

FTTP (Fibre to the Premises) Provides fibre direct to the premises at a lower cost than that of standard lease line products

LLU (Local Loop Unbundling) Is the process by which third party network operators are able to install equipment into BT exchanges in order to deliver their own services without having to utilise BT's network.

BT Infinity (British Telecom) Fibre delivered broadband service from enabled exchanges and cabinets providing broadband speeds of up to 80Mbps download (subject to conditions) at a lower cost to that of traditional leased fibre services.

Mobile Voice / Data Appraisal - Coverage Predictions

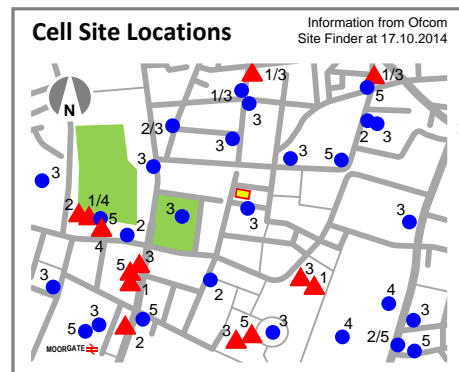
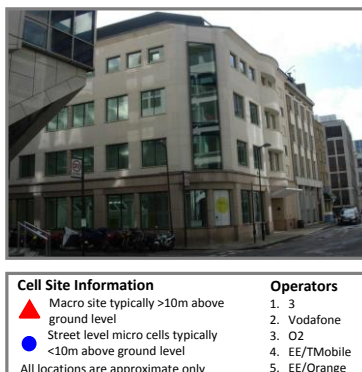
66 Wilson Street, London EC2A 2JX

Oct 2014

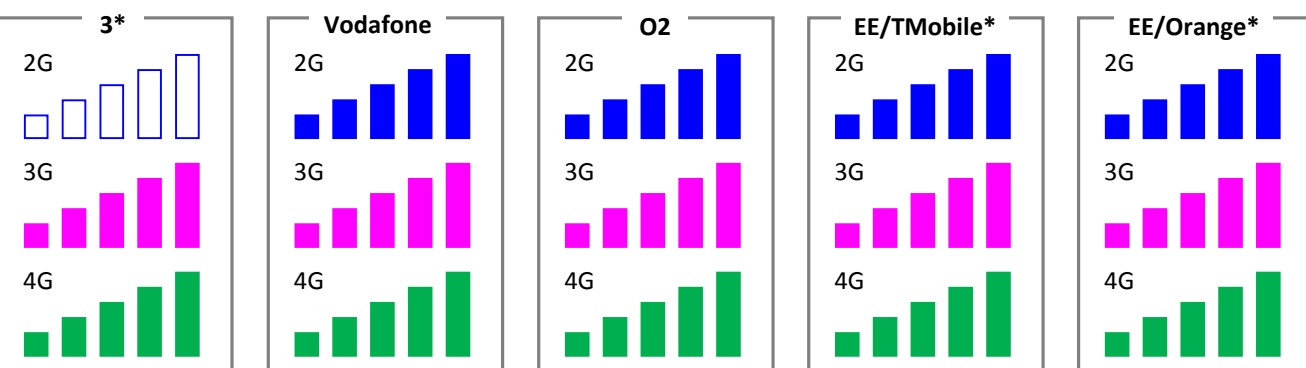
STRUCTURE

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TOPOGRAPHY



STREET LEVEL COVERAGE



OBSERVATIONS

66 Wilson Street affords an excellent level of macro coverage from all of the four mobile operators for 2G, 3G and 4G services as above. The closest serving cells are detailed in respect of 2G, 3G and 4G services and can be seen vary in location and distance, providing general coverage to the site. Any high concentration of users within the building may impact on the capacity available especially if this is confined to any one single network operator. Based on this information it is considered to be a location that affords a good/excellent level of overall coverage across all operators at street level.

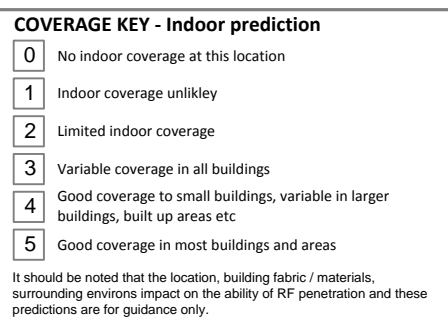


PREDICTIONS

Surrounding buildings, the distance and direction of the serving cells and building construction can all impact on the penetration of signal throughout a building. Based on the location and serving cells, it is envisaged that a good/variable level of coverage will be present throughout the buildings for 2G, 3G and 4G services across all operators. However, there may be some limited isolated coverage issues on any lower floor internal rooms but still maintaining an acceptable level of voice service, with increased risk of limited service in the lower ground areas as expected. In cases of coverage issues, each of the operators can provide solutions to enhance their service of which we can provide details and assist in their procurement and installation should they be required. Further to the coverage levels, the availability of service is dependant on capacity. This is the volume of data and simultaneous voice calls the macro cell can accommodate at any one time. Capacity issues result in 'network busy' messages or dropped calls. The level of capacity can be addressed by the operators should the building be populated with a high number of users on a single network which will impact on both them and others using the same cell.

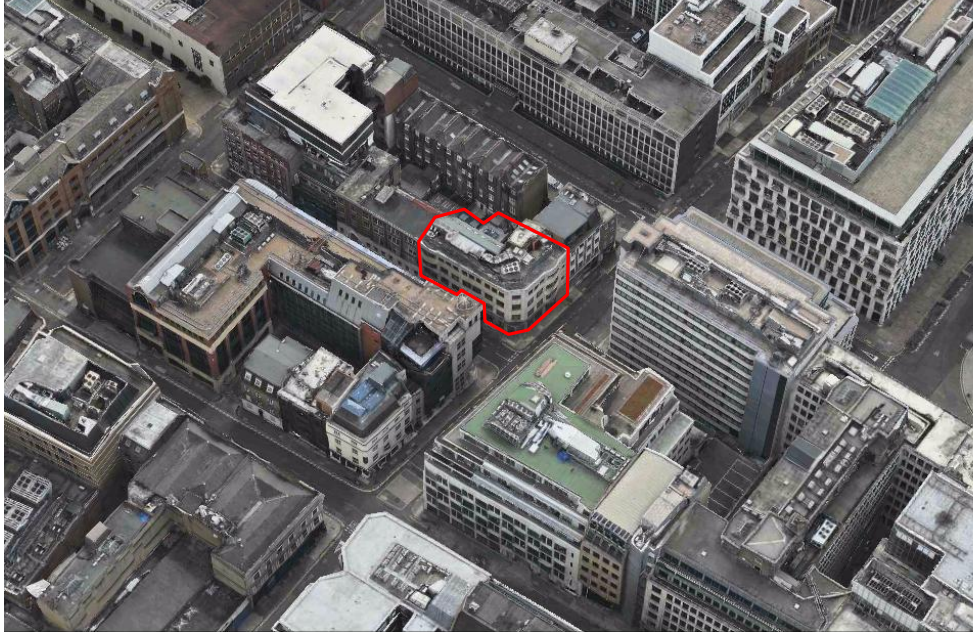
INDOOR SUMMARY

OPERATOR	2G	3G	4G
3*	0	4	4
Vodafone	4	4	4
O2	4	4	4
EE/T-Mobile*	4	4	4
EE/Orange*	4	4	4



Fixed Telecoms Appraisal Summary

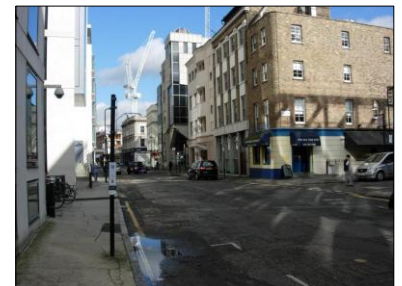
In addition to the Fixed Network carrier study completed, a review by survey of the building was undertaken on the 16th October 2014 accordingly. The purpose of this survey was to clearly identify the presence of existing fixed telecommunications carrier's infrastructure in/adjacent to the building, or within the local environs.



SITE AERIAL VIEW (Building highlighted in red)



LOOKING SOUTH ALONG WILSON STREET



LOOKING NORTH ALONG WILSON STREET

Local Carriers

66 Wilson Street has access from the public highway along Wilson Street to the west and Dysart Street to the north. The survey located an extensive number of telecommunications chambers owned and operated by BT, Virgin Media, Vodafone, Interoute, Colt Telecommunications, Zayo, EU Networks and Verizon in both the carriageway and footway in close proximity to the building. This infrastructure extends along Wilson Street in both directions where further chambers were located for all carriers indicating extensive owned infrastructure presence (See **Photographs 1, 2 & 3**). In addition, a number of further BT chambers exist in the footway around the perimeter of the building in both Wilson Street and Dysart Street.



PHOTOGRAPH 1
BT, VODAFONE AND COLT TELECOMMUNICATIONS
CHAMBERS OPPOSITE BUILDING



PHOTOGRAPH 2
MULTIPLE CHAMBERS LOCATED IN CARRIAGEWAY
NORTH OF BUILDING IN WILSON STREET



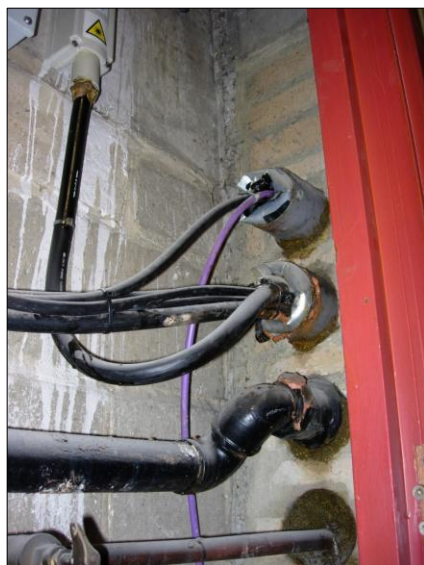
PHOTOGRAPH 3
MULTIPLE CHAMBERS LOCATED IN CARRIAGEWAY
SOUTH OF BUILDING IN WILSON STREET

Building Presence

The main entry point for telecommunications infrastructure is located within the electrical room on the lower ground floor, assumed via the existing Sub-Station. Access to the Sub-Station was not available during the survey but from the drawings it is clear this extends past the street level building line under the footway in Wilson Street affording access to the public highway. Access into this location is provided by two 100mm diameter (approx) duct entries at high level (See **Photograph 4**). Two further access points were located below, but are utilised by other services at this time. No further access points were noted at the time of survey, but space is available should they be required subject to landlords approvals etc. Both duct entries are currently utilised by BT for copper and fibre services, with an additional fibre cable in the top duct owned and operated by Vodafone.

The level of current services within the building by BT extend to an existing copper distribution point (DP) located in a cupboard on the lower ground floor in the corridor (See **Photograph 5**). This contains approximately 100-150 copper pairs and all previously run cables from the DP have been cut back and remain within the DP for future connection when required. In additional, a total of three fibre terminations were located on the wall adjacent to the duct entries all providing previous tenant services (See **Photograph 6**). These are still in position and it is assumed that service can be reinstalled in minimal timescales where required. This will be subject to fibre provision from the local joint being in place, and any required blown fibre tubing internally to the specific delivery area. It is understood that all blown fibre tubing from previous services has been cut back as part of the refurbishment to suit at various location.

The only other existing telecommunication service is that of Vodafone which terminates in a building flexibility point (BFP) adjacent to the duct entries as shown on **Photograph 6** (purple cable). This service is believed to be obsolete and has been cut back as part of the refurbishment. However, this will be able to be reactivated where required within minimal timescales to suit.



PHOTOGRAPH 4
DUCT ENTRIES AT HIGH LEVEL IN ELECTRICAL ROOM
ON LOWER GROUND FLOOR



PHOTOGRAPH 5
EXISTING BT COPPER DISTRIBUTION POINT ON
LOWER GROUND FLOOR



PHOTOGRAPH 6
EXISTING BT AND VODAFONE FIBRE SERVICES
ADJACENT TO DUCT ENTRIES

Cable Routes, Containment and Risers

Cable routes from the duct entries currently run at high level through the electrical room and down the wall into the below floor void along the corridor to the main BT distribution point location (See **Photograph 7 & 8**). This cable route extends both into the main DP location and also into the riser cupboard opposite for access throughout the building (See **Photograph 9**). This riser extends the full height of the building providing access from the lower ground floor to all office areas as shown on **Figure 1**. The location of the main riser is typical across all floors with additional riser space as shown (See **Photographs 10, 11 & 12**). Based on the location of the risers and the available space on the containment we consider this to be suitable in order to provide access from the duct entries into the below ground void across all tenant floors.



PHOTOGRAPH 7
HIGH LEVEL CONTAINMENT AND CABLE RUN ON
LOWER GROUND FLOOR



PHOTOGRAPH 8
CABLE ROUTE FROM HIGH LEVEL TO BELOW GROUND
VOID ON LOWER GROUND FLOOR



PHOTOGRAPH 9
MAIN RISER OPPOSITE LOCATION OF EXISTING BT
DP ON LOWER GROUND FLOOR

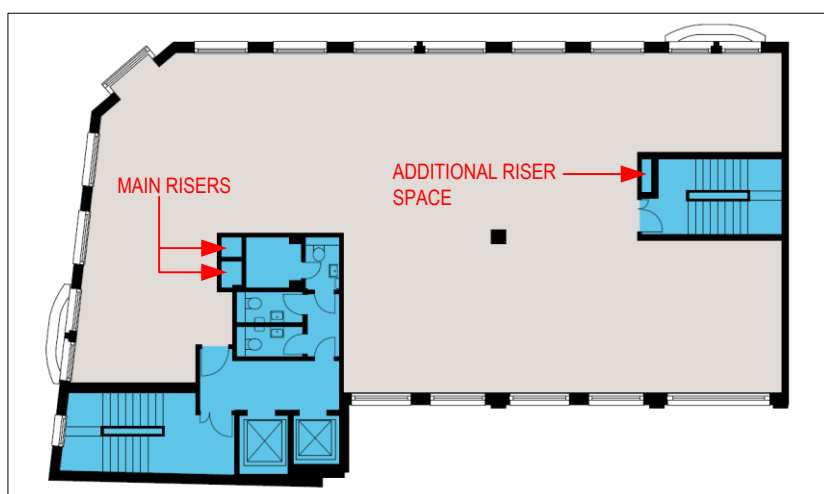


FIGURE 1
TYPICAL RISER LOCATIONS



PHOTOGRAPH 10
TYPICAL MAIN RISER ON FLOORS



PHOTOGRAPH 11
TYPICAL RISER CONTAINMENT



PHOTOGRAPH 12
TYPICAL RISER CONTAINMENT

Service Availability

The standard services afforded by BT over its existing copper networks provides a level of broadband services with speeds expected in the region of 17Mbps. Bishops Gate Exchange is 21CN enabled, but is currently under review in respect of providing FTTC services to this address (Data obtained via the BT website). The current level of business tariff services available from BT will however provide an excellent level of service at this time both over copper or fibre. Furthermore, there are a host of companies that can provide enhanced products over the existing infrastructure providing smaller businesses a more affordable level of service if so required. The presence of Vodafone already in the building, and Virgin Media, Interoute, Colt Telecommunications, Zayo, EU Networks and Verizon adjacent to the building provides a choice of providers, albeit with the need for minimal external works.

Summary

Based on the local carrier infrastructure and the availability of services from BT's local exchange including the existing copper and fibre services on site, we consider 66 Wilson Street has an excellent level of connectivity with the ability to enhance this by means of additional fibre services where required in minimal timescales from order. The presence of the additional carriers affords a good alternative provision of service and diversity at this time albeit subject to the viability and rights of access requirements.