

Telecommunications Connectivity

Fixed Network and Mobile Coverage Assessment

Corinthian House
 17 Lansdowne Road
 Croydon
 CR0 2BX



FIXED NETWORK SERVICES

BUILDING ENTRIES	
DUCT ENTRIES	NUMBER UNKNOWN
LOCATION	BASEMENT (NORTH ELEVATION)
SECURITY	EXCELLENT (ASSUMED)
OWNERSHIP	BT / LANDLORD
DIVERSITY AVAILABLE	UNKNOWN
STATUS (CAPACITY)	SPARE CAPACITY ENVISAGED

CARRIERS	
BT OPENREACH	IN BUILDING
VIRGIN MEDIA	IN BUILDING
VODAFONE	IN BUILDING
LEVEL 3	LOCAL ENVIRONS
INTERROUTE	LOCAL ENVIRONS

SERVICES	
BT OPENREACH	COPPER + FIBRE SERVICES – BASEMENT/ACROSS BUILDING (TELECOMS ROOM) ADSL BROADBAND AT 4-11Mbps
VIRGIN MEDIA	FIBRE SERVICES – BASEMENT/ACROSS BUILDING (BFP)
VODAFONE	FIBRE SERVICES – BASEMENT/ACROSS BUILDING (BFP's)

ADDITIONAL SERVICES	
LANDLORD	MANAGED FIBRE SERVICES AVAILABLE TO ALL AREAS / PLUS WI-FI
OTHERS	N/A

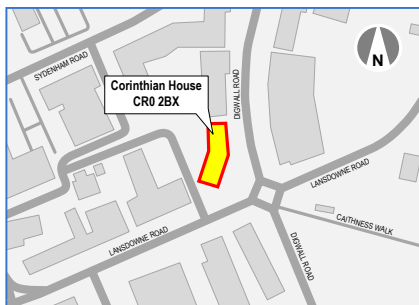
BUILDING DISTRIBUTION	
RESILIENCE	SECURE INTAKE LOCATION IN BASEMENT (NORTH ELEVATION) - ASSUMED
RISERS	SECURE RISER AVAILABLE – RESTRICTED ACCESS
SECURITY	EXCELLENT SECURITY THROUGHOUT, INTAKE POSITIONS IN RESTRICTED ACCESS AREA.
TENANT FLOOR SPACE	EXCELLENT CONNECTIVITY/EASE OF INSTALL FROM RISER VIA TRUNKING/CEILINGS

MOBILE NETWORK SERVICES

OPERATOR SERVICES	THREE, VODAFONE, O2, EE - 2G, 3G, 4G (THREE - 3G/4G ONLY)
COVERAGE SUMMARY	GOOD/VARIABLE COVERAGE ACROSS ALL OPERATORS, POTENTIAL DEGRADATION OF SERVICES IN LIFTS AND BASEMENT (NO 5G SERVICES IN BUILDING AT THIS TIME)
BUILDING SOLUTIONS	NO COVERAGE SOLUTIONS IN PLACE AT THIS TIME



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Fixed Network Services

BT Services	Excellent
Other Carriers	Excellent
Building Distribution	Excellent

Mobile Network Services

Operator	Voice	Data
Three	Good	Good
Vodafone	Good	Good
O2	Good	Good
EE	Good	Good

Fixed Network Connectivity - Carrier Study

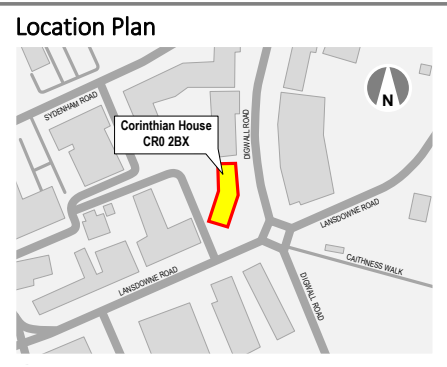
Corinthian House, 73 Lansdowne Road, Croydon CR0 2BX

Feb 2020

STRUCTURE

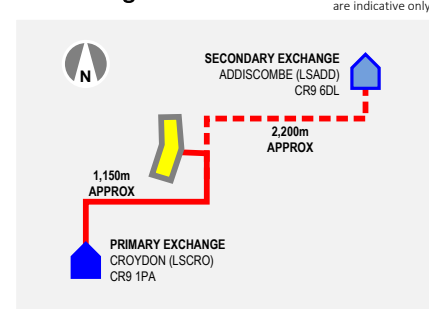
Corinthian House is an established commercial property located on Lansdowne Road in Croydon town centre. The building extends to ground floor reception and ten upper floors plus basement plant rooms affording approximately 45,000 sq ft (4,182 sqm) of high quality refurbished office accommodation with perimeter trunking and suspended ceilings throughout. The building is of typical frame construction with a mixture of concrete and glazed facades and sits within an environment of other commercial and residential properties of varying height in all directions.

TOPOGRAPHY



BT Exchange Information
Primary Exchange CROYDON (LSCRO)
 (1,150m approx) CR9 1PA
Secondary Exchange ADDISCOMBE (LSADD)
 (2,200m approx) CR9 6DL

BT Exchange Locations



BT SUMMARY

Corinthian House is located approximately 1,150m from the BT Croydon Exchange, which is situated to the south west of the building. This exchange provides excellent services including ADSL, ADSL+, SDSL, 21CN WBC, FTTC and FTTP (to some areas) plus the availability of LLU services from Sky, Talk Talk, Vodafone and Zen Internet over BT infrastructure. Based on the standard copper services, Croydon Exchange can offer ADSL broadband speeds of around 4-11Mbps at this time. This exchange has been enabled to provide BT Infinity services over FTTC technology with speeds of up to 80Mbps download and 20Mbps upload. However, the building is noted as currently 'exploring solutions' in respect of FTTC technology delivery but provides no timescales for deployment at this time (Data via the BT website). Addiscombe Exchange to the north east affords a similar range of services, and could provide a level of diversity and resilience across BT business services if required.

TELECOMS CARRIERS

Telecommunications carriers with owned infrastructure located adjacent to 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 constitute availability of service.

British Telecom Tel: 0800 800 152 www.bt.com
Virgin Media Tel: 0800 953 0180 www.virginmedia.com
Vodafone Tel: 020 7111 0047 www.vodafone.co.uk
Level 3 Tel: 020 7954 5454 www.level3.com
Interoute Tel: 020 7025 9100 www.interoute.com

SUMMARY

The BT copper and fibre services available at Croydon Exchange, and added resilience of a second exchange afford Corinthian House an excellent level of services to meet today's business needs with the added advantage of potentially good diversity and resilience opportunities. The physical presence of alternative carriers infrastructure to BT from Virgin Media and Vodafone in the building with Level 3 and Interoute outside and in the local environs affords an excellent choice of alternative carrier to provide fibre services to any incoming tenant at this time albeit subject to network extension and new building entry requirements in respect of those not currently in the building.

RATING

BT	4
OTHERS	4

BT	1 Low (Copper only)
	2 Fair (Copper internal / fibre in environs)
	3 Good (Copper internally / fibre externally)
	4 Excellent (Copper/fibre internally) with diversity

OTHERS	1 None (No alternative carriers adjacent to site)
	2 Fair (Carrier services in local environs)
	3 Good (Carrier services adjacent to building/site)
	4 Excellent (Carrier services in building/site)

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 to the cabinet/premises delivered services from enabled exchanges 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

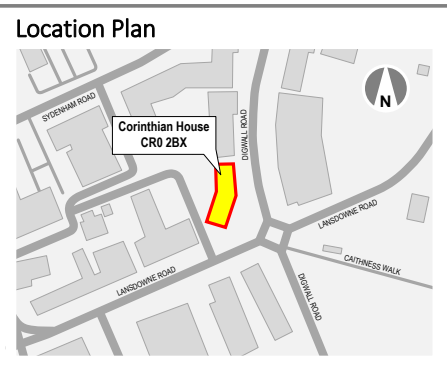
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TOPOGRAPHY



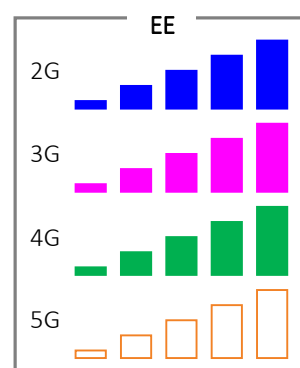
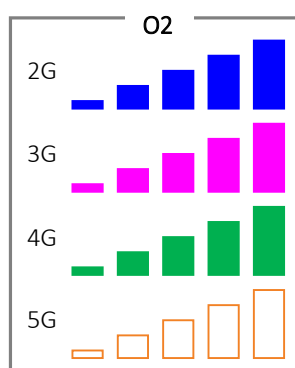
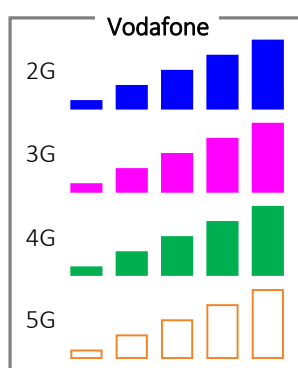
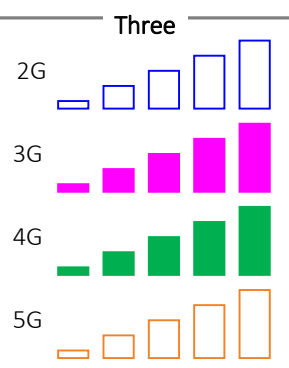
Building Observations

- Building sits in a commercial/residential environment
- Adjacent buildings of varying height in all directions
- Building fabric consists of concrete and glazed facades
- No noted mobile equipment located on roof top
- No noted in-building coverage solutions in place

Building Environment



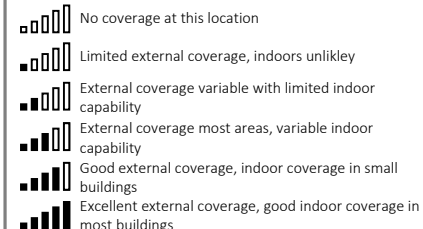
STREET LEVEL COVERAGE



OBSERVATIONS

Following our review of the mobile operators coverage details it is clear that Corinthian House affords an excellent level of macro coverage from all operators for 2G, 3G and 4G services. The availability of 5G services across all operators is in early stages of roll-out across the country and is not currently available at this location. Based on this information it is considered to be a location that affords an excellent level of overall coverage across all operators at street level for 2G, 3G and 4G services at this time. 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.

COVERAGE KEY - Street Level



PREDICTIONS

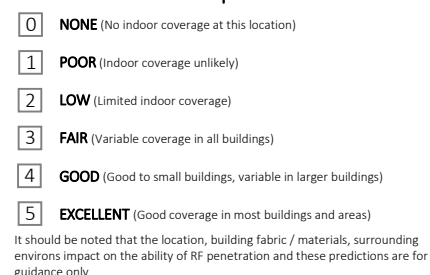
Surrounding buildings, the distance and direction of the serving cells and building construction can all impact on the penetration of signal throughout a building. Based on the location and serving cells, it is envisaged that a good/variable level of coverage will be present throughout the building for 2G, 3G and 4G services with some potential degradation in the lifts and basement areas across all operators and technologies. In-building coverage across 5G services is not available at this time. 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. This extends to full in-building coverage, or specific areas or floors by means of Femto Cell technology. 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	5G
Three	0	4	4	0
Vodafone	4	4	4	0
O2	4	4	4	0
EE	4	4	4	0

Three operates a 3G/4G/5G network only ■ 5G Services are currently in roll-out across the UK in selected cities

COVERAGE KEY - Indoor prediction



Fixed Telecoms Appraisal Summary

In addition to the Fixed Network carrier study completed, a review by survey of the building was undertaken on the 17th February 2020. The purpose of this survey was to clearly identify the presence of all fixed telecommunications carrier's infrastructure in the building, adjacent to or within the local environs.



SITE AERIAL VIEW (Building highlighted in red)



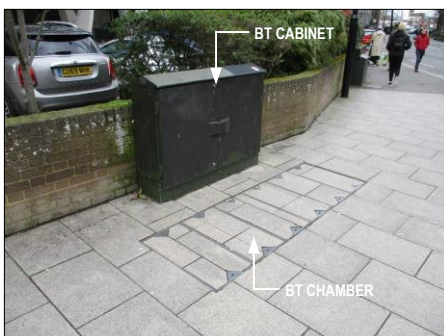
VIEW LOOKING SOUTH ALONG DINGWALL ROAD



VIEW LOOKING EAST ALONG LANSDOWNE ROAD

Local Carriers

Corinthian House has existing telecommunications access from Dingwall Road on the east elevation of the building into the telecoms room located in the basement at the north end of the building. The survey located a good level of telecommunications chambers and infrastructure owned and operated by BT, Virgin Media, Vodafone outside of the building with Level 3 and Interoute in the local environs (See **Photographs 1 to 6**). The presence from BT is extensive in this area with infrastructure running along the building frontage with noted chambers and cabinets. The level of infrastructure from Virgin Media and Vodafone follows a similar path to that of BT with noted chambers in the footway along Lansdowne Road and Dingwall Road past the building frontage. The infrastructure from Level 3 and Interoute was less comprehensive with chambers and infrastructure noted in the carriageway on Lansdowne Road and Dingwall Road to the south of the building. However, based on presence it is considered potentially viable for extension and connection, albeit subject confirmation from the carrier.



PHOTOGRAPH 1
BT CABINET AND CHAMBER AT JUNCTION OF LANSDOWNE ROAD WITH DINGWALL ROAD OUTSIDE BUILDING



PHOTOGRAPH 2
VIRGIN MEDIA CABINET AND CHAMBER AT JUNCTION OF LANSDOWNE ROAD WITH DINGWALL ROAD OUTSIDE BUILDING



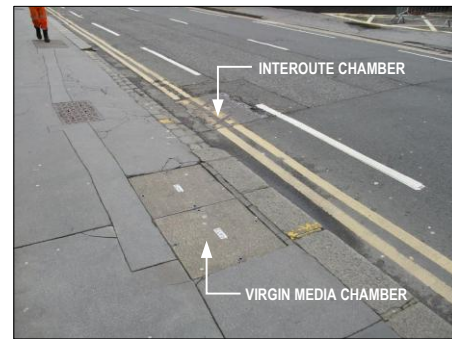
PHOTOGRAPH 3
EXISTING BT AND VODAFONE CHAMBERS ON LANSDOWNE ROAD TO SOUTH OF BUILDING



PHOTOGRAPH 4
EXISTING VODAFONE CHAMBER IN FOOTWAY
ON DINGWALL ROAD OPPOSITE BUILDING



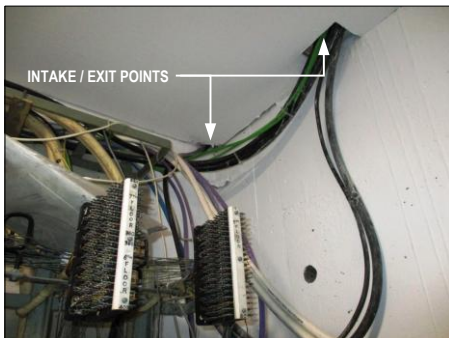
PHOTOGRAPH 5
EXISTING LEVEL 3 CHAMBER IN CARRIAGEWAY
ON LANSDOWNE ROAD TO WEST OF BUILDING



PHOTOGRAPH 6
EXISTING VIRGIN MEDIA AND INTERROUTE CHAMBERS
ON DINGWALL ROAD TO SOUTH OF BUILDING

Building Presence

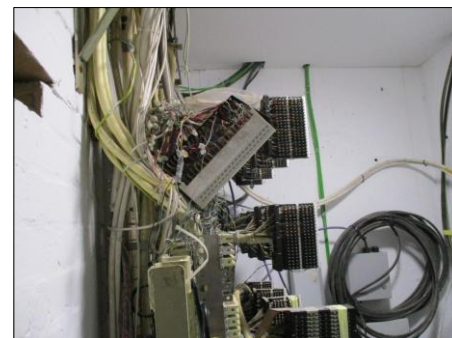
The telecommunications intake for the building is considered to be at the north end of the building with all services dropping down into the basement telecoms room. The location of the incoming ducts could not be determined due to limited access to the area at ground and basement level and within the risers. All cable services enter and exit the room from the ceiling to the equipment across all carriers (See **Photographs 7 to 12**). The copper services from BT are delivered over multiple cables terminated on an historic frame with multiple outgoing services to the riser. Based on the cabling and frame we consider approximately 300-400 copper pair are present, albeit subject to confirmation from BT. The BT fibre services are delivered over 2No. cables (multiple tubes/fibres) which are both terminated in a splice enclosure, with a second splice enclosure providing outgoing tubes to the riser. Based on the incoming cables identified and their sizes we consider that a total of 8No. blown fibre tubes with a capacity of 4/12No. fibres per tube (32/96No. fibres total) are present at this time, albeit subject to confirmation from BT. Virgin Media enter the room via a number of cables all terminated in a building flexibility point (BFP) on the wall with outgoing services to the riser. Vodafone also enter the room via a number of cables terminated in 2No. BFP's with outgoing services to the riser. It was noted that an existing rack is present within the BMS room providing managed fibre services to the tenants with backhaul provided by BT at this time. Further details are included in the Landlords Managed Service section of this report.



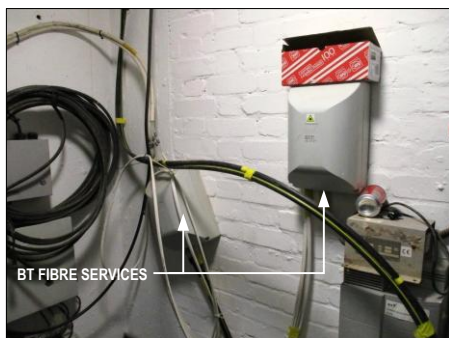
PHOTOGRAPH 7
TYPICAL VIEW OF INTAKE / EXIT ROUTES OF CABLING
IN CEILING IN TELECOMS ROOM IN BASEMENT



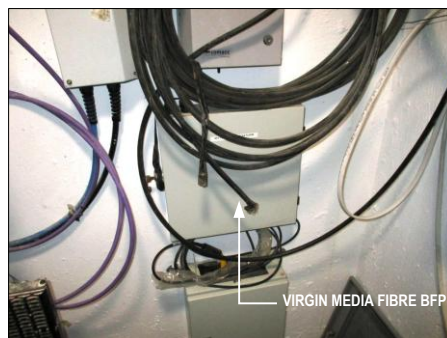
PHOTOGRAPH 8
TYPICAL VIEW OF INTAKE / EXIT ROUTES OF CABLING
IN CEILING IN TELECOMS ROOM IN BASEMENT



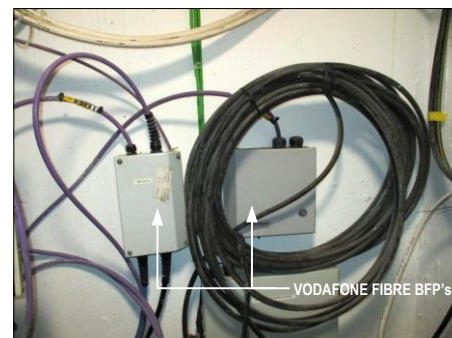
PHOTOGRAPH 9
TYPICAL VIEW OF BT COPPER FRAME
IN TELECOMS ROOM IN BASEMENT



PHOTOGRAPH 10
BT FIBRE CABLING AND SPLICE ENCLOSURES ON WALL
IN TELECOMS ROOM IN BASEMENT



PHOTOGRAPH 11
VIRGIN MEDIA FIBRE BUILDING FLEXIBILITY POINT (BFP)
ON WALL IN TELECOMS ROOM IN BASEMENT



PHOTOGRAPH 12
VODAFONE FIBRE BUILDING FLEXIBILITY POINTS (BFP's)
ON WALL IN TELECOMS ROOM IN BASEMENT

Risers and Cable Routes

Access to cable routes from the telecoms room in the basement to risers was unavailable at the time of survey due to site restrictions. In addition, no access was permitted to the vertical risers during survey due to ongoing health and safety issues. However, considering the volume of services at basement level and size of the risers viewed externally, we consider access to all floors is excellent with ease of access into the tenant areas to suit via the perimeter trunking and suspended ceilings.

Landlord Managed Services

In addition to the copper and fibre services available direct from the carriers, the building has a full managed fibre service available to all tenants both fixed and over WI-FI. This allows a number of fibre based services to be provided to any incoming tenant within very short timescales of order across all floors with no requirements for building wayleaves. Typical services available include internet connectivity from 100Mbps to 1Gbps, choice of circuit and contract lengths, links to data centre co-hosting with cross connects to all major data centres, SIP and other voice services etc.

Service Availability

The standard services afforded by BT over its existing copper networks can offer ADSL broadband speeds of around 4-11Mbps at this time. Croydon Exchange has been enabled to provide BT Infinity services over FTTC technology with speeds of up to 80Mbps download and 20Mbps upload. However, the building is noted as currently 'exploring solutions' in respect of FTTC technology delivery but provides no timescales for deployment at this time (Data via the BT website). The level of copper services available from BT and other companies that can utilise the BT network will be able to provide enhanced speeds by use of bonded ADSL products where required to increase speed. Typically two 11Mbps ADSL lines bonded can increase speed to 22Mbps, increasing with the number of lines bonded accordingly. In addition to the copper services, it is clear that an excellent level of fibre based business tariff services will be available from BT to provide any level of speed and bandwidth required over fibre products. For example, the introduction of a 100Mbps fibre bearer can be delivered over the existing ducted network affording un-contended upload and download port speeds from 10Mbps to 100Mbps based on the tenants requirements. These are also scalable from initial requirements up to the maximum available speeds in respect of the bearers. Higher bearer capacities are available to suit typically 500Mbps to 1Gbps and beyond where required. Furthermore, there are a host of companies that can provide enhanced products over the existing infrastructure potentially providing smaller businesses a more affordable level of service if so required. The presence of Virgin Media and Vodafone in the building affords an excellent level of alternative service should it be required, delivering a similar range of fibre products to that of BT. Furthermore the Landlord managed fibre service is available across the building providing both internet access and telephony services. This level of service will permit the connection and provision of services in minimal timescales to all new and existing tenants where required.

Summary

Based on the level of infrastructure and the availability of services from BT's local exchange we consider Corinthian House has an excellent level of connectivity with the ability to enhance this by means of fibre services where required in minimal timescales from order in respect of BT, Virgin Media, Vodafone and the Landlords managed services. In addition, the presence of the Level 3 and Interoute services in the local environs greatly increases the connectivity of the building, albeit subject to local extension and new building entry requirements.