

# Telecommunications Connectivity

## Fixed Network and Mobile Coverage Assessment

### Clockwork Building

45 Beavor Lane  
Ravenscourt Park  
London  
W6 9AR



## FIXED NETWORK SERVICES

BUILDING ENTRIES	
DUCT ENTRIES	1No. TOTAL (NOT CONFIRMED)
LOCATION	RECEPTION INTAKE CUPBOARD
OTHER	N/A
SECURITY	EXCELLENT
OWNERSHIP	BT
DIVERSITY AVAILABLE	NO
CAPACITY	SPARE CAPACITY ENVISAGED

CARRIERS	
BT OPENREACH	IN BUILDING
HYPEROPTIC	IN BUILDING
VODAFONE / ZAYO	OUTSIDE BUILDING
COLT TELECOMS	OUTSIDE BUILDING
G NETWORK	OUTSIDE BUILDING
VIRGIN MEDIA	LOCAL ENVIRONS
EU NETWORKS	LOCAL ENVIRONS

SERVICES	
BT OPENREACH	COPPER + FIBRE SERVICES – GROUND FLOOR RECEPTION INTAKE CUPBOARD ADSL BROADBAND AT 8-23Mbps BT FIBRE ESSENTIAL / FIBRE 1 / FIBRE 2 AT 35-73Mbps
HYPEROPTIC	FIBRE SERVICES ACROSS BUILDING TO ALL FLOORS

ADDITIONAL SERVICES	
LANDLORD	N/A
OTHERS	N/A

BUILDING DISTRIBUTION	
RESILIENCE	SECURE INTAKE LOCATION IN GROUND FLOOR RECEPTION INTAKE CUPBOARD
RISERS	SECURE RISERS AVAILABLE – RESTRICTED ACCESS
SECURITY	EXCELLENT SECURITY THROUGHOUT, INTAKE POSITION IN RESTRICTED ACCESS AREA
RISER SPACE	EXCELLENT SPACE FOR ADDITIONAL SERVICES
TENANT ACCESS	EXCELLENT CONNECTIVITY/EASE OF INSTALL FROM RISER VIA PERIMETER TRUNKING

## MOBILE NETWORK SERVICES

OPERATOR SERVICES	THREE, VODAFONE, O2, EE - 2G, 3G, 4G SERVICES (THREE - 3G/4G ONLY) VARIED LEVEL OF 5G SERVICES FROM THREE, VODAFONE, O2 AND EE
COVERAGE SUMMARY	GOOD/VARIABLE COVERAGE ACROSS ALL OPERATORS FOR 2G, 3G & 4G, POTENTIAL DEGRADATION OF SERVICES IN LIFTS GOOD TO POOR LEVEL OF 5G IN-BUILDING SERVICES ACROSS OPERATORS
BUILDING SOLUTIONS	NONE

## SUMMARY

Fixed Network Services		In-Building Mobile Network Services						
BT Openreach	Excellent	Operator	2G	3G	4G	5G	Voice	Data
Other Carriers	Excellent	Three	✗	✓	✓	✓	Good	Good
Services in Building	Excellent	Vodafone	✓	✓	✓	✓	Good	Good
Risers	Excellent	O2	✓	✓	✓	✓	Good	Good
Building Distribution	Excellent	EE	✓	✓	✓	✓	Good	Good



# Fixed Network Connectivity - Carrier Study

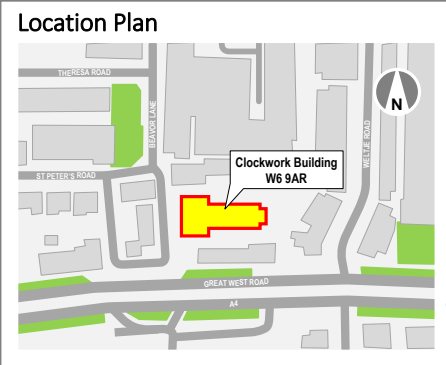
## Clockwork Building, 45 Beavor Lane, Ravenscourt Park, London W6 9AR

May 2022

### STRUCTURE

The Clockwork Building is an established office building located on Beavor Lane in Ravenscourt Park, London. The building extends to ground and five upper floors, affording approximately 42,659 sq ft (3,963 sqm) of high quality office accommodation across open floor plates with exposed ceilings and perimeter trunking throughout. The Clockwork Building is of typical frame construction with a mixture of brick and glazed facades to all elevations, and sits within an environment of other commercial and residential properties of varying height with good separation between adjacent buildings.

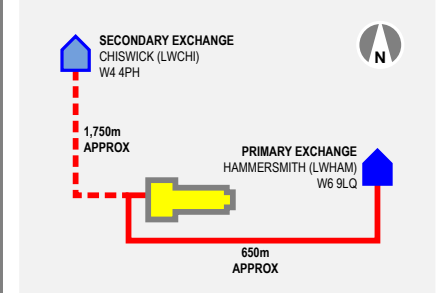
### TOPOGRAPHY



**BT Exchange Information**  
**Primary Exchange** HAMMERSMITH (LWHAM)  
(650m approx) W6 9LQ  
**Secondary Exchange** CHISWICK (LWCHI)  
(1,750m approx) W4 4PH

### BT Exchange Locations

Routes and distances are indicative only



### BT SUMMARY

The Clockwork Building is located approximately 650m from the BT Hammersmith Exchange which is situated to the east of the building. Hammersmith 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 all over BT infrastructure. Based on the existing standard copper services, this exchange can offer ADSL broadband speeds of around 8-23Mbps at this time. This exchange has been enabled to provide BT Fibre Essential, Fibre 1 and Fibre 2 over FTTC technology with speeds from the local cabinet of 35-73Mbps indicated to the building (Data via the BT website). Chiswick Exchange to the north west affords a similar level of services and could provide a level of diversity and resilience across BT business services should it be 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  
**Hyperoptic** Tel: 0208 318 8216 www.hyperoptic.com  
**Vodafone** Tel: 0207 111 0047 www.vodafone.co.uk  
**Colt Telecommunications** Tel: 0207 863 5510 www.colt.net  
**Zayo** Tel: 0207 220 3800 www.zayo.com  
**G Network** Tel: 0203 909 4555 www.g.network  
**Virgin Media** Tel: 0800 052 0422 www.virginmedia.com  
**EU Networks** Tel: 0207 952 1300 www.eunetworks.com

### SUMMARY

The BT copper and fibre services available at Hammersmith Exchange, and added resilience of a second exchange afford the Clockwork Building 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 Hyperoptic in the building with Vodafone, Colt Telecommunications, Zayo, G Network, Virgin Media and EU Networks outside and in the local environs affords an excellent choice of alternative carriers to provide fibre services to any incoming tenant at this time, albeit subject to network extension and connection for those currently not in the building based on our initial inspection.

### RATING

BT	4
OTHERS	4



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



- 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)

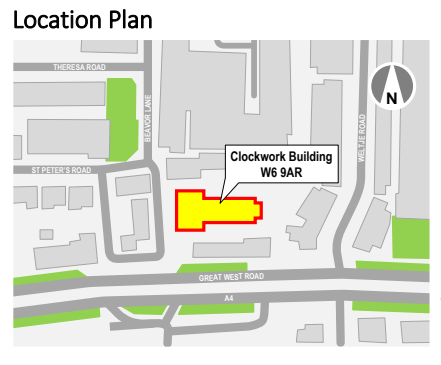
### GLOSSARY OF TERMS

**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 Fibre Essential, Fibre 1, 2, 100, 300, 500 and 900** (British Telecom) Fibre to the cabinet/premises delivered services from enabled exchanges providing broadband speeds of up to 900Mbps download (subject to conditions) at a lower cost to that of traditional leased fibre services.

### STRUCTURE

The Clockwork Building is an established office building located on Beavor Lane in Ravenscourt Park, London. The building extends to ground and five upper floors, affording approximately 42,659 sq ft (3,963 sqm) of high quality office accommodation across open floor plates with exposed ceilings and perimeter trunking throughout. The Clockwork Building is of typical frame construction with a mixture of brick and glazed facades to all elevations, and sits within an environment of other commercial and residential properties of varying height with good separation between adjacent buildings.

### TOPOGRAPHY

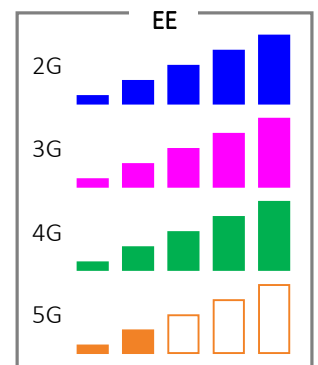
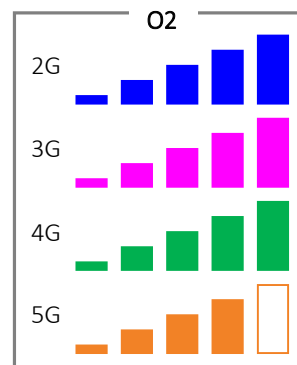
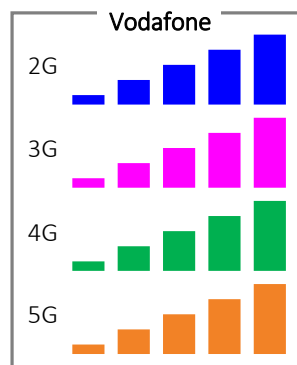
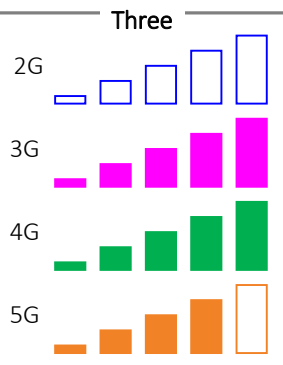


- Building Observations**
- Building sits in a commercial/residential environment
  - Adjacent buildings of varying height in all directions
  - Building fabric consists of brick and glazed facades
  - No noted mobile equipment located on roof top
  - No noted in-building coverage solutions in place

### Building Environment



### STREET LEVEL COVERAGE



### OBSERVATIONS

Following our review of the mobile operators coverage details it is clear that the Clockwork Building 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 the early stages of roll-out across the country and currently a varied level coverage is provided by all operators. 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 with a varied level of 5G coverage from excellent to limited. 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

- No coverage at this location
- Limited external coverage, indoors unlikely
- External coverage variable with limited indoor capability
- External coverage most areas, variable indoor capability
- Good external coverage, indoor coverage in small buildings
- Excellent external coverage, good indoor coverage in most buildings

### 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 across all operators and technologies. Varying levels of 5G services are available internally from all operators from good to poor. 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 Small 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	3
Vodafone	4	4	4	4
O2	4	4	4	3
EE	4	4	4	1

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

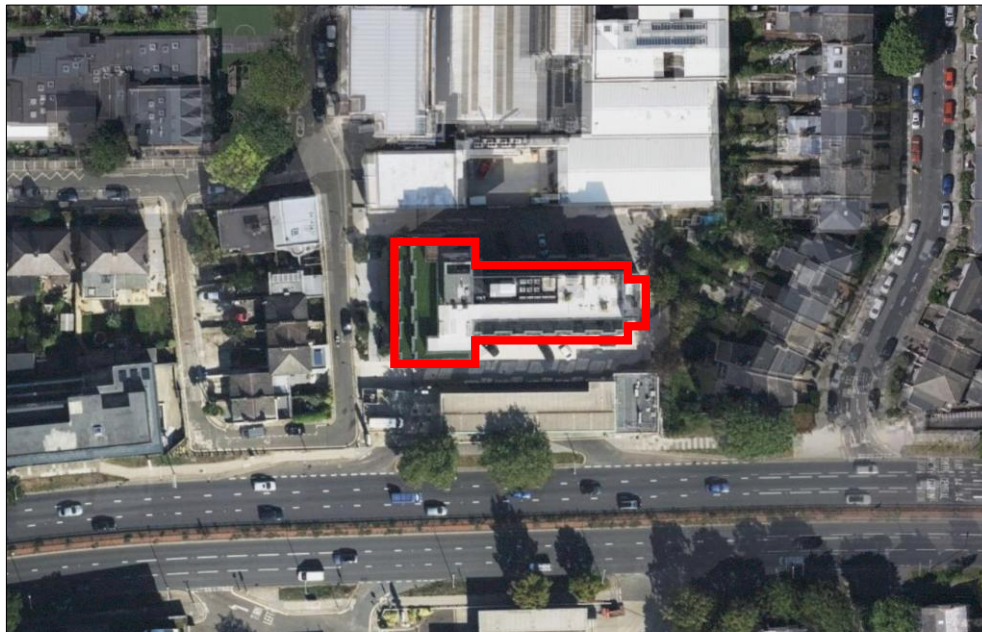
### COVERAGE KEY - Indoor prediction

- 0 NONE (No indoor coverage at this location)
  - 1 POOR (Indoor coverage unlikely)
  - 2 LOW (Limited indoor coverage)
  - 3 FAIR (Variable coverage in all buildings)
  - 4 GOOD (Good to small buildings, variable in larger buildings)
  - 5 EXCELLENT (Good coverage in most buildings and areas)
- It should be noted that the location, building fabric / materials, surrounding environs impact on the ability of RF penetration and these predictions are for guidance only



## Fixed Telecoms Appraisal Summary

In addition to the Fixed Network carrier study completed, a review by survey of the building was undertaken on the 10<sup>th</sup> May 2022. 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 NORTH ALONG BEAVOR LANE



VIEW LOOKING EAST ALONG ST PETER'S ROAD

## Local Carriers

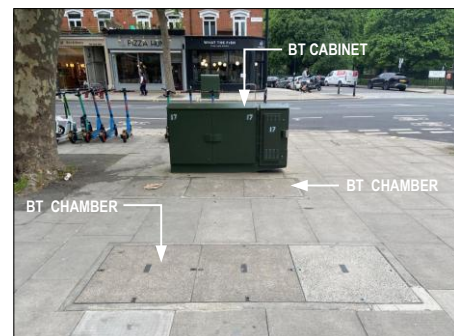
The Clockwork Building has telecommunications access from Beavor Lane into the west elevation of the building via an existing BT chamber located on the north west corner. The survey located a good number of telecommunications chambers owned and operated by the following carriers including BT, Vodafone, Colt Telecommunications, Zayo, G Network, Virgin Media and EU Networks outside and in the local environs (See **Photographs 1 to 6**). The presence from BT is extensive in this area with noted cabinets, chambers and infrastructure running along Beavor Lane on both sides of the carriageway. The level of infrastructure from Vodafone, Colt Telecommunications and G Network is also comprehensive with noted chambers in the footway and carriageway along Beavor Lane, all considered viable for extension and connection to the building if required with minimal street works. The level of infrastructure from Virgin Media and EU Networks was found to be to the north of the building adjacent to the junction of Beavor Lane with King Street. Based on the location of the closest Virgin Media and EU Network infrastructure we consider connection to be viable, albeit subject to consideration in respect of commercial viability by the carrier.



**PHOTOGRAPH 1**  
EXISTING BT CHAMBER IN ACCESS WAY  
AT NORTH WEST CORNER OF BUILDING



**PHOTOGRAPH 2**  
EXISTING BT CHAMBER IN CARRIAGEWAY  
ON BEAVOR LANE TO NORTH OF BUILDING



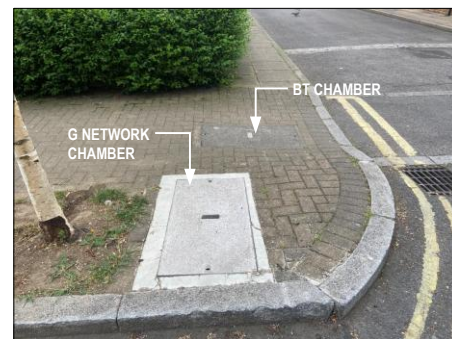
**PHOTOGRAPH 3**  
EXISTING BT CABINET AND CHAMBERS ON  
KING STREET AT JUNCTION WITH BEAVOR LANE



**PHOTOGRAPH 4**  
EXISTING ZAYO AND COLT TELECOMS CHAMBERS AT  
JUNCTION OF BEAVOR LANE WITH ST PETER'S ROAD



**PHOTOGRAPH 5**  
EXISTING VODAFONE CHAMBER IN CARRIAGEWAY  
ON BEAVOR LANE OPPOSITE BUILDING



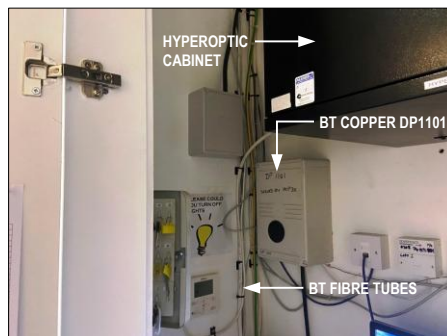
**PHOTOGRAPH 6**  
EXISTING BT AND G NETWORK CHAMBERS IN FOOTWAY  
AT JUNCTION OF BEAVOR LANE WITH THERESA ROAD

## Building Presence

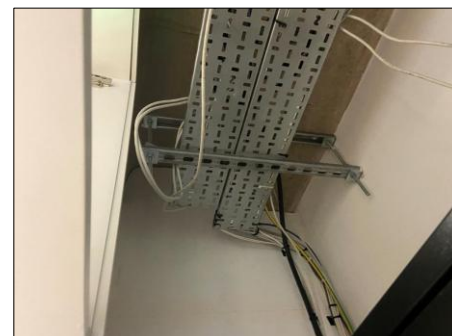
The point of telecommunications intake for the building is located in the reception area with access from the external BT chamber (See **Photographs 7 to 9**). The intake cupboard is fitted for storage at the time of survey and the incoming duct was not visible. However, based on our experience we consider a single 90mm diameter (approx) duct will be present affording access for BT's copper and fibre services. The BT copper services are delivered over a single cable terminated in a distribution point (DP) DP1101 on the wall with outgoing services to the building. Based on the cable size and DP we consider approximately 50 copper pairs are present, albeit subject to confirmation from BT. In addition to the copper, a BT fibre service is in place which is visible via existing blown fibre tubes adjacent to the copper DP. As these tubes are of internal specification, we consider a joint/gas seal is in place above the duct at this time, albeit not visible. Based on the visible tubes, we would envisage a single incoming cable is present (multiple fibre/tubes) over 4No. tubes with a capacity of 4/12No. fibres per tube (16/48No. fibres total), albeit subject to confirmation from BT. It was noted that a fibre service is in place across the building from Hyperoptic with a cabinet located within the intake cupboard. Further outlets are located in the risers across all floors providing services to the tenants floors. Based on the incoming fibre services, we consider these are utilised by Hyperoptic at this time, albeit subject to their confirmation if required. No other services from the highlighted carriers were found to be in the building at this time.



**PHOTOGRAPH 7**  
TYPICAL VIEW OF INTAKE CUPBOARD IN  
GROUND FLOOR RECEPTION AREA



**PHOTOGRAPH 8**  
TYPICAL VIEW OF EXISTING SERVICES IN  
GROUND FLOOR RECEPTION INTAKE CUPBOARD



**PHOTOGRAPH 9**  
TYPICAL VIEW OF HIGH LEVEL CABLE ROUTES IN GROUND  
FLOOR RECEPTION INTAKE CUPBOARD TO RISER



## Risers and Cable Routes

Access from the telecoms reception intake cupboard is afforded by high level containment to the riser. Based on our inspection of the building and risers we conclude that access to all floors is excellent in respect of riser location, with excellent access into the tenant areas and across the floor plates to suit via the perimeter trunking (See **Photographs 10, 11 & 12**).



**PHOTOGRAPH 10**  
TYPICAL VIEW OF FIRST FLOOR RISER CUPBOARD  
INDICATING EXISTING SERVICES AND AVAILABLE SPACE



**PHOTOGRAPH 11**  
TYPICAL VIEW OF FIRST FLOOR RISER CUPBOARD  
INDICATING EXISTING SERVICES AND AVAILABLE SPACE



**PHOTOGRAPH 12**  
TYPICAL VIEW OF FIRST FLOOR RISER CUPBOARD  
INDICATING EXISTING SERVICES AND AVAILABLE SPACE

## Service Availability

The standard services afforded by BT over its existing copper networks can offer ADSL broadband speeds of around 8-23Mbps at this time. Hammersmith Exchange has been enabled to provide BT Fibre Essential, Fibre 1 and Fibre 2 over FTTC technology with speeds from the local cabinet of 35-73Mbps indicated to the building (Data via the BT website). 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 Hyperoptic in the building affording fibre services up to 1Gb to incoming tenants in very short timescales, plus Vodafone, Colt Telecommunications, Zayo, G Network, Virgin Media and EU Networks outside and in the local environs affords an excellent level of alternative service should it be required, delivering a similar range of fibre products to that of BT.

## Summary

Based on the level of infrastructure and the availability of services from BT's local exchange we consider the Clockwork Building 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 and Hyperoptic. The presence of the other highlighted carriers outside and in the local environs, albeit subject to network extension and new building entry requirements, greatly increases the connectivity of the building.