

# Telecommunications Connectivity

## Fixed Network and Mobile Coverage Assessment

CI Tower  
 St George's Square  
 New Malden  
 KT3 4HG



## FIXED NETWORK SERVICES

BUILDING ENTRIES		CARRIERS	
DUCT ENTRIES	YES – MULTIPLE	BT OPENREACH	IN BUILDING
LOCATION	BASEMENT PLANT ROOMS	VIRGIN MEDIA	IN BUILDING
SECURITY	EXCELLENT	LEVEL 3	IN BUILDING (TBC)
OWNERSHIP	BT/VIRGIN MEDIA/LEVEL 3 (TBA)	VODAFONE	OUTSIDE BUILDING
DIVERSITY AVAILABLE	YES - BY CARRIER / LOCATION		
STATUS (CAPACITY)	SPARE CAPACITY AVAILABLE		

SERVICES	
BT OPENREACH	COPPER + FIBRE SERVICES – BASEMENT FRAME ROOM AND RISERS ADSL BROADBAND AT 10-19Mbps - EXCHANGE LINE ONLY
VIRGIN MEDIA	FIBRE SERVICES IN BT FRAME ROOM
LEVEL 3	TO BE CONFIRMED (IF REQUIRED)

ADDITIONAL SERVICES	
LANDLORD	N/A
OTHERS	N/A

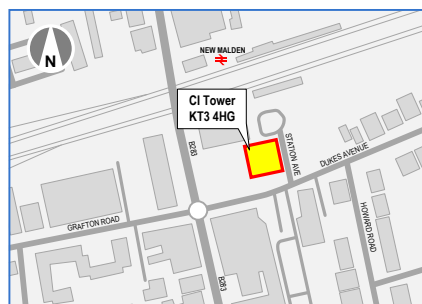
BUILDING DISTRIBUTION	
RESILIENCE	SECURE INTAKE LOCATIONS – BASEMENT PLANT ROOMS
RISERS	SECURE RISER AVAILABLE – RESTRICTED ACCESS
SECURITY	GOOD SECURITY THROUGHOUT, INTAKE POSITION IN RESTRICTED ACCESS AREA.
TENANT FLOOR SPACE	GOOD CONNECTIVITY/EASE OF INSTALL FROM RISERS VIA FLOOR TRUNKING / CEILINGS

## 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 ACROSS BASEMENT AND IN LIFTS
BUILDING SOLUTIONS	NO COVERAGE SOLUTIONS IN PLACE AT THIS TIME



**CI Tower**  
St George's Square  
New Malden KT3 4HG



### Fixed Network Services

BT Services	Excellent
Other Carriers	Excellent
Building Distribution	Good

### Mobile Network Services

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

# Fixed Network Connectivity - Carrier Study

## CI Tower, St. George's Square, New Malden KT3 4HG

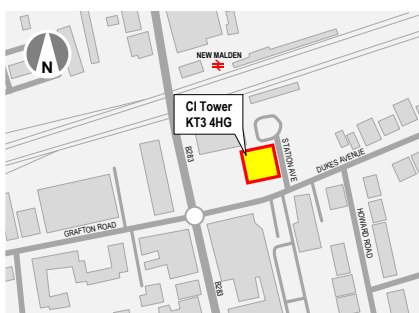
Aug 2018

### STRUCTURE

The CI Tower is an established office building located in the centre of New Malden. The building extends to ground floor reception and retails space with fifteen upper floors plus basement plant rooms. The building currently has available floors of approximately 5,370 sq ft (499 sqm) affording high quality accommodation with under floor trunking and suspended ceilings. The CI Tower is of typical frame construction with a mixture of clad and glazed facades to all elevations, and sits within an environment of other commercial and residential properties of varying height in all directions with good separation between adjacent buildings.

### TOPOGRAPHY

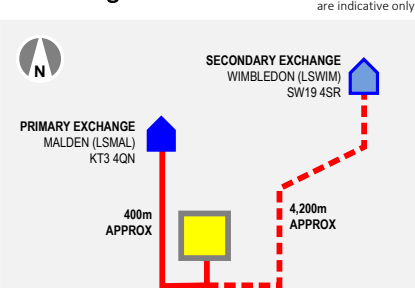
#### Location Plan



#### BT Exchange Information

**Primary Exchange** MALDEN (LSMAL)  
(400m approx) KT3 4QN  
**Secondary Exchange** WIMBLEDON (LSWIM)  
(4,200m approx) SW19 4SR

#### BT Exchange locations



### BT SUMMARY

The CI Tower is located approximately 400m from the BT Malden Exchange, which is situated to the north of the building. This exchange provides excellent services including ADSL, ADSL+, SDSL, 21CN WBC and FTTC (to some areas) plus the availability of LLU services from Sky, Talk Talk and Vodafone all over BT infrastructure. Based on the existing standard copper services, the exchange can offer ADSL broadband speeds of around 10-19Mbps 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, this building is noted as 'Exchange Only' and is not therefore connected to the local street cabinet and BT are currently 'exploring options' in respect of FTTC technology delivery but provides no timescales for deployment at this time (Data via the BT website). Wimbledon Exchange to the north east affords a similar range of services, and can 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  
**Virgin Media** Tel: 0800 953 0180 www.virginmedia.com  
**Level 3** Tel: 020 7954 5454 www.level3.com  
**Vodafone** Tel: 020 7111 0047 www.vodafone.co.uk

### SUMMARY

The BT copper and fibre services available at Malden Exchange, and added resilience of a second exchange afford the CI Tower 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 in the building and potentially Level 3 with Vodafone outside and in the local environs affords an excellent choice of alternative carrier to provide fibre services to any incoming tenant at this time.

#### 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

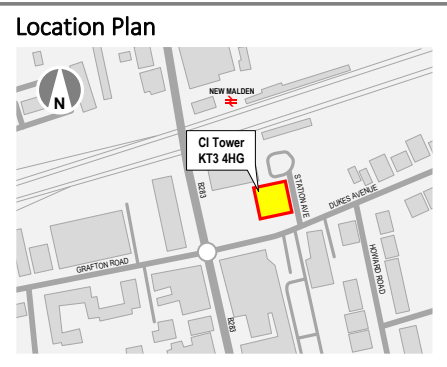
**LLU (Local Loop Unbundling)** Is the process by which third party network operators are able to install equipment into BT exchanges in order to deliver their own services without having to utilise BT's network.

**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.

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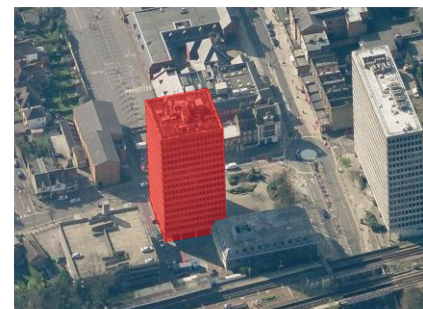
### TOPOGRAPHY



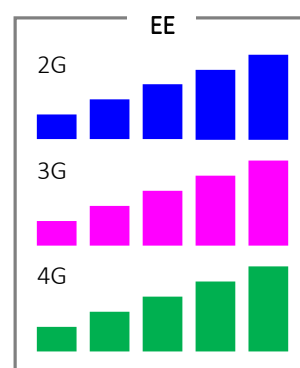
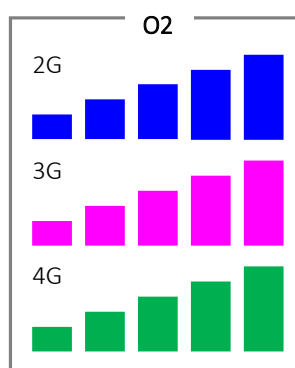
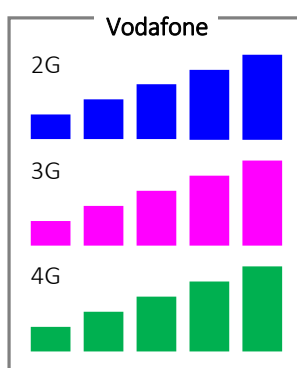
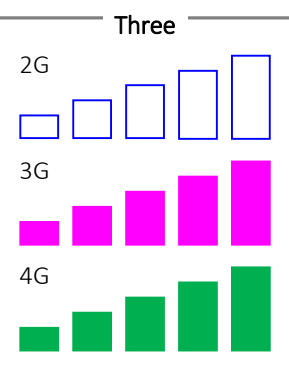
**Building Observations**

- Building sits in a commercial/residential property environment
- Adjacent buildings of varying height in all directions
- Building fabric consists of clad and glazed facades
- 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 CI Tower affords an excellent level of macro coverage from all operators for 2G, 3G and 4G services. 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 an excellent level of overall coverage across all operators at street level for 2G, 3G and 4G services.

### 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 across the basement areas and in the lifts across all operators and technologies. 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
Three	0	4	4
Vodafone	4	4	4
O2	4	4	4
EE	4	4	4

EE operates under both T-Mobile and Orange brands within the United Kingdom / Three operates a 3G/4G network only

### 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 15<sup>th</sup> August 2018. 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 WEST ALONG DUKES AVENUE



VIEW LOOKING SOUTH ALONG THE B283

## Local Carriers

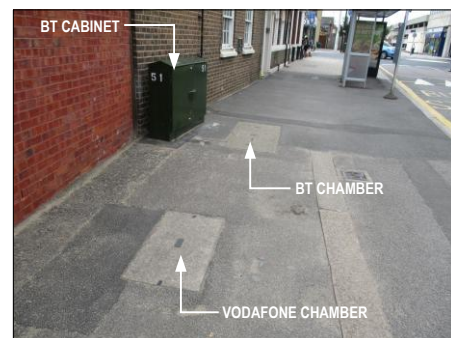
The CI Tower has telecommunications access from the south elevation from Dukes Avenue and to the north elevation from the B283 into the basement areas. The survey located a good number of telecommunications chambers owned and operated by BT, Virgin Media, Level 3 and Vodafone outside and local to the building (See **Photographs 1 to 6**). The presence from BT is extensive in this area with noted cabinets, chambers and infrastructure running along Dukes Avenue and the B283 on both sides of the carriageway extending around the building via the car park access road. The level of infrastructure from Virgin Media is also extensive in this area with infrastructure following a similar path to that of BT with a noted chamber adjacent to the building on the north elevation. A similar chamber location was noted for Level 3, with continued infrastructure along the B283 and Dukes Avenue where a further chamber was present outside the building to the south elevation. Vodafone's presence is less comprehensive than that of Virgin Media, but exists along both sides of Dukes Avenue with a noted chamber on the south elevation of the building.



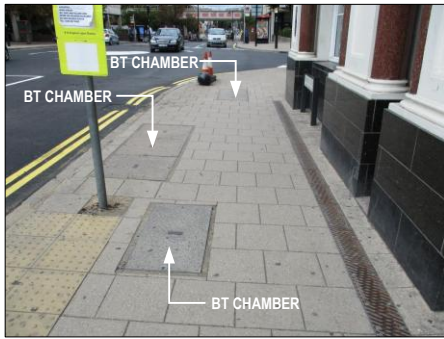
**PHOTOGRAPH 1**  
EXISTING BT, LEVEL 3 AND VIRGIN MEDIA CHAMBERS IN FOOTWAY AT NORTH WEST CORNER OF BUILDING



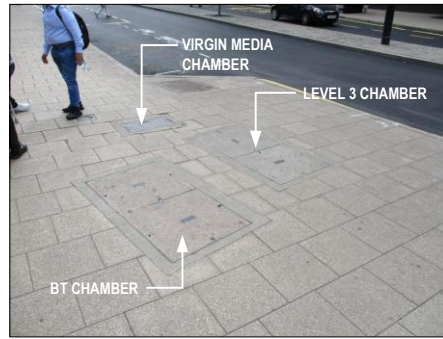
**PHOTOGRAPH 2**  
EXISTING LEVEL 3, BT AND VODAFONE CHAMBERS IN FOOTWAY ON DUKES AVENUE TO SOUTH ELEVATION OF BUILDING



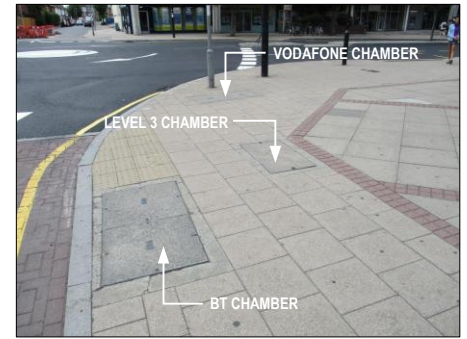
**PHOTOGRAPH 3**  
EXISTING BT CHAMBER AND CABINET PLUS VODAFONE CHAMBER ON DUKES AVENUE OPPOSITE BUILDING



**PHOTOGRAPH 4**  
EXISTING BT CHAMBERS IN FOOTWAY ON THE B283  
ADJACENT TO JUNCTION WITH DUKES AVENUE



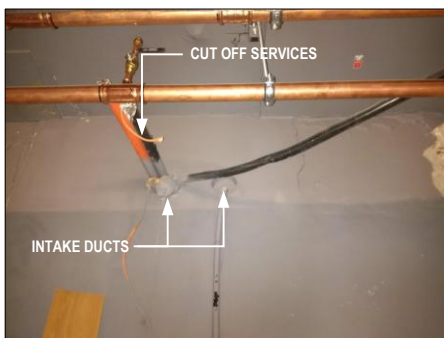
**PHOTOGRAPH 5**  
EXISTING BT, LEVEL 3 AND VIRGIN MEDIA CHAMBERS IN  
FOOTWAY ON B283 TO NORTH OF BUILDING



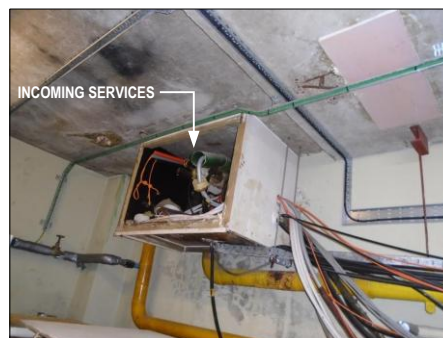
**PHOTOGRAPH 6**  
EXISTING BT, VODAFONE AND LEVEL 3 CHAMBERS IN  
FOOTWAY AT JUNCTION OF B283 WITH DUKES AVENUE

## Building Presence

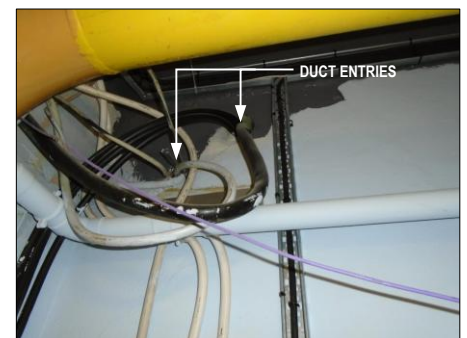
There are currently three points of telecommunications intake into the basement areas. The first is located a high level on the south elevation consisting of 2No. 90mm diameter (approx) ducts (See **Photograph 7**). BT enter this point with fibre services terminated in a gas seal with outgoing blown fibre tubes to the riser. Additional unmarked cables are within the ducts, but could not be identified due to height. It was noted that cut off cables exist and these are potentially deemed to be Level 3 based on the presence of their chamber plus historic civil scars, albeit subject to confirmation if required. The second intake is located on the north elevation at the west end into the tank room (See **Photograph 8**). This is considered to be the primary entry with a number of 90mm diameter (approx) ducts entering at high level. Both BT and Virgin Media enter this location with a number of cables running to the main frame room. The third intake is located also on the north elevation outside the tank room and provides access for a number of BT incoming fibre cables (See **Photograph 9**). The cabling from all of the intakes runs around the basement on high level containment to the central riser, with both BT and Virgin Media running via the BT frame room located in the centre of the basement (See **Photographs 10, 11 & 12**). BT terminates its copper services at this point in a main distribution point (DP) DP1078 and historic frame. Based on the number of cables and sizes we estimate approximately 300 copper pairs are present, but this will be subject to confirmation from BT. A number of the incoming fibre services from BT are terminated in gas seals in the frame room with outgoing blown fibre tubes to the riser. Based on the number of cables identified throughout the basement we estimate that approximately 40No. blown fibre tubes with a capacity of 4/12No. fibres per tube (160/480No. fibres total) are present at this time, albeit subject to confirmation from BT. The incoming Virgin Media services are also present in the frame room terminated in a building flexibility point and historic cabinet. All outgoing services exit the frame room through the wall onto the high level containment to the central building riser to all floors. It is considered that a number of services go direct from the intakes to the riser bypassing the frame room based on our inspection (See **Photographs 13, 14 & 15**).



**PHOTOGRAPH 7**  
EXISTING DUCT ENTRIES IN BASEMENT ON SOUTH  
ELEVATION OF BUILDING

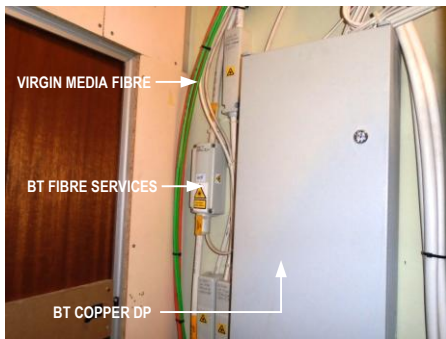


**PHOTOGRAPH 8**  
EXISTING DUCT ENTRIES IN TANK ROOM IN BASEMENT ON  
NORTH ELEVATION OF BUILDING



**PHOTOGRAPH 9**  
EXISTING DUCT ENTRIES IN ROOM ADJACENT TO TANK ROOM  
IN BASEMENT ON NORTH ELEVATION OF BUILDING

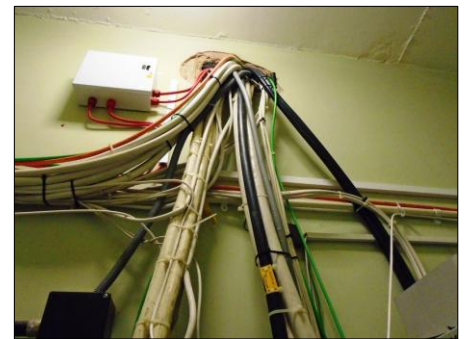




**PHOTOGRAPH 10**  
TYPICAL VIEW OF BT AND VIRGIN MEDIA SERVICES IN MAIN  
FRAME ROOM IN CENTRE OF BASEMENT AREA



**PHOTOGRAPH 11**  
VIRGIN MEDIA BUILDING FLEXIBILITY POINT ON WALL  
BENEATH BT COPPER DP



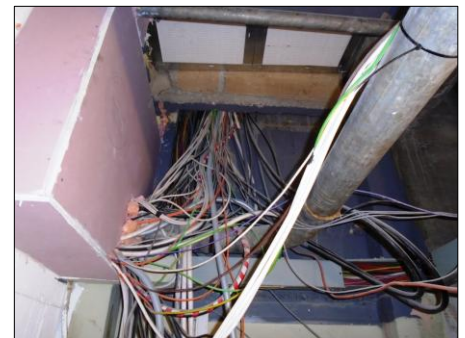
**PHOTOGRAPH 12**  
TYPICAL VIEW OF INCOMING / OUTGOING SERVICES AT  
HIGH LEVEL IN BT FRAME ROOM



**PHOTOGRAPH 13**  
TYPICAL VIEW OF SERVICES FROM PRIMARY INTAKE IN TANK  
ROOM EXITING AT HIGH LEVEL TOWARDS RISER



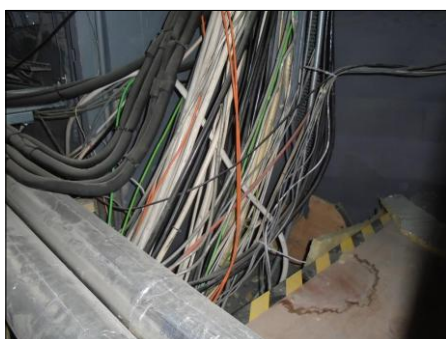
**PHOTOGRAPH 14**  
TYPICAL VIEW OF CABLING ON HIGH LEVEL CONTAINMENT  
ACROSS BASEMENT AREAS



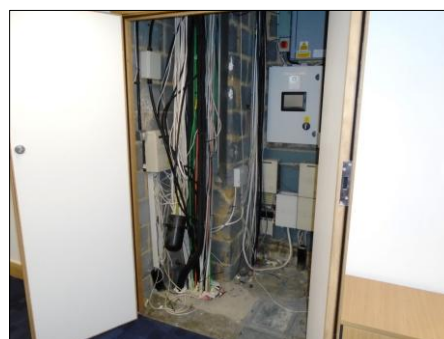
**PHOTOGRAPH 15**  
VIEW OF CABLING FROM ALL INTAKES ENTERING MAIN  
CENTRAL RISER IN BASEMENT AREA

## Risers and Cable Routes

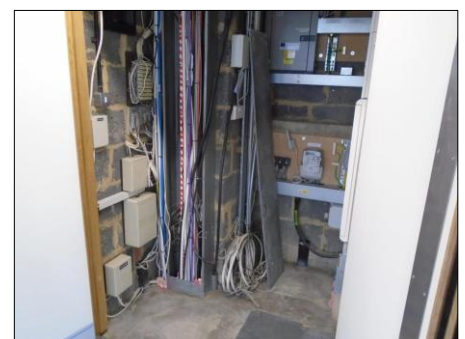
Access from the telecoms intake points in the basement are afforded by the vertical riser to all floors located in the centre of the main building core (See **Photographs 16, 17 & 18**). Based on our inspection of the building and riser we conclude that access to all upper floors is good in respect of riser location, with good access into the tenant areas to suit via the under floor trunking and suspended ceilings. It was noted that a level of congestion is present at basement level due to the number of cables, plus the presence of a 'dog leg' section accessed via a hatch on the staircase between the basement and the first floor. However, this level of congestion is reduced with elevation and is not considered to impact on the delivery of any additional required services at this time.



**PHOTOGRAPH 16**  
TYPICAL VIEW OF 'DOG LEG' SECTION OF RISER BETWEEN  
BASEMENT AND FIRST FLOORS



**PHOTOGRAPH 17**  
TYPICAL VIEW OF RISER ON FIRST FLOOR INDICATING  
SERVICES AND AVAILABLE SPACE



**PHOTOGRAPH 18**  
TYPICAL VIEW OF RISER ON THIRD FLOOR INDICATING  
SERVICES AND AVAILABLE SPACE

### Legacy Fixed Cabling Assessment

As part of the survey, we reviewed the level of historic cabling that has been left in place following tenant vacation or legacy services from any of the telecommunications carriers. The level of services provided by BT across all floors is extensive both in respect of copper and fibre cabling, terminations and equipment etc. A number of small copper distribution points were identified on the floors with varying levels of outgoing cables etc. It is evident that some of this cabling may now be redundant. However, the level of this is minimal and we do not consider warrants any further action at this time. The level of historic services across the basement is extensive, but would prove challenging to identify redundant cabling that could be removed, and may cause interruption to ongoing services is addressed at this time. However, it may be worth considering in the future as part of any planned refurbishments.

### Service Availability

The standard services afforded by BT over its existing copper networks can offer ADSL broadband speeds of around 10-19Mbps. Malden Exchange has been enabled to provide BT Infinity services over FTTC technology with speeds of up to 80Mbps download and 20Mbps upload. However, this building is noted as 'Exchange Only' and is not therefore connected to the local street cabinet and BT are currently 'exploring options' 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 19Mbps ADSL lines bonded can increase speed to 38Mbps, 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 in the building, with potentially Level 3 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 CI Tower 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 Virgin Media, and potentially Level 3. The presence of Vodafone outside the building and in the local environs, albeit with requirements for a new building entry greatly enhances the connectivity of the building at this time.