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Telecommunications Connectivity

Fixed Network and Mobile
Coverage Assessment

Abbey Gardens
Abbey Street
Reading
Berkshire
RG1 3BA



Fixed Network Connectivity - Carrier Study

Abbey Gardens, Abbey Street, Reading, Berkshire RG1 3BA

Mar 2012

STRUCTURE

Abbey Gardens is a modern office building consisting of three interconnecting blocks located within Reading town centre. The building is over varying heights up to eight floors affording approximately 150,199 sq ft of Grade A office accommodation in total. The building is of concrete frame construction with external curtain walling of aluminium and full height glazed facades to all elevations. The building sits within an environment of other office buildings of equal or greater height to all sides.

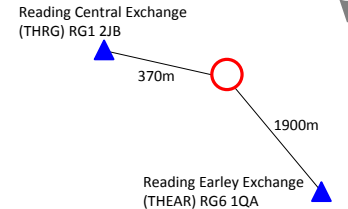
TOPOGRAPHY



Abbey Gardens
Abbey Street, Reading
Berkshire RG1 3BA



BT Exchange locations



Note: All distances are straight line and cable routes will be greater. All distances and orientations are approximate only

BT SUMMARY

Abbey Gardens is served from the Reading Central Exchange, positioned to the north west of the building. This exchange provides excellent services including ADSL, ADSL+, SDSL and 21CN WBC, FTTC plus the availability of good LLU services from AOL, O2/Be, C&W Bulldog, Sky Easy Net, Talk Talk, and Tiscali all over BT infrastructure. Based on the existing capabilities, Reading Central Exchange can offer broadband speeds of around 17Mbps. There is currently no forecast date indicated for the roll-out of BT Infinity services (Data via the BT website). The building is positioned on the fringe of the coverage from the Reading Earley Exchange, located to the south east providing similar services in order to deliver diversity and resilience if 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 constitute availability of service at the building location.

- British Telecom** Tel: 0800 800 152 www.bt.com
- Cable & Wireless** Tel: 0800 953 0180 www.cw.com
- Virgin Media** (NTL/Telewest Business) Tel: 0800 953 0180 www.virginmediabusiness.co.uk
- Colt Telecom** Tel: 0207 390 3900 www.colt.net
- Kingston Communications (Kcom)** Tel: 0800 915 5226 www.kcom.com
- Verizon** Tel: 0800 018 1818 www.verizonbusiness.com
- Geo Networks** Tel: 020 3326 9500 www.geo-uk.net

SUMMARY

The services available at Reading Central Exchange, and added resilience of a second exchange afford Abbey Gardens an excellent level of services to meet today's business needs. The presence of alternative carriers to BT offers additional choice of services and resilience, albeit some may be restricted by location and the cost of providing service over owned infrastructure. However, the ability to provide such services over the BT network must not be overlooked as a more cost effective solution. The potential of service provision from Cable & Wireless, Virgin Media, Colt Telecom, Kcom, Verizon and Geo Networks is one to be considered but would be dependant on the ability to access the site over third party infrastructure or by extension of existing infrastructure which would be subject cost considerations by the carrier in some cases.

RATING
BT / LLU **4**
CARRIERS **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

- 1** Limited infrastructure available
- 2** Adequate 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
- 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.

Mobile Voice / Data Appraisal - Coverage Predictions

Abbey Gardens, Abbey Street, Reading, Berkshire RG1 3BA

STRUCTURE

Abbey Gardens is a modern office building consisting of three interconnecting blocks located within Reading town centre. The building is over varying heights up to eight floors affording approximately 150,199 sq ft of Grade A office accommodation in total. The building is of concrete frame construction with external curtain walling of aluminium and full height glazed facades to all elevations. The building sits within an environment of other office buildings of equal or greater height to all sides.

TOPOGRAPHY

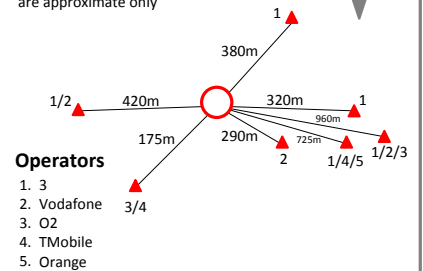


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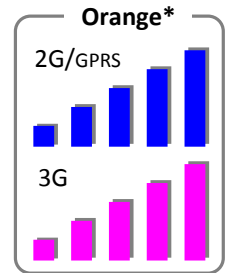
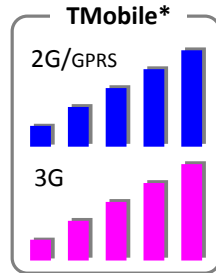
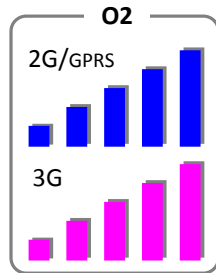
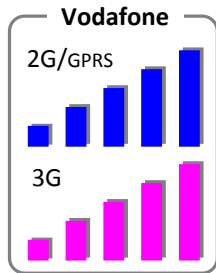
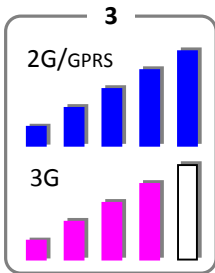


Macro Locations

Note: All distances and orientations are approximate only



STREET LEVEL COVERAGE



OBSERVATIONS

Abbey Gardens affords an excellent level of macro coverage from all of the five mobile operators as shown in the plan above. The closest serving cells are detailed in respect of 2G and 3G services and can be seen vary in location and distance, providing general coverage to the building. The location of adjacent buildings may impact on service due to shadowing. Based on this information it is considered to be a location that affords very good overall coverage across all operators.

NOTE*
Everything Everywhere operates under both the T-Mobile and Orange brands within the United Kingdom

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

Based on the location of the building and serving cells, it is envisaged that a good level of coverage will be present within the buildings for both 2G and 3G services, with potentially only small specific areas having issues due to their location such as internal rooms towards the middle of the buildings. The external glazed facades of the building, and close proximity of adjacent buildings can also impact on the penetration of signal throughout the building, but would only be expected to impact within specific locations. 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.

A further detailed internal survey for one or all operators networks can be undertake to determine the actual level of service achievable throughout the building should this be required. From this information, we can address any issues on the owners/ tenants behalf with the relevant mobile network operator.

INDOOR SUMMARY

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

COVERAGE KEY - Indoor prediction

- No indoor coverage at this location
- Indoor coverage unlikely
- Limited indoor coverage
- Variable coverage in all buildings
- Good coverage to small buildings, variable in larger buildings
- 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.

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Fixed Telecoms Appraisal Summary

In addition to the Fixed Network carrier study completed, a review by survey of the above location was undertaken on the 7th March 2012. The purpose of this survey was to clearly identify the presence of existing fixed telecommunications carrier's infrastructure adjacent to the building, or within the local environs.

Local Carriers

The buildings location is one that is accessed via Abbey Street to the west or King's Road to the south. This provides adequate routes for a good level of diversity should it be required, subject to suitable routes into the building. The level of existing infrastructure within and around Abbey Street and King's Road currently extends to that of British Telecom, Cable & Wireless, Virgin Media, Colt Telecom, Kingston Communications, Verizon and Geo Networks. This network infrastructure extends to the junction of King's Road with Forbury Road crossing the bridge into central Reading, which is occupied by a number of carriers.

It is evident that existing infrastructure from all highlighted carriers, with the exception of Verizon and Geo is present adjacent to the building with a number of recent connections visible by means of re-surfacing scars in the footway and carriageway.

Service Availability

The services afforded by BT over its existing copper networks provides an excellent level of broadband services with speeds expected in the region of 17.0Mbs. There is currently no forecast dates for BT Infinity within this area of Reading. (Data obtained via the BT website). The presence of Cable & Wireless, Virgin Media, Colt Telecom, Kingston Communications, Verizon and Geo Networks affords an excellent alternative to BT, and will be able to offer a host of business services to suit any requirements. The location of their existing infrastructure adjacent to / outside of the building is one that will necessitate limited civil works in providing a connection based on our initial investigations.

Summary

Based on the local carrier infrastructure and the availability of services from BT's Reading Central Exchange, we consider the building has an excellent level of connectivity with the ability to enhance this by means of fibre services if required in minimal timescales from order. The presence of the alternative carrier's in the local environs and close to the building affords an excellent level of service and diversity at this time with limited requirements for external street works albeit subject to rights of access requirements.