Manor Road – Digital Connectivity

Policy SI6

"To ensure London's global competitiveness now and in the future, development proposals should:

1) ensure that sufficient ducting space for full fibre connectivity infrastructure is provided to all end users within new developments, unless an affordable alternative 1GB/s-capable connection is made available to all end users

2) meet expected demand for mobile connectivity generated by the development

3) take appropriate measures to avoid reducing mobile connectivity in surrounding areas; where that is not possible, any potential reduction would require mitigation

4) support the effective use of rooftops and the public realm (such as street furniture and bins) to accommodate well-designed and suitably located mobile digital infrastructure."

1 Fibre Internet Solution for Apartment Blocks and Apartments

Drawings 0209506-HL-XX-ZZ-SM-E-640-0001.pdf and 0209506-HL-XX-ZZ-SM-E-640-0002.pdf show schematics showing the following information:

– Power On – Fibre Provider Utilising Building Provided Incoming Ducts to provide Connectivity to the Comms Room.
– Additional 100mm Ducts are available for alternative suppliers such as Open Reach ONT Solution.
– From the Comms Room Fibre Distribution is shown, with associated Home Hub & Telephone Point as required to each apartment.

Manor Road will be utilising the marketplace of Modern Residential Internet Service Providers and Open Reach ONT Solution to provide appropriate connectivity.

Modern Residential Internet Service Providers

The Residential solutions that are currently available from providers such as Hyperoptic, Power On, Glide and Wifinity include:

– Incoming multiples of 10Gb Fibre Connection that is shared amounts the Apartments.
– Internal Fibre Cable connecting distribution Communications Rooms to Apartments.
– Service within Apartments includes: Revenue Packages with Standard Maximum Speeds of 1Gbps. Advanced Packages and functionality can be up to 10Gbps.
– Both Cable Connectivity and Wi Fi Connectivity.
– Wi Fi Connectivity with Apartments and Common Areas.
– Concept of Day 1 Connectivity, solution pre-installed by Main Contractor and Service Provider to allow tenants to energies connectivity via either online transaction or telephone transaction.

Features

– Ability to received 1Gb per tenant, tenants sign up online to start connectivity and open account.
– ISP Installs Internet Feed into Telco Room Located in basement.
– Fibre is installed within the risers of the building terminating in cabinets strategically located e.g. Risers.
– Copper Connectivity from the Cabinets connects to the tenant's demise.
– Connectivity provided via Hyperoptic Active Equipment.
– Unique Selling Point – Same Day Connectivity Online.
– 100% Hyperoptic's Risk on Service.

Figure 1 – Hyperoptic Tenant Connectivity Point

2 Mobile Phone Coverage Considerations

2) meet expected demand for mobile connectivity generated by the development

The Manor Road development with 500+ units will have a sizable local population which naturally will have a draw of the mobile phone capacity of the local area.

The additional capacity that is required within the local area will be mitigated via the following:

– Inclusion of a fast-accessible Wi Fi system including Guest Connectivity that will enable Mobile Phone devices to easily connect, therefore reducing the load on the Mobile Network, using functionality such as Wi Fi Calling and data usage via Wi Fi rather than the Mobile Network.

– Inclusion of Mobile Phone Enhancement that will add within the buildings and immediate external spaces additional mobile phone capacity for the required mobile phone networks, typically 4 MNO's.

Mobile Phone Enhancement Insight

It is envisaged that mobile signal reinforcement system will be required for the Manor Road development.

When looking at a strategy of how to manage the enhancement of mobile phone coverage we have included space allocation within the Communications Rooms active port count for the introduction of the system if required.

Typically, a cellular mobile reception survey is commissioned by the design team to review the current space to determine the current level of coverage during construction phase, normally following the completion of the fabric of the building and installation of glass and any windows.

Hoare Lea's strategy would look to include within the structured cabling system and active network design the ability to install enhancement devices within the common areas identical to the coverage of Wi Fi devices. Therefore, core provision is included within the building to install mobile phone boosting when and if required.

Licensed mobile enhancement providers will propose solutions to provide coverage and quality of 2G, 3G, 4G and 5G (if technically available) for all four mobile network operators (MNO's). It is envisaged that any signal reinforcement system required at the site, would preferably be a multi-operator system supporting business, staff and visitor use.

Two options are available for mobile phone signal boosting enhancement.

Option 1 Digital Distributed Antenna System

A traditional distributed antenna system (DAS) has been replaced in recent years by a digital distributed antenna system (DDAS).

The key differentiators of a DAS and a DDAS apart from offering a superior level of technology is the physical space requirement. A DAS typically needed a large communications room with multiple racks, where a modern DDAS only requires at a maximum a single rack and can be based within the MER. An allocation of a single rack has been included.

A DDAS typically operates most of the cabling on fibre compared to a traditional DAS operating on Coax, therefore the DDAS can utilise the provided fibre backbone infrastructure which is already included.

A digital distributed antenna system (DDAS) is a network of antennae distributed throughout a building to reinforce cellular mobile coverage within that building.

Remote units are commonly installed in risers. The number of antennae a remote unit can support depends on the design of the system (length of the cabling, and power required at each antenna) and is typically 5 No. to 15 No. antennae per building. Depending on the number of frequencies that need to be provided by the DDAS, sometimes more than one remote unit is required per location.

The remote units are then linked back to head-end equipment, accommodated in a dedicated rack within the MER, typically using fibre cabling.

The head-end equipment is then in turn linked via external wide area network fibre connections to a 3rd party operator, which manage the solution on behalf of the client.

The 3rd Party's equipment is then in turn linked to MNO base stations, again taking place offsite.
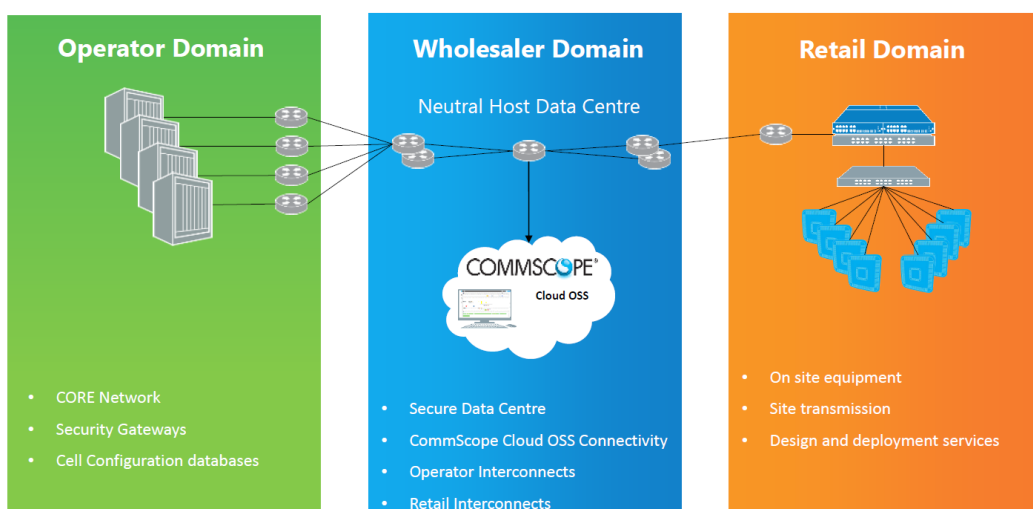
Option 2 Small Cells

Small cells are low-powered cellular radio access nodes which are PoE-enabled, similar in appearance to Wi-Fi access points.

Small cells are typically operator specific and are traditionally used as single operator solutions in residential and commercial environments.

Managed service solutions are available that comprise clusters of 4 No. small cells, one for each operator, installed in selected areas of a building.

The small cells are connected to the structured cabling system of a building. 4 No. RJ45 data outlets terminated to the nearest secondary comms room housing network access switches, are required for every cluster of small cells, Network access switches installed in each of the secondary comms rooms are linked via fibre to a core switch in the main comms room.

Small cell systems currently only support 3G for O2, EE and Three and 3G/4G for Vodafone. It is expected that, there will be a standard 3G/4G offering by the other operators in 2020. With the introduction or 5G in Q2 of 2021 the market is now changing further.

Currently copper structured cabling has not been included within the Stage 3 design with the preference towards a DDAS at this stage.

**Current Hoare Lea recommendation is the following configuration:**
– All-digital infrastructure

– Cat6A and fibre cabling

– Options for Common Network for DAS and Wi Fi

– Consideration for 3G, 4G and 5G

– Multi Operator

– Lightweight onsite equipment, compared to traditional DAS's

– Network equipment cohabits MER's and SER's, utilising common fibre infrastructure

– Engagement with 3rd party providers typically required for market engagement

3 Avoiding Local Interference

3) take appropriate measures to avoid reducing mobile connectivity in surrounding areas; where that is not possible, any potential reduction would require mitigation

The project design team during RIBA Stage 3 will work with the 4 Major MNO's via a Mobile Phone Coverage Survey to understand the impact of the buildings upon the local mobile phone coverage.

If coverage is impacted as shown in the image below, confirmed via appropriate Mobile Survey, engagement with the 4 Major MNO's will be required to allow mitigation to be completed. Typically, mitigation will include the incorporation of Mobile Cell Sites within the Roof of the Building, which can be completed during RIBA Stage 3 Detailed Design onwards and engagement with the MNO's.

Shadow volume in which receivers are potentially affected
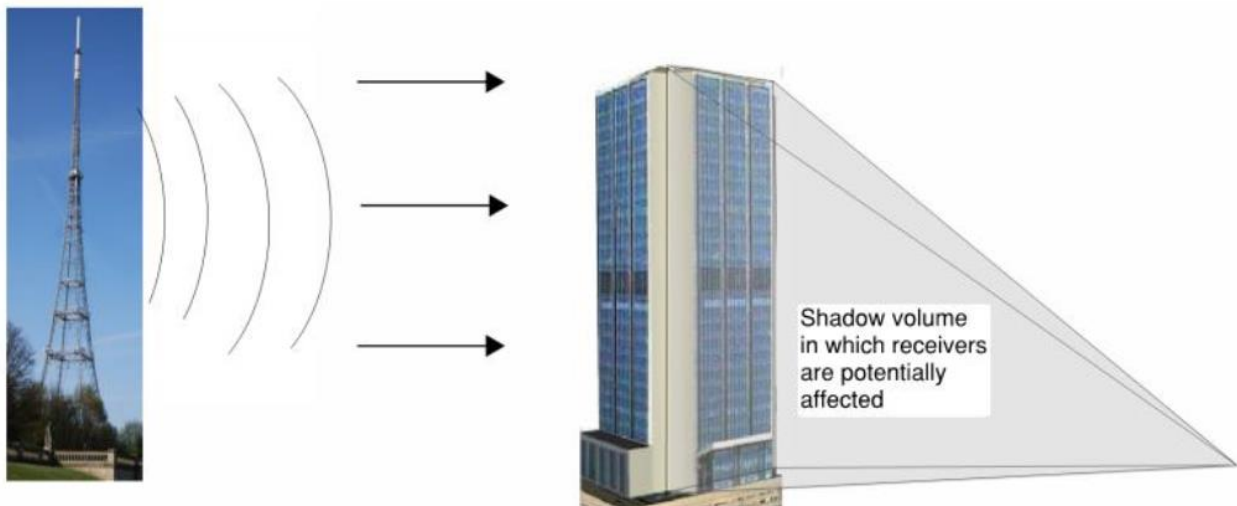
4 Spatial Allocation for MNO"s

4) support the effective use of rooftops and the public realm (such as street furniture and bins) to accommodate well-designed and suitably located mobile digital infrastructure."

Following the Mobile Survey at RIBA Stage 3 and working with the MNO's, enhancement and mitigation maybe required to be incorporated into the design, and respect of the Telecommunications Act, that gives MNO's the right to place equipment as required.

Developed Design will ensure design solutions are incorporated into the buildings to allow for MNO's integration either on day 1 or in the future, solutions include:

– Allocation of Roof Space, to ensure any impacted shadows are mitigated.
– Planned external locations for Microsites (it is understood that with the growth of 5G network, microsite requirements will continue to grow).