From 2G to 5G

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The roll-out of fifth-generation telecommunications is placing fresh demands on operators and landowners alike but there are significant opportunities for shrewd surveyors

In 1995, second-generation or 2G mobile technology arrived, allowing around 7% of the UK?s population to benefit from voice calls and texting. The next 2 decades saw 3G and 4G complement these services with dedicated data products and network capacity that enabled smartphones to support essential applications. Now 5G is set to revolutionise mobile networks and their uses. The internet of things, autonomous vehicles and the interconnected world will all need the new generation network to meet the need for a significant increase in volume, availability of data services and speed of operation, also known as lower latency.

To achieve this step-change, these networks will need base stations with smaller footprints, as the allocated radio frequencies continue to rise: higher frequencies provide greater capacity but lower range. Small base stations using the high frequency end of the spectrum are also poorer at penetrating structures, so specific indoor infrastructure will be needed as radio signals from outside will be unable to reach very far into insulated buildings.

For most operators, it will be more economically feasible to start 5G roll-out with restricted, dense zones of high capacity to support these new services rather than attempting to provide ubiquitous coverage. The new sites are likely to appear first in city centres and along main transport routes. For years to come, 2G is likely to maintain coverage for voice and texts, while 4G will continue to provide wide-area data capacity, until there is compelling justification for extending the 5G network.

This densification is likely to drive the roll-out of the much-heralded urban small cells ? small antennae, located mainly on existing street furniture ? in large numbers. Each new site will need to be connected by fibre as point-to-point microwave radio systems will generally be unable to provide sufficient capacity. The new network, therefore, will build on existing ones, adding layers of complication in design, architecture and management, with a universal requirement to replace existing copper cables and radio connections with fibre.

The UK is particularly lacking in this area: in January 2018, <u>4% of properties benefited from a</u> <u>fibre connection</u>, whereas Spain, by way of comparison, was at <u>35% at the end of 2016</u>. So, while the UK can quote coverage and capacity at internationally competitive rates for today?s network, it is at a significant disadvantage at the starting point for 5G.

The need for the UK to be able to compete globally has led the government to take measures to support the roll-out of these new networks. In 2016 the telecoms section of the General Permitted Development Order was revised to relax the rules on deploying such apparatus. Masts could be made taller, more equipment could be deployed on existing sites and the locations where these rights apply were extended. In December 2017 the Electronic Communications Code (ECC) was also revised, giving operators rights ? in the absence of an

arm?s-length, commercial agreement at a market rent ? to have the Lands Tribunal order their equipment to be deployed even if site owners decline to cooperate.

Rents for telecom base stations are to be set in a manner similar to compulsory purchase, on a ?no scheme world? basis, assuming existing use values, potentially at a peppercorn amount. A <u>Lands Tribunal Decision in February 2019</u> settled consideration for a base station on the roof of a block of flats in Islington at ?50 per year, with additional elements adding up to a total of ?1,000 per year. The rent had been agreed under the old code at ?21,000 per annum.

The practical implications of the new code have alienated many site owners and their agents, who are disinclined to cooperate around further apparatus. Until the tribunal sets a case precedent on rental levels, many negotiations for new sites are being delayed.

The overlapping constraints on the deployment of the new 5G network therefore include technical complexity, the need for many more cell sites, network range, financial feasibility, the cooperation or otherwise of property owners and the lack of fibre. What does this mean for chartered surveyors?

Threats to traditional roles

Many chartered surveyors have built their careers on advising owners about investment and the management of assets and their occupiers. The traditional telecom property market of the 1990s, based on designing, building and renting masts and base stations, has now changed fundamentally. The demand for services around telecom property is expected to surge again for 5G but the ground rules have changed with the new legislation.

The level of surveyor expertise previously required for management or acquisition tasks is no longer necessary, neither is it affordable for operators or landowners. Previous roll-outs have created teams of unqualified but experienced support staff, capable of providing the required services at more competitive prices. The role of a surveyor is likely to be leading these teams, providing quality control and acting as an escalation point when issues arise.

Operator clients also see value in bundling together the services they commission and a surveyor?s services form only part of the requirement. Surveyors must, therefore, either expand their knowledge and expertise into new areas or accept a less vital role in the market. It will become important to understand and be able to demonstrate the added value that a chartered surveyor brings to justify the consequential cost premium.

Chartered surveyors managing commercial or rural property for clients who are approached by operators with requests to locate base stations on land or buildings are likely to find they have less understanding of the technical and commercial issues affecting the operator. This will make it difficult to conclude agreements or settle them quickly and amicably. Understanding that clients? and surveyors? own interests have been shaped by the new ECC and revised planning legislation will be essential, but telecoms property issues are likely to become an area requiring specialist help.

It is also becoming apparent that the traditional benefit of a financial return from an operator occupying property may be exceeded by the coverage they provide. Strong evidence suggests that the ability to connect a property to an operator?s network delivers a significant premium to the property owner in terms of rent and capital value. As Extended Systems chief technology officer Tormod Larsen observes, ?There is widespread recognition now that mobile connectivity is the building?s fourth utility. Building owners realise that reliable coverage is essential to prospective tenants, and they?re seeing better tenants in buildings with advanced connectivity.?

How can a chartered surveyor determine the balance between the value of coverage by 1 or more operators against the peppercorn rent they wish to pay and the property management difficulties they create? The speed of these changes is increasing, but as it does, the risk of acting without sufficient professional knowledge of the consequences also rises.

Operators and owners offer opportunities

The volume of upgrades, changes, new sites and wayleaves that existing and new 5G networks are generating will require dedicated, knowledgeable and proactive professional management, whether on behalf of the operators or property owners. Chartered surveyors can grasp these opportunities in a number of ways:

- new site searches;
- site surveys, using modern technology to increase efficiency;
- civil design, both for in-building installations and external sites;
- structural surveys and certificates;
- acquiring new sites, extensions and equipment upgrades;
- rent reviews and lease renewals;
- notices to quit and temporary solutions for site refurbishments;
- town and country planning applications and notifications;
- wayleaves;
- maintenance schedules;
- health and safety implications and compliance with the <u>Construction (Design and</u> <u>Management) Regulations 2015</u>;
- removal of equipment and providing records of condition; and
- expert witness representations.

Understanding that operators are dealing with barely manageable levels of complexity simply to operate the existing networks ? even before 5G arrives ? is crucial to aligning clients? and chartered surveyors? objectives. This needs to go hand in hand with an understanding of property owners? particular concerns and constraints. Appreciating both sides? points of view and articulating them concisely will help all parties and may, thereby, avoid the need to refer to the Lands Tribunal to impose an agreement, with consequential cost savings for both sides. Doing so will distinguish the professional surveyor from the unqualified competitor.

When considering the business opportunities, understanding that the operators do not have the ability to invest in new networks in the way they have done in the past will be vital. They are under constant pressure to compete on customers? monthly charge rates. This is not compatible with the need to buy new spectrum bands, deploy densified networks that offer access in buildings and lightly populated locations, and achieve a return on their investment.

The business opportunities, therefore, are likely to be based on a low-cost, high-volume model. Chartered surveyors? understanding of modern technology and practices should make them more efficient than less-qualified counterparts. For example, LIDAR surveys have been shown to reduce the need for site visits by 70%, while integrating telecoms design into a building information model will allow cable routes to be planned from a desktop. The effective use of these technologies may mean that the deployment of a site on 1 property could be achieved, where it would be cost-prohibitive on another.

Understanding the level of professionalism and integration of all of these issues so that the telecom property complies with health and safety legislation in terms of design and management is another area where chartered surveyors can differentiate their services from those with less knowledge. This issue is of increasing importance to all parties; supply chain management is another area of increasing risk for operators and property owners alike.

Surveying is based on capturing and interpreting data for benefit. That remains true in the

fast-moving environment relating to telecoms property issues. Identifying where those benefits are and how to realise them, together with regulatory compliance, puts chartered surveyors in a unique position to serve clients? interests, the profession and UK plc.

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Further information

- Related competencies include: <u>Landlord and tenant</u>, <u>Legal/regulatory compliance</u>, <u>Valuation</u>
- This feature is taken from the <u>RICS Property journal</u> (May/June 2019)
- Related categories: Funding development projects