Chief Executives' Group – North Yorkshire and York

9 February 2017

Improving mobile phone coverage

1.0 Purpose of report

1.1 To seek support for a proposal to improve mobile phone coverage across North Yorkshire.

2.0 The industry explained

Mobile Network Operators

2.1 There are four Mobile Network Operators (MNOs) in the UK; EE (owned by BT); Three; O2; and Vodafone.

2.2 There are also a number of Mobile Virtual Network Operators (MVNOs) who enter into agreements with the MNOs to access their networks, for example Tesco and Virgin.

2.3 The table below published by the National Infrastructure Commission in 2016 shows the percentage of subscribers for each MNO (including MVNOs).

UK Mobile Network Operator subscribers	
Operator	**Subscribers**
EE (owned by BT)	33%
O2	33%
Vodafone	23%
Three	11%

2.4 There is a network sharing agreement in place between EE and Three and a separate agreement between O2 and Vodafone.

The evolution of coverage

2.5 The table below shows the evolution of mobile phone coverage over the years.

Type of coverage	**Year of rollout**	**Function**
1G	Early 1980s	Voice only to a limited number of subscribers.
2G	1992	Predominantly voice services and some early data service.
3G	2003	Data services become core part of mobile phone use.
4G	2012	Faster data speeds. The "smart phone age"
5G	Gradual introduction from early 2020s, but full deployment unlikely until the 2030s	Ultra-fast reliable connectivity.

2.6 Currently mobile voice coverage is provided using a combination of 2G and 3G technologies and mobile data coverage is provided over 3G and 4G. The standards for 5G are yet to be agreed, but it is envisaged that the data coverage will be similar to a fixed Wi-Fi connection.

3.0 Evidence of the problem

Voice coverage

3.1 The table below shows voice coverage in the UK's rural areas. The data provides a good indication of coverage, but because operator's coverage data is based on computer predictions it can be inaccurate.

Voice network coverage in UK's rural areas (Source: Ofcom analysis of operator data, 2015)			
	None of the voice networks have coverage "Not-spots"	Some of the voice networks have coverage "Partial not-spots"	All voice networks have coverage
Outdoor premises	3%	25%	72%
Indoor premises	13%	56%	31%

3.2 It can be seen from the table that in terms of outdoor signal 3 per cent of rural areas have no signal (a "not-spot") and 25 per cent of rural areas only have coverage from some of the operators ("partial not-spot"). The issue in these "partial not-spot" areas is that unless the user is a customer of the particular network providing coverage they will not receive a signal. The situation is considerably worse indoors because buildings block the signal with 13 per cent of the rural population living in a "not-spot" and 56 per cent in a "partial not-spot" area.

Data coverage

3.3 The 4G network is critical for data coverage as it is up to ten times faster than 3G. In 2016 the National Infrastructure Commission reported that 80 per cent of rural premises are in a "not-spot" for 4G coverage.

3.4 Furthermore data from OpenSignal published in November 2016 shows that on average UK mobile users can only access 4G coverage 58 per cent of the time. OpenSignal data is based on the actual experience of 15 million customers recorded through an app which monitors the performance of their mobile connection.

Barrier to growth

3.5 These coverage issues already act as a barrier to growth particularly in rural areas where businesses do not receive a signal. Without intervention there is a real risk of the situation worsening as investment is targeted in urban areas and potentially other rural areas.

3.6 A Confederation of British Industry (CBI) survey in 2016 found that 81 per cent of firms see more reliable connectivity as essential.

3.7 Ofcom reported in 2015 that 31 per cent of consumers in rural areas were dissatisfied with their mobile reception.

3.8 Since the introduction of 4G services there has been a rapid increase in mobile data traffic that is predicted to continue. Ofcom estimate the increase is currently around 60 per cent a year. In areas of high demand there is a concern that the existing network

cannot cope with this rising demand leading to a “capacity crunch”. York has been highlighted by one MNO as a location where this is already an issue.

3.9 The reality is that mobile phone coverage is often now described as a utility, rather than a luxury, and business and residents expect coverage to meet their requirements.

4.0 How the technology works

Radio spectrum

4.1 Radio spectrum is used by the MNOs to provide coverage with information transmitted over different frequency bands. This radio spectrum is a finite resource and is auctioned by Ofcom.

4.2 Lower frequencies provide better wide area coverage, whilst higher frequencies offer more capacity and MNOs therefore need a mixture of frequencies to provide their different services.

Mobile network infrastructure

4.3 Mobile network infrastructure can be divided into three main elements:

- Radio access network – a network of base station sites or “masts” that transmit and receive data from mobile devices.
- Backhaul network – this relays data from the base stations to the operator’s core network and is mostly physical cabling (fibre connection) due to its ability to carry high capacity data.
- Core network – the “intelligent” part of the network owned by each MNO which identifies the location of the network’s subscribers and ensures data is sent to the correct user.

Base stations (“masts”)

4.4 There are four key factors that need to be satisfied in order to deliver a mast site:

- Identify appropriate site and reach agreement with landlord.
- Secure power supply.
- Secure a backhaul network connection which is generally a fibre connection although the connection can be wireless.
- Secure planning consent.

4.5 The network of base stations must be built out from the centre and neighbouring base stations must be connected to one another to ensure coverage is retained as users move about.

4.6 Wholesale Infrastructure Providers e.g. Arqiva are increasingly providing mast sites for the MNOs. This has resulted in cost savings to the MNOs through economies of scale.

5.0 Government intervention

Obligation on the MNOs

5.1 In 2014 the Government agreed a legally binding agreement with the four MNOs to improve mobile infrastructure. The MNOs have agreed to a £5 billion programme of investment and the following targets by December 2017:

- Guarantee voice and text coverage from every operator across 90% of the UK;
- Increase full coverage from all four mobile operators to 85%;

- Cut complete not-spots by two-thirds and halve partial not-spots; and
- Provide more reliable signal strength for voice coverage.

5.2 However, the British Infrastructure Group of MPs have said these targets are "highly unlikely to be achieved" by December 2017. The Digital Economy Bill includes a proposal to enable Ofcom to fine any MNO failing to meet these targets up to 10% of its 'relevant gross revenue', but the Bill needs to be passed in time to give Ofcom this power.

Legislative change

5.3 The Government has pursued a number of legislative changes in an attempt to reduce operational costs and barriers to investment for the industry including:

- Planning reforms which extend permitted development rights for taller masts
- Amending the Electronic Communications Code which oversees the relationship between MNOs and site providers. The new code is seeking to restrict site providers from charging exorbitant rental fees which can be a barrier to investment particularly where the business case is marginal.

Emergency Services Mobile Communications Programme

5.4 This will provide the next generation communication system for the three emergency services, but the intention is that this network will be shared with the public. The Government has committed £1 billion of investment and EE has won the mobile services provision element of the contract.

Funding for 5G trials

5.5 In the 2016 Autumn Statement the Government announced that local authorities will have the opportunity to bid into a £740m fund to trial 5G networks by linking them to fibre optic systems.

Mobile Infrastructure Project

5.6 In 2013 the Government committed £150m and identified 600 potential sites for new phone masts to address "not-spot" areas. However, by the end of the programme in March 2016 only 75 masts had been built. It is widely accepted that the project was badly managed with poor engagement with stakeholders and unrealistic timetables being cited as the root causes for the failure.

6.0 Need for further action

6.1 Whilst the Government interventions identified in paragraph 5 will bring some improvement, the National Infrastructure Commission have recently concluded that there will continue to be on-going coverage issues unless further action is taken.

6.2 Furthermore, the National Infrastructure Commission report that an emerging tension in the UK mobile market is limited capital. Whilst data usage has grown exponentially over recent years the industry has not been able to pass these costs onto the consumer leading to challenges in financing the enhanced infrastructure. Future investment is therefore likely to be targeted, even more so than is currently the case, at the most economic (densely populated) areas.

6.3 Other local authorities, particularly those covering rural areas, have flagged the issue of poor mobile phone coverage, but this has tended to focus on criticism directed towards the Government and the MNOs. There is limited evidence of local authorities in England being proactive and setting out their stall to do everything within reason to work with Government and the industry to improve coverage.

7.0 What we have done so far

7.1 Officer time has been invested to explore the issues and develop a better understanding of the possible solutions. The County Council has met with senior representatives from all four MNOs. The issue has also been raised with the Directors of Development Group.

8.0 Proposal

8.1 It is proposed that:

All public sector partners make a collective commitment to work with the industry, Government and Ofcom to maximise commercial investment in improving coverage and pioneer innovative solutions to address coverage issues in rural areas that are currently less commercially viable.

8.2 The thinking being that if all public sector partners and the York, North Yorkshire and East Riding LEP can sign up to such a commitment we could set ourselves apart from other areas. It should make the area more attractive to the industry and we can lobby with one-voice. In terms of the specific actions it is proposed that we:

1.	Seek to make the case/lobby Government/Ofcom to position North Yorkshire at the forefront of piloting potential new solutions including: • The sharing of infrastructure so that a single set of infrastructure supplies services to all. The National Infrastructure Commission has recommended that by the end of 2017 Ofcom and Government must review the existing regulatory regime to ensure that it supports this solution. • Macro not-spot roaming which would enable mobile customers to use different mobile operators when they do not receive signal from their primary provider. In November 2014 the Government consulted on a proposal for national roaming which was unanimously opposed by the MNOs. However, the British Infrastructure Group of MPs has recently recommended that Government should undertake an impact assessment of a smaller-scale system of mobile roaming targeted in rural areas most affected by "not-spots". They argue this approach could significantly improve coverage without compromising network ownership. • Trialling 5G networks.
2.	Make available all appropriate public sector land for mast sites.
3.	Seek to develop innovative funding solutions that support the roll-out of new infrastructure in locations that are currently less commercially viable. Areas that could be explored include funding bids e.g. Local Growth Fund, business rate relief, grant subsidy etc. It is difficult to ascertain how much it costs to deliver a mast site, particularly in a challenging rural area, as this is commercially sensitive information. The Government allocated £150m to the Mobile Infrastructure Project and the target was 600 masts so this equates to £250K per mast. However, this funding covered site searches/acquisition and supplier/programme management costs so the build costs per mast must have been less than this. Some MNOs have indicated a higher figure than this (up to £500K) whereas others have suggested it costs less (£80K). Clearly every site has its own challenges and these will be reflected in the cost of delivery.
4.	Ensure a consistent and supportive planning environment across all authorities and that the deployment of digital infrastructure is established as a priority in local planning policy.

5.	Work with the MNOs to understand/influence future commercial investment plans.
6.	Seek to address any issues, challenges and community opposition in relation to new infrastructure at an early stage in advance of the formal approval process.
7.	Facilitate better engagement between all stakeholders including communities, the MNOs, Government, Ofcom and all local authorities.
8.	Develop the intelligence base around coverage issues in order to inform priority areas.

8.3 There would need to be further engagement with the industry, Government and Ofcom to refine these actions into a delivery plan.

8.4 In order to effectively deliver on such a commitment it is proposed that we need to identify a delegated individual with lead responsibility. In reality it is suggested that this means the creation of a new post to act as facilitator/trouble-shooter with the specific focus of implementing the delivery plan. It is felt that such a post would help to address the root causes for the failure of the Mobile Infrastructure Project (see paragraph 5.6).

8.5 The County Council is therefore proposing to fund a new post that would be focussed on North Yorkshire, but that could liaise with the City of York Council and East Riding of Yorkshire Council.

9.0 Recommendations

9.1 District Chief Executives are asked to seek the necessary member approval for their authority to sign up to the commitment and contribute where required to the proposal set out in paragraph 8.

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Background documents

- Connected Future, National Infrastructure Commission, 2016.
- Mobile Coverage: A good call for Britain? British Infrastructure Group, 2016.
- Connected Nations, Ofcom, 2015.