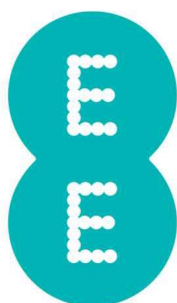


2019

# INDEPENDENT BENCHMARK ASSESSMENT OF MOBILE COVERAGE IN WORCESTERSHIRE



Worcestershire  
Local Enterprise Partnership



worcestershire  
county council



## EXECUTIVE SUMMARY 1 of 2

This report presents the results of the mobile network coverage and user experience assessment of the four main operators (3UK, EE, O2 and Vodafone) during the mobile network benchmarking survey conducted in Worcestershire for Worcestershire County Council (the Council) and Worcestershire Local Enterprise Partnership in September 2019.

The central framework for the benchmarking survey was centred on:

Measurement and mapping of the current GSM (2G), UMTS (3G) and LTE (4G) mobile network coverage footprint, including evaluation of voice and data service quality and user experience.

The scope of testing included drive surveys covering approximately 1,500 km of Class A and B roads, walk and stationary surveys in over 38 locations as well as rail surveys along 6 key railway routes.

The 2019 survey results were compared to the results of a similar benchmarking survey commissioned by the Council in 2017 and, as part of activities initiated by the Council and Worcestershire LEP to address the quality of mobile network services for residents and businesses. As with the 2017 report and findings, the output from the 2019 activity will be used as input to engage the mobile network operators and other stakeholders in a collaborative effort towards improving mobile network coverage in the County.

To receive voice and data services on a mobile network, a mobile signal with sufficient power and quality is required. For ease of comparison, the technology-specific signal thresholds outlined by Ofcom, in the 2018 *Connected Nations* report, for what defines a sufficiently strong signal to make a voice or data call was used.

With these threshold values, the findings from the coverage assessment for each network layer are:

- **2G:** An outdoor 2G signal on the roads, from the lowest performing operator, was available at least 88.84% of the time in 2019 *compared with 88.56% 2G signal availability on the roads for a County in the East of England from data collected in 2019.*

O2 had a 5% increase in its 2G coverage footprint since 2017 - the highest increase among the operators. O2 and Vodafone's coverage footprint remained largely unchanged from the levels recorded in 2017.

- **3G:** An outdoor 3G signal on the roads, from the lowest performing operator, was available at least 95.68% of the time in 2019 *compared with 94.88% availability on the roads for a County in the East of England from data collected in 2019.*

Comparing the operators, 3UK and EE have similar 3G coverage footprints with signal availability of around 95.68% translating to no significant improvements from 2017. O2 and Vodafone have similar coverage footprints of 98.17% in 2019 meaning a slight improvement from 2017.

The similarity in coverage footprints for some of the operators may be due to existing infrastructure sharing arrangements between the operators through joint venture vehicles such as MBNL and CTIL.

- **4G:** An outdoor 4G signal on the roads, from the lowest performing operator, was available at least 92.50% of the time in 2019 *compared with 94.78% availability on the roads for a County in the East of England from data collected in 2019.*

There was an 8% to 10% improvement in outdoor 4G coverage footprint from the levels recorded in 2017.

EE has the highest footprint of 98.02% 4G signal availability on the roads from the results of the 2019 survey.

### Voice coverage

In-car voice service coverage represents the percentage of tested areas where voice calls were successfully attempted, sustained and completed either on the 2G, 3G or 4G technology layers within the required call duration window.

Outlined are the key voice coverage findings from the benchmark assessment:



## EXECUTIVE SUMMARY 2 of 2

- Voice services can now be accessed via 2G, 3G and 4G technologies compared to only 2G and 3G in 2017 (with the exception of EE which had 4G voice then).
- At least 45% of voice calls made during the survey, for all four operators, were conducted on the 4G technology layer in 2019 compared with only 21% for EE in 2017.
- Voice coverage on 2G/3G increased 2-3% for 3UK and EE since 2017.
- The quality of voice calls is generally better on 4G than on 2G/3G. Average voice quality scores on 4G were above 4 out of a maximum of 5 for all four operators in 2019 translating to clear voice calls on average.
- Consumers can improve their mobile reception experience, through the increased capacity and quality provided by the availability of 4G, by using handsets, SIM cards and subscription plans capable of accessing all 3 technologies.

### Data coverage

Data service coverage was assessed on 3G and 4G technology layers and represents the percentage of areas where a sufficiently strong 3G or 4G signal was present to support successful data services such as file transfer downloads.

- Data coverage has increased marginally, corresponding to the moderate improvements in 4G signal availability.
- The highest utilisation of data services on 3G for all networks was around 20%, while the rest occurred on 4G and 4G+ technologies.
- The increase in geographic 4G coverage and use of LTE carrier aggregation technology has impacted positively on the average data speeds. In 2017, the average data speed on the roads in Worcestershire was 13.31 Mbps compared with 16.84 Mbps in 2019.

### District Comparison

Seven diverse locations were surveyed in each of the six districts in Worcestershire. The data collected was analysed and used to compare the user experience and service performance between the six districts.

The best user experience for voice services was recorded in Wyre Forest district where 98% of voice calls initiated in the 2017 and 2019 surveys were successful, reflecting a better radio coverage around Kidderminster and Bewdley compared with the more rural areas of the county such as Malvern Hills.

For data performance, the fastest average mobile data speed was 21.89 Mbps, recorded in Bromsgrove and Wyre Forest districts. This performance is in line with the UK average mobile speed of 21.7 Mbps. Malvern Hills district had the slowest speeds in 2019 with an average of 13.59 Mbps reflecting its lower signal coverage footprint.

The coverage footprints for each mobile network operator and technology (2G, 3G or 4G) are presented in the report in the form of heatmaps, and screenshots showing the locations of not-spots and call failures recorded during the surveys. The detailed results and performance ranking of the locations surveyed are provided in the Appendices.

While Mobile Network Operators are responsible for providing and maintaining Outdoor coverage, poor or unreliable indoor coverage continues to be a challenge for many consumers. Advice for consumers who may be faced with mobile network issues is provided in Appendix A of the report.

Infrastructure sharing arrangements such as the proposed Shared Rural Network venture, if progressed in the UK, should significantly lower 4G network deployment costs and serve as an impetus to improve outdoor coverage in rural settlements, like those found in parts of Worcestershire. To improve mobile connectivity and the user experience in Worcestershire requires the focus and combined efforts of Mobile Network Operators, Central Government, Ofcom and local organisations, such as the County Council, as well as the End Users themselves.