

# NFU SPOTLIGHT ON FARM BROADBAND & MOBILE NETWORKS



## KEY ASKS

The NFU calls on the government to keep its commitment to make the UK the best connected country in the world, by ensuring that there is the necessary targeted funding and a positive regulatory framework to support the accelerated roll out of universal superfast broadband and a reliable mobile phone network. We need a system designed to actually address the rural market and boost competition to access the final 5%. We ask the telecommunications industry to get positively involved. We want a competitive digital rural market for our members and their rural communities.

## TO ACHIEVE THIS WE ASK FOR:

- 1 Targeted action to provide superfast broadband for the final 5%
- 2 Easier access for broadband providers offering affordable alternative solutions
- 3 Prompt and fair information sharing about the current superfast roll out
- 4 Measurement of actual broadband delivery on the ground
- 5 A review of the Mobile Infrastructure Project and targeted intervention to accelerate 'not-spot' coverage
- 6 Fair land deals for farmers and landowners offering their land for telecoms projects
- 7 'Digital by default' by choice, with offline solutions offered for those without access to infrastructure
- 8 4G services that do not compromise delivery of quality voice and text coverage
- 9 Research into fifth generation (5G) technology to be targeted on agriculture and other spectrum advances
- 10 Greater focus on improving health and safety using broadband and mobile phone technology



## FOREWORD

The government has committed to making the UK the best connected country in the world, by ensuring that there is the necessary targeted funding and regulation to allow the accelerated roll out of universal superfast broadband and a reliable mobile phone network. The NFU calls on government to ensure that farmers and rural areas are prioritised throughout the remainder of the roll out.

UK government targets include delivering superfast broadband (defined as 24 Megabits per second (Mbps)) to 95% of premises by 2017<sup>1</sup>. This leaves an estimated 5% or 1.2 million premises without superfast provision. In comparison, EU wide targets involve universal access to 30Mbps by 2020 and Sweden has progressive roll out of 100Mbps to 90% by 2020<sup>2</sup>.

Our mobile phone industry is committed to providing 90% geographical coverage by 2017. A government programme to fund coverage for the remaining 'not spots' has only provided 75 new masts to date. Our members report mobile coverage of voice and text is actually getting worse in some rural areas.

Superfast broadband and access to mobile phone coverage is essential for modern, efficient, profitable and safe farm businesses. The United Nations Food and Agriculture Organisation (FAO) estimated that if current patterns of food consumption persist, 60% more food will need to be produced globally by 2050, compared with 2005-07<sup>3</sup>. In response, agriculture needs to become more productive and efficient in the UK and in the rest of the world.

● Mobile phones are essential as they can allow farmers to co-ordinate staff, suppliers and contractors remotely from the field. Spending less time in the farm office and more time out on the



farm brings efficiency gains to the whole farm business. Online technology gives farmers better access to real time information, markets and accounting.

- Better digital access means less bureaucracy for farmers. The expectation of the Government is for all farming regulatory compliance to eventually go online. If farmers are to achieve this, then they need widespread digital access.
- Through the use of mobile devices, precision farming, GPS and other technology can be integrated into farm management to increase outputs and minimise inputs.
- Farm diversification (for instance converting redundant farm buildings into offices) raises alternative income streams and enables farming families to continue doing what they do best – producing food. Yet attracting commercial tenants onto farms relies on good distance connections.
- Farmers frequently work on their own with heavy machinery in remote areas. Lack of mobile signal can have implications for safe working practices.

In this report we make a clear case as to why farmers need good digital connections and why the current roll out plans are not sufficient to meet the needs of most farmers. We demonstrate how farmers are already being held back by poor connections and identify technologies that could be used to reach rural areas. The report outlines the important findings of the NFU's digital survey, as well as providing individual case studies.

It is vital for rural connections to be improved and it is clear this will depend on government's intervention and policy to create a more competitive digital market for farmers and their rural communities.







## NFU DIGITAL TECHNOLOGY SURVEY

Farmers need superfast broadband and reliable mobile phone connections. This was highlighted when 850 members responded to the NFU Digital Technology Survey, carried out during the summer of 2015. The results are a robust evidence base, exposing how poorly connected many farmers are.

"I employ four people and in 50% of the farm we can't get in contact with each other over the mobile."

"I have to travel 5 miles away from the farm in order to get a reliable mobile signal."

"We sometimes have no connection, but on average have between 0.3 and 0.6 Mbps. Our biggest hurdle is not being able to attract potential tenants to our converted sheds to offices, as the connection is too weak."

Current levels of broadband and mobile phone provision in rural areas are not catering for demand and are stifling innovation. There are social, economic and environmental benefits of connecting the final 5%, especially for the delivery of a sustainable and productive agricultural sector. We need to be able to use the technology to farm more efficiently to meet the needs of our growing population and compete in the international markets.

By utilising new technology and improving access to information and business services, farmers can:

- Raise yields
- Create increased revenue
- Cut costs
- Increase productivity
- Improve record keeping
- Enable efficient management and reduce wasted time
- Reduce their environmental impact
- Improve the UK's drive for self sufficiency
- Give easy access to online applications
- Ensure farmers can access guidance and comply with regulations
- Gain detailed access to local and international market information and customers

Smart and precision farming methods can help minimise inputs and maximise food outputs in modern farming systems. For example, switching from manual to satellite-guided steering could reduce overlaps and cut fuel costs. Smart electronic livestock management means farmers can track movements online and also detect illness and unusual behaviour so as to act much earlier raising welfare standards.







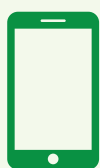
## NFU SURVEY RESULTS

### MOBILE



**98%**

of farmers own a phone



**56%**

own a smart phone



**16%**

stated no indoor locations  
had a reliable signal



**70%**

of smart phone users have  
no access to 4G at all



**>90%**

agreed having a reliable signal  
was important for their business



**52%**

had reliable signal in only  
a few outdoor locations

### BROADBAND



**4%**

have no access to the internet



**58%**

use a tablet  
e.g., an iPad



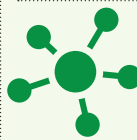
**69%**

get internet over copper wire  
infrastructure



**6%**

use satellite



**51%**

have broadband through  
a fixed wireless network

**80%**

had an upload speed  
of 2mbps or less



**4%**

had access to superfast  
download speeds

**58%**

had a download speed  
of 2mbps or less





## MODERN FARMING AND THE IMPACT OF POOR MOBILE AND BROADBAND CONNECTIONS

*Superfast broadband and access to mobile phone coverage is essential for modern, efficient, profitable and safe farm businesses.*

Farmers with poor connectivity cannot use the full range of agricultural technology. They spend time travelling back and forth to signal hot-spots and have to outsource their management of online finance and regulatory systems.

Online compliance can cut costs for both the government and farmers. However the system remains inefficient since many farmers do not have the broadband capabilities to participate. The government's current system is designed to work at 2Mbps, but our survey evidence is that 80% of farmers are only able to get up to 2Mbps with varying uploads and download speeds.

The recent failures of the "online only" Basic Payment Scheme, which has reportedly cost the taxpayer £60 million to date, highlights how far there is to go before it will be possible to expect farmers to go fully online. This money would have been better spent providing rural broadband infrastructure.

The system means that some farmers face additional costs and delays as they have to pay land agents to do their work. The system also works by updating farmers by email, regardless of whether they can actually physically access the internet due to their rural location.

### DIVERSIFICATION

61% of our members have diversified businesses. This provides them with an additional income source and helps support the wider rural economy.

By diversifying, farmers are able to spread risk, increase revenue and help support wider farming activities, thereby enabling the farm business to remain more resilient.

Digital connectivity is vital to the success of many on farm diversification enterprises. It helps to promote tourism, it stimulates creative industries, professional services, and facilitates the use of farm buildings for office or business use. It attracts business and investment into rural areas and provides new employment opportunities. It can also reduce input costs and provide local energy supplies. A third of our

members host renewable energy projects.

For business related diversification, reliable broadband and mobile phone signals are essential. Farmers will not be able to attract tenants if they cannot provide good digital connections. For example, holiday makers expect to instantly download films – just like they do at home. Unfortunately, a typical film is 1 gigabyte – which on some farms would take 15 hours to download. Customers have high speed expectations across both rural and urban areas despite the digital divide.

### HEALTH AND SAFETY

Health and safety is a fundamental requirement of a sustainable farming business and should be regarded as an essential part of farm business management. Better channels of communication are one way to improve farm health and safety.

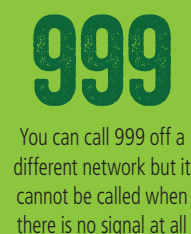
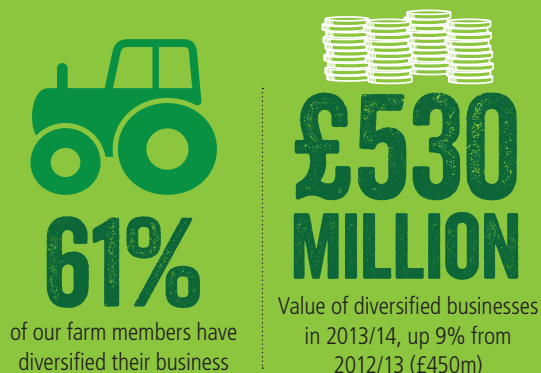
The agricultural worker fatal injury rate is around 6 times than that in construction and 20 times that across all industries<sup>4</sup>. Those working on their own are especially vulnerable.

- You can call 999 on any available network but 999 cannot be called when there is no signal at all.
- Being able to call 999 universally across the farm both indoors and outdoors could save lives and reduce injury rates.

### SECURITY

CCTV is used on farms to tackle rural crime. Effective systems are likely to require a high speed connection. CCTV can prevent unauthorised persons accessing chemicals or livestock.

The lack of a targeted government strategy, coupled with too much red tape is stifling the roll out of rural broadband. We need a system designed to actually address the rural market and boost competition to access the final 5%.





## CASE STUDIES



George Gittus has a business park that hosts a number of businesses and a B&B for guests on his farm in East Anglia.

"People invested in diversifying in the previous decade as encouraged by government and these projects are now in jeopardy as the original tenants have not got the service or internet access that they had when they started – we have gone backwards."

George was forced to invest privately in better connections. "I was prepared to bear sensible cost but this seemed excessive. Poor connectivity stagnates business and we have lost customers and revenue through it."



Jane Basset, whose farm in Derbyshire is in a honeypot location for tourists, has diversified the farm business to have a Bed and Breakfast.

Across her village there is poor broadband provision. Speeds vary considerably and are excessively slow during peak times, especially when children come home from school.

Jane tries to turn a negative into a positive for a 'get away from it all break.' However, this is increasingly difficult as more and more guests rightly expect good broadband speed and mobile coverage.

Dafydd Jones has no mobile signal on his farm in Dolgellau, Wales and often works alone. One day he fell and was found unconscious in the yard by the postman. Even if he had been conscious, Dafydd would not have been able to call for help on his mobile and would have had to make his way back to the landline. On another occasion Dafydd fell through some floor boards and injured his shoulders, if he had been trapped or seriously injured he would not have been able to call for help. The lack of signal means that the only way his family would know there was a problem is if he didn't come home for dinner.

John Emmett was out alone on his farm in Cornwall when he had a heart attack. John tried to call 999 and also his wife, Deborah, but had no mobile signal. To get help, John struggled back to his vehicle and managed to drive back to the farmhouse where Deborah was able to call 999 on the landline. John's case emphasises that mobile coverage is essential right across the farm.



Duncan Priestner, a poultry farmer from the North West, has broadband speeds comparable with dial up. Duncan cannot get a fast or reliable enough connection to fully make use of digital technology available to poultry farming, e.g. egg grading machines, bin weighing and his solar renewable power generation. Therefore, Duncan cannot take full advantage of these technologies to remotely monitor the data and systems 24/7, reducing their efficiency and raising the risk of loss of revenue if a malfunction is not picked up quickly.

Robert Lockhart in the West Midlands uses precision farming to grow wheat and barley. The lack of a DGPS signal means it can take 10 minutes to get a good signal when the equipment is first started up and even this is unreliable. "We have not yet joined an 'in-cab link back' to the office computer, which would be an advantage. I write spray details on the back of envelopes and bits of paper."



Roger Jenkin, a dairy farmer in Cornwall, moved to an online system for his cattle movements and identification. Roger has had long running issues with his broadband. On two occasions completed cattle passports which Roger had sent online were not received. A letter from BT proved its poor connection was responsible rather than a deliberate infringement. Despite trying to be more efficient in complying online, Roger is now on his 'last chance' due to his lack of connectivity.



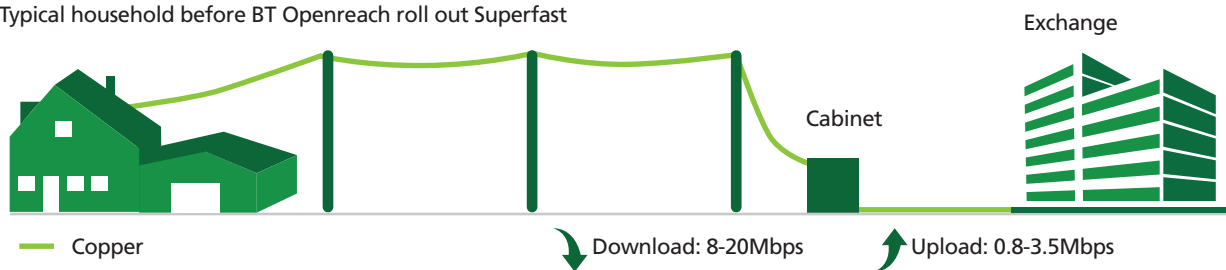
## HOW DOES BROADBAND WORK?

Broadband connection and speeds are dependent on the type of infrastructure a property has. The quality and age of cables are also important. BT Openreach deploys mostly Fibre-to-the-Cabinet (FTTC) in the superfast roll out. This is based on the assumption that the average property is 300m from a green street cabinet. In many rural areas some

farmers may be several kilometres away from a cabinet. Therefore, any benefit from an upgraded cabinet is quickly lost with distance. Properties over 1km from the cabinet may see only small increases in speed and none at all beyond that.

### COPPER NETWORK

Typical household before BT Openreach roll out Superfast



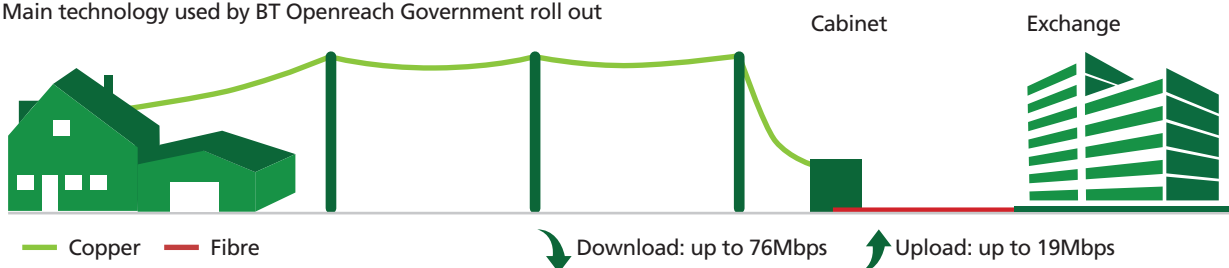
- Based on original telephone lines designed for voice signals.
- Copper provides limited bandwidth, it was designed to provide enough bandwidth for voice signal.
- The modem amplifies signal and copper can also be

upgraded to generate higher speeds.

- Old copper cables may be damaged and speeds slow significantly with distance from the cabinet.
- If the cables are on poles then they are susceptible to interference from adverse weather conditions.

### FIBRE-TO-THE-CABINET (FTTC)

Main technology used by BT Openreach Government roll out



- Copper line from exchange to street cabinet is upgraded to fibre.
- High speed (1000 Mbps +) from the exchange to cabinet.
- Old copper lines still take broadband to the premises and therefore rely on existing infrastructure, slowing down speeds (speed dependent on quality and length of existing copper cable to premises).

- Remote premises will not feel the benefits of upgraded cabinets.
- Consumers have to upgrade to a superfast package to receive benefits.
- Finite capacity, benefits of the upgrade may decrease with more subscribers.

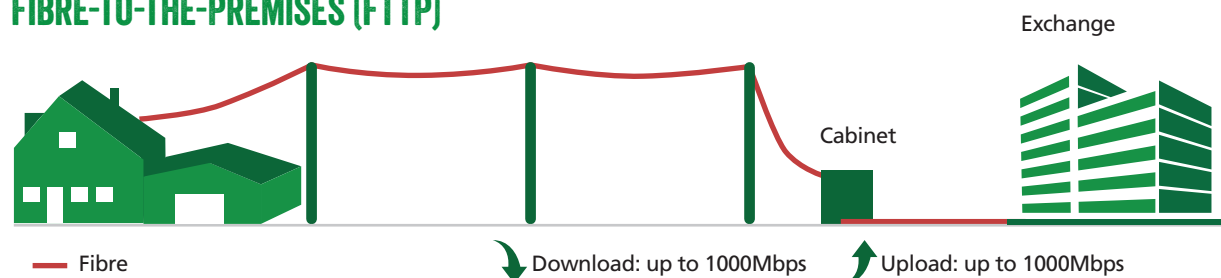




## BT AND ALTERNATIVE INTERNET PROVISION

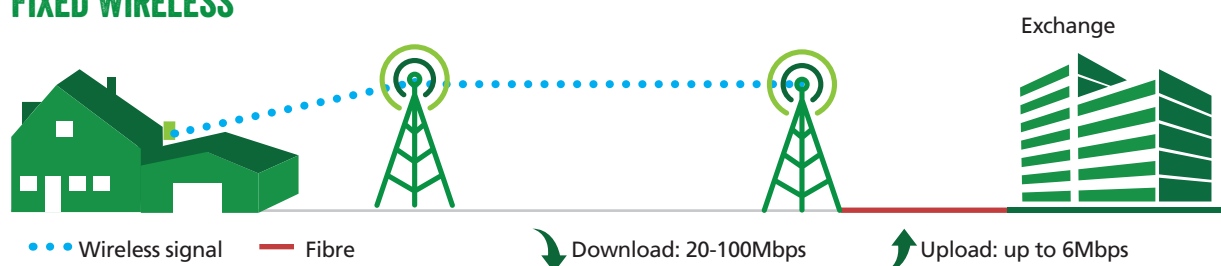
The main urban solution for premises near cabinets or in rural areas where there are targeted programmes, for example in Wales.

### FIBRE-TO-THE-PREMISES (FTTP)



- Fully fibre network – separate to BT Openreach telephone network.
- High speed (1000 Mbps +) runs both ways from exchange to premises.
- Installed either by node point (small cabinet splits to different premises) or direct from the exchange (point to point).
- Operating fibre is cheap, but putting infrastructure in place can be expensive.

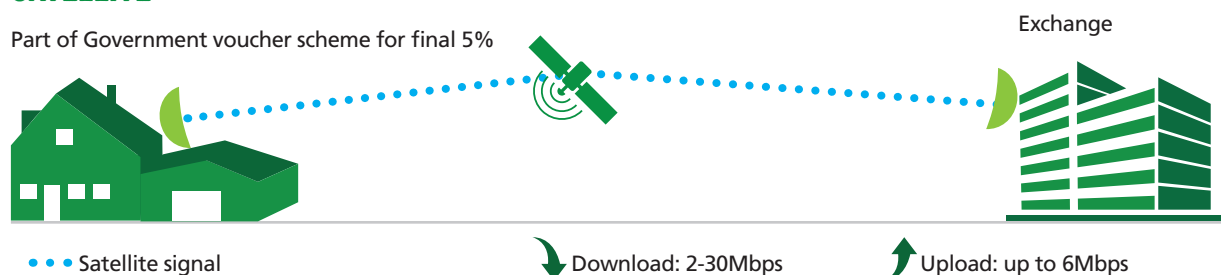
### FIXED WIRELESS



- Achieving high speeds depends on available backhaul (electricity supplies and telecoms network) and the capacity of network.
- Relies on line of sight between receiver and transmitters.
- No need for cables.

### SATELLITE

Part of Government voucher scheme for final 5%



- Can function at any location.
- Low bandwidth, and poor latency (can be slow, it may increase costs to buy more bandwidth).
- Can be affected by weather.
- Can be expensive for high usage customers.



## MOBILE INFRASTRUCTURE

### THE LINK TO MOBILE PHONE AND TABLET

Mobile devices can provide internet access via 3G and 4G technologies across the farm, as well as quality voice and text services, essential for health and safety and day to day farm communications. However in practice, although 98% of NFU members own a mobile phone, far less can receive a reliable signal across the farm. Mobile phone signal is crucial for farm business, not only for broadband but to ensure quality voice and text is available across the farm.

### MOBILE INFRASTRUCTURE PROJECT

The Mobile Infrastructure Project has been set up by government to address areas of no coverage or 'not-spots'. It aims to cover the capital costs of building masts, which the mobile operators can then use to deliver coverage to rural areas.

The Mobile Infrastructure Project closed in 2016. The project aimed to improve coverage for 60,000 UK premises out of some 80,000 known not-spots, but has fallen far short of this. There were 75 masts built upon project closure.

### WHY HAS COVERAGE NOT IMPROVED?

The mobile operators have until 2017 to provide 90% second generation (2G) voice coverage<sup>5</sup>. The operator O2 won the contract to roll out 4G coverage to 98% of the population by 2017<sup>6</sup> with the other operators committing to match this. However, Vodafone stated in 2014 that, "in certain areas of the UK it may be more difficult to deliver the level of coverage our customers expect. This could be due to a number of reasons, such as the geography of the area and difficulties in

finding sites following discussions with potential landlords." Vodafone 2014.

There also appears to be some unexpected downsides for customers when masts are shut off or upgraded to 4G. For example some farmers have experienced voice signal getting worse.

### THE ROLE OF FARMERS AS LANDOWNERS

NFU members are involved in providing wayleaves and hosting telecommunications equipment for broadband technology across the country.

Despite willingness to provide land for infrastructure, farmers tell us that the mast providers have been slow to engage and deliver coverage and that licenses for masts are not being renewed. In some rural areas this means that the signal is getting worse.

If a mast is for a commercial mobile operator and not part of a community project, farmers must get a fair market value for mobile equipment being hosted on their site and the rights being given to the operator. This should include consideration for mast sharing and upgrading equipment.

The government is looking to address these issues via a possible revised Electronic Communications Code. For the Electronic Communications Code to work in practice the market value of a site must be carried out by assessing what is actually happening on the site. Currently, neither the telecommunications industry nor landowners know how this will impact on the rollout of mobile infrastructure. Any new regulations need to be fair and aimed at boosting universal mobile phone provision.





## MOBILE INFRASTRUCTURE PROJECT (MIP)



Beyond the MIP,  
EE, O2, Three and Vodafone  
have voluntarily pledged  
to spend a combined

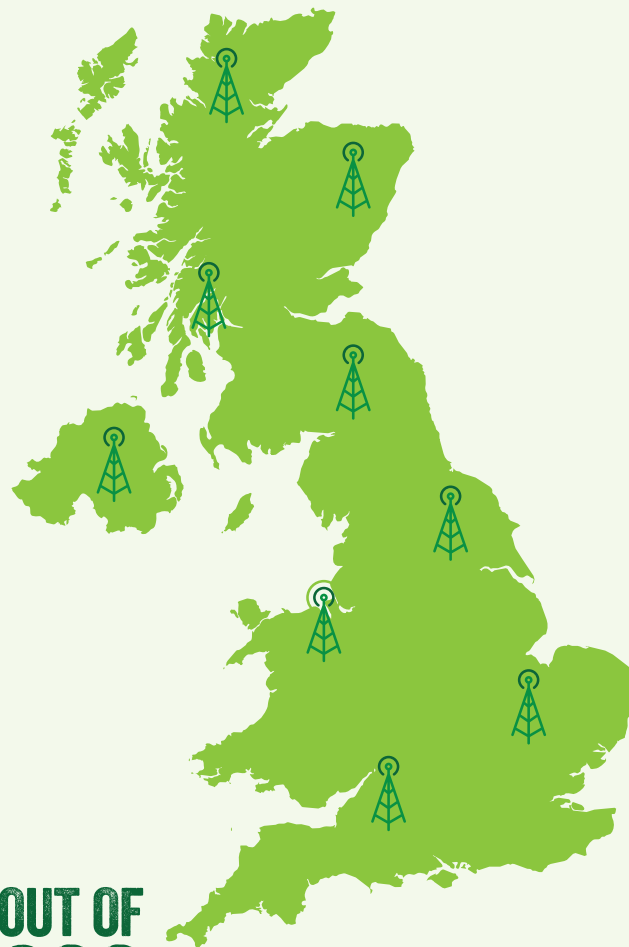
**£5BN**

to provide voice coverage  
to 90% of the UK by 2017



**£150  
MILLION**

to improve mobile coverage  
in rural areas by 2016  
– only £9.1 million spent<sup>11</sup>



**OUT OF  
600**

proposed masts  
– only 75 masts completed

**70%**

of UK land area managed by farmers,  
who are hosting a considerable amount  
of telecoms equipment

***"A true digital economy is one where businesses take full advantage of the possibilities and benefits offered by digital technologies, both to improve their efficiency and productivity, as well as to reach customers and realise sales. Businesses in the United Kingdom are not fully taking advantage of these possibilities."*** Digital Agenda for Europe (October 2015). This is one of the seven pillars of the "Europe 2020 Strategy" which sets objectives for the growth of the EU economy by 2020.



## WHAT IS THE GOVERNMENT OFFERING?

### CURRENT GOVERNMENT SUPERFAST BROADBAND ROLL OUT METHOD

Broadband Delivery UK (BDUK) is the government established company responsible for rolling out broadband with local authority match-funded projects in areas where there is no planned commercial investment. The funding for infrastructure provision has been won almost exclusively by BT Openreach for Phases 1 & 2. The reason why many farmers are not being included in these BDUK deployments is because they are remote from parts of the established telecommunications network. Furthermore, limited BDUK funds available means farmers often don't meet the cost criteria set in the government contracts and potentially don't qualify under the funding rules.

### SUPERFAST BROADBAND – THE DEMAND IS THERE

For rural businesses, it costs more to connect to high speed broadband but the demand is still there. As part of a recent Super Connected Cities scheme, small to medium sized businesses in selected cities could apply for a £3000 grant to get high speed broadband. Low take up rates meant the pot of £100 million was eventually opened up to include some rural areas. High take up exceeded demand and money ran out quickly. Small grants or loans would enable farmers and rural communities to make the necessary investment to get connected at a reasonable cost.

In response to the government's commitment for everyone to be able to access 2Mbps broadband speed by 2016, the government announced a satellite broadband voucher scheme in December 2015.<sup>7</sup> The scheme is only available in postcode areas where there is no existing 2Mbps service or plans to deliver this in the next 18 months and where there is

no affordable alternative access to broadband services.

The scheme aims to subsidise the cost of broadband provision for the first year, up to the value of £350, and is to be managed by local authorities and Local Enterprises Partnerships. However, there are restrictions as to who can qualify. This means that it will not help everyone with low broadband speeds. Whilst farmers welcome support to get connected, satellite can be very expensive. At the same time the quality of signal can be affected by atmospheric conditions.

The Welsh government has a far more generous voucher scheme. It is easier to qualify for and can allow access to both superfast and ultrafast connections, delivered by a number of broadband technologies.<sup>8</sup>

The NFU has an established discounted satellite deal for its members with Avonline and has previously provided evidence about the cost and reliability of satellite broadband to the EFRA Select Committee.<sup>9</sup>

### WHY 10MBPS IS NOT ENOUGH

The government has recently started consultations on the introduction of a Universal Service Obligation (USO) of 10Mbps by 2020. This would give users the legal right to ask for broadband to be delivered at 10 Mbps at any location, at a reasonable price. We understand that this is a regulation that parts of the industry are resisting.

If introduced, we hope that the USO encourages solutions that can be easily upgraded to offer superfast and ultrafast broadband and does not slow down delivery of superfast solutions. This is essential considering EU targets include universal access to 30 Mbps and 50% household subscription to 100 Mbps by 2020. Farming businesses, like many other industries, are increasingly finding higher speeds necessary to actively engage in technological and business advancements.

*"Although there has been great pressure on farm incomes over the past 12 months, I believe the industry has a good future and technological advances will help British farmers improve their productivity and make the industry more resilient and better placed to deal with pests and diseases."*Farming Minister George Eustice, 2015.<sup>10</sup>

## SERVICES MOVING ONLINE

VAT

VEHICLE  
REGISTRATION

BPS

GUIDANCE  
MANUALS

ANIMAL  
REGISTRATIONS

LIVESTOCK  
MOVEMENT  
RECORDS

£  
ONLINE  
BANKING





## GOVERNMENT BROADBAND DELIVERY

THE GOVERNMENT AND LOCAL AUTHORITIES ARE SPENDING

**£1.7 BILLION**  
ON A THREE PHASE BROADBAND ROLL OUT:

### PHASE 1

was to extend superfast broadband defined as **24Mbps** coverage to **90%** of UK premises by December 2016 and provide basic **2Mbps** broadband to all by the end of 2015



### PHASE 2

is to extend superfast broadband coverage to 95% of UK premises by December 2017



### PHASE 3: MARKET TEST PILOTS

To test options for the final 5%, with 7 pilot projects reported results in February 2016.

- The final 5% – an estimated 1.2 million premises are located in hard to reach locations.
- EU targets are to deliver 30Mbps to all by 2020
- Sweden aims to deliver 100Mbps to 90% by 2020
- The NFU manifesto calls for 'Accelerated rollout of high-speed broadband to all rural areas to provide universal coverage equivalent to urban areas.'







# POSSIBLE SOLUTIONS

## REGULATION

Farmers are in need of targeted action to provide the digital infrastructure required to deliver superfast broadband for the final 5%. It is likely that a range of technologies will need to be used. Communities and service providers need access to broadband funding. Prompt and fair information sharing about current superfast roll out will enable effective decision making. Where broadband has been delivered, validation of actual broadband delivery on the ground is vital with both download and upload speeds being taken into consideration. Farms unable to access reasonable upgrade speeds need to be offered alternative provision.

Rural connectivity is essential in improving health and safety in farming. Universal access to good quality voice and text is a prerequisite.

A review of the Mobile Infrastructure Project with further targeted intervention to accelerate 'not-spot' coverage is needed. Greater coverage will require more masts designed for rural areas. There needs to be fair land deals for farmers and landowners, both in terms and conditions and rents when offering their land for telecoms projects.

Offline solutions should be offered to those without access to infrastructure. The government cannot make effective savings through "Digital by default" until the infrastructure is in place to allow farmers and rural communities to fully participate. Ongoing research into fifth generation (5G) technology should have a focus on agriculture to ensure we realise the full potential the technology can offer the industry.

Red tape means that at present government funded Phase 1 & 2 roll out can prevent access to superfast broadband for up to 18 months. During this period, satellite vouchers are not available and alternative providers may not invest in new infrastructure, made to be redundant after the roll out. In some cases the roll out coverage and priorities then change.

Whilst the roll out of superfast broadband is usually the option people have to wait for, there are other options. Rural communities need targeted action to ensure that they are not being left behind in the digital divide.

## COMMUNITY PROJECTS

One example is Broadband for the Rural North (B4RN). This is a community internet service provider, laying fibre optic cable for an ultrafast 1000Mbps fibre-to-the-premise (FTTP) connection

service. B4RN has over 1250 connected customers and is active in over 41 parishes. B4RN was created and built by local volunteers with support from landowners and farmers. There is no public sector funding; the project relies almost entirely on local investors in shares and loans. Accessible funding for community projects would enable rural communities to secure super-fast broadband connections.

## ALTERNATIVE PROVIDERS

Companies such as Gigaclear respond to demand in areas not due to be upgraded, although they have won some government roll out money to connect parts of rural Essex. Gigaclear operates on an ultra-fast FTTP basis and has a network that spans thousands of rural homes and businesses in several counties. Gigaclear builds separate infrastructure networks to BT Openreach. Most of the areas where Gigaclear invests are those outside of the national Broadband Delivery UK deployment with BT Openreach.

## SATELLITE

Avonline Broadband is offering all NFU members a discount programme on their Next Generation KaSat Satellite Broadband services. The service offers real 18Mbps speed and up to 30 Mbps, theoretically covering 100% of the UK and is available to every NFU member. The government is now offering a satellite offer to those who potentially cannot get >2Mbps broadband. The advantage of satellite is that it will work at almost any location. Potentially slower speeds and weather related interference mean it is not a viable long term broadband solution.

## WIRELESS

Wireless uses radio spectrum to transmit high speed broadband. Airband is a wireless internet service provider. Their private network covers six counties in the Midlands from Warwickshire to Powys including Worcester, Hereford, Shrewsbury, Telford and Ludlow. Broadband signal is passed from a radio on a transmitter to a radio attached to your building. From there a cable is passed into your building which allows you to connect to the internet the same way as via fibre or an ADSL connection.





## FARMERS AND RURAL BROADBAND SCHEMES

Farmers can be invaluable to these organisations, which rely on at least some form of infrastructure base. Barns and hilltops can be ideal for hosting equipment, fibre cables have to cross farmland and many providers are keen to work with landowners and farmers to connect villages. Farmers are keen to play their part in the roll out of super-fast broadband.

### 2G

A continued effort to address 2G not-spots is essential. Revisions of the electronic communications code, addressing physical infrastructure involved in mobile and broadband technology, must ensure fair rent prices for farmers.

### 3 & 4G

Mobile broadband packages are often sold with personal hotspot Wi-Fi devices. These are mini broadband routers with a built-in SIM card that provide a wireless network to which you can connect your laptop, tablet or other devices. Mobile broadband also comes bundled with tablets or is available in a SIM only deal with no hardware. It can offer higher speeds, but is only available in areas covered by 3 or 4G.

### 4G

Currently 4G may provide quality voice and text as well as access to mobile data. The frequencies 4G runs at are much lower and so can go further and penetrate buildings better, but in practice NFU members report that voice quality has fallen and drop out rates have increased. We need future 4G roll out to achieve its full potential.

### 5G

5G is currently in development as a high speed and high capacity successor to 4G. It is predicted to drastically improve communication pathways. In particular, it will improve machine-to-machine communication, an area rapidly developing in agri-tech. 5G could produce significant efficiencies for rural communities and particularly farms, provided it is developed with agriculture in mind.

Improving rural digital communications requires both Government and the telecommunications industry to get involved and focus on providing value for money solutions for farms and other rural customers. Wireless technology benefits all and geography should not be a barrier. There is potential for future systems to meet the needs of farming more directly but there may be a long wait without clear and focused action.

## REFERENCES:

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## KEY ASKS

The NFU calls on the government to keep its commitment to make the UK the best connected country in the world, by ensuring that there is the necessary targeted funding and a positive regulatory framework to support the accelerated roll out of universal superfast broadband and a reliable mobile phone network. We need a system designed to actually address the rural market and boost competition to access the final 5%. We ask the telecommunications industry to get positively involved. We want a competitive digital rural market for our members and their rural communities.

## TO ACHIEVE THIS WE ASK FOR:

- 1 Targeted action to provide superfast broadband for the final 5%
- 2 Easier access for broadband providers offering affordable alternative solutions
- 3 Prompt and fair information sharing about the current superfast roll out
- 4 Measurement of actual broadband delivery on the ground
- 5 A review of the Mobile Infrastructure Project and targeted intervention to accelerate 'not-spot' coverage
- 6 Fair land deals for farmers and landowners offering their land for telecoms projects
- 7 'Digital by default' by choice, with offline solutions offered for those without access to infrastructure
- 8 4G services that do not compromise delivery of quality voice and text coverage
- 9 Research into fifth generation (5G) technology to be targeted on agriculture and other spectrum advances
- 10 Greater focus on improving health and safety using broadband and mobile phone technology

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