Programme Summary

What is the Shared Rural Network?

The Shared Rural Network (SRN) is a telecommunications programme which sees the UK Government working in partnership with the four UK mobile network operators - EE, O2, Three and Vodafone - to increase mobile connectivity in rural parts of the UK.

The programme will make 4G available to 95% of the UK, offering significant improvements to mobile coverage in rural communities. The mobile network operators (MNOs) expect this will extend mobile coverage to an additional 280,000 premises and create an additional 16,000km of the UK's roads, boosting productivity and investment in rural areas.

Why create the Shared Rural Network?

The Shared Rural Network was developed to improve digital infrastructure across the UK, ensuring that people and businesses have access to a reliable 4G mobile connection, regardless of their location. Good coverage and high-speed mobile connectivity are essential to a modern way of life, whether it's running a business, communicating with friends and family, working remotely, or accessing news and information instantly, there is a need for reliable, good quality coverage.

How is the Shared Rural Network structured and funded?

The Shared Rural Network will cost over £1billlion to build and operate, with the UK Government contributing £500m and the mobile network operators (MNOs) contributing £532m. The Shared Rural Network is the first time that the UK Government and MNOs have come together to deliver a programme of this scale and impact, and will be delivered in two parts:

1. For those areas where there is some 4G coverage, but not from all four operators, known as partial not-spots, the MNOs are investing in extending coverage, by upgrading their existing networks. By closing the majority of partial not-spots across the UK, the programme will increase choice for rural communities and businesses and improve the experience for people travelling around the UK.

2. The publicly funded element will see new masts being built to target the hard-to-reach areas with no mobile coverage at all, known as total not-spots. The UK Government will pay for the infrastructure and masts to be built and all four MNOs will use the masts to provide coverage to their customers.

Together, the Shared Rural Network will increase the parts of the UK that get a mobile service from at least one operator to 95% and from all operators to 84%, enabling rural businesses and communities to thrive.

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Who is responsible for the delivery of the Shared Rural Network?

The Shared Rural Network is a complex programme which requires a great deal of partnership working from a wide range of stakeholders, suppliers, and service providers. Digital Mobile Spectrum Limited (DMSL), a joint venture of all four mobile operators, manages and runs the Shared Rural Network programme and provides reporting and tracking information for the four mobile network operators, the Department of Culture, Media & Sport (DCMS) and Ofcom.

DMSL will work with the mobile network operators, in partnership with the UK Government, to tackle the total not-spot areas; and the industry led part of the programme addressing the issue of partial not-spots is being delivered directly by the four mobile network operators.

All the work undertaken as part of the Shared Rural Network programme is regulated by Ofcom, with regular reporting throughout the life of the programme to ensure agreed obligations and targets are met.

What are the benefits of the Shared Rural Network?

The benefits of reliable 4G mobile connectivity are far reaching and have positive impacts on many aspects of day-to-day life. There are many personal and commercial benefits, as well as positive impacts on healthcare, education, tourism, remote working, and accessing online services, to name a few. The Shared Rural Network will help those who live and work in rural communities to achieve their full potential through improved mobile connectivity.

Local Authorities

Importance of connectivity to local authorities

Many local authorities have driven the digitisation of public services in recent years, recognising the opportunities offered by technology and digital tools. By developing accessible and usable websites and mobile offerings, local authorities are able to target specific services and interact more efficiently with those who live and work in their local area.

With these new services, comes the need to ensure residents and businesses can access them effectively. However, fixed broadband in rural areas may not be fast, reliable, or even in place at all. The mobile coverage that will be delivered by the Shared Rural Network will enable people across the UK to access the services provided by their local authority.

How will local authorities benefit from the Shared Rural Network?

Local authorities have embraced the fact that people want to carry out their daily business online at a time and place convenient to them, and with the growing use of smartphones and tablet devices, they are increasingly adopting a 'mobile first' approach. The introduction of the Shared Rural Network will allow these mobile devices to be connected away from the home and office.

Online services extend across most local authority departments, whether it's paying bills online or accessing council information, arranging bin collections or submitting planning applications; the number of online services is constantly increasing with technological advancements. Local authorities now benefit from the likes of taking car parking fees via mobile phones or using geo-mapping for people to log potholes and fly tipping whilst out and about, they use live web chats to reduce face to face costs and use online forms to log issues and complaints; the coverage delivered by the Shared Rural Network will help make these services more accessible, to more people.

By moving many of their services online, local authorities have been able to make significant cost savings and streamline operations. It is in their best interest to encourage as many residents as possible to use these online services. The Shared Rural Network will significantly improve the connectivity options in rural areas and help remove barriers to people connecting to local authority services.

However, it's not just the end user that will benefit. The introduction of the Shared Rural Network will enable local authority staff to work more effectively while they are out and about. They will be able to access documents and files on the go, assist members of the public with online services, or simply be able to work at home more efficiently. The Shared Rural Network will provide the networks needed to help improve productivity and assist in reducing public spending across local authorities.

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People & Communities

Importance of connectivity to people and communities

Mobile technology and connectivity have become a necessity to both rural and urban areas. The ability to quickly access information, work and learn remotely, use online services and stay connected with friends and family, are all part of the world we now live in.

This has never been more relevant as we see the impacts of a global pandemic on our everyday lives. Access to reliable broadband and 4G networks has transformed the way in which we live and work, and the Shared Rural Network (SRN) will allow those in rural and remote parts of the UK to connect with those that matter most in their lives.

How will people and communities benefit from the Shared Rural Network?

Consumer Choice - By offering greater connectivity in rural areas the Shared Rural Network will increase consumer choice across a range of goods and services, not just in mobile service providers. Access to online shopping and the ability to search for the best deals on products and services will ensure that those in rural areas are no longer at a disadvantage compared to those in urban areas.

Online Services - As local authorities and businesses move more services online, the need to have a reliable connection is hugely important. The increased levels of connectivity provided by the Shared Rural Network will result in better access to the likes of online banking, public services, and utility providers.

Social Connectivity - The pandemic has highlighted the need to socially connect with others, and the importance those connections can have on our mental health. Those in rural areas are already impacted with reduced opportunities for physical interactions and the need for reliable 4G connectivity is more evident than ever. The Shared Rural Network will assist the way in which friends and family stay connected by providing the networks needed to operate social media and communication apps.

Disability Inclusion - The SRN will aim to make it easier for those with impairments to engage with others by removing certain barriers to inclusion. The ability to access websites, apps and web-enabled services can assist in communication, online participation, and provide access to useful information and guidance to help improve the lives of those with disabilities.

Work and Learn Remotely - The SRN will help support the increasing uptake of home and remote working. The Coronavirus pandemic has highlighted the importance of stable and reliable access to the internet, not only for workers but also for those learning from home. Faster speeds delivered by 4G can improve access to work and educational materials, as well as facilitate more streamlined ways of working and learning through remote meetings, classes and events.

Entertainment - We live in a society that increasingly uses mobile technology for the sharing of news, TV, films, music and sees mass consumption of social media content. Fixed broadband in rural areas may not be fast, reliable, or even in place at all, therefore, the ability to connect to a 4G network will be a significant improvement to many who live in rural areas.

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Rural Business

Importance of connectivity to rural businesses

Technological advancements have changed the ways in which businesses operate. High-speed connectivity removes barriers, allowing businesses to explore opportunities to maximise growth, get immediate access to information, and focus on more efficient ways of working.

In rural, hard to reach areas, the infrastructure needed to deliver these services has previously been difficult to install, with impacts felt across communities. A DEFRA report found that half of rural businesses said being in a not-spot area had a negative impact on business profits, turnover and productivity, with many estimating reported losses of £100-£250 a month due to poor mobile connectivity[1]. The Shared Rural Network aims to remove these barriers, allowing rural businesses to improve operations and exploit the full potential of the internet across a range of sectors.

How will rural businesses benefit from the Shared Rural Network?

Rural communities play host to a variety of industries and businesses. Whether it is a small arts and crafts business run from home, or a large-scale farming operation, the need for reliable mobile connectivity is a key driver to success. Over 80% of businesses say that the availability and quality of digital infrastructure impacts where they decide to invest[2].

The importance of having good mobile phone coverage alongside fixed broadband, allows for flexible working away from the office. Documents and files can be accessed on the go, emails from potentially new and existing clients and customers can be received, and payments can be taken through mobile devices. Businesses can better market themselves and their services with the ability to connect with new audiences through social media; and they can reach customers and clients without needing to travel excessive distances.

Administration can be streamlined by making use of online tools and services, sales and stock can be managed more effectively, and by accessing price comparison and other retailing sites there are savings to be made on stock, equipment or materials.

The increased ability to have mobile connectivity on the move via the Shared Rural Network will allow outdoor rural businesses to work more efficiently. Whether it's improved vehicle management, the ability to track stock, or even something as simple as the ability to check weather conditions regularly, all can inform better work patterns and practices.

Faster speeds delivered by 4G have led to innovation and different ways of working across business sectors. Whether it's the ability to use audio-visual streaming services for quality and regular communication or allowing access to cloud computing so that businesses can be based remotely, the Shared Rural Network will help businesses connect better, often helping reduce traditional operating costs.

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/412201/Mobile_network_not_spots_final_report.pdf
[2] http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/rural-broadband-and-digital-only-services/written/103245.html

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Health & Wellbeing

Importance of connectivity to health and wellbeing

Lack of connectivity is linked to social isolation, financial exclusion and poorer health outcomes, with the NHS spending half its budget on people who can't access the internet[1]. The ability to source healthcare information and access the services needed to lead a healthier lifestyle is a key indicator of health and wellbeing; being better connected leads to better outcomes.

How will health and wellbeing benefit from the Shared Rural Network?

The Shared Rural Network will deliver 4G coverage, which can assist in improving the health and wellbeing of those in remote areas through better access to healthcare services, as well as increased accessibility to information on how to live healthier lifestyles.

Through improved mobile connectivity, patients can see healthcare professionals quicker and more efficiently via online appointments and prescription services. The ability to access these services from any location will result in cost and resource savings; less time will need to be taken off work to attend appointments and there will be reductions in the amount of time travelling to and from appointments.

Mobile connectivity will allow patients to access information on symptoms and medical conditions, as well as access to support groups and those with similar conditions. Family members and caregivers can benefit from mobile connectivity by providing access to information and support, helping them and those they care for, live more independently and hopefully result in less time spent in medical facilities.

Mobile connectivity can offer access to a range of health apps which can be accessed on the go. These can include functions such as reminders for patients to take their medication, book a recurring appointment with a specialist, or renew prescriptions; and many are a source of information on diet, exercise and ways to live a healthier lifestyle.

Healthcare professionals will have better access to the tools and services they need to treat patients in remote areas away from surgeries, hospitals and care centres. The Shared Rural Network will provide mobile connectivity, which could enable them to access patient data on the go, accelerating response time and treatment decisions. They could instantly access patients' prescriptions and other vital information, allowing them to collaborate with other medical staff and delegate care more effectively.

There are also many safety benefits of having a reliable 4G connection which contribute to a better sense of wellbeing. Knowing there is a connection and the ability to communicate with others in times of need provides reassurance to anyone living or visiting these areas that help is there if needed. When traveling in rural areas, there is comfort in knowing that devices can access online maps and directions providing real time road condition and traffic information. Should difficulties be encountered, there is the reassurance of being able to access helpful information or contact the Emergency Services.

[1] https://www.goodthingsfoundation.org/news-and-blogs/blog/nhs-spends-more-half-its-budget-people-who-cant-access-internet

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Sustainability & the Environment

Importance of connectivity to sustainability and the environment

The importance of digital connectivity cannot be undervalued, with positive impacts across many sectors, industries and demographics.

Although the Shared Rural Network does require the build and installation of new infrastructure, by providing better mobile connectivity, more services can be digitised in rural areas, reducing the overall carbon footprint of businesses and households. Connectivity can play a vital role in a greener, more resilient future, helping to reduce carbon emissions and build back better and greener.

How will the Shared Rural Network aim to reduce its environmental impact?

The Shared Rural Network aims to transform mobile coverage without duplicating infrastructure, minimising the impact on our countryside. By coming together and sharing resources, the mobile network operators (MNOs) are able to minimise the carbon footprint of installing, operating and maintaining mobile sites. According to one MNO, base stations account for 65% of the company's entire energy consumption[1]. As the Shared Rural Network allows sharing of these base stations, the need for additional masts and the associated energy consumption is removed.

Part of the requirements of building a new mast is that the site has an adequate power supply. This in itself can have impacts on the environment depending on the source of power, therefore, as part of the programme we are exploring the potential for alternative power solutions.

As well as trying to reduce environmental impacts, there are long term sustainability benefits of being better connected to consider. The connections that will come from the Shared Rural Network will assist in the development of smart technologies in rural areas. Smart transportation, smart buildings, smart manufacturing and smart agriculture can all help facilitate emission reductions, whilst improving quality of life and supporting economic growth.

Connectivity powers digital solutions that help businesses and communities grow and thrive in a sustainable way, from reducing household energy consumption through smart metering, to reducing travel by powering remote working, and by improving efficiencies through the adoption of the Internet of Things (IoT) – the term used to encompass devices connected to the internet.

[1] https://www.telegraph.co.uk/technology/2019/08/05/will-5g-help-hinder-britains-target-net-zero-emissions-2050/

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Tourism

Importance of connectivity to tourism

For many people, connectivity and internet access is increasingly becoming an important aspect of their visitor experience. The ability to access information on the go, make or amend bookings, share photos and memories online, or simply look up directions, means it is fast becoming a necessity for tourists to have access to the internet whilst travelling. Visitors have grown to expect reliable mobile coverage when out and about, as well as having high expectations of the digital offerings that hotels and attractions can offer.

Connectivity can offer so much more than visitors being able to share experiences on social media or keep in touch with friends and family. Tourists use their mobile devices to store travel documents, access details of bookings and reservations, keep copies of ID documents and make online payments for goods and services.

How will tourism benefit from the Shared Rural Network?

With customers looking to use their mobile devices to gain access to the internet throughout all stages of their travel experience, the Shared Rural Network will help provide the coverage necessary for this. When choosing where to visit, tourists will be more inclined to travel to areas that have good coverage and can offer them the connectivity needed to use their mobile devices. The Shared Rural Network will improve mobile service in rural areas to the point that 95% of the UK will have 4G coverage.

It's not only the individual tourist that will benefit from the Shared Rural Network, but businesses will also gain through greater connectivity. Following the impacts of the pandemic on international travel, it is likely that there will be more UK based holidays in the next few years. The potential increase in visitors to areas with good coverage will hopefully lead to increased consumer spend in the local economy via hotels, attractions, and shops.

The introduction of high-speed mobile connectivity as a result of the Shared Rural Network will help businesses in rural communities across many parts of their online operations. An improved online presence ensures that they are visible and bookable online, helping connect visitors to businesses, building meaningful relationships with customers at an early stage.

Improved connectivity from the Shared Rural Network also has the ability to positively influence visitor experiences through the use of mobile apps. This could be a virtual tour guide, or an app that shows local events, it could be the ability to scan QR codes, or even offer immersive content through augmented reality. Mobile connectivity is needed to make these digital offerings work and the Shared Rural Network will make these options previously unavailable to rural areas a reality.

MAST FACTSHEET

The parts of a mast and other FAQs

SHARED RURAL NETWORK

1 ANTENNA

Antennas send calls, texts and internet data to your smartphone using radio waves and in turn receive radio waves from the device. Most masts will have at least three antennas to provide coverage in every direction.

2 RADIO UNIT

The radio unit generates the radio waves transmitted by the antennas. Traditionally, the radio unit was installed at ground level. Nowadays, they're more likely to be installed higher up the mast closer to the antenna to help improve performance.

3 TRANSMISSION / BACKHAUL

Cables, traditionally copper but now far more likely to be fibre optic, are used to connect the mast with other masts and the rest of the mobile operator's network. These are usually buried in the ground. In some cases, a microwave dish is used instead.

4 CABINETS

Located at ground level, these contain computers which communicate with other masts in the network. Additional equipment, such as a battery backup in case of power failure and connectors for the transmission/backhaul, are also stored here.

5 POWER

Most masts will draw their power from the National Grid; some will have their own renewable power source on-site. In a handful of cases, such as with temporary masts, power will be provided by a diesel generator.

6 MICROWAVE DISH

In some locations, such as remote rural areas, a microwave satellite dish is used instead of fibre optic cables to act as transmission/backhaul, connecting the mast to the rest of the mobile operator's network. To do so, the dish must be within line-of-sight of a dish on another mast.

Factsheet content provided by Vodafone
Image used for illustrative purposes

How long does it take to build a mast?

It usually takes around 12-18 months, from engineers first identifying a potential site to the erected mast going live. The process includes making site investigations, negotiating with land owners and planning authorities, arranging equipment delivery and then carrying out the build. There is potential for challenges to crop up at every stage of this process, which could lead to delays, so timescales can vary from mast to mast.

Who decides where masts are built?

Engineers pick sites that best meet the technical, logistical, economic and regulatory requirements for hosting a mast. However, the local council has to grant planning permission for the building works to go ahead, so we try to engage with them, and the landowners, as early as possible to make sure our plans are aligned.

Does mast construction have to lead to road closures?

Not necessarily, but if the only way cranes and other heavy vehicles can deliver and install bulky equipment is by public road, then they may have to close temporarily. Once a local authority grants planning permission for construction, details of any planned road closures will be shared, which are kept to a minimum where possible.

What about the health effects of mobile phone masts?

Mobile masts – whether 2G, 3G, 4G or 5G – do not cause any adverse health effects. This is the consensus of international scientific bodies, such as the World Health Organisation and the International Commission for Non-Ionizing Radiation Protection (ICNIRP). The radio signals used are simply too weak to cause any damage to living cells or human DNA. Visit mobileuk.org/5g-and-health-concerns for more information.

Why do masts look like they do?

Masts are simply towers designed to raise the antennae up high enough to send and receive radio signals. They have to be sturdy and cost effective to build, so form follows function. Telecoms companies have experimented with different designs, particularly in rural areas. Some masts have even been disguised as trees, however, there comes a point where aesthetics begin to hamper the job the mast is supposed to be doing, so it’s a trade-off.

Why can’t you build it somewhere else?

Not all sites are suitable. To provide the strongest mobile signal to as wide an area as possible, there can’t be too many neighbouring buildings, trees or other geographical features in the way. These tend to block the mast’s signal. The taller the mast, the wider the area it can cover and the more people it can provide with a reliable mobile signal.

Masts also need their own power and what’s known as ‘backhaul’ – data connections to the rest of the network. To meet soaring demand for faster speeds, that backhaul often consists of fibre optic cables under the ground. In rural areas we use 'hubs' where the mast links to the cables in the ground but can then wirelessly provide connections to other more difficult to reach masts. This is why getting mast locations right in rural areas is so important, one hub can provide coverage for a significant area through these wireless connections.

To run power and data lines to a mast, we have to negotiate with the owners of the land, and often, with the owners of land adjacent to it. Those negotiations aren’t just about how much rent we will pay, but how easily we can access those sites for construction, maintenance and repairs. There are lots of variables that have to be considered when choosing mast locations and engineers have to do a lot of planning to get the right place.

For more information about the Shared Rural Network visit our website **www.srn.org.uk**

SHARED RURAL NETWORK

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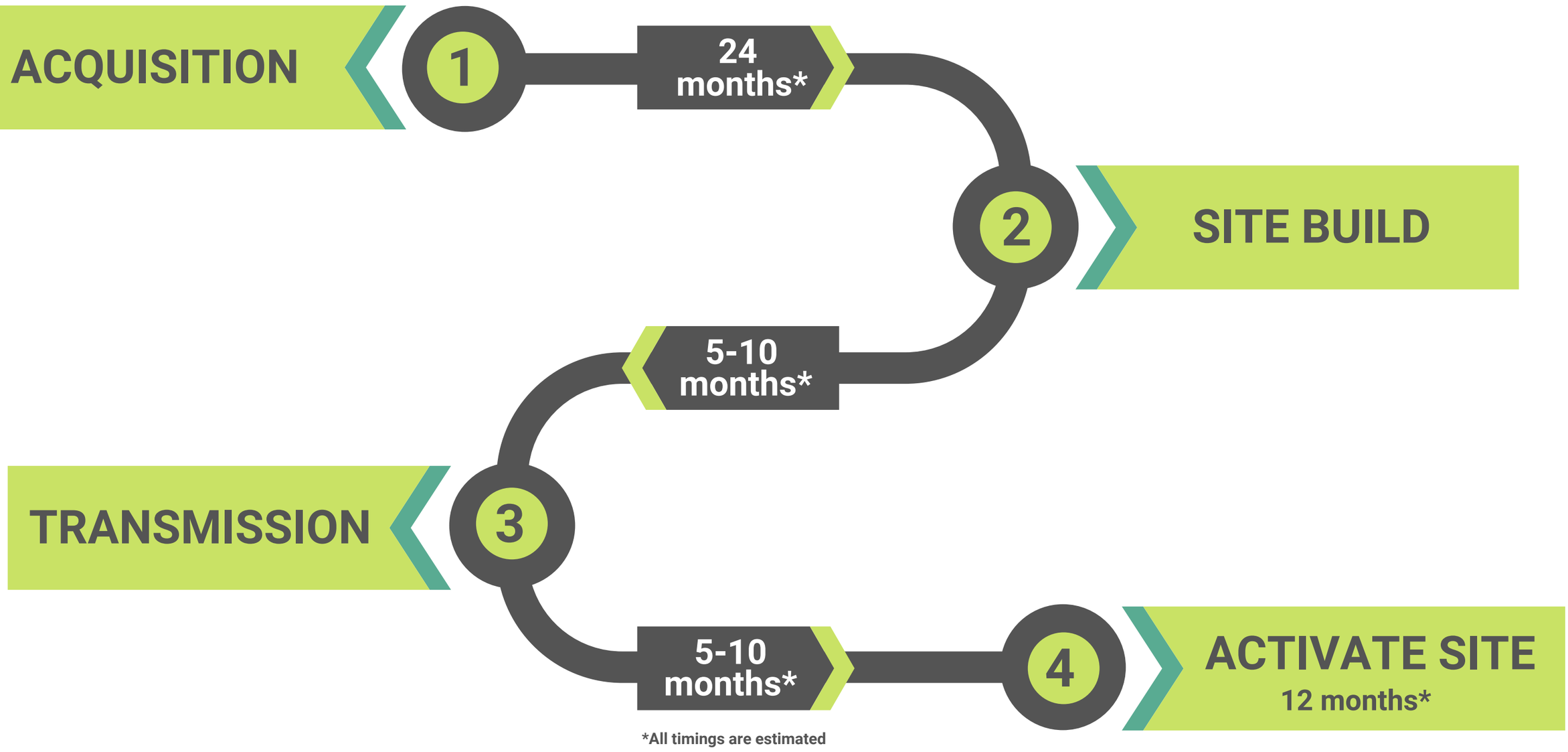
Image used for illustrative purposes

MAST BUILD FACTSHEET

The journey of building a telecoms mast

SHARED RURAL NETWORK

In order to deliver 4G coverage to rural areas we need to have the necessary infrastructure in place, here we explain the process of building a mast:



*All timings are estimated

1 ACQUISITION

The first stage of acquisition is to find a suitable location. Many factors are taken into account, including access, getting power to the site, and whether we can transmit signals back to the network. A Multi Skilled Visit is conducted, during which a variety of individuals assess whether a site is suitable for the installation and operation of a mast.

If a location is suitable, we then engage with key stakeholders including landowners and local planning departments. During the planning process we will start negotiations with land owners to formally acquire the site and leases are agreed.

2 SITE BUILD

Once we have formally acquired a site we then start the build process. This can include the installation of new access tracks, the laying of concrete foundations and building the steelwork structure which will support the different operators' equipment.

As well as building the mast structure, we also need to supply power to the site. If we are using mains power, these connections are often installed at the same time as the access track.

However, we may also need to consider alternative power solutions in particularly remote areas.

3 TRANSMISSION

When a mast is in place we then need to send data from the mast back to the main network, this is called 'backhaul'.

In some cases we are able to install fibre optic cabling when building a mast, this allows us to connect the mast directly into the main network.

However, it's often the case with rural masts that we can't install fibre directly to each one, instead we send signals from one mast to another, until it is able to connect to the main network. This requires additional equipment being installed on the masts.

4 ACTIVATE SITE

This final stage can take up to 12 months to complete.

The last stage of a build is to install the final pieces of radio equipment needed for each network operator.

The mast is then activated and integrated into the main network.

The mast will then undergo a final inspection before it is handed over to the teams who will maintain the site.

The site is now live and will provide a 4G signal to users in the area.

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