



Monmouthshire:
**DIGITAL
INFRASTRUCTURE
ACTION PLAN** 2019 - 2022



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MONMOUTHSHIRE: DIGITAL INFRASTRUCTURE ACTION PLAN 2019-2022

1. Monmouthshire’s Digital Infrastructure and Ambitions

1.1 Situational Analysis: What is the problem we are trying to solve?

1.1.1 In August 2018 the UK Government released [The Evaluation of the Economic Impact and Public Value of the Superfast Broadband Programme](#) an independent assessment of the impact the rollout Superfast Broadband had had in its first years (2012-2016). Key findings from the report concluded that:

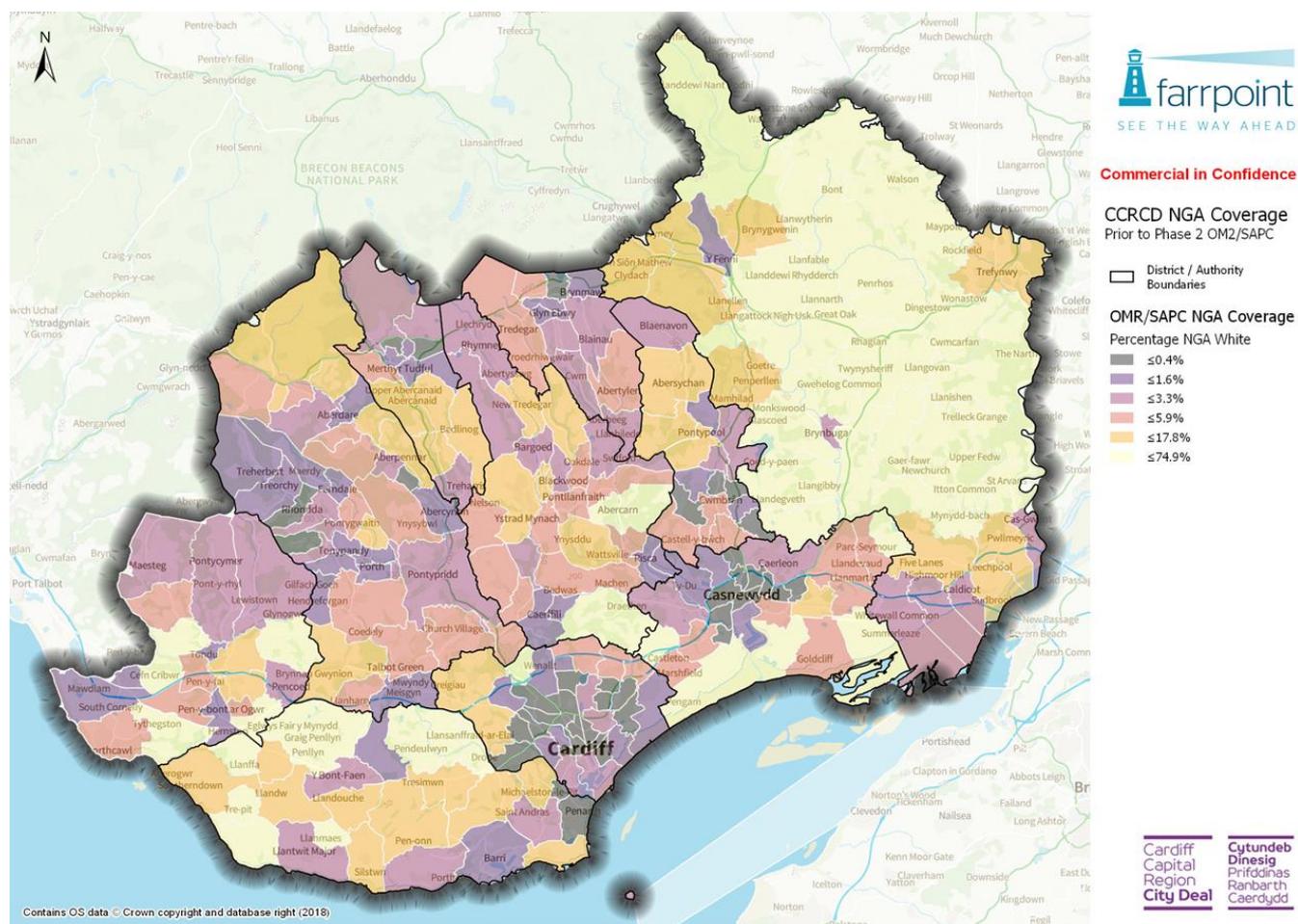
- The Programme had delivered £12.28 benefit for businesses for every £1 invested by the Government and local authorities;
- £9 billion surge in turnover for businesses benefitting from faster connections available;
- £690 million net increase in Gross Value Added to the UK economy;
- A reduction of almost 9000 individuals claiming jobseekers allowance, as well as a reduction in long term claimants by 2,500 in programme areas, accompanied by the creation of 49,000 local jobs;
- Strong indication that high take up rates of Government’s superfast programme have encouraged telecommunications industry to expand their own commercial broadband projects

1.1.2 However, at a local level, Monmouthshire County Council (MCC) and Monmouthshire’s residents feel that the delivery of the Superfast Cymru programme in Monmouthshire has not been seen as a priority area for Welsh Government or BT, their delivery agent. This is due to the sparsity of the population, the rurality of the landscape, the difficulty of the topography and subsequently the limited commercial viability of the county’s deep rural areas. This is evidenced in the current situational analysis of Superfast Broadband Next Generation Access (NGA) coverage in the Cardiff Capital Region (CCR), based on the Open Market Review (OMR/SAPC) undertaken in 2017 prior to the Superfast Cymru Phase 2 (SFC2) Procurement in 2018. The analysis paints a stark picture in terms of the current lack of coverage in Monmouthshire in comparison to our other nine CCR Local Authority partners as detailed in Table One and Map one that follow. Another Open Market Review is currently taking place which will complete in August 2019, following which the market will be in a position to respond to more accurate and up to date information.

Table One: Comparison of NGA coverage among the ten CCR Local Authorities

Local Authority	NGA Coverage	% NGA White	NGA White Premises
BLAENAU GWENT	96.7%	3.26%	1,175
BRIDGEND	95.6%	4.41%	3,002
CAERPHILLY	95.2%	4.76%	4,002
CARDIFF	98.9%	1.14%	1,935
MERTHYR TYDFIL	96.8%	3.17%	925
MONMOUTHSHIRE	87.4%	12.56%	5,898
NEWPORT	98.0%	2.00%	1,480
RHONDDA CYNON TAFF	96.4%	3.58%	4,252
TORFAEN	96.4%	3.61%	1,615
VALE OF GLAMORGAN	96.1%	3.95%	2,453
TOTAL	96.4%	3.64%	26,737

Map One: Comparison of NGA coverage among the ten CCR Local Authorities



1.1.3 As one of the core strategic objectives of the Council is 'Supporting enterprise, entrepreneurship and job creation' the Council wishes to capitalise on the provision of a high speed, first class digital infrastructure, alongside our ambition for a tailored skills package in order to deliver economic growth, wealth creation and increased productivity and GVA for the county and the country.

1.1.4 The ambition of the Council from its own digital perspective is made clear in its Digital Strategy which is based on seven key themes:

- **Building a Digitally Skilled and Enabled Workforce** – to enable staff to do their jobs in a digital world;
- **Digital Customer Services** – designing simple services accessible via numerous digital devices;
- **Business Digital Capacity and Automation** – improved efficiency through automation and digital design;
- **Technology** – having the right tools to do the job;
- **Data and Evidence** – data with integrity to enable efficient decision making;
- **Digital Platforms and Standards** – interconnected digital platforms to enable access at speed;
- **Protecting our Digital Assets and Security** – Enabling access without compromising security.

The digital imperative for the Authority is clear, the digital landscape is constantly changing, our customers are becoming more digitally savvy and we need to make digital access to our services easy so we can free up staff time and release cashable savings. Having also declared a Climate Change emergency we need to digitise our services to reduce the environmental impact upon our natural resources however without a robust digital infrastructure in place, progress in achieving these ambitions will be slow. This is a frustration, given the importance of public service delivery in a challenging rural environment already struggling with poor public transport and the resultant higher proportionate costs of delivering services e.g. social care.

1.2 Resident's Concerns drawn from the Situational Analysis

When comparing the ambition of the Council, the current NGA coverage and anecdotal evidence from residents received by Officers and Members alike (Appendix A), the following concerns can be drawn, indicating evidence of:

- Clear pockets of digital deprivation evidenced through independent CCR analysis and regular correspondence received from disgruntled residents who are receiving a service below 2MG;
- Digital businesses struggling to deliver a high quality service due to poor connectivity;
- Students being unable to undertake their studies effectively due to poor connectivity;
- Home owners struggling to sell their homes due to poor connectivity; and
- Delays in digitisation of council services due to the capability of current connectivity and limited access leading to increasing service costs at a time of austerity.

1.3 Wider Strategic Concerns

In addition to local concerns the current lack of NGA coverage also highlights additional wider strategic concerns:

- Monmouthshire is **strategically located** within the CCR as a key gateway into Wales from the economic power engines of the South West and the West Midlands accessed via the Severn Bridge, the M4 and the A40/A449;
- **The SFC2 programme was delayed** resulting in the NGA infrastructure delivery having ceased in Monmouthshire in December 2017 and not recommencing until early 2019. Although the tender for the 'Monmouthshire lot' has now been awarded to BT, intervention will be limited to circa 1580 properties, all by fibre to the premise service. Therefore any improvement on the NGA coverage via SFC2 during 2019/2020 will be minimal and any likely improvements in the county will be within our conurbations, leaving deep rural areas in the same situation faced today;
- **Rural Community Development Funding** (RCDF) previously used by the Council's Rural Development Programme team to draw in funds for Broadband pilots such as TV Whitespace **has now been withdrawn** from WG and the money diverted for environmental projects. Fortunately, MCC has had its last grant application approved enabling an estimated 500 premises to be connected. However Welsh Government has since announced a Local Broadband Fund (July 2020) which Officers are currently considering.
- The current **CCR digital objectives are ambitious** and **Monmouthshire's digital deprivation could stymie their ambitions** which are:
 - To ensure that the CCR citizens and businesses have access to world class digital infrastructure to facilitate Social inclusion, Economic development and inward investment by:
 - The creation of extensive Full Fibre Infrastructure across region;
 - Global connectivity - access to international fibre links to drive inward investment from key sectors such as media and finance;

- Welsh Connectivity - Exploitation of the Cardiff Internet Exchange (IX) and wider connectivity;
 - Community Broadband – Settlement and Individual Property Connectivity;
 - Regional and Community Wi-Fi;
 - Mobile 5G access - Pilot specific locations for 5G, establish PoC and Scale-Up;
 - Sensing the CCRD - Providing a constellation of sensors to provide Smart City information resources;
 - Open Data - Develop a fully Open Data environment
- The **Welsh economy is less productive than the rest of UK**, accounting for only 3.4% of the UK's GVA however **Monmouthshire**:
 - **Is the second most competitive authority in Wales** - UK Competitiveness Index (Cardiff = 1st);
 - Has the **third highest productivity in Wales** (Gross Value Added) = £20,684 per job (with Newport) (Cardiff & Vale =1st, Flintshire & Wrexham = 2nd);
 - Has the **highest rate of active businesses in Wales** - 750 per 10,000 popln;
 - Has the **highest rate of business births** (starts) in Wales - 83 per 10,000 popln;

We therefore need to ensure that Monmouthshire has sufficient NGA connectivity to maximise our economic growth and wealth creation capability, and increase our productivity in order to increase the GVA for the county and the country.

2. Wider Strategic Context

2.1 Superfast Broadband Exploitation Advisory Panel

Since its inception in 2016, the Council has been one of three Local Authorities representing the views of the public sector on the Superfast Broadband Exploitation Advisory Panel. The Panel oversees the delivery of the Superfast Business Wales programme which seeks to improve the digital maturity of companies across Wales and to date has:

- received over **7000 enquiries** from businesses that would like digital support;
- put on in excess of **625 workshops and events**, and delivered over 30,000 hours of help for businesses; and
- have worked with over **3,500 businesses** to give them digital fitness.

Details of how companies have embedded digital technologies into their working practices can be found here - [case studies](#). The Advisory Panel helps the Welsh Government shape the programme of support it delivers to help businesses make the most of superfast broadband. Acting as a critical friend, the panel draws on huge industry experience to guide Superfast Business Wales and hold Welsh Government accountable for delivering real value, helping businesses to adopt online technology so together they can drive profits for Welsh firms, jobs for Welsh people and increase the productivity in Wales. The Panel also provides the Council with a useful opportunity to network with ICT and broadband infrastructure companies and influence the type of support that is delivered to businesses whilst promoting the opportunities to Monmouthshire businesses. However, currently the Superfast Broadband programme has only reached 7% of Wales' businesses, demonstrating there is much more work to do.

2.2 Digital Skills

Although access to digital infrastructure is vital building digital skills amongst residents is equally important to ensure residents can maximise opportunities once they have a digital connection. To address this, the Council's Community Education Team offer a range of courses to help people

improve their ICT skills in the Hubs in Caldicot, Abergavenny, Usk, Chepstow and Monmouth. These courses range from weekly classes, to one day workshop ranging from beginners classes to Website design. The courses are generally accredited essential skills ICT classes that run for the academic year (36 weeks) whereby people can join anytime, apart from the one day workshops such as the iPad and Tablet workshops. Additional opportunities include Job Clubs where people can drop in for support whether it's for help to send emails, search for jobs online or write CVs etc. as well as literacy skills, confidence building and interview skills. Job Clubs also act as a stepping stone to enable low level or unconfident learners to gain the confidence to enable them to join further essential skills class. The Hubs also run more informal 'Tea and Tech' sessions to help residents who want to make the most of their smartphone/tablet/laptop by bringing their device along for a free 'problem solving' drop in sessions.

2.3 Wales Digital Infrastructure Group

MCC is one of ten Welsh Local Authorities, invited to join the Welsh Government's Wales Digital Infrastructure Group. The group meets monthly, the purpose of which is:

- to identify immediate solutions to broadband coverage deficits;
- to identify and recommend practical actions that can be taken in the short-term to improve broadband access to the remaining white premises in Wales in consultation with Government Departments, Local Authorities and other key stakeholders;
- to consult and engage with the telecoms industry in order to identify and address barriers to infrastructure and service deployment;
- to identify solutions which can be implemented in the short, medium and long term; and
- to assist and inform future procurement routes and interventions.

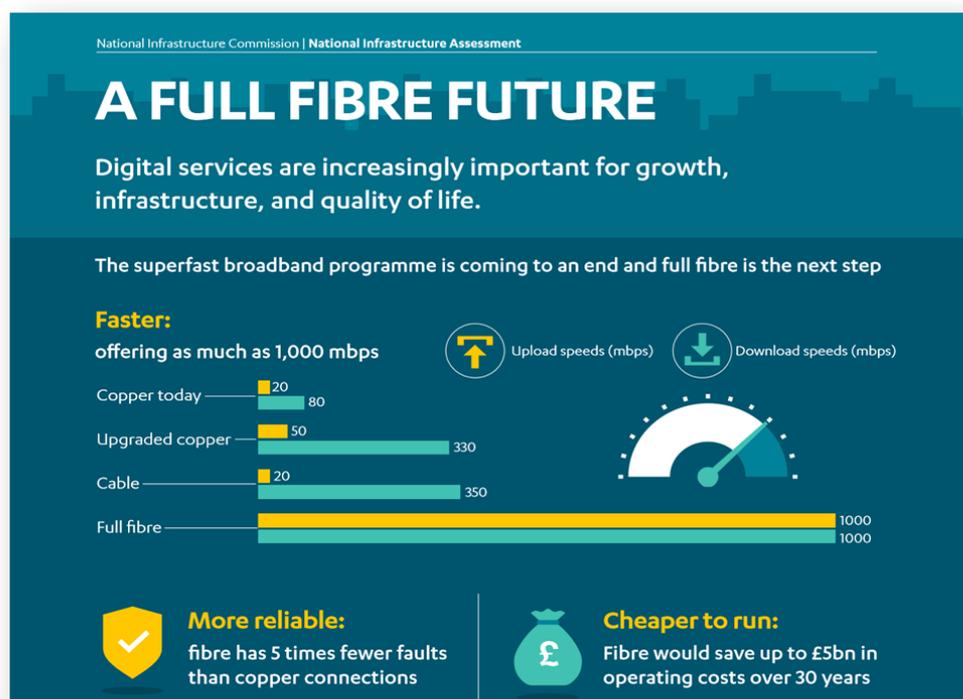
3. The Future of Broadband and Connectivity Applications

3.1 Future Telecoms Review

In July 2018 the UK Government published the [Futures Telecoms Review](#) which identified that the UK was lagging far behind its international competitors in deploying full-fibre gigabit capable networks. The Review promotes a full-fibre and 5G future for the UK and recognises the need for both public sector and commercial investment to deliver the new full-fibre networks that the UK requires to grow and compete in the global digital economy.

3.1.2 The Review also cites the July 2018 National Infrastructure report which has a key chapter on [Digital Society](#). Figure One that follows, extracted from this chapter, reveals the significant difference in upload and download speeds that are achievable from full-fibre connections (as opposed to the current predominately copper-based solutions as utilised by BT and Openreach). The Review proposes a switch off date for the existing copper networks of 2025 making the existing Superfast Broadband Services potentially redundant within 7 years, however, a more likely switch off date is 2033. The switch off date has implications for rural communities like Monmouthshire who receive a Whitespace or Wireless broadband connection as their connection speed options are likely to fall far below the future basic standard of full-fibre connectivity. In addition, the full potential of 5G connectivity is fully reliant on connecting to full-fibre networks. The connectivity technology and the current lack of full fibre infrastructure for it to connect into will therefore need to be a consideration for the Council when assessing opportunities moving forward.

Figure One: A Full Fibre Future



3.2 5G Connectivity

5G or Fifth Generation wireless is the latest development in cellular technology and is being designed to greatly increase the speed and responsiveness of the wireless network, enabling a significant increase in the amount of data being transmitted due to increased bandwidth and advanced antenna technology.

The much improved network will enable wireless network connections to support services that need to respond in real time, from connected and autonomous vehicles i.e. self-driving cars to smart connected home products such as remotely controlled central heating, lighting, etc. all of which use secure, data only connections via the Internet of things (IoT). 5G networks and services will be deployed over the coming years to accommodate the increasing reliance on mobile and internet-enabled devices and as a result will generate a huge variety of new applications and uses as the technology is rolled out for example, Agri-tech, Med tech, etc.

Concerns have been expressed, since the launch of 2G, that harnessing millimetre wave (mmWave) spectrum for faster data speeds poses adverse health effects for the public - 5G particularly as it uses very high frequency spectrum. Anxiety is centred round whether radiofrequency radiation can increase the risk of cancerous tumours however this remains unproven and Government currently believes that the safety limits remain acceptable.

3.3 Internet of Things and LoRaWAN

The Internet of Things (IoT) is a generic term for sensors that can measure parameters from the environment around them, and report these measurements back to an action point. The variety of sensors is increasing at a very high rate, for many different applications. These sensors relay very small packets of data, at predetermined intervals of time. As the quantities of data are small, the battery life on these devices can last for many years, so installation costs tend to be very low. They are ideal in situations where mains power is either difficult to access, or is not available at all.

The signals that the devices send can be picked up on a number of different network types, but are ideally suited for low power wide area networks (LPWANS). There are a number of these LPWAN standards, of which the most popular currently is LoRaWAN (long range wireless access network).

Due to the low power, and the fact that these networks operate on the same unlicensed frequencies as WiFi (2.4 and 5Ghz), LoRaWAN gateways (base stations) have a long range of many kilometres. Each gateway needs access to the internet, however, because of the small size of the data packets, internet connections can be through 2G, 3G, 4G, 5G or fixed broadband services. This makes them ideal where generally fixed or mobile broadband coverage is poor. It has been estimated that Monmouthshire as a whole would require approximately 50 gateways to obtain full coverage.

The current costs of gateways is circa £1k each, and the cost of sensors an average of £20 plus Installation costs. The IoT and associated LoRaWAN networks have the ability to make the vulnerable safer e.g. devices that register the front doors of dementia patients opening in the early hours; keep energy costs lower e.g. the remote control of temperature sensors; and reduce pollution e.g. by monitoring carbon dioxide levels in towns – ultimately improving the Council’s ability to reduce operating costs whilst also supporting our individuals, towns and communities.

4. Next Steps

- 4.1 In order to address Monmouthshire’s current digital deprivation rate of 12.5% (approximately 8,000 premises) as detailed, the Council has taken a policy position to proactively encourage BT and alternative broadband providers or Altnets to install broadband infrastructure in the County. This is in line with the CCR’s City Deal Digital Strategy which advocates ‘the creation of an extensive Full Fibre Infrastructure across region, and UK Government’s Future Telecoms Review which promotes a full-fibre and 5G future for the UK and recognises the need for both public sector and commercial investment to deliver the new full-fibre networks that the UK requires to grow and compete in the global digital economy. This policy position advocates a full fibre to the premise (FFTP) solution to ensure consistency and quality of broadband signal however where this is not commercially viable e.g. remote rural farms, then the Council also encourages alternative solutions such as wireless. A degree of proportionality between speed and ‘want’ will need to be considered, which balances the necessity for a business requiring 1Gb connectivity to run their operating systems as opposed to the needs of a rural home or home business where a reduced speed of say 30Mb will be sufficient. Other considerations will include the environmental impact of the deployment of the infrastructure, in a county bordered by a national park and an Area of Outstanding Natural Beauty. Favoured solutions will be those that avoid expensive, disruptive, carbon generating civil engineering works.
- 4.2 This proactive policy position has buy in from a whole range of services across the Council to include Planning, Highways, Economic Development, Rural Development, Estates and Legal. A Strategic Broadband Working Group has therefore been established to ensure necessary processes are expedited to enable broadband providers to move at speed.
- 4.3 It is also likely that, as this is still an emerging field, some of the Altnets may require seed corn loan funding to progress opportunities within the county to address digitally deprived areas. The Council has approved one loan proposal and will seek to support other Altnets wishing to invest in the County.
- 4.4 In order to ensure that the county takes full advantage of the emerging 5G cellular technology the Council is fully considering opportunities to engage with funding opportunities to install 5G and LoRaWAN infrastructure within the County and is now a partner in the Co-Core Rural Testbed 5G programme. By opening up the County as a regional testbed and pathfinder for this emerging technology, we also open up opportunities for businesses and residents to benefit from the variety

of applications that will be developed as a result. This is likely to have a beneficial impact within the agricultural sector through Agri Tech developments such as animal sensors, farm security, crop monitoring, etc. and also for our ageing population in the development of Med Tech to assist with dementia, health monitoring, etc. which will also complement the Council's ambition for the recently established Monmouthshire Med Tech.

- 4.5 Table Two below lists a number of opportunities currently open to the Council. As each of these opportunities is developed, proposals will be put forward to the Strategic Broadband Working Group and as necessary, to the Council's Investment Committee for commercial loan consideration. To ensure that actions are monitored and evaluated it is proposed that an update of the Action Plan is presented to the Economy and Development Select Committee on a six monthly basis.

Table Two: Current Opportunities August 2019				
Opportunity	Resources	Impact	Risk	Activity to Date
<p>Local Full Fibre Network: Funding secured from DCMS to supply a minimum of 1Gb/s fibre to a number of local authority owned assets.</p>	<ul style="list-style-type: none"> MCC match funding contribution to be funded from the release of a portion of Public Sector Broadband Amalgamation (PSBA) revenue payments to BT, which can be capitalised over a 20 year period. Staff resource required to manage the whole process of installation, supplier discussions, highways work, scheduled building works etc. plus Gigabit Broadband Voucher Scheme promotion and application facilitation – further details can be found here 	<ul style="list-style-type: none"> 22 anchor tenancy sites with a minimum of 1 GB/s speed to service both business and citizens within their vicinity via Rural Gigabit Broadband Voucher scheme. Gigabit vouchers can be used by small businesses and the local communities surrounding them to contribute to the installation cost of a gigabit-capable broadband connection. Through the scheme businesses can currently claim up to £3,500 against the cost of a gigabit capable connection either individually or as part of a group project. Residents can claim a voucher worth £1500 as part of a group project with a business. For group projects, the Welsh Government will pay up to an additional £3,500 per small to medium-sized business (SME) and an additional £1,500 per 	<ul style="list-style-type: none"> Funding now secured however risk is in delivery; Limited current resource in place to manage programme installation or voucher scheme promotion which could lead to failure to meet the needs of the bid; 20% target of the 12.56% deprivation issue not addressed so wider impact lost; Reputational risk of non-delivery. 	<ul style="list-style-type: none"> Funding secured activity underway

		<p>residential property. This means that for group projects up to £7,000 is available per business and up to £3000 is available per residential property.</p> <ul style="list-style-type: none"> • Potential to address 20% of 12.56% deprivation issue via Voucher Scheme; • Opportunities for communities to benefit e.g. free Wi-Fi to village halls; • Addresses CCR Regional fibre connectivity ambitions; • Enables/Complements WG Trunk Road project. 		
<p>Trunk Road concession option: Opportunity to connect communities off the A465, A449/A40, M4 and A4042 via the Spectrum concession option.</p>	<ul style="list-style-type: none"> • Staff liaison resource required to keep track of project delivery 	<ul style="list-style-type: none"> • Potential to address 20% of 12.56% deprivation issue by taking spurs to local communities from the Trunk Road infrastructure; • Addresses CCR Regional fibre connectivity ambitions; • Enables/Complements WG Trunk Road project. 	<ul style="list-style-type: none"> • No current resource in place to keep track of delivery so may fail to meet all objectives; • 20% target of the 12.56% deprivation issue not addressed so wider impact lost; • Reputational risk of non-delivery and opportunity lost. 	<ul style="list-style-type: none"> • Concession contract has now been awarded to Spectrum. Dark fibre (As yet unused optical fibre, available for use in fibre-optic communication which can be leased from a network service provider) will be deployed along the county's main trunk roads to be used primarily to provide full fibre

				connections. This fibre will be available to community projects and other Internet Service Providers as well as Spectrum and will be very useful to 5G deployment in the County.
<p>Rural Gigabit Connectivity Programme - £200M funding pot from DCMS to adopt a new "outside-in" approach trialling models for local hubs in rural areas, starting with primary schools, alongside a voucher scheme for funding full fibre connectivity to nearby premises, providing full fibre connectivity to homes and businesses. Monmouthshire schools in the worst affected areas are Cross Ash and Pandy</p>	<ul style="list-style-type: none"> • DCMS funding bid to be considered following further clarification from DCMS; • Staff resource required to manage the whole process of installation, supplier discussions, highways work, scheduled building works etc. Plus Rural Gigabit Broadband Voucher scheme promotion and application facilitation. 	<ul style="list-style-type: none"> • Potential to address 5% of 12.56% deprivation issue by taking spurs to local communities from the schools; • Addresses CCR Regional fibre connectivity ambitions; 	<ul style="list-style-type: none"> • No current resource in place to submit funding application or manage project once approved; • 5% target of the 12.56% deprivation issue not addressed so wider impact lost; • Reputational risk of opportunity lost. 	<ul style="list-style-type: none"> • Under consideration
<p>Rural Connected Communities - DCMS project with the aim of building the business case for rural mobile connectivity (including 5G) by:</p>	<ul style="list-style-type: none"> • MCC is a partner in Co-Core a 5G rural Testbed in the County. • Staff resource required in moving the project forward. 	<ul style="list-style-type: none"> • Potential to address a percentage of the 12.56% through a 5G solution; • Potential for businesses and residents to benefit from the variety of IoT applications that will be developed as a result. 	<ul style="list-style-type: none"> • Limited resource in place to manage project; • Potential to target a percentage of the 12.56% deprivation issue will be lost; 	<p>Through the Co-Core 5G Rural Testbed project specifically Monmouthshire, as a partner, will be involved in developing test cases for the use of 5G in:</p>

<ul style="list-style-type: none"> Identifying and testing demand-led coverage models; Testing a range of innovative technical solutions and commercial approaches; and Building and proving demand through new 5G use cases. 			<ul style="list-style-type: none"> Potential to benefit from the development of new IoT applications will be lost. 	<ul style="list-style-type: none"> Tourism: Scalable AR Experience for a Sensitive Site and Preservation & Safety specifically at Raglan Castle; and Diverse Rural Economy: Farms Security & Safety and Farmer Mental Wellbeing & Isolation
<p>Welsh Government Local Broadband Fund</p> <p>Funding to deliver interventions that provide or support the provision of fast reliable broadband to premises that remain unserved. The £10 million is planned to span an initial three year period.</p>	<ul style="list-style-type: none"> Funding bid to be considered in readiness for the 7th September 2020 Staff resource required to submit bid and keep track of project delivery if successful. 	<ul style="list-style-type: none"> Potential to address a percentage of the 12.56% 	<ul style="list-style-type: none"> Funding bid not approved Limited resource in place to manage project; Potential to target a percentage of the 12.56% deprivation issue will be lost. 	
<p>Commercial Loans to Altnets</p> <p>– BT’s involvement in the roll out of further broadband infrastructure in the County other than SFC2 is likely to be minimal. Therefore as the commercial viability of broadband infrastructure is more limited than in an urban</p>	<ul style="list-style-type: none"> Staff resource required in the assessment of the commercial loan applications and in managing the Council’s continuing interests in broadband deployment when applications are successful. 	<ul style="list-style-type: none"> Potential to address a percentage of the 12.56% 	<ul style="list-style-type: none"> Risk of loan not being approved; Risk in Altnet’s ability to deliver broadband solution; Limited resource in place to manage Council’s continuing interest in broadband deployment; 	<ul style="list-style-type: none"> One loan approved for Broadway Partners Build out of FTTP from September 2020 to be focussed initially on Llandenny, Llansoy, Llangwym, King

<p>environment due to reduced take up rates and more complex civil engineering requirements to install the infrastructure the Council is being approached for commercial loans to provide seed corn funding.</p>			<ul style="list-style-type: none"> • Altnet likely to use voucher scheme to encourage take up, risk if Voucher scheme runs out of funds. • Potential to target a percentage of the 12.56% will be lost; • Reputational risk of non-delivery. 	<p>Coed, Llanarth and the Pitt, Great Oak, Penrhos and Tregare, Llangovan and Cross Ash (together comprising ca. 1,000 premises), with a further 4,500 rural premises planned to be upgraded to FTTP as demand justifies and where commercially viable. This in addition to existing and continuing Fixed Wireless broadband operations.</p> <ul style="list-style-type: none"> • Ambition is for the Gigabit overlay network, that is the subject of the commercial loan from the Council, to be 5G carrier grade to enable the deployment of 5G connectivity in rural areas. An additional bid will be made to WG to secure funding to enable
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				this upgrade to happen.
<p>LoraWAN: IoT and associated LoRaWAN networks have the ability to make the vulnerable safer; improve the Council’s ability to reduce operating costs whilst also supporting our individuals, towns and communities.</p>	<ul style="list-style-type: none"> • Staff resource required in moving the project forward. 	<ul style="list-style-type: none"> • Potential to address a percentage of the 12.56% • Potential for businesses and residents to benefit from the variety of IoT applications that will be developed as a result. 	<ul style="list-style-type: none"> • Limited resource in place to manage project; • Potential to target a percentage of the 12.56% deprivation issue will be lost; • Potential to benefit from the development of new IoT applications will be lost. 	<ul style="list-style-type: none"> • Through the Rural Development Programme 2014-2020, funding has been secured to trial a project “IoT and Independent Living”. An MCC occupational therapist has been seconded to the project for 18 months until March 2021. The project focusses on three demographics, mild dementia, hospital re-enablement and social isolation. The team considered IoT sensors, operating in homes within a Lora WAN network and engaged Cardiff University to develop solutions around our concepts. The product was trialled with 2 users in Monmouthshire

				<p>with good results, however the Covid 19 pandemic has interrupted the trials.</p> <ul style="list-style-type: none">• A further funding application is currently being developed via the Local Government Digital Transformation Fund to extend the project across the wider Gwent region.
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5. Current additional opportunities

- 5.1 A consortium of SMEs (currently rolling out TV White Space (TVWS) and 5Ghz line of sight under a Rural Community Development Fund grant) have been awarded £1.2M for a **5G rural test-beds and trials project in Monmouthshire**. The trial, now complete, will continue to serve to raise the profile of the county's digital deprivation issues. The cutting edge opportunities arising from the 5G trial is the setting up of a pilot rural gigabit village in Monmouthshire, Llandewi Rhydderch, without the need for fibre infrastructure.
- 5.2 The current **RDP programme** has a digital strand namely the '**Exploitation of digital technology**' which is underutilised at present due to resource issues. There is therefore an opportunity to develop wider revenue and skills projects which will support the current and future capital infrastructure initiatives including the potential to fund a Digital Infrastructure Officer.

6. Future Opportunities

- a) Transport for Wales willingness to use Monmouthshire as a pilot area for its responsive transport strand, Mobility as a Service (MaaS);
- b) A Monmouthshire consortium of interested parties is being considered to deploy similar broadband solutions as Wales's fastest community at speeds of 1,000Mb/s in Michaelston-y-Fedw. An enabling DIY toolkit is available from DCMS link [here](#).

7. Future Legislation

7.1 Universal Service Obligation

The UK Government intends to introduce a Universal Service Obligation (USO) for broadband. The USO is a UK-wide measure to deliver broadband connections to the hardest to reach premises in the UK and is intended to fill the gap left by the UK Government's existing broadband roll-out programmes which is likely to assist some of the most hard to reach premises in Monmouthshire.

The USO will provide a legal right for citizens to request a broadband connection of at least 10 megabits per second (Mbps) download speed. Eligible consumers and businesses will be able to request a connection under the USO and a Universal Service Provider(s) will be required to fulfil all requests up to a cost threshold of £3,400. The USO is underpinned by secondary legislation made under the Digital Economy Act 2017, and Ofcom has the responsibility to implement the USO which will be funded by industry through a cost-sharing fund. A mix of technologies that meet the minimum specifications will be used to deliver the service.

UK Government anticipates that the USO will be in place by 2020 at the latest. Ofcom reported that as of January 2018, 925,000 premises in the UK (3%) would qualify for the USO based on the proposed technical specifications. USO will only be available to those consumers that do not have access to broadband connections that fulfil the minimum standards, not those who have such a connection available but choose not to subscribe to it. The number of premises covered by the USO will ultimately depend on the number of consumers that register.

8. Conclusions and Recommendations

- 8.1 The current NGA Broadband situation in Monmouthshire with 12.56% of properties (approximately 8,000) not having next generation access to broadband, compared to 3 or 4% in other counties in the CCR region is unacceptable. It puts our communities and businesses and indeed Wales at a severe economic and social disadvantage, particularly given our proximity to the economic powerhouses of the South West, Gloucestershire and Herefordshire.

- 8.2 The current opportunities available to address the issue as detailed in Table Two above provide options to address the issues and progress is being made.
- 8.3 There are therefore clear and substantiated recommendations within this report which are summarised as follows:
1. The Council has taken a policy position to proactively encourage BT and alternative broadband providers to install broadband infrastructure in the County. Ideally this will be a full fibre to the premise solution however where this is not commercially viable then alternative solutions such as wireless will be encouraged. A degree of proportionality between speed and 'want' will need to be considered, which balances the necessity for a business requiring 1Gb connectivity to run their operating systems as opposed to the needs of a rural home or home business where a reduced speed of say 30Mb will be sufficient. Other considerations will include the environmental impact of the deployment of the infrastructure, in a county bordered by a national park and an Area of Outstanding Natural Beauty. Favoured solutions will be those that avoid expensive, disruptive, carbon generating civil engineering works.
 2. The Council has established a Strategic Broadband Working Group to ensure a proactive approach is taken in ensuring all necessary internal Council processes are expedited to enable broadband providers to move at speed.
 3. Through its' Investment Committee, the Council has approved and will further consider commercial loans to companies wishing to progress digital infrastructure projects within the county that will address digital deprivation issues.
 4. The Council has engaged with funding opportunities to install 5G and LoRaWAN infrastructure within the County, opening up the County as a regional testbed and pathfinder for this emerging cellular network and the variety of applications likely to be developed as a result. However, a conscious note will be made of any changes to legislation regarding any potential health impacts.
 5. Monitoring and Evaluation of the progress of the associated Action Plan will be undertaken by the Economy and Development Select Committee on a six monthly basis.

Appendix A – Anecdotal Evidence

Small Business Owners:

“I have been trying to get a decent broadband service for several years now and in the last few weeks the service has been grinding to a halt which causes serious problems when trying to run a small business that works a lot internationally. It took me some 40 minutes the other day to make a simple hotel booking such was the slow and intermittent nature of the connection. The frustration, wasted time and sheer inefficiency this causes is so draining.

I was recently involved in a business Skype conference call with some 15 people around the world - USA, Denmark, and Asia - only for the signal to be corrupted for the first half of the call. I'll leave you to gauge how embarrassing, frustrating and annoying that is in 2017.

Is it not possible to connect me as the line is literally a few hundred yards away from a number of properties that are now able to access the service? Given it's a simple question of laying or trailing a fibre cable and wiring a box I am at a loss to understand why I have to be connected to a box some 2 miles away which I have been advised will impact on any signal strength. Again I stress, I and my next door neighbour are very willing and able to dig any trench and actually lay the cable if that were to aid and speed up the process”.

“Trying to run a small business globally using Skype. Email, conference calls, etc. and have to work on a 19th century copper wire. Utter disgrace in this day and age”.

Technology Business

“I access sites to do cloud accounting for clients. I can wait a long time for response. Multi-tasking between cloud applications is impossible”.

Frustrated Residents:

“I have largely given up hope of achieving an Open reach solution for our small community, consequently the questions I have address the more strategic perspectives of any continued rollout; openness and transparency, honesty and communication.

A meeting a few weeks ago highlighted the passion and anger with BT, and the government's, hollow promises and propaganda embedded communication painting a somewhat skewed perspective on the reality 'on the ground' of the broadband roll-out.

Equally the isolation and loneliness of communities within communities, desperate for decent services, each dealing with the issue independently had a real feel resignation and powerlessness. The need for leadership, a coordinated plan and honest communication was very clear.

Increasingly I believe that I'm wasting my time pursuing this issue, but passionately believe that substantial communities are being left behind in an accelerating digital world. If we were a quaint backwater before, we are slipping further beneath the surface at an increasing pace. The really sad thing is that these communities have come to manage with what they have, however disadvantaged they are in a digital world”.

“Speed is too slow to be able to use iPlayer or streaming services. Speed is typically 1 Mbps. Unfortunately this was considered too fast for us to take advantage of a recent local initiative to increase speeds in the Penallt area. The speed is also affected by rain! Following the repair of a fault I

was told by a BT engineer that the copper cables that bring the signal from the BT box to our house are extremely old and the cable covers had deteriorated and were letting in moisture. When I asked if there were any plans to upgrade the old cables I was told it was unlikely. I'm unsure whether fibre to the box will help as we will still be stuck with these ancient and unsuitable copper cables."

"Whole situation is a pathetic joke for Wales and its hopes of economic growth - yet so many people making living at BT WG and Superfast Cymru etc. are all saying they are working on it but its 2017 for God's sake - I'm going to give it another year and then probably move".

I imagine ALL of the below are key pillars or the Welsh Government and MCC's development plans-develop rural enterprise; reduce CO2 and raise education standards. All of these are being compromised by the absence of broadband in our area."

Family Concerns:

"We are a modern family with all of the same technical requirements as those who live in cities. I believe that people in rural areas now rely on broadband more than those in cities as we do not have easy access to many facilities. Businesses in rural areas with decent broadband can offer many of the same services as those in cities whilst those in areas with slow broadband are being left behind".

"My wife is trying to run a business from home and has to drive to her parents in Chepstow to use her parent's internet. I can't lease our barn out as a Holiday Let (people expect internet) and my daughter struggles to do her homework as Shirenewton school like most now set a lot of her homework is online e.g. MyMaths".

"Our lack of Broadband is restricting our ability to run a rural enterprise (employment). Increasing CO2 emissions (we have to drive to get a decent internet link) and impacting our children's education (they are disadvantaged compared to their classmates because they struggle to complete their homework)".