Causeway Coast and Glens

Digital Strategy

November 2020

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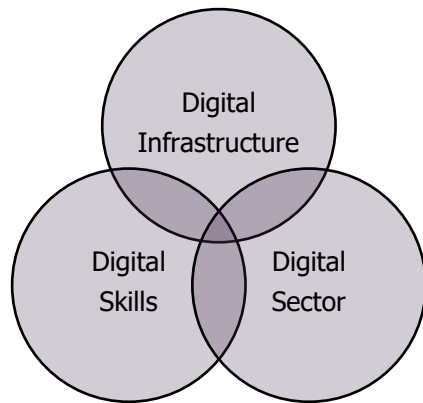
1.1 Integrated Approach

Figure ES1. The three themes of the Digital Strategy

The **Causeway Coast and Glens – Digital Strategy** has been developed in support of a range of local and national social, economic and digital strategies. The digital strategy addresses the three inter-linked themes of sector, infrastructure and skills. The digital strategy is also an input to the Growth Deal currently being defined for Causeway Coast and Glens.

1.2 Uncertain Times

The current economic and social background to the development of the Digital Strategy is very challenging and uncertain. The combination of COVID-19 and Brexit impacts all aspects of the economy and society – with little clarity over how severe the impact may be, or how long it will last.

However, against this unprecedented background of uncertainty, recent events have demonstrated clearly the critical importance of reliable high-bandwidth digital communications and applications, how essential it is that they are integrated throughout the economy and society, and how important it is that everyone has the skills to use them effectively.

1.3 Existing Developments

Although existing digital infrastructure in the Borough is relatively weak compared to other areas of the UK, other strategic developments are about to deliver significant change. The Full Fibre Northern Ireland (FFNI) and Project Stratum will soon begin deployment – turning Northern Ireland from one of the poorest connected areas in the UK, to one of the best connected in Europe.

Ensuring that the people and businesses in Causeway Coast and Glens adapt to this change and make the most of the opportunity available to them is the critical challenge of the **Causeway Coast and Glens – Digital Strategy.**

1.4 Digital Infrastructure

Digital infrastructure in Causeway Coast and Glens is currently poor beyond the main towns – and on a par with other rural areas in Northern Ireland. Figure ES2 shows how in rural parts of the Borough, access even to relatively basic broadband is patchy. Access to full fibre broadband is particularly poor.
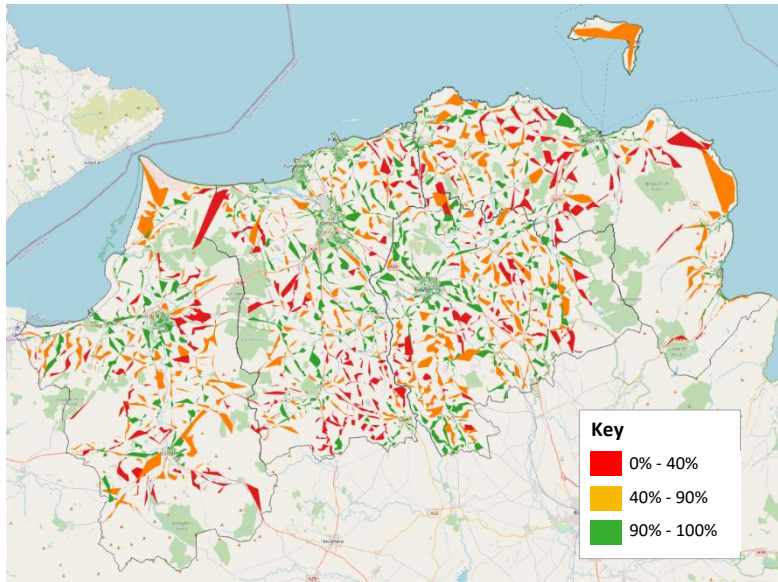

Figure ES2: Availability of decent broadband (10Mbps or higher) in Causeway Coast and Glens [Source: Ofcom data]

However, current public sector projects, combined with commercial deployments by Openreach, Virgin Media and Fibrus

will soon transform the Borough into one of the best-connected areas in Europe.

Other digital technologies – including mobile and LPWAN networks are also developing to support the wider digital transformation of the economy and services in the Borough.

Four key priorities are identified to continue the digital infrastructure development:

- **Ubiquitous Connectivity** – extending the deployment of full fibre broadband to those premises not covered by Project Stratum (an initiative to deliver fibre broadband to the areas with inadequate broadband currently).

- **Support new capabilities** – LPWAN, 5G and Wi-Fi networks present important new economic opportunities.

- **Reduce barriers to deployment** – encouraging commercial deployment and supporting public sector initiatives to maximise benefit.

- **CCGBC upgrade its own IT platforms** to adequately support remote working and digital transformation.

1.5 Digital Skills

Digital technologies have been widely recognised as critical to economic and social sustainability for many years. However, the recent experience of 'lockdown' forced by the COVID-19 pandemic has emphasised the importance for all parts of the economy and society.

This importance, and the potential long-term need for restricted social interaction, means that it is essential that all individuals have the skills necessary to engage with the digital delivery of critical services, and all businesses have access to the skills necessary for the digital transformation necessary for survival.

The Digital Skills strategy considers two important aspects:

- **Skills in the Digital Sector** – to allow this sector to develop and grow, and to support the wider economy.

- **Skills throughout the economy and society** – to allow the Borough to thrive in an increasingly digital world.

1.6 Digital Sector

Digital Sector businesses form a very small part of the economy in Causeway Coast and Glens. However, the sector has an important part to play in the Borough's economy – both through employment and the wider economic impact of digital transformation. Many individuals working in the digital sector in the Borough may be employed by international companies operating in the rapidly growing digital cluster in Belfast, or as digital experts in businesses outside of the sector.

We have four key opportunities identified to support the digital sector and the wider economy in Causeway Coast and Glens:

- **Collaboration Hubs** – buildings and facilities to provide a local focus for the sector development in the Borough.

- **Networking programme** – a programme of events to encourage networking as a part of the wider digital cluster in Belfast and beyond.

- **Incubator support** – providing cost effective opportunity for new business start-ups within the wider Northern Ireland digital cluster.

- **Support for other key sectors of the economy** – being digitally enabled is a vital component for success of all business sectors. The digital sector has a key role to play in supporting tourism, manufacturing, agriculture and the delivery of public services. We explore in detail how digital technologies can help to transform the visitor economy as it recovers from the damaging effects of the COVID-19 pandemic.

The next few years will see Causeway Coast and Glens transformed from one of the least well-connected places in the British Isles to one of the best connected. This strategy aims to ensure that the improved connectivity **reaches everyone**, that they **have the skills to benefit** from the improved connectivity and that the connectivity and skills are harnessed to **support the wider economy** to the benefit of all who live, work and visit here.

2. Background

An effective digital strategy does not exist in isolation; it fits within the context of other development goals and strategies, and within the context of overall economic and societal trends and developments.

The **Causeway Coast and Glens – Digital Strategy** comes at a time of significant economic uncertainty (including the economic upheaval following the measures taken to control the spread of COVID-19, the current political framework in Northern Ireland, as well as the Brexit developments affecting the UK and Europe more generally). It also comes at a time of growing awareness of wider society issues such as our ageing population and global climate change. It is also a time of rapid development of digital technologies.

The combined impact is one of significant opportunity and challenge – where digital technology will make dramatic changes in the way we live – and where dramatic changes may be necessary if our society is to continue to thrive.
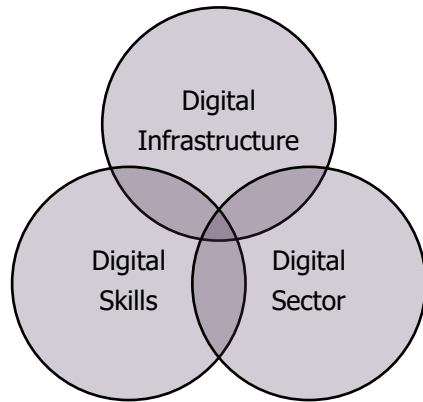
2.1   Integrated Approach

Figure 1. The three themes of the Digital Strategy

The **Causeway Coast and Glens – Digital Strategy** supports the wider **A Better Future Together – the Delivery Plan for Causeway Coast and Glens Community Plan 2017-2030[1]**. The digital strategy aims to reflect the critical role of digital technologies in Causeway Coast and Glens – both in terms of the digital sector within the economy, and as a critical enabler of other economic and societal developments. It has been developed as a key input to the Growth Deal currently being defined for Causeway Coast and Glens.

As illustrated in Figure 1, the digital strategy is formed around here core strands to provide a basis for development of from establishing the current position and vision for the future, to identifying actions and targets for delivery.

2.2   Context

The digital strategy is developed in parallel with and is informed by the broader economic strategy for Causeway Coast and Glens and took into account a range of digital strategies, initiatives and developments from the UK and beyond that establish the context for development in the Borough.

The strategic context (in Figure 2 below) provides a background of requirements, targets, inputs and best practice that help shape and form the **Causeway Coast and Glens – Digital Strategy**.
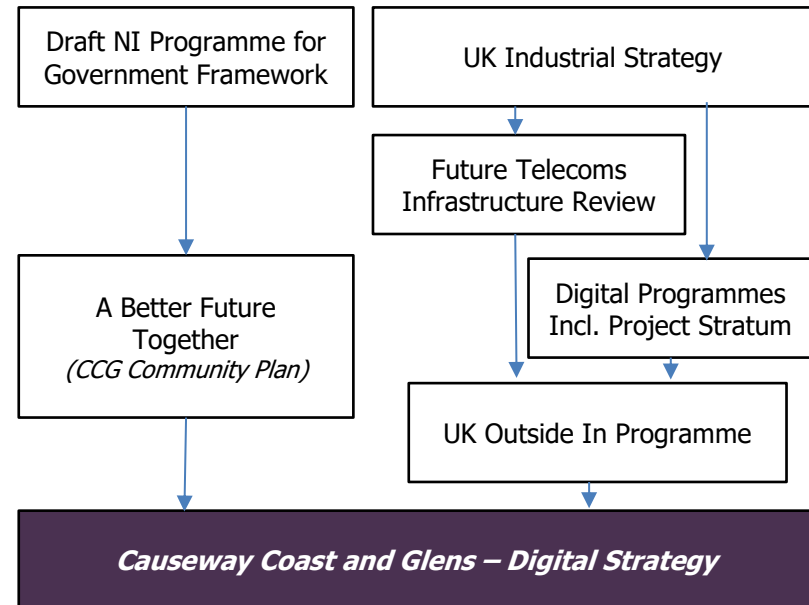

Figure 2. The context of the digital strategy

2.3 Strategic Background

The strategic background comes from a range of local and national strategy developments. These provide a foundation for the core objectives of the digital strategy, as well as a direction and best practice for achieving those objectives.

2.3.1 Draft Programme for Government Framework

The Draft Programme for Government Framework[2] covers the period 2016 to 2021. It identifies a range of 42 outcomes which, if achieved, will improve the lives of citizens of Northern Ireland. Outcome 24 is to "Improve Internet connectivity". This objective flows through directly to the infrastructure theme of the **Causeway Coast and Glens – Digital Strategy** and provides a foundation for all aspects of the strategy.

2.3.2 A Better Future Together

A Better Future Together – the Delivery Plan for Causeway Coast and Glens Community Plan 2017-2030[1] is the corporate plan for Causeway Coast and Glens Borough Council.

The document identifies 12 outcomes for the people who live in, work in and visit Causeway Coast and Glens. The digital strategy provides significant support to achieving each of these outcomes:

Outcome 1: All people of the Causeway Coast and Glens benefit from improved physical health and mental wellbeing

Improved digital connectivity throughout the Borough will help to combat loneliness among the elderly and isolated, allowing easy communication and video sharing. Video allows the physical state of elderly and vulnerable people to be assessed in a way that is not possible in a telephone call.

Outcome 2: Our children and young people will have the very best start in life

Although the dangers associated with excessive screen time and pressures from social media are well documented, the educational and social benefits for young people being well-connected are considerable. Good rural connectivity will ensure that all children in the Borough will benefit from these advantages.

Outcome 3: All people of the Causeway Coast and Glens can live independently as far as possible and access support services when they need it

COVID-19 has broken a log jam of resistance to remote medicine and social care which has been impeding progress of remote health and social care delivery for more than a decade. This change of approach from the health and social care sectors, combined with the widespread availability of high-quality reliable connectivity will have a dramatic effect on the ability of many elderly and vulnerable people to live independently at home with access to the support services they need.

Outcome 4: The Causeway Coast & Glens area feels safe

Security in remote farms and businesses is difficult. Significant numbers of serious thefts of equipment and livestock happen each year. Widespread availability of LPWAN in rural areas is easy to achieve and sensors can be put on gates, lanes and out-buildings that can sound alarms when there is unusual activity. This is likely to have a strong deterrent effect on such theft.

Outcome 5: The Causeway Coast and Glens area promotes and supports positive relationships

Active volunteer schemes can be supported across communities through online promotion by CCGBC and other organisations. These schemes can promote cross-community collaboration and cooperation which enhance positive relationships.

Outcome 6: The Causeway Coast and Glens area is widely recognised and celebrated for its unique natural built landscapes

The Borough has a very strong reputation through the presence of the Giant's Causeway and because of the *Game of Thrones* locations in the Borough. Active online promotion of these will be important as the Borough battles to attract the greatly reduced numbers of people willing to travel following the Covid-19 crisis. Extensive support for all of the Google five stages of travel (dreaming, planning, booking, experiencing and sharing) will be essential to revive the visitor economy.

Outcome 7: The Causeway Coast and Glens area has physical structures and facilities that further growth, access and connections

In terms of communications infrastructure, these facilities already exist, but they are unevenly distributed. Project Stratum and the Outside In programme of DCMS will make access to such communications infrastructure almost ubiquitous. It will be necessary to consider those that are not reached by those programmes to ensure total coverage of good communications. (The availability of broadband at download speeds of 30 Mbps is one of the indicators against which this outcome will be measured.)

Outcome 8: The Causeway Coast and Glens area is a sustainable environment

The measurement of air and water quality, particularly in rural areas, can be supported through the widespread availability of LPWAN with appropriate sensors and services to support monitoring and alarms for those responsible for the levels.

Outcome 9: The Causeway Coast and Glens area provides opportunities for all to contribute to and engage in a more prosperous and fair economy

Widespread availability of good broadband will help to eliminate the economic, educational and social disadvantages endured by citizens living in rural and remote locations. It will also help to stem and maybe even reverse the migration of young people away from rural areas to towns and cities.

Outcome 10: The Causeway Coast and Glens area attracts and grows more profitable businesses

Digital transformation of businesses has been proceeding for decades, but many businesses have progressed slowly. The COVID-19 pandemic has forced many businesses to accelerate their digital transformation. A requirement that has become very clear in recent months is how dependent businesses are on their employees having good connectivity from home. Having a strong hub like the Enterprise Zone in Coleraine is a great advantage. Having excellent connectivity at home for everyone who works there will strengthen the attractiveness of it as a location.

Outcome 11: The Causeway Coast and Glens area drives entrepreneurship & fosters innovation

The OECD and the World Economic Forum recognise the importance of good digital connectivity to the development of entrepreneurship and fostering innovation. Access to sophisticated digital tools is vital for innovation in a wide variety of advanced sectors form biosciences to finance and advanced manufacturing to food science.

Outcome 12: All people of the Causeway Coast and Glens will be knowledgeable and skilled

Fostering the advancement of digital skills will assist this outcome. Furthermore, the ubiquitous availability of digital infrastructure and services will greatly assist general education, distance learning and on-the-job training, all of which will raise the skills base of the Borough.

The **Causeway Coast and Glens – Digital Strategy** has been developed in parallel with and to support the economic strategy for Causeway Coast and Glens. Both initiatives are designed to assist with the delivery of the objectives laid out in **A Better Future Together**.

2.3.3 UK Industrial Strategy

The UK Industrial Strategy[3] arose from the identified need to improve productivity to keep pace with our international competitors. The strategy identifies five foundations of productivity for our future transformed economy:

- **Ideas** – the world's most innovative economy
- **People** – good jobs and greater earning power for all
- **Infrastructure** – a major upgrade to the UK's infrastructure
- **Business environment** – the best place to start and grow a business
- **Places** – prosperous communities across the UK

The infrastructure foundation specifically highlights the need to boost our digital infrastructure, including the widespread deployment of full fibre and 5G infrastructure.

In addition to the five foundations of productivity, the Industrial Strategy recognises the importance of key challenges in the development of improved productivity. Four Grand Challenges are identified:

- Putting the UK at the forefront of the artificial intelligence and data revolution;

- Maximising the advantages for UK industry from the global shift to clean growth;

- Being a world leader in shaping the future of mobility; and

- Harnessing the power of innovation to help meet the needs of an ageing society.

The Foundations and Grand Challenges of the UK Industrial Strategy provide a clear direction and focus for the *Causeway Coast and Glens – Digital Strategy*.

2.3.4 Future Telecoms Infrastructure Review

The Future Telecoms Infrastructure Review (FTIR)[4] arose from the recognition that although superfast broadband had placed the UK as a world leader in the deployment of current high bandwidth digital connectivity, the focus had resulted in us falling far behind international competitor nations in the deployment of more future-proofed full fibre and 5G connectivity.

The FTIR separates the market for full fibre into four categories (illustrated in Figure 3).
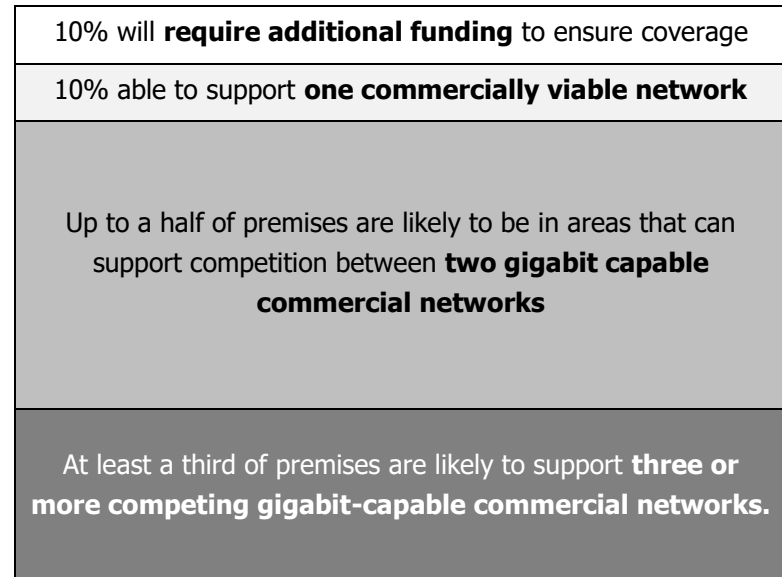
10% will **require additional funding** to ensure coverage
10% able to support **one commercially viable network**
Up to a half of premises are likely to be in areas that can support competition between **two gigabit capable commercial networks**
At least a third of premises are likely to support **three or more competing gigabit-capable commercial networks.**

Figure 3. The level of competition supportable in UK telecoms

The FTIR sets key goals for infrastructure technology deployment:

- 15 million premises connected to full fibre by 2025

- Full fibre coverage across all parts of the UK by 2033

- The majority of the UK population to have 5G coverage by 2027

The review recognises that the most effective way to deliver nationwide full fibre connectivity at pace is to promote competition and commercial investment where possible, and to intervene

where necessary. The FTIR identifies five essential aspects to delivering national full fibre coverage:

- Making the cost of deploying fibre networks as low as possible by addressing barriers to deployment, which both increase costs and cause delays

- Supporting market entry and expansion by alternative network operators through easy access to Openreach's ducts and poles, complemented by access to other utilities' infrastructure (for example, sewers)

- Stable and long-term regulation that promotes competitive network investment

- An 'outside in' approach to deployment that means gigabit-capable connectivity across all areas of the UK is achieved at the same time, and no areas are systematically left behind

- A switchover process to increase demand for full fibre services.

Most of these aspects require national level intervention and support by the service providers. However, two key aspects can be developed and supported locally, and must be reflected in the **Causeway Coast and Glens – Digital Strategy**:

- 'Barrier Busting' approaches should be employed to simplify the administrative and practical burdens of network deployment

- An 'outside in' approach should be adopted to ensure widespread deployment, including in rural areas

The FTIR also identifies the need to improve the availability of mobile signal coverage and sets the ambition for the UK to become a global leader in 5G. To meet these requirements, the FTIR sets the targets to:

- Ensure 95% geographic coverage of 4G by 2022

- Majority of people in UK will have access to 5G by 2027

To support these ambitions, the FTIR identifies four priority areas for 5G deployment:

- Make it easier and cheaper to deploy mobile infrastructure and support market expansion, including the implementation of the wide-ranging reforms to the Electronic Communications Code (ECC) on site access and consideration of further planning reforms;

- Support the growth of infrastructure models that promote competition and investment in network densification and extension;

- Fund beneficial 5G-enabled use cases through the Government's 5G Testbeds and Trials Programme, to help de-risk business models for 5G; and

- Promote new, innovative 5G services from existing and new players, through the release and authorisation of additional spectrum.

2.4 Other initiatives and programmes

2.4.1 Causeway Coast and Glens Growth Deal

City Deals and Growth Deals are developing as an important funding mechanism for economic development across Northern Ireland. The Causeway Coast and Glens Growth Deal is a unique growth deal in Northern Ireland as it is focussed on a single authority. Based on a *per capita* allocation of Department of Communities and Local Government money it can expect to get £34 or £35 million. This will be matched by NI government Money and it potentially has another £10 million on top to give a total of £80 million public funding with the potential for additional funding from partners such as Ulster University and the private sector. This is ring fenced and dependent on the council putting forward projects of suitable quality.

The approach to the growth deal consists of two broad plays: *Renewal and Recovery* (from the immediate effects of the Covid-19 pandemic) and *Infrastructure and Regeneration*. The Council is currently seeking projects of high quality with a Borough-wide economic impact. There is a strong expectation that digital infrastructure will be an important and significant part of the overall spend.

2.4.2 The DCMS Outside-In Programme

Since the publication of the FTIR, availability of world class broadband has moved up the political agenda and, in the run up to the 2019 General Election in December 2019, the Prime Minister pledged full-fibre broadband everywhere in the UK by 2025. This pledge has developed into to a pledge for gigabit-capable broadband available as far as possible in the UK by 2025. DCMS is currently working on the *Rural Gigabit Connectivity* programme to support the delivery of this pledge.

2.4.3 Existing Digital Programmes

In addition to the economic and digital strategies, the ***Causeway Coast and Glens – Digital Strategy*** is developed within the context of existing digital programmes aimed at supporting developments in the digital sector, digital infrastructure or digital skills in the Borough.

2.4.4 Full Fibre Northern Ireland

The Full Fibre for Northern Ireland (FFNI) project was developed under the Local Full Fibre Networks (LFFN) challenge fund developed by the Department for Digital Culture Media and Sport (DCMS) in support of the UK Industrial Strategy.

Northern Ireland has secured £15 million LFFN funding to deploy full fibre connectivity to a number of government buildings. This includes £1.4 million for Causeway Coast and Glens.

The FFNI project is expected to increase the deployment of full fibre connectivity to locations across the Borough, using public sector buildings as 'anchor tenant' locations. The project will

improve availability of backhaul connections to support further commercial deployment of full fibre connectivity.

2.4.5 Project Stratum

Government subsidy in the UK has increased availability of superfast broadband beyond commercial deployment, to deliver the national target of 95%. However, availability in hard-to-reach areas is below this target. Across Northern Ireland availability is only 88%. Project Stratum[5] has resulted from additional UK government funding being made available to address this difference.

The project aims to intervene to improve the availability of superfast broadband to existing 'white properties' (properties without access to superfast broadband at 30 Mbps or faster). The Department for the Economy is carrying out final assurance and approval work and hopes to award the contract in November 2020.

Project Stratum will help transform broadband connectivity in Northern Ireland, particularly in rural areas, and the project will benefit many homes and businesses. However, a small proportion of premises will be very difficult to serve, and may be excluded from the project. If nothing is done about connecting them, they will remain with very poor digital connectivity, and will be at a significantly greater relative disadvantage as connectivity for everybody else will improve dramatically.

2.4.6 Northern Ireland IoT Challenge

Things Connected NI[6] is a regional program that deployed Low Powered Wide Area Network (LPWAN) infrastructure across most of Northern Ireland. The project, led by the Digital Catapult, aims to make the network free to use for experimentation and testing, demonstration, and piloting 'Internet of Things' (IoT) products and services.

Things Connected Northern Ireland is backed by a consortium of local councils, private sector bodies, universities and specialist advisors. The intention is to stimulate innovation in this high growth industry while actively building and supporting the ecosystem to innovate, experiment, prototype and bring to market new products and services.

Like 5G, LPWAN infrastructures and technology are seen as a key element of the next generation of internet access that will support a new range of business models and digital transformations. In particular, LPWAN infrastructure and IoT are essential in the digital transformation of critical public services (including health and social care).

The Northern Ireland IoT Challenge is an important initiative to help SMEs and other organisations develop key digital skills in a critical new area for the digital sector.

2.4.7 Broadband developments in the Republic of Ireland

There is a considerable amount of activity on broadband roll-out in the Republic of Ireland with the National Broadband Plan being rolled out by National Broadband Ireland. The roll-out is underway and is expected to deliver full-fibre broadband to more than half a million homes, farms and businesses that would not otherwise be covered through commercial roll-out.

The areas close to the border between Northern Ireland and the Republic of Ireland will benefit from the Irish National Broadband Plan. Similarly, Project Stratum will deliver a step change in infrastructure in the Northern Ireland border areas. Having greatly improved communications infrastructure on both sides of the border will help to meet some of the economic challenges raised by Brexit.

2.5 Economic Background

The economic background to the **Causeway Coast and Glens – Digital Strategy** is determined by the general business and economic conditions in the Borough, the importance of different business sectors, and by the requirements of the population in general.

2.5.1 General Economic Background

The economy of Causeway Coast and Glens does not exist in isolation. As illustrated in Figure 4, Causeway Coast and Glens has the second lowest GVA/head in Northern Ireland.
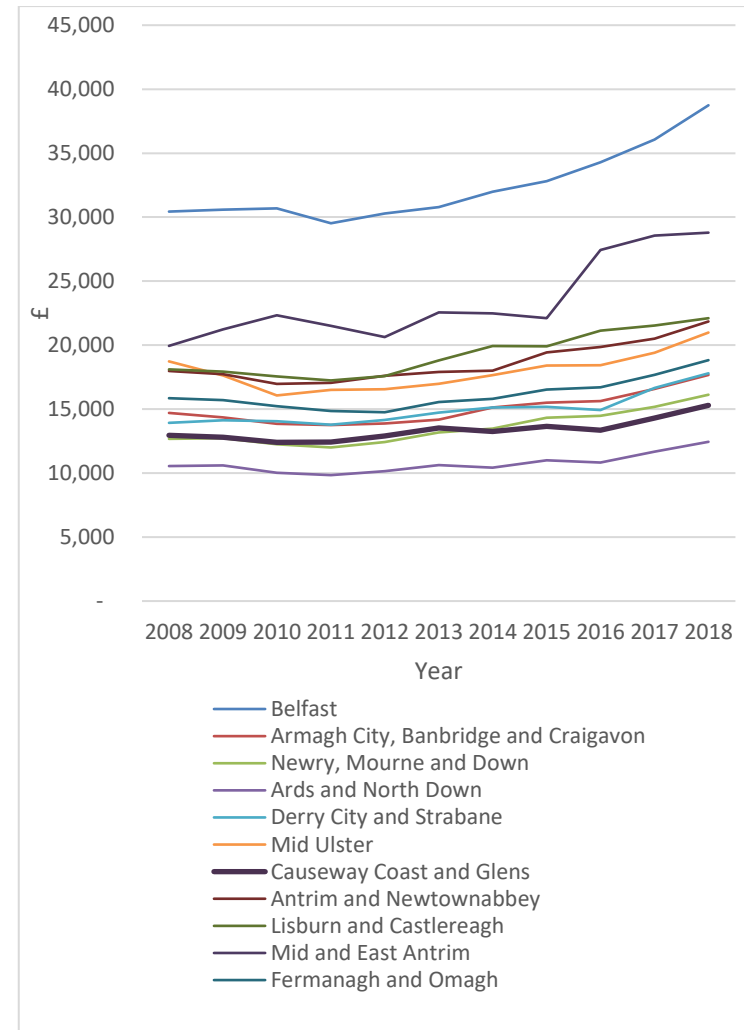

Figure 4. GVA per head for local authorities in Northern Ireland

Between 2008 and 2018, GVA in Causeway Coast and Glens increased 22% (compared to 33% for the UK and 31% for Northern Ireland). GVA per head in Causeway Coast and Glens grew only 17% between 2008 and 2018 – compared to 32% in Belfast. This was the third lowest growth rate among the Boroughs in Northern Ireland.

The strong economic growth in Belfast is driven by the surrounding areas. This is particularly important in key business sectors such as Digital industries where Belfast attracts investment from a wide area including most of Northern Ireland.

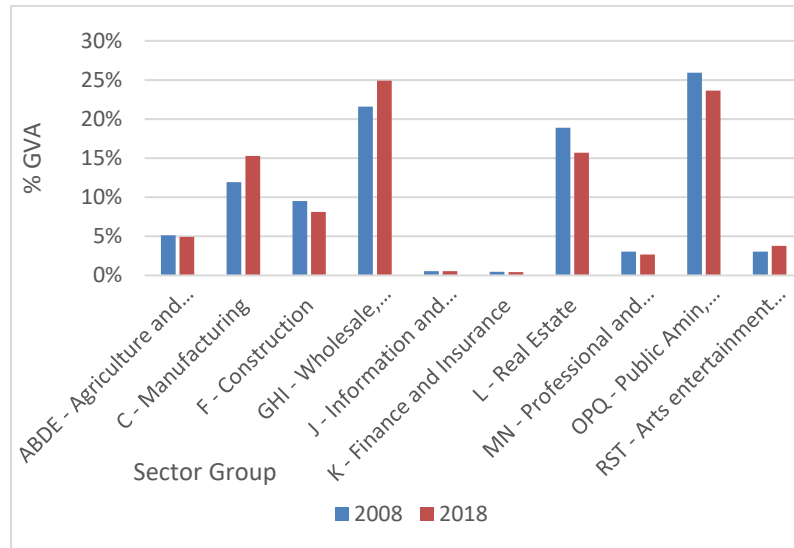### 2.5.2 Business Sectors

Figure 5. % GVA by sector groups in Causeway Coast and Glens

The economy in Causeway Coast and Glens is driven strongly by the visitor economy – which is present in a number of standard industry classification groupings (for example accommodation and food, as well as recreation).

Conversely, the Information and Communication sector in Causeway Coast and Glens is very small and has below average growth. Between 2008 and 2018, GVA in the Information and Communication sector in Causeway Coast and Glens increased by 20% - compared to 22% overall GVA growth in the Borough over the same period.

2.5.3 Impact of Belfast and Derry / Londonderry

The total GVA in Belfast between 2008 and 2018 grew 30% (well ahead of the 24% overall for the UK). Although the Information and Communication sector in Causeway Coast and Glens under-performed general economic growth, throughout the UK it is a high growth sector. Between 2008 and 2018 the Information and Communication sector grew 36% across the whole of the UK, 34% across Northern Ireland as a whole but showed growth of 44% in Belfast and 58% in Derry and Strabane.

The strong economic growth in Belfast, and Derry and Strabane, and in particular the dramatic growth in the Information and Communication sector is driven by the skills drawn from the surrounding areas and provides exceptional employment opportunities.

Maximising the opportunity presented by the economic growth in Belfast and Derry (in particular in the Information and Communication sector) and developing a complementary economic offer in Causeway Coast and Glens presents a key opportunity for the Borough to make significant progress towards many of its desired outcomes.

2.5.4 Geographic Distribution

The geographic distribution of businesses and sectors has a strong impact on digital connectivity requirements. Different business sectors typically have different digital connectivity requirements and the distribution of these requirements must be considered.

Industrial business locations (manufacturing, etc) tend to be clustered in the outskirts of larger towns. However, there is an unusually high prevalence of industrial locations scattered throughout the Borough that are not in the immediate vicinity of towns, as illustrated in Figure 6 (above).
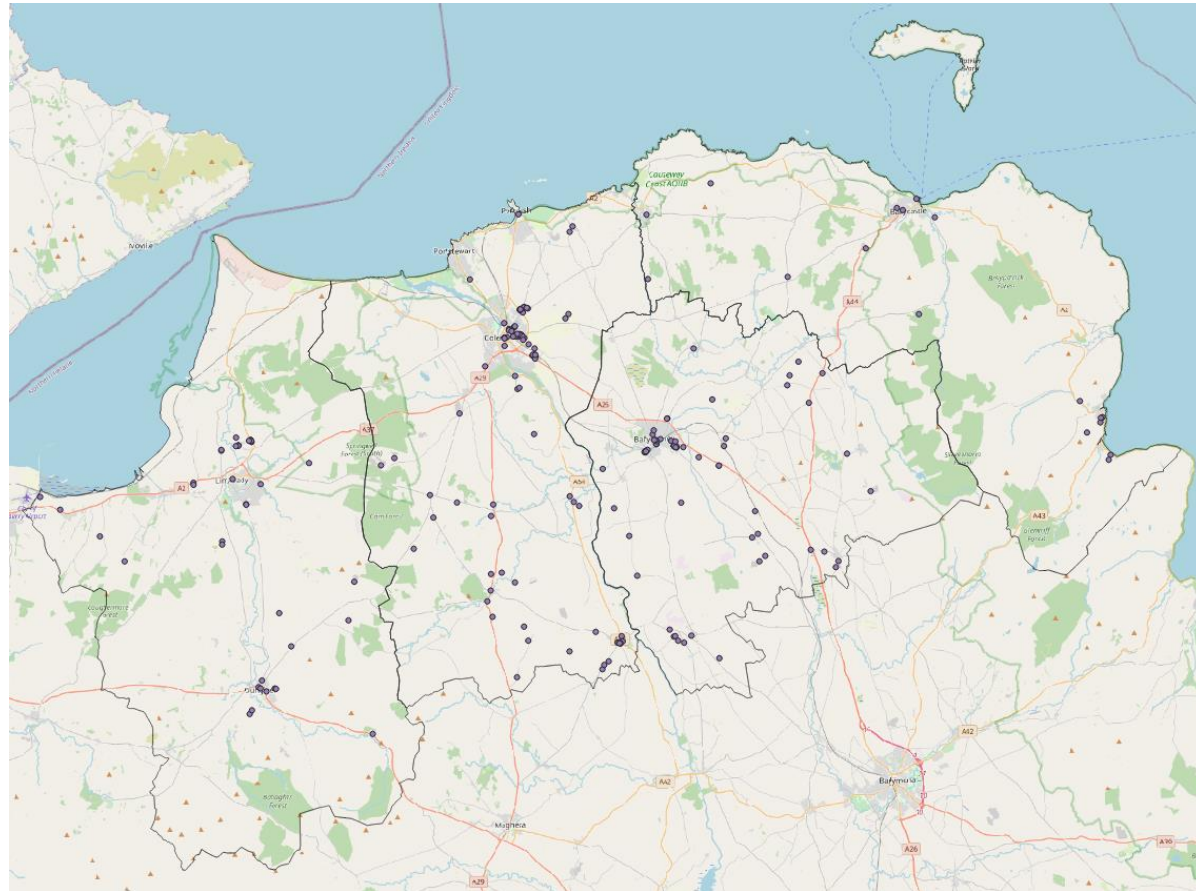

Figure 6. Industrial building locations

These more isolated industrial premises include quarries and aggregate providers, skip hire, fuel depots, and a variety of workshops (as well as a well-known distillery).

Office locations, shown in Figure 7 tend to match the industrial locations, and have clusters throughout the centre of larger towns, with smaller clusters and isolated locations spread throughout the area.

The digital requirements for industrial and office locations vary based on the size of the facility and level of digital transformation. Larger facilities currently usually employ leased lines, though high bandwidth contended (shared bandwidth) full fibre connections are presenting important alternatives for many businesses.
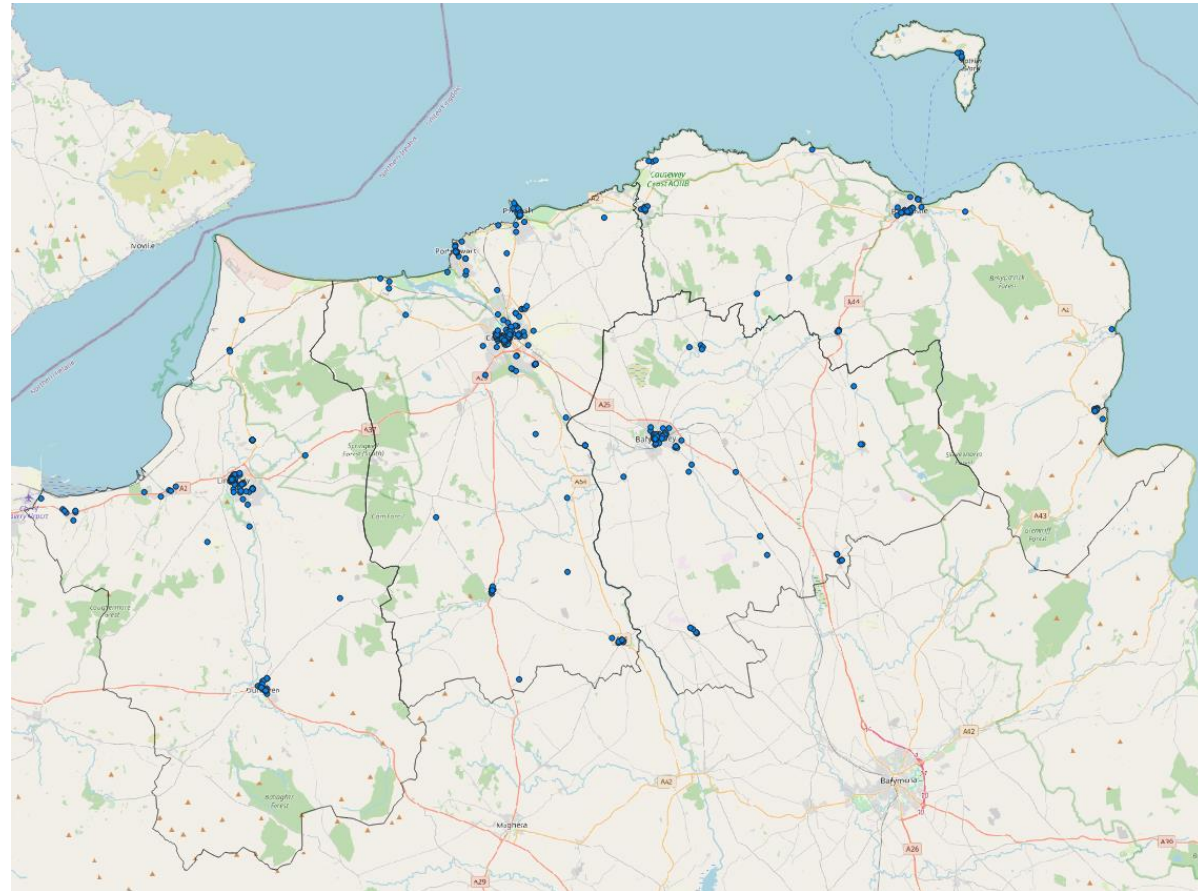

Figure 7. Office building locations

As digital transformation of all business processes becomes established over the next few years, having been given a strong boost by the COVID-19 pandemic, availability of full fibre digital connectivity will be an important factor in the sustainability of these locations.

Locations associated with the visitor economy often tend to be more widely distributed, and in different locations from the industrial and office locations – requiring a more widely available digital infrastructure. The situation in Causeway Coast and Glens follows this pattern with a very distributed coverage of the landscape between the larger towns.

The tourism strategy is one of dispersal- the Borough has a small number of heavily visited attractions. The Council wants to disperse people from these attractions to other attractions in the Borough as a means of managing over-crowding and dispersing the economic benefit.
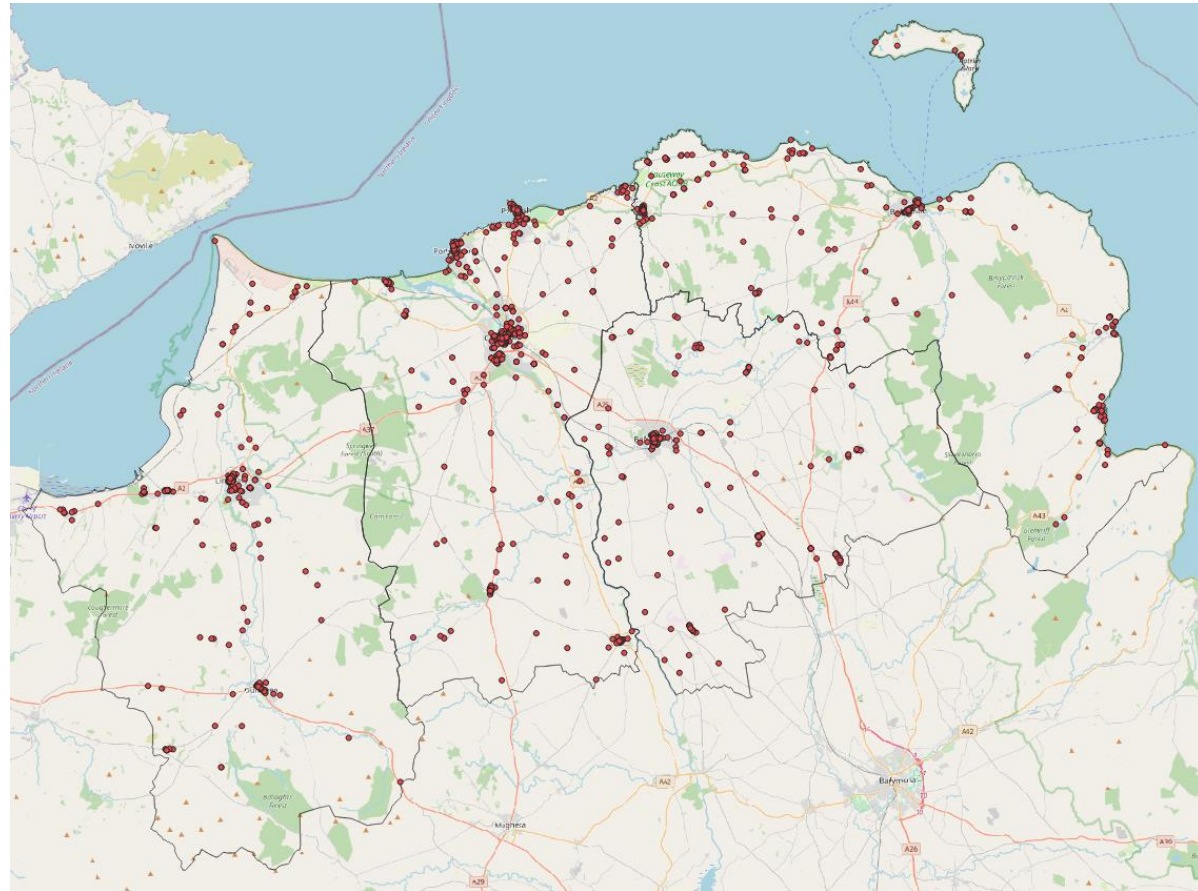

Figure 8. Retail, entertainment, cultural, hospitality and sporting locations

2.5.5 Population Background

Causeway Coast and Glens is a relatively aged Borough, and the median age is increasing ahead of the general trend for Northern Ireland and the UK as a whole.
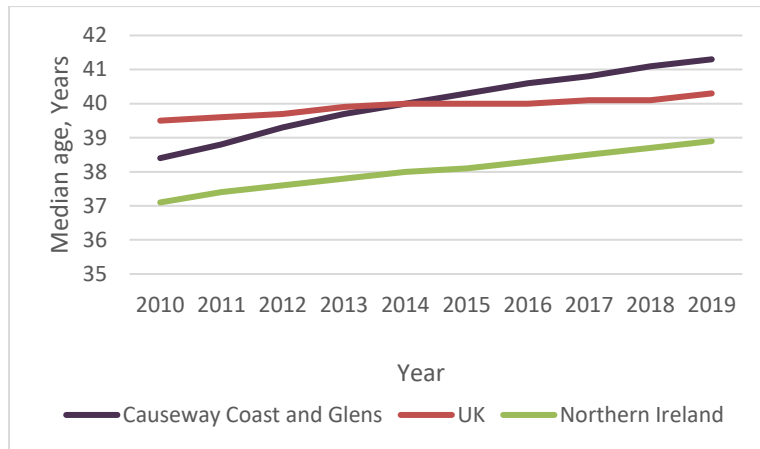

Figure 9. Mid- year median age 2010 to 2019

The age of the population is of critical importance. Compared to the UK and Northern Ireland as a whole, Causeway Coast and Glens has a slightly lower proportion of people of working age. However, the difference is only a half of a percentage point.

18.4% of the population of Causeway Coast and Glens are 65 or older. This is very close to the UK as a whole (18.5%) but is significantly higher than for Northern Ireland which has only 16.6% of its people aged 65 or older.

The cost of providing health and social care to people over 65 is significantly greater than the costs for people of working age. The need to improve the efficient delivery of health and social care services is particularly strong across the whole United Kingdom and Causeway Coast and Glens is no exception. It is expected that digital transformation will play a significant role in this efficiency improvement.

The COVID-19 crisis had also shown how significant proportions of interaction with medical professionals for everyone, not just the elderly, can be done remotely using online interaction. The pandemic has seen changes in NHS provision that would have seemed impossibly fast in 2019. It is likely that many changes will be made permanent and willingness to experiment to improve services will be much greater as challenges grow.

Critical to reducing the cost of providing health and social care to people over 65 is the digital transformation to allow them to receive effective care in their own homes for longer. Ubiquitous coverage of effective broadband to all homes is an essential element in this transformation and service delivery.

The distribution of domestic properties in Causeway Coast and Glens, shown in Figure 10, shows the delivery of ubiquitous coverage will be a significant technical and commercial challenge. Although significant clusters do exist in the larger towns and villages, properties are widely distributed throughout the area. However, there are very few extremely isolated properties which would be prohibitively expensive to serve with very long stretches of dedicated infrastructure.

In addition to an effective digital infrastructure, the digital transformation of services will demand critical digital skills. Skills will be required in the digital sector to develop the digitally transformed services, and throughout society to make effective use of the services.
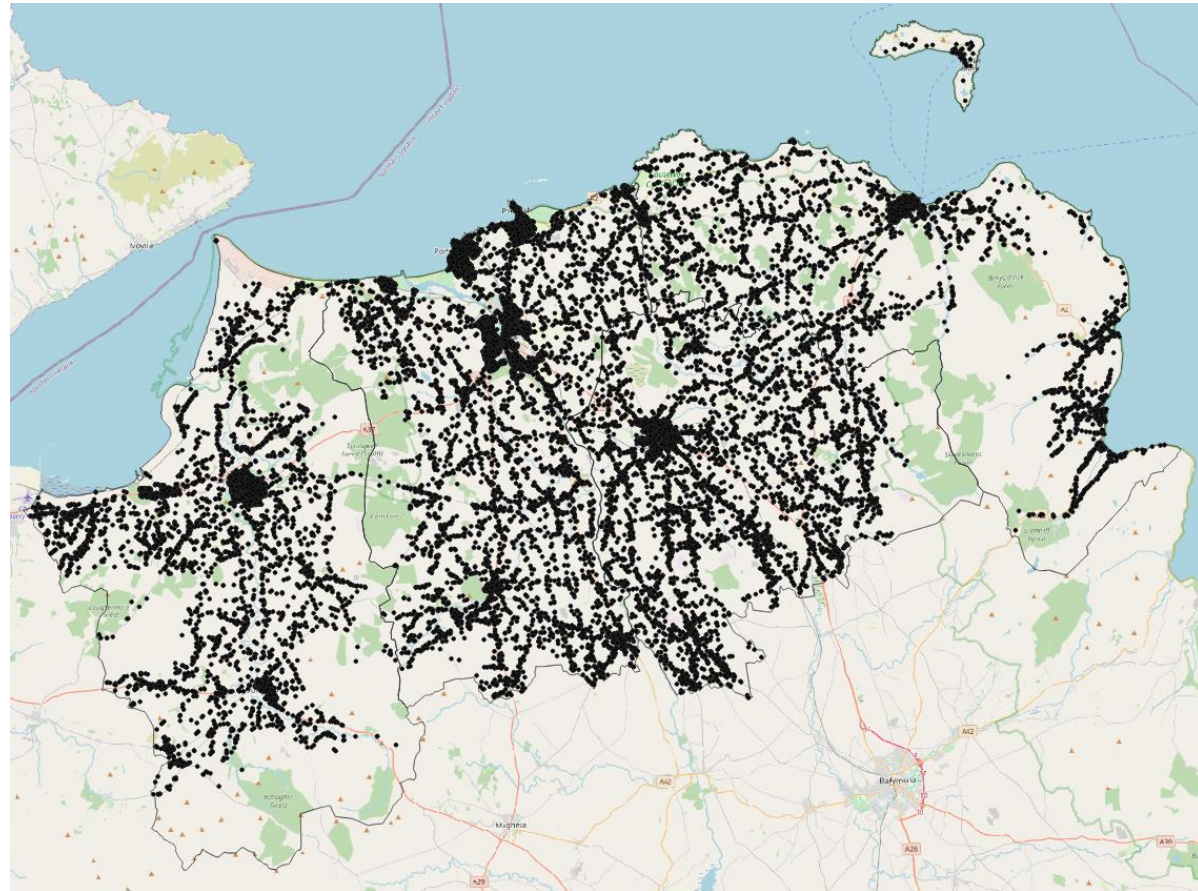

Figure 10: Distribution of domestic properties

2.6 Effect of COVID-19

COVID-19 has had a dramatic effect on every aspect of society, and Digital is no exception. Widespread availability of good broadband connectivity has meant that many businesses have been able to continue operating during lockdown. When schools were closed, connectivity meant that many children continued to receive at least some education. Interviewing people researching this strategy, there were reports of those with little or no connectivity being forced to drive into towns to access a Wi-Fi signal in order to work or do schoolwork. This highlighted the importance of good connectivity as a key enabler of resilience in the economy and society as a whole.

It is possibly still relatively early in the development of the pandemic and so it is difficult to assess the long-term effects. However, even the short-term effects have been dramatic.

2.6.1 Universal connectivity

It has long been recognised that good broadband connectivity is essential for full participation in 21st century society. COVID-19 has strongly amplified the importance of good connectivity in the home to allow participation in work and education. In addition, it has proven very important in maintaining mental health as a delivery mechanism for a wide variety of entertainment streaming services, video conferencing to maintain family contact (particularly with elderly and vulnerable people being almost completely isolated from physical interaction), video chat applications such as Zoom and Teams which supported wider social interaction and entertainment.

Northern Ireland is fortunate in that Project Stratum is expected to deliver near-universal excellent connectivity. Experience shows, however, that 100% is very rarely really achieved and some thought needs to be given to those excluded. Really universal connectivity has moved from being desirable to being essential.

2.6.2 Digital transformation/business continuity

In many organisations, COVID-19 has hugely accelerated digital transformation; with business continuity being reduced to "go home and work from there". In many smaller businesses which did not have any plans for digital transformation, a hasty online presence has been put in place as a means of basic survival. Many independent shops in market towns in the Borough have a web presence now that didn't at the beginning of 2020.

Public services have also had to react with dramatic speed. Schools and colleges offer online teaching. GP surgeries now deal with their patients by telephone (which is generally much more efficient for both the clinical staff and for the patients who can now consult without having to go to a surgery). Huge numbers of administrative staff in government and councils have taken to working from home and in many cases that is preferred by them to the way things were done before the pandemic.

There is no doubt that many of the changes that have happened at breath taking speed in 2020 will endure and the way that organisations operate will be dramatically changed.

This change will present challenges as well as opportunities. Data security will become a major issue with large proportions of people working from home on networks that are not as secure as those within corporate premises.

2.6.3 Network resilience

During the complete lockdown that was imposed in March 2020, the UK national broadband infrastructure seemed to be adequate. A senior Ofcom executive stated that at no stage was the national backbone infrastructure more than half full. That sounds reassuring. However, prior to the pandemic, data consumption in the UK was growing by 34% per annum.

AT that growth rate, spare capacity gets eaten up very quickly. In fact, a network should really only operate at 50% capacity to allow the growth to be accommodated with some level of comfort.

The UK high-capacity backbone networks need to be kept under constant review to ensure that core capacity does not become an issue as relentless increases in the demand for bandwidth continue to grow.

2.6.4 Health and social care delivery

It has been recognised for some years that a crisis is developing in the delivery of health and social care services. An increasingly elderly population suffering from increasing numbers of co-morbidities has put a real strain on health and social care services. The tragic way that COVID-19 swept through elderly care homes highlighted the risks of concentrating the elderly vulnerable in single locations with regular interaction with staff the work in multiple homes.

The near universal availability broadband that the roll out of Project Stratum will bring, combined with a recognition within health and social services providers that radical change can be implemented when needed could see significant developments in the supporting of people in their own homes with technology looking after the monitoring of patient conditions throughout the day and night.

2.6.5 Hospitality and social interaction

The hospitality sector has seen the greatest impact of COVID-19. Mass gatherings for entertainment or sport will only be able to return if effective track and trace systems are in place. The efficient management of the data involved in delivering this can only be handled through widespread deployment of effective digital technology.

In the UK, technology has not had a very successful pandemic. The promise of COVID-19 tracing apps and 'world-beating' track and trace systems have failed to live up to the promises made. However, it is apparent that technology will have an important part to plat in returning to some normal level of social activity.

2.7 Delivering Strategic Growth

The use of the integrated approach focused on the three core strands of infrastructure, skills and sector can be seen more clearly through a specific example.

Tourism is a critical sector for the overall economy in the Borough, and a sector hit hard by COVID-19. Online platforms providing a content rich experience for users can significantly increase the spend per visitor and help strengthen this element of the Borough's economy.

The AR360 platform[1] developed in Belfast provides a leading platform for the digital transformation of the tourism sector. The platform is being deployed throughout Northern Ireland so provides a clear benefit to the visitor economy in the Borough. It is important that the visitor economy can benefit from the best available, not the best available in the Borough.

Although the AR360 platform is not developed in the digital sector in the Borough, it will require advanced digital content specific to the visitor attractions and locations in the Borough. This will need to be refreshed regularly and maintained over time. There will be

an opportunity for companies in the digital sector in the Borough to develop the skills needed to produce the digital content for the augmented reality platform. Once they have this capability, they can offer these services to other areas using the AR360 platform, and also transfer them to other augmented reality and similar advanced digital platforms.

By focusing on the most effective digital transformation to support a key economic sector for the Borough, the strategy provides a focus for the digital sector in the Borough to collaborate with expertise from other areas (including Belfast). It also attracts advanced digital skills to help grow the digital sector within the Borough, and extend the reach of the digital sector to markets outside of the Borough.

Similarly, the effective operation of the AR360 platform will benefit from the availability of high bandwidth Wi-Fi services in key visitor areas, as well as LPWAN services more widely. Ensuring the provision of these infrastructure services to support the visitor economy allows their use to support other sectors, and the community more generally.

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[1] AR360 is an augmented reality platform designed to create immersive tourist experiences. It uses augmented reality to bring a tourist experience alive. It is currently being used in the Titanic Quarter and the Peace Wall in Belfast, the Armagh Planetarium and an augmented Giant's Causeway experience is under development.

2.8 Key Issues – Background

Digital connectivity and data are essential to all aspects of economic and social growth and sustainability. Maximising the accessibility and use of digital technologies is essential to all aspects of the long-term prosperity of the Borough.

The digital strategy is developed in three core strands (digital infrastructure, digital sector and digital skills). The strategic inter-dependence of the three core strands means that targeted developments lead to the strengthening of all strands.

The digital sector itself is a very small part of the economy in the Borough, and this is emphasised by the strong growth of the sector in Belfast. Attempting to grow the digital sector in competition with Belfast is unlikely to be successful, and counter-productive to the needs of the Borough.

However, the digital transformation of business and service delivery is essential to ensure long-term prosperity. The digital sector businesses and individuals in the Borough must be enabled to provide this support – either directly or by engaging with the digital sector in Belfast and elsewhere. This collaborative approach ensures the maximum wider economic development for the Borough, as well as providing a direct opportunity for the development of the digital sector.

The key requirements are to:

- Ensure current and emerging digital technologies are available and accessible to all.

- Support digital transformation of key economic sectors to ensure their sustainability and growth.

- Establish a digital skills ecosystem for the Borough – both directly within the Borough, and as a conduit for skills from Belfast and beyond.

3. Digital Infrastructure

Digital infrastructure provides the foundation for growth for all modern economies and is increasingly important to the sustainability of communities. The widespread deployment of full fibre infrastructure and advanced wireless digital infrastructure is paving the way for an accelerating technical revolution that will impact all aspects of our economy and our lives.

The Causeway Coast and Glens area has previously been relatively poorly connected. This is about to change and it will soon be among the best-connected areas in Europe. The Digital Infrastructure strand of the **_Causeway Coast and Glens – Digital Strategy_** addresses the different digital infrastructure options to maximise the reach of this transformation throughout the Borough.

3.1 Essential Infrastructure

Digital connectivity is already central to economic competitiveness and social sustainability. To achieve the necessary productivity improvements demanded by the economic strategy, and to meet the challenges imposed by demographic change will demand ever greater reliance on digital connectivity and transformation.

Effective infrastructure is essential to support this increasing dependence on digital connectivity. This infrastructure must ensure that digital connectivity needs are met throughout Causeway Coast and Glens (not just in the main towns) and must be sufficient to meet the rapidly changing needs of business and society as a whole.
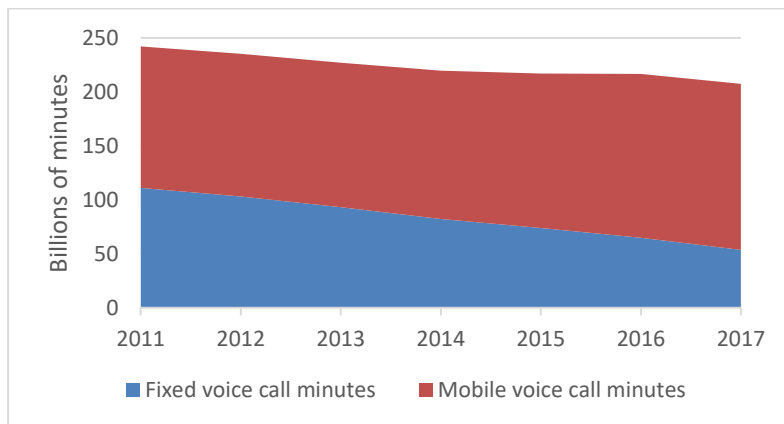
3.1.1 Changing Devices, Changing Use

Figure 11: Annual fixed and mobile call minutes in the UK

The devices we use, the systems we connect to, and the way we use them are constantly changing. The decline in fixed line telephone call minutes and the move to mobile, illustrated in Figure 11, is a familiar story, but the data also shows an overall decline in all call minutes as users move towards data-based calls and messages.
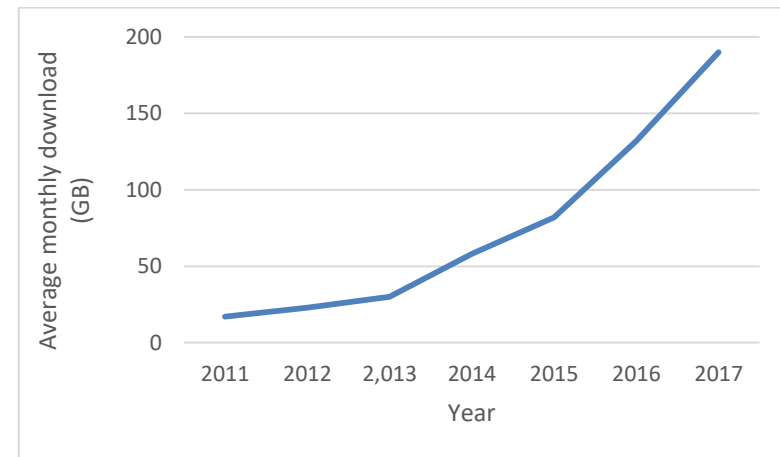

Figure 12: Fixed broadband data use per month

The decline in call minutes has been more than matched by an increase in data consumption (Figure 12). In 2011, the average fixed broadband data consumption per month was 17GB; by 2018 it was 240GB. Mobile data consumption has also increased, staying at approximately 1% of fixed data consumption throughout this period.

The change in the balance of call minutes between fixed and mobile, and the increasing importance of data shows a convergence between fixed and mobile systems and devices that is continuing far beyond simple voice calls. The Ofcom Communications Market Report identified that the majority (62%) of time spent on the internet was on mobile devices. However, mobile data usage per device remains only 1% of data use per fixed broadband line. Clearly users are accessing data through their mobile phones, but connected by Wi-Fi to fixed broadband connections.

3.1.2 Different Needs; Different Technologies

Different users have different needs from the digital connectivity. At one extreme, large businesses need to provide connectivity for many people for email and web browsing, and to support critical business systems, while many residential users have much simpler needs.
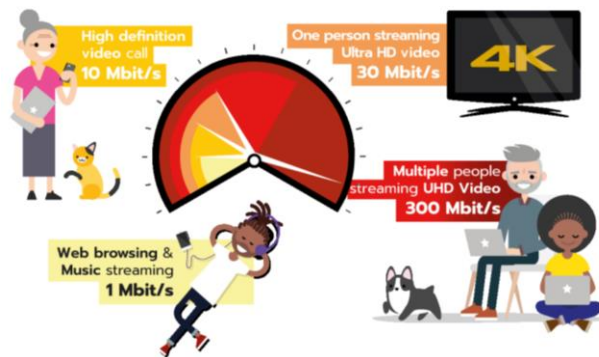

Figure 13: Residential broadband use
(image copyright: Ofcom, Connected Nations 2018)

However, it is clear that differences in use and expectations mean that there are considerable differences in requirements even for residential users. The differences are even more marked for business users – and may be critical to business operation.

These differences in requirements lead to differences in the types of digital infrastructure technologies that are suitable for different users.

	Large Business	Medium Business	Small Business	Micro Business	Residential
Leased Lines	🟩	🟨	🟥	🟥	🟥
Ultrafast +	🟨	🟩	🟩	🟩	🟩
Superfast	🟥	🟥	🟨	🟩	🟩
Basic broadband	🟥	🟥	🟥	🟥	🟨
Non USO	🟥	🟥	🟥	🟥	🟥

🟩 Suitable   🟨 Sometimes Suitable   🟥 Unsuitable

Figure 14: Digital technology applications

There is a range of digital infrastructure technologies in operation throughout Causeway Coast and Glens. These provide different levels of capability for different users.

Leased Lines

Until recently, leased lines have been considered the standard for all larger businesses. They offer a range of symmetrical, un-contended (i.e. not shared) bandwidths with high reliability and business-grade service level agreements. They are very expensive – presenting a significant barrier for smaller businesses.

Ultrafast +

A new range of high bandwidth contended (shared) broadband services are becoming available. Most important of these are the 'full fibre' technologies offering bandwidths of 1Gbps and even faster. However, other technologies also offer Gbps bandwidth using existing copper or cable infrastructure as well as fixed wireless access for the final delivery to the user's property.

Superfast

Superfast broadband was identified as a significant step forward from basic broadband and was the initial focus for government subsidised broadband deployment across the UK. Superfast broadband provides download speeds of 24Mbps or faster (30Mbps or faster for more recent deployments).

The majority of superfast broadband connections use fibre to the cabinet (FTTC) connections. Here optical fibres deliver connectivity to the nearby BT green cabinet, with copper connections to the end property. Other superfast connections may use fixed wireless or cable for the final connection to the property.

The use of different technologies (other than full fibre) presents the key limitation for superfast services – all are limited by the distance of this final connection.

Basic Broadband

The majority of basic broadband connections are delivered using Asymmetrical Digital Subscriber Line (ADSL) connections from the BT exchange over copper lines. The technology was introduced in the early 2000s and is now largely redundant.

Ofcom analysis for the Broadband Universal Service Obligation identified 10Mbps as the minimum speed that allowed users to 'participate fully in the digital society'. Connection distances over approximately 2.5km from the exchange will not deliver speeds over 10Mbps. Other technologies, such as fixed wireless access (FWA) can deliver USO speeds over greater distances, but may have other restrictions, such as line of sight dependency.

3.1.3 Mobile Communications

Since their launch in the 1980s, mobile networks are now an essential part of peoples' lives. Mobile technologies have evolved through a number of 'generations' with three variants remaining relevant today:

- 2G – still has the greatest coverage and availability within premises. It is still the most important coverage for mobile voice calls. However, it is rapidly being overtaken by 4G and the debate about when to switch it off has begun.

- 4G – Important for data and voice. Supporting maximum deployment of 4G services is the priority for mobile connectivity.

- 5G – A new and evolving standard that promises a new level of connectivity supporting a vast range of new applications. 5G comprises a range of different frequencies, with corresponding different properties. Initial deployments have been rolled out in major cities (including Belfast) in mid-2019 The more advanced mmWave frequency standards for 5G are still being developed.

As well as cellular mobile networks, a number of different low power wide area network (LPWAN) standards have emerged. These usually handle relatively low speed communications 50-100 Mbps but over a wide area. They are intended to support Internet of Things (IoT) applications where large numbers of devices emit small volumes of data periodically. Standards widely used in Northern Ireland include LoRaWAN and SigFox.

Although the availability of a mobile signal can be seen as important to users, mobile 'phones do not connect only to the standard mobile networks. The use of Wi-Fi is normal for accessing data over mobile 'phones and devices, and the use of Wi-Fi for voice calls is becoming standard. New Wi-Fi standards may also provide an important alternative to 5G services.

3.2   Fixed Broadband Availability

Availability of the key fixed and mobile digital technologies has been assessed across Causeway Coast and Glens using current Ofcom data.

For fixed broadband, the data provided a % measure of the properties in each postcode area able to access each service capability. This has been combined with postcode data to map availability. The following sections consider the key issues:

- Availability of 'decent broadband' at 10Mbps or faster so that everyone can participate in the digital society.

- Availability of superfast broadband as the current minimum requirement for most homes and micro businesses.

- Availability of ultrafast and full fibre broadband as a longer term strategic objective.

The mapping used is a variant on a typical postcode mapping to focus on areas containing properties rather than 'colouring in' the whole postcode area. This approach avoids distractions such as poor connectivity in large areas where there are no properties – and so of no concern.

3.2.1 Decent Broadband (USO)

'Decent Broadband' with a download speed of at least 10Mbps has been proposedas the minimum acceptable standard for all.

Figure 15 shows that the availability of decent broadband is reasonable along the coast, around the main towns and in the middle of the Borough with coverage to nearly 100% of premises in most postcode areas. However, the Glens and the south of the Borough have a large proportion of premises without access to decent broadband. There are many areas where more than 50% of properties cannot access this minimum acceptable standard.
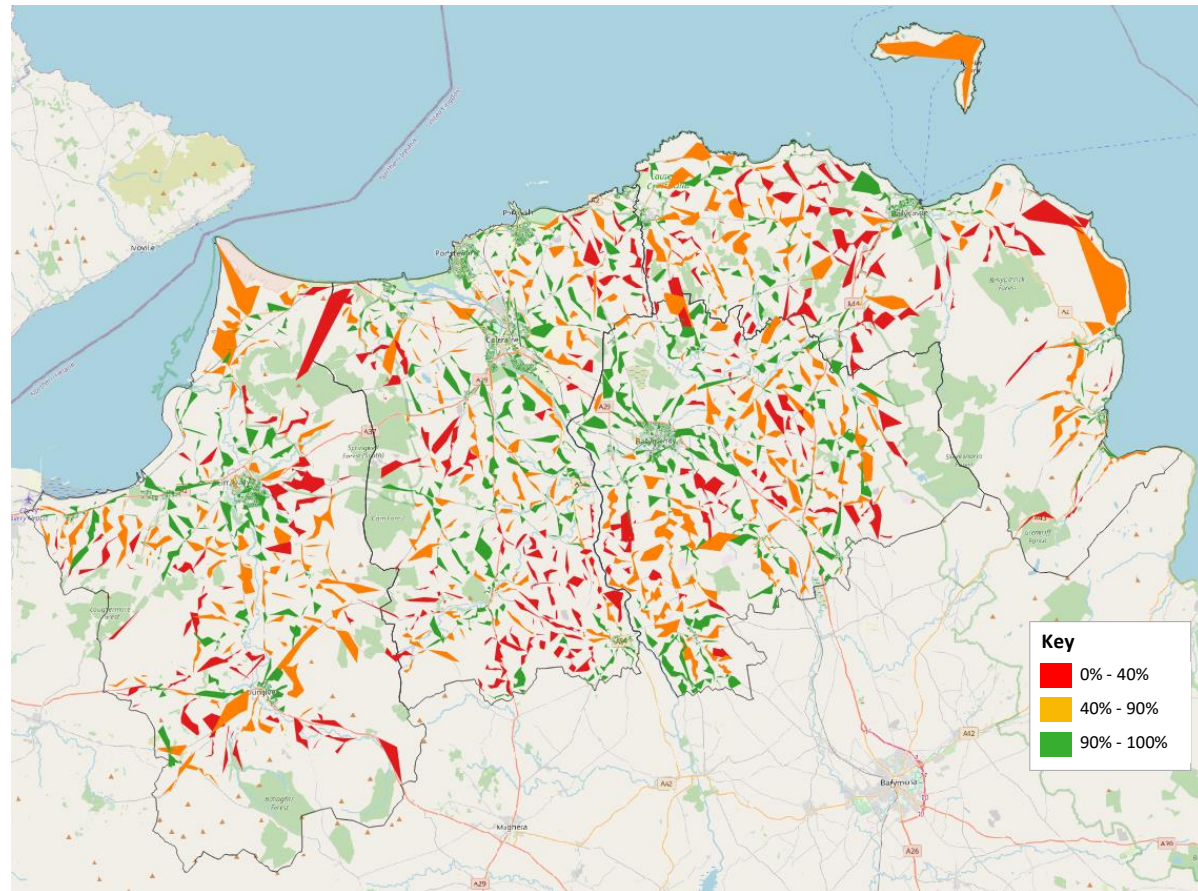

Figure 15: Availability of decent broadband and above in Causeway Coast and Glens
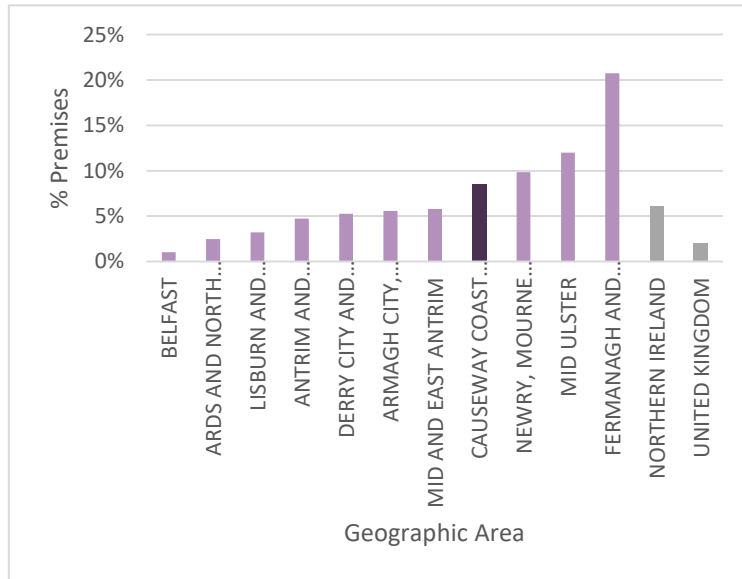
[Source: Ofcom data]

Figure 16: Unable to access USO broadband [Ofcom data][7]

Error! Reference source not found. shows that, while not the worst of the Boroughs in Northern Ireland for lack of access to decent broadband, it is in the bottom part of the table with nearly 9% of premises unable to access it. This is significantly more than the average for Northern Ireland and more than four times the rate for the UK as a whole.

3.2.2 Superfast Broadband

Availability of superfast broadband in Causeway Coast and Glens is below the average for Northern Ireland. Under 90% of properties can access superfast broadband. **Error! Reference source not found.** illustrates how the Borough is in the lower half of the league table for Superfast broadband availability in Northern Ireland.
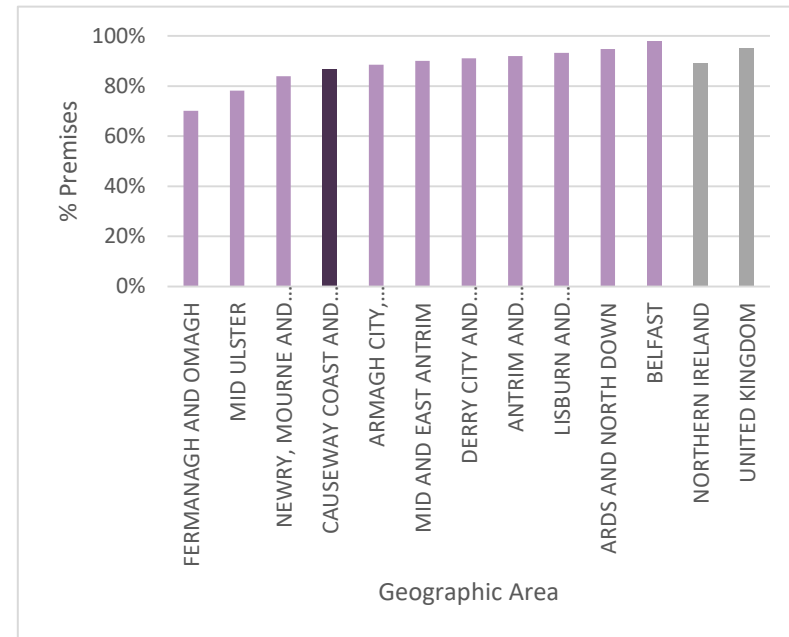

Figure 17: How Causeway Coast and Glens compares for superfast broadband [Source: Ofcom data]

As we would expect, superfast coverage is good in the main towns which have mostly green coloured postcodes.

A comparison of the maps in **Error! Reference source not found.** and **Error! Reference source not found.** shows how availability of superfast broadband in rural areas falls significantly with respect to decent broadband as the larger areas cause more properties to fall outside the 2km range of fibre to the cabinet (and where some cabinets and exchanges have not been Superfast enabled).

More worrying – many of those properties not able to access superfast are also not able to access even basic broadband!
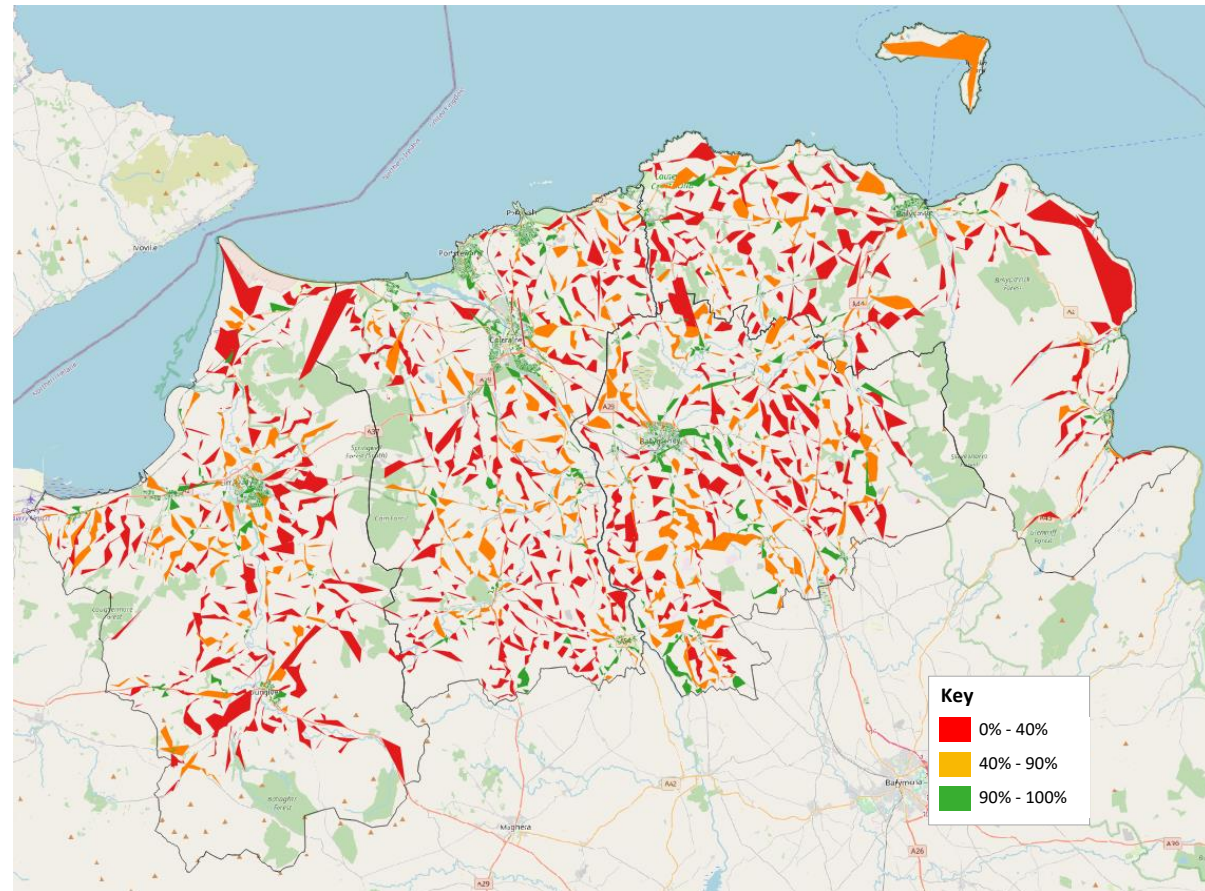

Figure 18: Availability of superfast broadband and above in Causeway Coast and Glens [Source: Ofcom data]

3.2.3 Ultrafast and Full Fibre

Ultrafast and full fibre broadband give significantly faster speeds and greater capability than standard superfast broadband. The difference is already important for advanced small and medium businesses, and will become more widely important as bandwidth expectations continue to grow.

Causeway Coast and Glens compares poorly with other areas in Northern Ireland and the UK. Ultrafast availability stands at only 22% of premises in the Borough well behind the leading Boroughs of Belfast (90%+), Derry and Strabane (71%) and Lisburn and Castlereagh (68%).
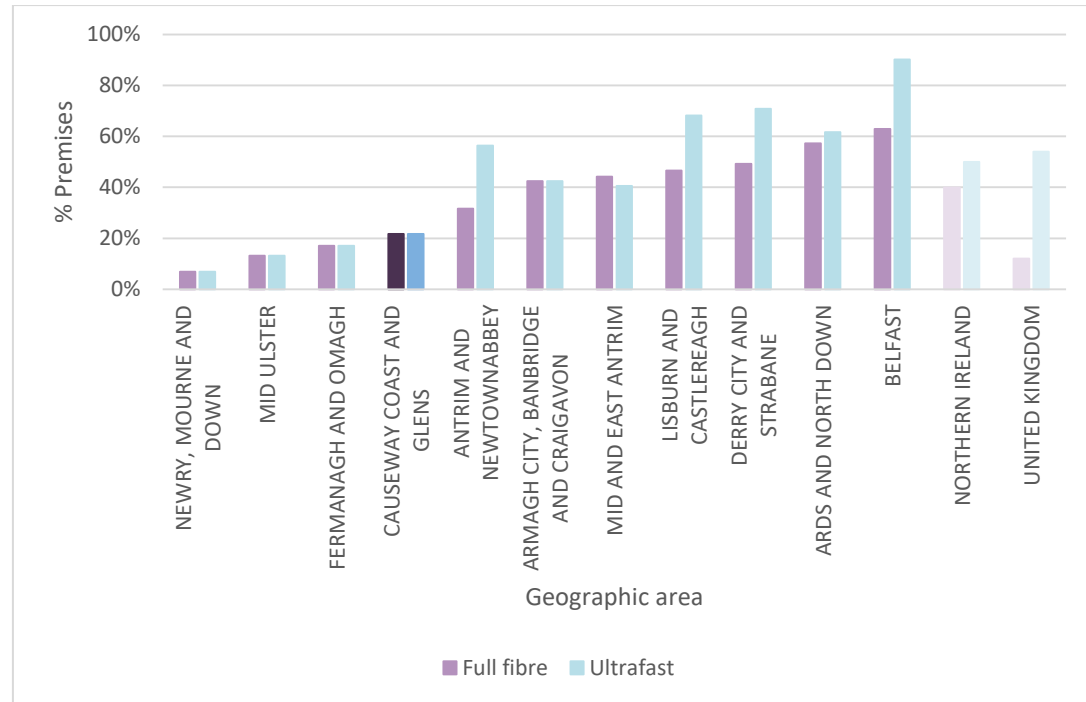

Figure 19: Comparison of ultrafast and full fibre broadband deployment [Source: Ofcom data]

The comparison of ultrafast and full fibre availability shown in Figure 19 is interesting. While the better served boroughs show a marked difference between ultrafast and full fibre provision, there is no difference between the two in Causeway Coast and Glens. The difference between the two is the result of high bandwidth cable broadband services – which are available in larger urban areas in Northern Ireland, but not deployed in the Borough.

The deployment of full fibre digital infrastructure is a critical strategic consideration. Although the capabilities of full fibre can be matched by other ultrafast technologies, full fibre offers greater reliability and far greater flexibility of geographic reach – an important factor in rural areas such as Causeway Coast and Glens.

Mapping the availability of full fibre broadband in Figure 20 shows that there is very little availability outside of the main urban centres of Limavady and Coleraine.

The rural areas of Causeway Coast and Glens are poorly suited to the deployment of ultrafast broadband technologies other than full fibre – and full fibre deployment has been delayed due to the earlier focus on superfast technologies across the UK.

This position will be changed dramatically by Project Stratum. The project is expected to expand enormously the availability of fibre to serve the large proportion of properties in rural areas currently unable to receive superfast or decent broadband.
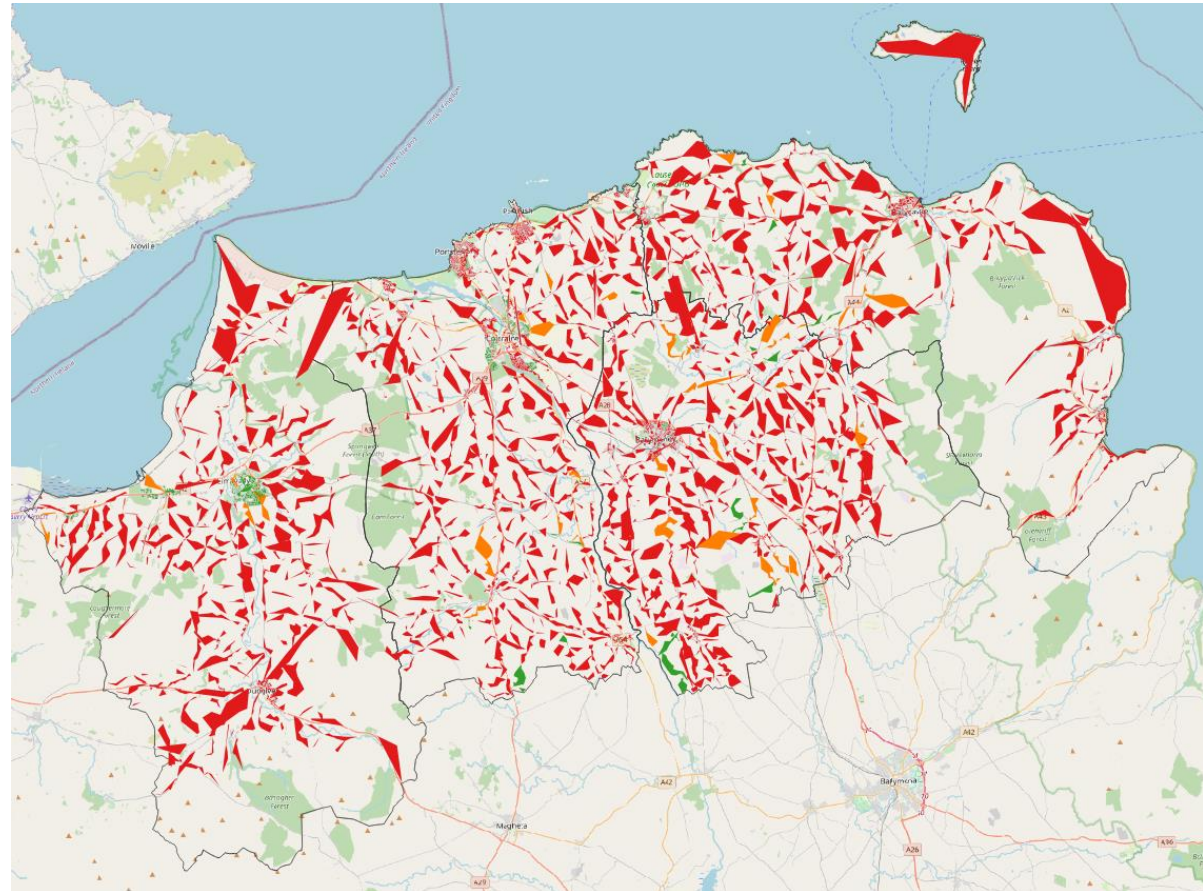

Figure 20: Availability of full fibre broadband in Causeway Coast and Glens [Source: Ofcom data]

3.3 Mobile Coverage

Mobile technologies are evolving with time and will continue to do so. In parallel with the mobile network developments, mobile devices evolve and access different networks for different requirements. The two major use cases for mobile communications are voice calls and access to data – for example to access emails, or for internet browsing. Ofcom reports on the availability of voice services independently from the technology used to deliver these services. Mobile data services are now delivered predominantly over 4G networks, and Wi-Fi connections are also critically important.

3.3.1 Voice Coverage

Mobile voice coverage in Causeway Coast and Glens is reasonable and is close to the average for Northern Ireland. 86% of the land area in the Borough is covered by all four operators (O2, Vodafone, EE and Three) with signals strong enough to allow voice calls outdoors. The proportion of land area that has no coverage is small (0.73%), but this is higher than for many other local authority areas in Northern Ireland. However, it is significantly better than for the UK as a whole.

Coverage to allow voice calls to be made indoors within premises is lower, but with 73% of premises able to make and receive calls from all four operators indoors, Causeway Coast and Glens is placed in the middle of Northern Ireland authorities. Only a small proportion of premises (0.45%) cannot receive indoor coverage

from any operator. Here, Causeway Coast and Glens is in the middle of the table for Northern Ireland local authorities.
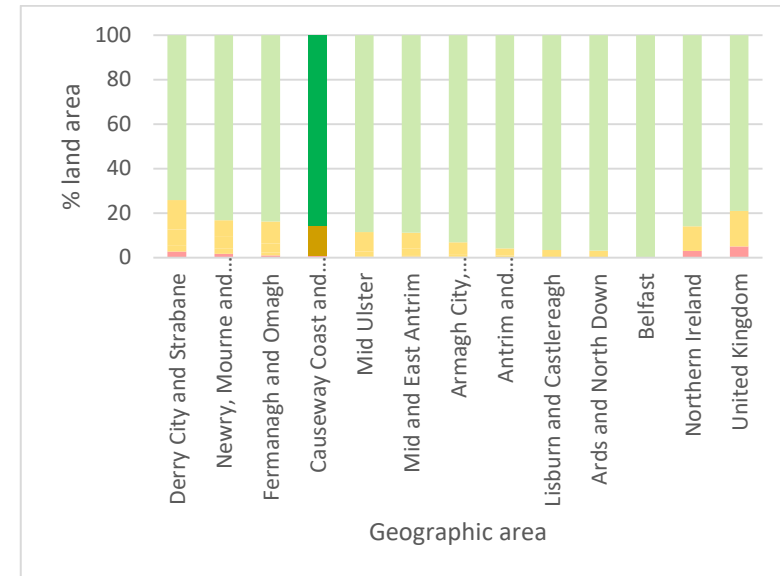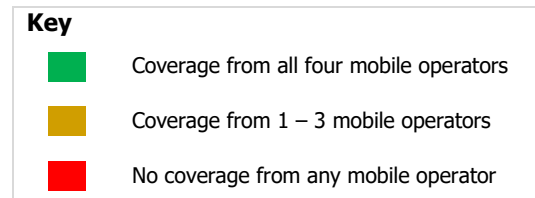

Figure 21: Voice outdoor coverage of Northern Ireland Boroughs
[Source: Ofcom Data]

Key

- 🟩 Coverage from all four mobile operators
- 🟫 Coverage from 1 – 3 mobile operators
- 🟥 No coverage from any mobile operator

More important for mobile voice coverage is the coverage along road routes. Figure 22 shows that only 65% of the main roads in Causeway Coast and Glens are covered by all four operators. This is slightly worse than the Northern Ireland average. However, 86% of roads have coverage from three or more operators. Just over 3% of the road length has no coverage from any operator. Causeway Coast and Glens is only one of three local authority areas to have more than 3% with no coverage but it is considerably better than Newry, Mourne and Down (just under 7%) and Derry City and Strabane (just under 11%).
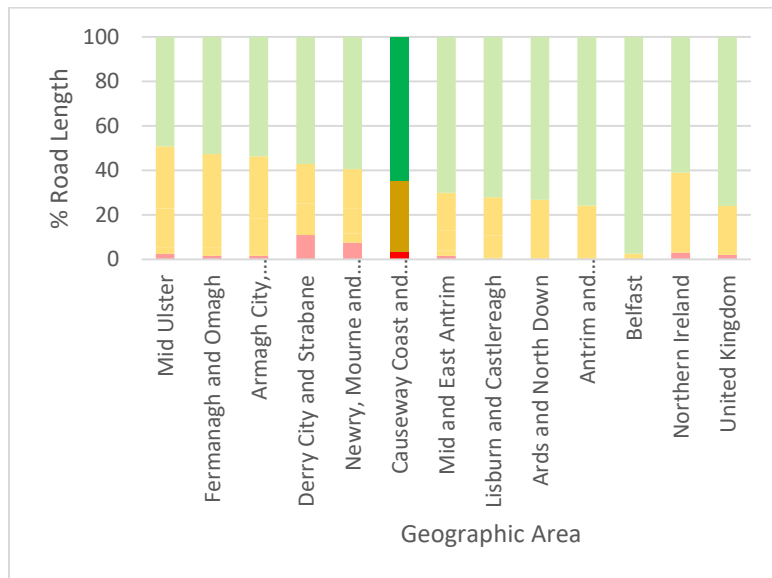

Figure 22: Voice coverage of Main Roads in Northern Ireland Boroughs [Source: Ofcom Data]

3.3.2 4G Coverage

In recent years, network operators have invested heavily in 4G network deployment. This has resulted in widespread availability of high-speed mobile data connectivity.
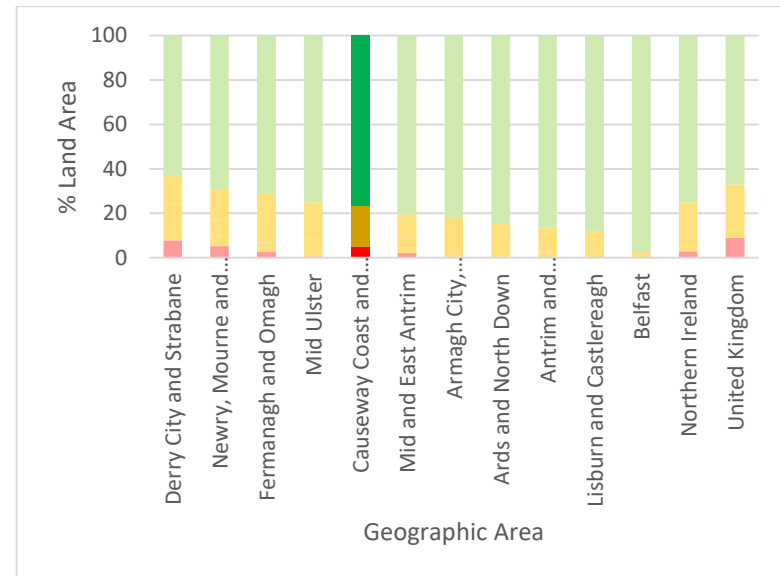

Figure 23: 4G outdoor coverage of Northern Ireland Boroughs [Source: Ofcom Data]

Figure 23 shows how that roll out has covered Northern Ireland. 77% of the land area of Causeway Coast and Glens is covered by all four operators sufficient for outdoor coverage. Worryingly, nearly 5% of the land area has no 4G coverage at all – the third worst of all the boroughs in Northern Ireland.
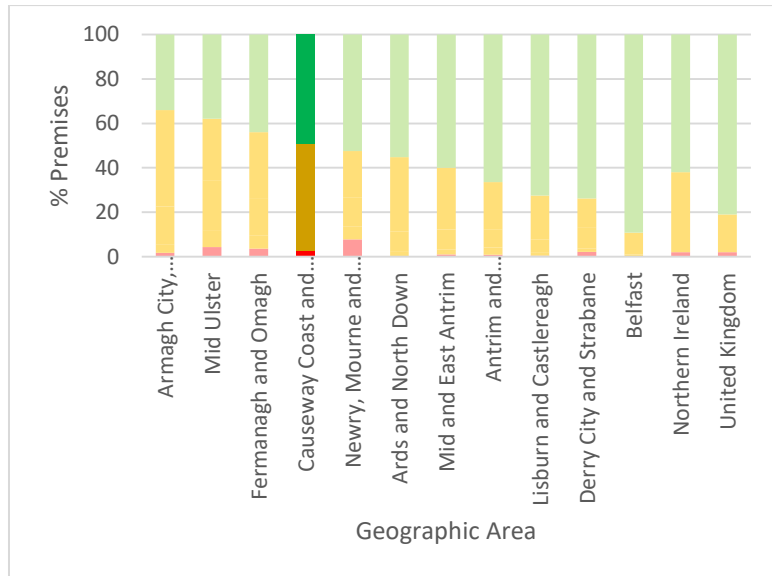
Figure 24: 4G indoor coverage in Northern Ireland Boroughs
[Source: Ofcom data]

Figure 24 shows how, for indoor coverage of 4G, Causeway Coast and Glens has just under 50% of premises covered by all four operators. However, more than 97% have indoor coverage from at least one operator.

As most data accessed even on mobile devices while indoors uses Wi-Fi connections, the indoor coverage is perhaps the least concerning issue regarding mobile coverage.
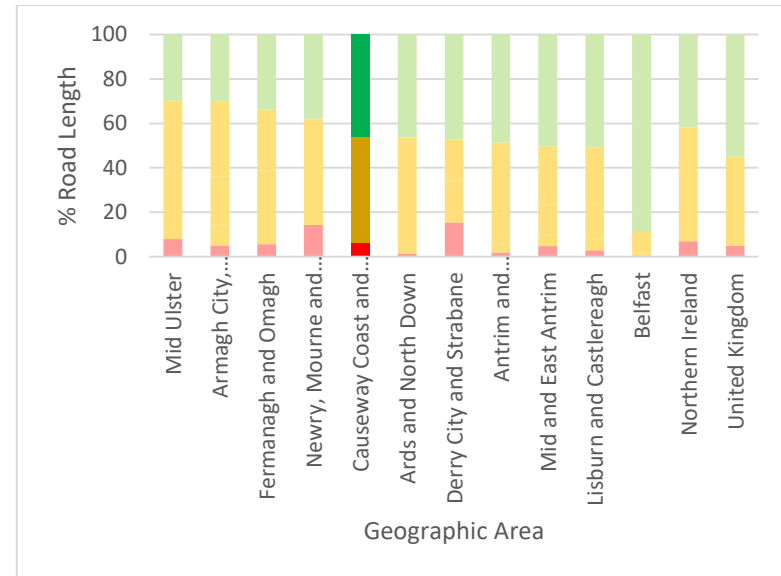
Figure 25: 4G coverage of main roads in Northern Ireland Boroughs [Source: Ofcom Data]

Figure 25 shows that the coverage of main roads in Causeway Coast and Glens is below average for Northern Ireland with only 46% of the road length covered by all four operators. 6% of road length has no coverage from any operator. Although generally drivers shouldn't access mobile data directly, many support systems such as sat nav, logistics support systems and fleet management systems do need access to reliable data. Also, passengers in vehicles, travelling for business or pleasure, often desire access to good data services throughout their journey.

3.3.3 Wi-Fi

Wi-Fi is a vital complement to mobile communications and, where provided, is the users' preferred means to access the Internet. As voice over Wi-Fi develops, we expect that it will become very important also for the delivery of voice communications between mobile devices.

Until March 2020, Causeway Coast and Glens Borough Council provided public realm Wi-Fi service in the five major towns in the Borough: Coleraine, Limavady, Portrush, Ballycastle and Ballymoney. This service was cut at the beginning of the new financial year delivering an annual saving of £26,000. The CCTV network was also switched off to save money.

Although switching off the Wi-Fi network resulted in very little complaint, this does not mean there was no impact. Key users will be visitors to Causeway Coast and Glens, with no contact with the Council. Visitors will not know the service has been switched off; they will simply see no Wi-Fi availability.

The model whereby the council provided the Wi-Fi service was probably not ideal. Establishing an appropriate partnership operation with a suitable commercial operator may provide a more sustainable long-term solution.

3.4 Developing Technologies

In addition to fixed broadband and current mobile coverage, there are emerging technologies which are expected to play an important future role in supporting tourism, healthcare and other services.

3.4.1 LPWAN

Low Power Wide Area Networks (LPWAN) provide long range networks that allow exchange of data at relatively slow speeds over large areas. LPWAN is seen as a key enabler of the Internet of Things (IoT), particularly in less populated areas which are less likely to have high capacity 5G or Wi-Fi networks to support IoT data communication.

The deployment of LPWAN infrastructure is still in its infancy. There has been a significant deployment of LPWAN in Northern Ireland by the Digital Catapult which has deployed over 50 LoRaWAN gateways across the province. As illustrated in **Error! Reference source not found.**, there are nine LoRaWAN gateways which offer coverage in Causeway Coast and Glens, and provide significant coverage throughout the Borough. Much of the east and some of the west of the Borough has no coverage. Extending this coverage to cover the whole of the Borough would be a relatively straightforward and inexpensive task.
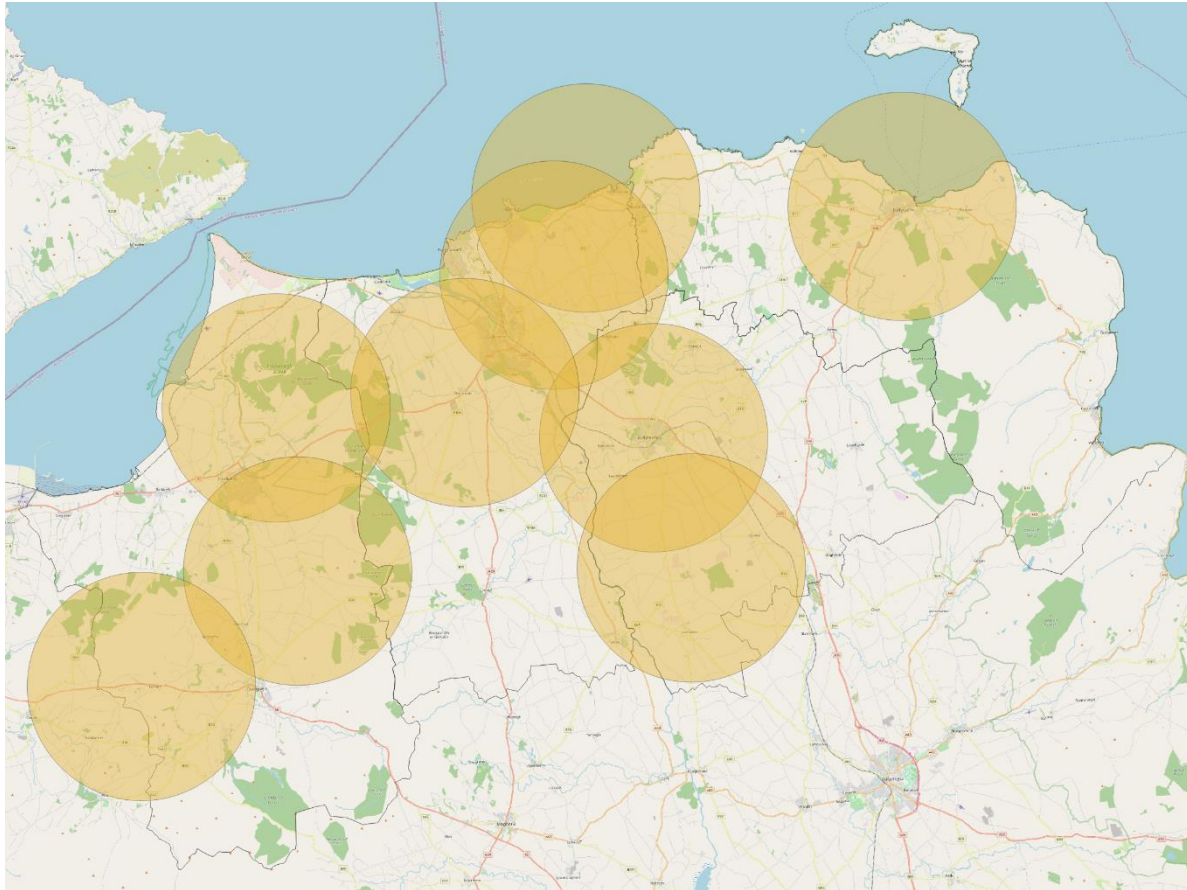
Figure 26: The NI-IoT LoRaWAN network deployed by the Digital Catapult [Source: Things Network]

Another LPWAN network using the SigFox standard is being deployed commercially around the world, including in Northern Ireland. Coverage of Causeway Coast and Glens is claimed, though the actual extent is unclear at the time of writing.

3.4.2 5G

The greatly anticipated 5G developments bring the potential for significantly improved mobile data connectivity through a range of frequencies in three separate main bands. 5G brings the potential for a wide range of completely new applications, and the UK Government has an ambition to develop a world-leading position in the development.

5G services will use a range of different frequency bands. Commercial deployment has begun in the 3.6GHz mid-band frequencies to address existing mobile data capacity issues in busy city centres. In mid-2019, both Vodafone and EE launched 5G services in major cities (including Belfast in the case of EE and Vodafone) with an ongoing deployment programme. This urban roll-out is continuing and has expanded to include larger towns in Britain. In Northern Ireland, we expect 5G roll-out to be confined to the vicinity of Belfast for some time. More rural coverage, which is what is required in the rest of Northern Ireland, using the low-band 700GHz frequency is likely to be slower as 4G coverage usually meets requirements well where it is installed.

The Belfast Region City Deal (BRCD) is planning a series of testbeds, including 5G testbeds, looking at specific areas including tourism and smart agriculture. Causeway Coast and Glens, with its economic focus on tourism could be a candidate to host 5G testbeds for BRCD.

3.5 Digital Infrastructure Key Priorities

The communications infrastructure in Causeway Coast and Glens is poor relative to that in many other parts of Northern Ireland, with very poor coverage outside of the main towns. Project Stratum will change this and provides an important context to infrastructure developments.

Four key priorities are identified:

- **Ubiquitous broadband** – extending the deployment of full fibre broadband to those premises not covered by Project Stratum.

- **Support wireless infrastructure** – LPWAN, 5G and Wi-Fi networks present important new economic opportunities.

- **Reduce barriers to deployment** – encouraging commercial deployment and supporting public sector initiatives to maximise benefit.

- **Digital transformation in the Council** to adequately support remote working and digital transformation.

The following sections consider the requirements and opportunities of these priorities.

3.5.1 Ubiquitous broadband

Project Stratum is expected to transform the connectivity available throughout Northern Ireland. As one of the less well-connected Boroughs, Causeway Coast and Glens can expect a greater boost than most other parts of the country. However, because it has some of the poorest broadband, it is highly likely that it will also have some of the properties that will not be connected for reasons of technical or economic difficulty.

The following measures should be put in place to deliver ubiquitous connectivity:

- A high value voucher scheme should be put in place to help those unserved premises on the mainland get connected. The approach should be similar to that employed in Scotland where vouchers of £5,000 can be used to top up the vouchers already available from DCMS (£1,500 per residential premise and £3,500 for a business premise). The precise maximum value of the voucher will need to be tuned to ensure full coverage in the Borough.

- Work with operators to ensure that Rathlin Island is given a fibre access infrastructure. The existing microwave backhaul link from Rathlin to Ballycastle should have sufficient bandwidth to support a fibre access deployment on the Island. This would address the short-term issues due to copper line lengths. In the longer-term, a fibre backhaul connection to the island is required.

3.5.2 Support wireless infrastructure

In March 2020, the five publicly provided Wi-Fi networks in Ballymoney, Portrush, Coleraine, Limavady and Ballycastle were switched off to reduce operational expenditure in the Council.

The Council should seek out a concession partner which has experience in operating Wi-Fi networks and generating interest and revenue from their operation. This would allow the existing networks to be turned on again and to become self-funding with possibly a revenue stream for the Council.

The LoRaWAN network deployed by the Digital Catapult (shown in **Error! Reference source not found.**) should be extended to give complete coverage of the Borough. It can then be used by the Council and other service providers to deliver effective IoT coverage of the Borough.

Deployment of 5G in the Borough may be a long way in the future and it is possible that much of the Borough will never get 5G coverage and will continue to operate on 4G for the foreseeable future. However, some areas of peak demand such as the vicinity of the world heritage site and Royal Portrush Golf Club may be in mobile operators plans for 5G deployment and operators should be encouraged to deploy there sooner rather than later.

3.5.4 Reduce Barriers to Deployment

The DCMS Barrier Busting Team have identified a range of actions that local authorities and stakeholders can take to simplify and encourage the deployment of digital infrastructure. These recommended actions identified in the Future Telecoms Infrastructure Review and also in an Analysys Mason Report[8] should be adopted as a matter of course:

- **Simplifying wayleave agreements** to facilitate easier access to multi-dwelling buildings.

- **Improved streetworks management** to reduce costs and delays.

- **Full fibre connectivity** to new build developments.

3.5.5 Digital Transformation in the Council

The connectivity promised by Project Stratum presents an opportunity to deliver a digital revolution throughout Northern Ireland. As well as providing opportunities for economic and social development, it also provides an opportunity for digital transformation of public services and operations.

3.6 Key Issues – Digital Infrastructure

The demands for data and digital communication are increasing constantly to support all aspects of society and the economy. Superfast broadband technologies were a poor match for the requirements in Causeway Coast and Glens, resulting in poor digital connectivity compared to the rest of Northern Ireland. However, this is expected soon to change.

Using full fibre deployment, Project Stratum will deliver significant improvement to the reach and bandwidth capabilities of digital infrastructure throughout the Borough. This change represents a significant opportunity to transform the economy and lives of people in Causeway Coast and Glens.

In addition to the improved coverage of full fibre and superfast broadband, full coverage of LPWAN across the Borough, and restored, improved and extended Wi-Fi coverage in key towns and visitor locations is required to maximise the impact of the step-change in capability.

4. Digital Skills

As with the digital sector throughout the United Kingdom (and through much of the developed world), availability of suitably skilled personnel is a major constraint on the growth of digital companies and on the wider economy that is dependent on digital innovation to improve competitiveness and productivity. Several companies identified finding qualified and experienced staff as one of the major constraints on their growth.

4.1   Importance of Digital Skills

More and more products and services are becoming 'digital'. Whether that relates to the online retail of day-to-day products, or to online interaction with banks, the public sector and other service providers. Digital technologies are also increasingly central to the way we communicate as a society.

Because of the increasing demand for online delivery of services, and the increasing efficiency savings possible through digital transformation, it is increasingly difficult for businesses, organisations or individuals to not participate.
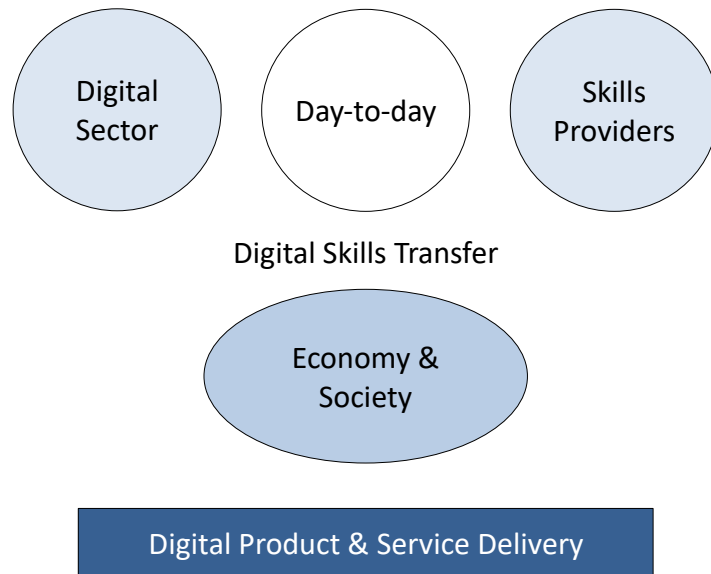

Figure 27: Digital Skills Transfer

The requirement for a widespread coverage of digital skills across the whole population has been driven home by the experience of the COVID-19 pandemic and lockdown. The need to be able to work from home, learn from home and communicate with family remotely all depend on a basic level of digital fluency.

The impact of the pandemic has also highlighted the need to improve health and social care and allow more people to receive effective care in their own homes. This transformation of health and social care is expected to rely heavily on digital transformation of the service delivery. It will be essential that both the service users and service providers have sufficient digital skills for the systems to operate.

Day-to-day use of digital technologies by the majority of individuals will build transferable skills to allow them to access other products and services online, and to use these skills in their employment, etc. However, not everyone is actively engaged in the digital society – ensuring access to skills to allow the digital inclusion of all members of society remains an important consideration.

The Digital Skills strategy must consider two important aspects:

▪ **Skills in the Digital Sector** – to allow this sector to develop and grow, and to support the wider economy.

▪ **Skills throughout the economy and society** – to allow the Borough to thrive in an increasingly digital world.

However, many of the skills delivery mechanisms will serve both aspects. Also, as all businesses become increasingly digital, it is hard to separate the skills needed by these different aspects. The Digital Skills strategy addresses them together, with consideration for their different needs.

4.2 Digital Skills Demand

The world of digital skills is rapidly evolving. Digital applications and systems are constantly building on earlier capabilities. This drives an increasing rate of change, and a constantly evolving skills requirement – both for the developers and the users of the applications and systems.

Consequently, digital skills themselves have shelf lives with established skills falling in importance as new skills emerge. It appears that generic digital skills (such as MS Office) have become so embedded in day-to-day life that they are no-longer a significant consideration.

There are more and more specialisations emerging, with strong demand now evident in the areas of artificial intelligence (AI), big data manipulation and management, the Internet of Things (IoT), 5G, augmented and virtual reality and many other areas.

This astonishing rate of change puts real pressure on businesses, since locating good people with these skills is a significant challenge. Wage inflation among those with in-demand skills is strong and the gap in earning potential between digital professionals and the workforce as a whole is increasing.

4.2.1 Shortage of Skills

In Causeway Coast and Glens, businesses in the Digital Sector are struggling to find and retain suitable staff. There are a range of different factors involved. Specific location is important:

"This is a moment in time that our Borough needs to seize with two hands. COVID-19 presents an opportunity for the Borough to sell itself as a place for people to live and work and have a really enjoyable work-life balance." (Causeway Chamber)

As inward investment successes by Invest NI brings in more international companies with a strong thirst for talent, pressure on smaller indigenous companies may increase.

"FDI is causing problems with a lot of American companies moving into Belfast and hoovering up the talent."

However, although the close proximity of the strong digital cluster in Belfast may result in some pressure on skills availability in the digital sector in Causeway Coast and Glens, it also means there is a strong availability of advanced digital skills to the wider economy in the Borough, exceptional opportunity for individuals with digital skills to encourage long-term development, and significant scope for advanced skills transfer within the digital sector.

4.4 Developing Digital Skills

Digital Skills development is required to address four key skills areas:

- **Basic digital skills** – needed by everyone to allow them to participate in an increasingly digital economy and society.

- **Professional digital skills** – needed by businesses and organisations to allow them to operate their standard digital processes and systems.

- **Sector-specific digital skills -** digital skills that are specific to the digital transformation requirements of individual sectors

- **Advanced digital skills** – needed to develop the new generation of advanced digital products and services.

4.4.1 Basic Digital Skills

The OECD Skills Strategy Northern Ireland[9] equates digital literacy with basic literacy and numeracy as a foundational skill, essential to participate in society. The importance of digital literacy has been highlighted by experience of the COVID-19 pandemic where participation in employment and education has relied on a basic level of digital literacy.

The basic digital skills needed by all develop through a mix of channels, including the day-to-day use of digital applications. At present this approach does not deliver a depth of skills for all: digitally excluded citizens still remain. The existing digitally excluded citizens must be addressed through the short-term training, and a longer-term strategic solution adopted to reduce the levels of digital exclusion.

The Northern Ireland Council for the Curriculum, Education and Assessment (CCEA) has created a framework to integrate digital skills across the different stages of the Northern Ireland education system, building thinking skills into the process of learning about digital devices and creating qualifications that are unique to Northern Ireland.

The CCEA framework addresses all the statutory requirements for Using ICT through a new optional Digital Skills curriculum for primary schools.

This curriculum is delivered through three strands (becoming a digital citizen, becoming a digital worker and becoming a digital maker) and is supported by the publication of teaching and learning resources for different types of ICT and a progression of skills appropriate for each key stage in primary.

The CCEA Digital Skills Framework for secondary schools takes the concepts behind the three broad tiers of digital skills and applies them to the wider world.

On moving on to further and higher education, the skills learned are applicable for a wide range of qualifications including some with very applicable digital focus such as Digital Technology, Software Systems Development, Business Communications Systems, Moving Image Arts and Design and Technology.

This level of integrated framework across all the stages of education is unique in the UK and probably one of the most integrated in the world. Where practicable, primary schools should be encouraged to follow the optional primary curriculum.

However, discussions with teachers have indicated that the implementation of the curriculum is patchy and highly dependent on the availability of enthusiastic teachers on the ground to make a real impact. A complement to the curriculum is the Digital Schools of Distinction programme which provides a highly supportive environment for staff to develop digital skills in schools.

Figure 28: Northern Ireland Digital Skills Curriculum and Qualifications Framework [Source: CCEA][10]

The integrated framework for the inclusion of digital skills through all levels of education provides a long-term strategic solution to address digital exclusion. In the short-term, direct training may need to be provided to encourage digitally excluded citizens to become more confident and familiar with the use of digital applications and systems.

Of course, current digital skills training in schools will miss the many hundreds of thousands of people who have passed through the education system and emerged with little or no digital skills. Reaching these people can be more of a challenge.

Ulster University has the Widening Access Fund designed to raise skill levels in the general population to make higher education more accessible. Targeting digital skills training at companies with a high proportion of manual workers may be a fruitful route to reach those with low levels of digital skills who are outside the education system.
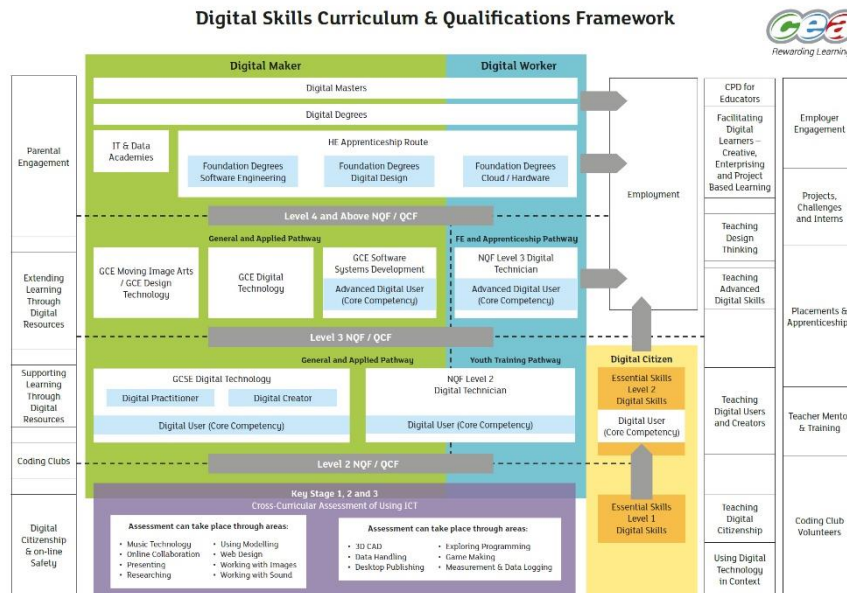
4.4.2 Professional Digital Skills

At present, typically only larger businesses have dedicated digital professionals within the company structure. Some smaller businesses outsource their digital skills requirements to dedicated service companies, and more still simply buy in digital skills on an ad-hoc basis when they are needed.

As more and more businesses need to become digital businesses in the way they deliver their products and services, so there will be a growing need for professional digital skills within the non-digital sector economy. Businesses in Causeway Coast and Glens can source these skills from the digital sector within the Borough, but also from the large digital sector in Belfast.

Equally, the wider digital cluster in Belfast will create a demand for professional digital skills that can be addressed by digital sector businesses in Causeway Coast and Glens.

It is clearly important that the Digital Sector in Causeway Coast and Glens can develop and maintain effective levels of skills for them to serve the needs of the wider economy. Education and training in professional digital skills is available within the Borough, and further afield.

The CCGBC *Digital Causeway* initiative supports around 100 businesses each year to embrace digital technology and incorporate digital platforms into their business operations and procedures. It operates at a basic level helping businesses to cross the digital threshold and giving them basic skills and routes to advancement.

Further education is served in Causeway Coast and Glens by the Northern Regional College (NRC) with sites in Coleraine and Ballymoney and the North Western Regional College (NWRC) which has a site in Limavady. They offer a wide range of computing and engineering courses at FE and HE level.

The learning opportunities within Causeway Coast and Glens complement the widely available opportunities presented by the established Open University and more recent developments such as Massive Open On-line Courses (MOOCs) with content from a range of internationally respected contributors.

4.4.3 Sector Specific Digital Skills

The application of digital skills is becoming increasingly important to all economic sectors. The need for digital skills is not restricted to the digital sector. This creates a need for digital skills that are specific to the digital transformation requirements of individual sectors.

For example, as the tourism sector becomes more sophisticated in its online presence, there will emerge a strong need for a significant number of professionals capable of generating and maintaining digital content regarding tourist attractions around the whole of the Borough. The FE colleges in the Borough should be made aware of the need for courses that help professionals identify, record, post and maintain high-quality engaging digital content. The Digital Causeway programme should also provide basic training in content generation and maintenance.

4.4.4 Advanced Digital Skills

The rapid development of full fibre, 5G and LPWAN capabilities, combined with the rapid growth of new digital opportunities (such

as gaming, digital animation, and digital service delivery across all sectors) means there is an urgently growing need for advanced digital skills to maintain economic strength.

The development of advanced digital skills requires action beyond standard technical education programmes. Continuous professional development, digital sector networking and targeted research programmes are required to build these more advanced skills.

Professional associations are very important to maintaining and updating skills and knowledge. The digital space is largely covered by two associations, both of which are active in Northern Ireland:

- The **Institution of Engineering and Technology** (IET) has an annual programme of around 20 events in Northern Ireland covering tours, lectures, young professional skills building, competitions and awards and social events. Most of these events are in Belfast with a smattering in Derry, Craigavon and Antrim.

- The **British Computer Society** (BCS) has a Dedicated Northern Ireland branch which runs a programme of between 10 and 15 events per annum, mainly in Belfast.

It is clear that proximity to the strong digital cluster in Belfast is a significant benefit in developing advanced digital skills within the digital sector in Causeway Coast and Glens – the levels of opportunity afforded to the digital cluster in Belfast would simply not be available in Causeway Coast and Glens in isolation.

Extending the strengths of the digital cluster into Causeway Coast and Glens presents a further strategic goal. Focusing on key economic sector requirements in the Borough (such as the visitor economy) will allow Causeway Coast and Glens to extend elements of the Belfast digital cluster into the Borough and establish strength through a depth of advanced digital skills.

4.5 Key Issues - Digital Skills

Digital skills are important to everyone as society becomes more digital. There is a hierarchy of needs which goes from basic skills (needed to function generally) through professional skills (needed to function in the modern digital professional environment) to advanced skills (needed to develop the software and systems which keep expanding the digital capabilities of society.

Demand for qualified and experienced staff is a barrier holding back expansion of the digital sector in Causeway Coast and Glens and more generally.

Northern Ireland has a very forward-looking approach to the development of basic digital skills through its Digital Skills Curriculum and Qualifications Framework, which will ensure that all pupils emerging from the education system have had the best opportunity to develop their general digital potential. There remains a need for additional training for those already out of education who did not benefit from such a background and suffer some level of digital exclusion.

Professional digital skills are catered for through the NRC and the NWRC and the third level educational opportunities available through the universities and distance learning institutions. Targeting specific skills needed for digital transformation of key economic sectors in Causeway Coast and Glens provides an opportunity to ensure maximum economic benefit of digital skills training.

5. Digital Sector

The digital sector in advanced economies has been a key driver of employment and productivity growth over the last several years. However, although the sector is expected to show high growth, in Causeway Coast and Glens the digital sector is very small and has below average GVA growth compared with the wider economy in the Borough.

However, recent developments have shown that all sectors are digital sectors now. New entrants in a range of business sectors have been able to achieve significant efficiency advantages and scale rapidly through the application of digital technologies. Although the development of the digital sector may not be economically important in its own right, it is critical to support productivity gains in other key industries.

The digital sector has a critical role in the development of Causeway Coast and Glens although the sector is currently very small. The COVID-19 Recovery Plan drafted by CCGBC identifies Digital as one of four key sectors which will create high paying jobs in the Borough over the short to medium term. The digital sector is also a critical enabler of wider economic and social development throughout the Borough.

Given the proximity and economic scale of Belfast, and Londonderry/Derry in the West of the Borough, any developing digital sector in Causeway Coast and Glens needs to complement wider sector developments – which provide opportunity and momentum to the sector development throughout Northern Ireland.

The sector must also seek to support the wider social and economic requirements of the Borough which has an older than average population and a strong focus on the visitor economy as a driver for growth.

This section of the ***Causeway Coast and Glens – Digital Strategy*** looks at:

- The importance of the digital sector in development of the economy of the Borough
- Suggested actions to support the development of the sector in the Borough.

5.1 Importance of the Digital Sector

There is often some uncertainty regarding the actual *identity* of the digital sector, and there is a range of definitions of the sector. One important factor is the importance of digital professionals in all sectors throughout a modern economy. For this reason, we have adopted the definition to guide the development of the digital strategy:

Organisations <u>and individuals</u> involved in the design, development, manufacture, support, maintenance and application of digital products, components, networks, systems and platforms – including, hardware, firmware and software.

In terms of economic data, however, we view the sector as the standard Information and Communications sector. Economic data shows the sector is only a small part of the economy in Causeway Coast and Glens and growing more slowly than the economy as a whole for the Borough. In total there are just over 200 companies in the Borough in the Information and Communications sector, employing just over 1,000 people. The size of the sector in the Borough does not, however, mean that it does not have a critical part in the ongoing economic development. Indeed, one of the four strands of activity for the Causeway Coast and Glens Growth Deal is Innovation and Digital.
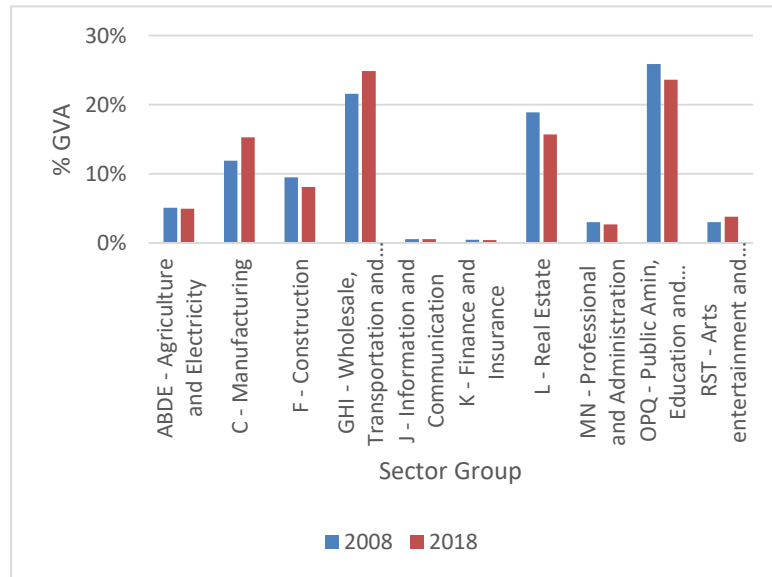
Figure 29. Digital Sector Economic Priorities

The digital sector in Causeway Coast and Glens has three critical roles:

- The digital sector in CCG is a part of the wider digital sector (in particular Belfast) that is driving economic growth.

- The sector must support growth of the visitor economy and other key sectors through digital transformation.

- With increasing pressure on public services the sector must support the digital transformation of key service delivery.

A series of online video interviews with key businesses and stakeholders in the digital sector informed the development of the digital strategy. A number of key recurring issues were identified:

- **Access to skills** – the ability to attract and retain skilled employees was identified as a significant barrier to development.

- **Belfast migration** – the Borough does have the skilled workforce needed in the sector, but they are attracted to larger companies (and higher salaries) in Belfast.

- **Need for networking** – the ability to meet with other companies in the sector is important and lacks focus at present.

These key themes are considered in the context of the wider economic issue, and in particular the three critical roles for the sector identified above.

5.1.2 Direct Sector Economic Impact

Although digital sector companies in Causeway Coast and Glens identified the problem of competing with Belfast for skilled workers, the exceptional strength and growth of the digital sector in Belfast provides strength and opportunity across the whole of Northern Ireland.
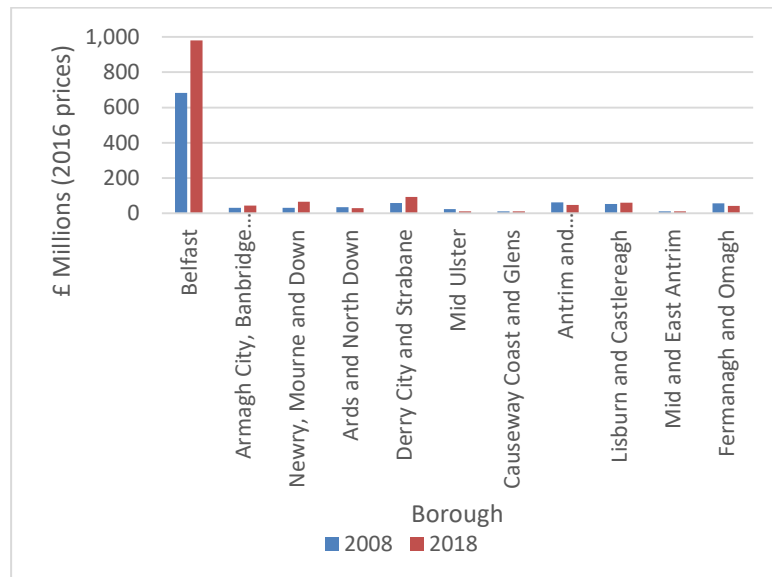

Figure 30. ICT Sector GVA in Northern Ireland

In 2008, the Information and Communications sector GVA in Belfast was 64% of the combined GVA of all other local authorities in Northern Ireland: in 2018 it was 70%. In that period, 88% of the total growth in the sector in Northern Ireland occurred in Belfast.

The strength of the digital sector cluster in Belfast brings the potential for significant ongoing economic growth – through indigenous business growth and foreign direct investment. The proximity to Belfast gives the potential to extend the geography of the Belfast cluster to allow similar economic benefits in Causeway Coast and Glens

5.1.3 Wider Digital Transformation

The continuing decline of the high-street and growth of online retail is just one factor in the growing economic importance of digital technologies. New digital capabilities supported by new developments and the deployment of improved digital platforms (such as full fibre, 5G and LPWAN) are extending the importance to more and more sectors of the economy.

The visitor economy is essential to the sustainability and growth of the economy in Causeway Coast and Glens, and increasingly dependent on digital technologies.

The expectations of visitors accessing Wi-Fi at their hotels are easy to understand, and only a small part of the digital requirement for the visitor economy. Events, such as the major golf tournaments at Royal Portrush Golf Club create exceptional demand on services.

Nearly 240,000 people attended the 148th British Open when it was held at Royal Portrush in 2019. The majority would have expected to be able to access the internet throughout their visit – using social media to post items about their experiences, as well as following the tournament, finding out about entertainment, accommodation, transport, etc.

Few digital platforms are designed to accommodate this level of increase in demand compared to normal day-to-day requirements.

The critical economic importance of digital communication and transformation, and the increasing technical complexity mean that it is essential that there is effective technical advice and support available throughout the economy.

5.1.4 Demographic Challenge

The ageing population throughout the UK is creating a growing challenge for service delivery. The demographics of Causeway Coast and Glens mean this challenge is even more urgent.

18.5% of the population of Causeway Coast and Glens is over 65 years of age. This is typical for the UK but is significantly higher than for Northern Ireland as a whole (16.5%). This age factor places a growing strain on the delivery of key services – in particular health and social care.

The digital transformation of health and social care is seen as a critical development for the sustainability of service delivery in the medium term. It is essential that services such as assisted living applications are accessible throughout Causeway Coast and Glens.
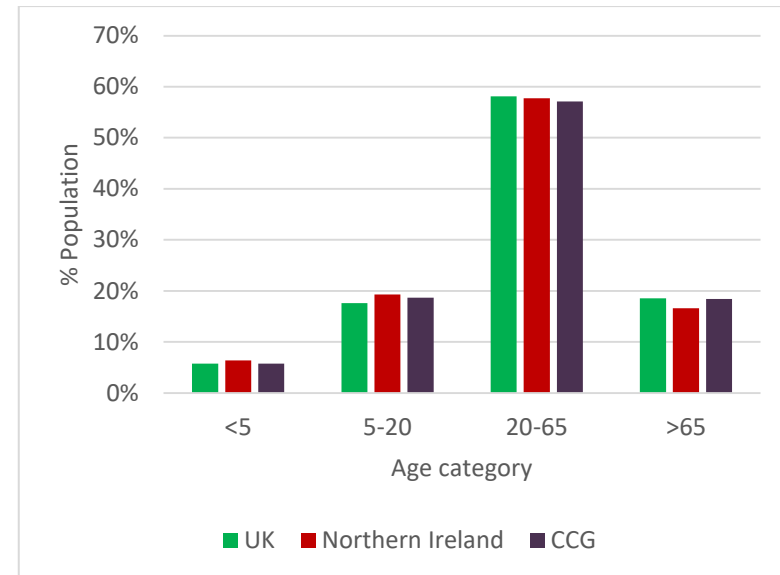

Figure 31. Population by age grouping

Ensuring the accessibility of digitally transformed services requires more than accessibility of digital connectivity. It is important that devices and applications can be installed in peoples' homes, and that the service users can operate them. The digital sector, in conjunction with other expert groups, will have a vital role in ensuring the effectiveness of the digital transformation of services.

5.2 Developing the Digital Sector

It is clear that the importance of the digital sector extends far beyond the direct economic impact of the sector itself. The development of the digital sector in Causeway Coast and Glens must reflect this importance throughout the economy, and beyond the geographic boundaries of the Borough.

Four key opportunities to support the digital sector in Causeway Coast and Glens are identified:

- **Collaboration Hubs** – buildings and facilities to provide a local focus for the sector development in the Borough.
- **Networking programme** – a programme of events to encourage networking as a part of the wider digital cluster in Belfast and beyond.
- **Incubator support** – providing cost effective opportunity for new business start-ups within the wider Northern Ireland digital cluster.
- **Targeted support for economic growth** – the visitor economy is central to the Borough. Current developments are using digital technologies to transform service delivery. This provides a key market opportunity to develop the digital sector – and a model for engagement and support between sectors.

5.2.1 Collaboration Hubs

Currently, digital companies in the Borough are dispersed and in many cases occupying premises that are not ideal for collaborative working. Physical hub locations would be highly beneficial for the development of the digital sector in Causeway Coast and Glens. They can also complement and extend the collaborative hub infrastructure for the sector in Belfast – providing greater capacity and choice.

As a result of the COVID-19 pandemic, large numbers of people in the Borough who normally commute to Belfast are working from home. This may become a permanent change in working habits. Hubs can help remote workers operate more effectively.

The development of one or more collaboration hubs is supported by existing digital sector businesses in the Borough:

"COVID-19 has changed the way people from CCG and elsewhere behave. It has shown that individuals can work from home or visit local hubs rather than having to commute to their normal workplaces." (InvestNI)

"Looking at mid-tier US tech companies with an outpost in Belfast, a model that some of them are looking at is Regional Hubs. They may have three or four employees in Cookstown and three or four employees in Coleraine and they will rent space from the likes of an Enterprise Causeway to bring these people together." (Causeway Chamber)

Physical hub locations can provide a focus for networking and collaboration that are at the heart of the development of an effective cluster.

Hubs need to provide physical space closely linked to sources of appropriate support. Locations need to offer:

- Excellent communications infrastructure
- Incubator space
- Communal space to support networking (café, etc)
- Meeting rooms
- Event spaces
- Hot desking facilities

Appropriate locations were considered and discussed with existing digital companies and sector stakeholders. The Data Centre on the Enterprise Zone just outside Coleraine could be a suitable location for such a hub. A smaller hub is being developed in Ballycastle. Other locations such as Limavady may also benefit.

5.2.2 Networking Programme

Networking helps to support effective collaboration between companies and is an essential element in maintaining sector development awareness and skills.

You also need the right people delivering the right programmes of events and networking to inject energy and a sense of purpose into the sector. (Causeway Chamber)

Maintaining links and encouraging networking with other digital sector businesses throughout Northern Ireland and the Belfast digital cluster presents an opportunity for ongoing collaboration.

Developing and delivering an effective programme of networking events is a perfect opportunity to continue and develop this sector collaboration across Northern Ireland.

Careful attention should be paid to the 'wrap-around' services offered in successful hubs such as the Ormeau Baths in Belfast. Any networking programme should be modelled on successful programmes elsewhere.

5.2.3 Incubator Support

The strength and growth of the digital sector in Belfast provides a clear opportunity for Causeway Coast and Glens to provide a 'feeder' incubator capability for the wider Northern Ireland cluster. Causeway Coast and Glens can offer a supportive environment (and lower cost structure) for new digital businesses to form, with the growth opportunity in Belfast nearby or in Derry in the west of the Borough.

Collaboration hubs will provide much of the physical infrastructure required to support new business start-ups; they also provide a focus and environment for other support activities – for example generic entrepreneurial business skills training and advice programmes.

5.2.4 Supporting Key Business Sectors

Although the digital sector in Causeway Coast and Glens is small, it has a vital role to play in supporting the other major sectors of the economy of the Borough. It will support other sectors such as manufacturing, agriculture and the delivery of public services.
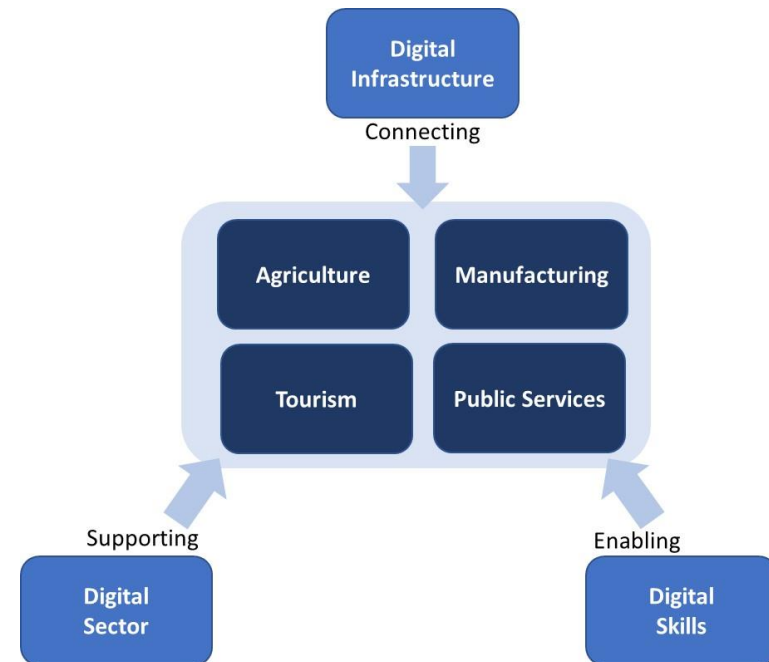

Figure 32: The effect of the Digital Strategy on key sectors

Tourism is an important example. The sector is vitally important to the economy of the Borough and one which has been devastated by the COVID-19 pandemic.

Meeting the needs of the visitor economy is a critical requirement, and the sector is being transformed through digital technologies.

At a basic level, visitors to the Borough require digital connectivity to meet a range of needs and expectations throughout their stay – accessing Netflix and similar streaming applications from their

hotel rooms, engaging with social media, and internet browsing to identify new attractions, events and activities. In recent years, the visitor experience is being enhanced using augmented reality which allows visitors to engage with attractions in a much richer way.

However, visitors are usually attracted initially to a small number of major attraction sites; the majority of visitors rarely stray far from these major. The aim of Digital Tourism developments is to encourage visitors to extend the scope (and economic impact) of their stay.

We are always keen to get people off the beaten track to some of the lesser known spots. Dispersal is a key part of our strategy, to let visitors know what else there is to do and see when they are in the area. (Causeway Coast and Glens Borough Council Tourism lead)

The Google five stages of travel provide a useful structure to understand the requirements for these applications and the interaction with existing applications and services.

Travel Apps on users' mobile 'phones provide an opportunity to change users' behaviour – altering their travel routes and encouraging them to visit new areas. However, users need a compelling reason to move away from Google Maps and the other sites and Apps that they are already familiar with.

Figure 33. Key travel sites and Apps against Google five stages of travel [Source: Google]

New technologies give new opportunities to increase visitor numbers and their economic contribution to Northern Ireland, and to Causeway Coast and Glens.

The development of Augmented Reality, Virtual Reality and the Internet of Things presents the opportunity to develop a new breed of content giving an entirely new level of engagement for users:

- **Augmented Reality** provides greater depth of engagement during the *experiencing* stage – enabling content to increase visitor movement and spend during their stay.

- **Virtual Reality** gives the potential to extend the use of rich content into the *dreaming* and *planning* stages –

increasing the total numbers of people choosing to visit Northern Ireland.

- **IoT** allows greater use of real-time data to enable detailed management of visitor behaviour.

The AR360 platform (developed by Belfast-based Yellow Design) is a platform that allows the user to greatly enhance their experience using augmented reality. It already delivers exciting AR content in the Titanic Quarter and at the Peace Wall in Belfast. They are now working with the National Trust to develop AR content for the Giant's Causeway. Given this level of coverage of the major attractions, using the AR360 platform as the basis for a Northern Ireland wide tourism app would provide an ideal opportunity to support visitor dispersal.

Figure 34 Augmented Reality adds depth to major attractions [Source: Yellow Design]

This would complement the Simpleview platform that is currently being rolled by Tourism NI (discovernorthernireland.com) and CCGBC (visitcausewaycoastandglens.com).

Coordinated Development

A Digital Tourism strategy for Causeway Coast and Glens requires coordinated development on three levels:

- **Platform –** to provide core advanced functionality to engage visitors and maximise economic impact. This will require integration of the AR360 platform with the Simpleview platform being rolled out.

- **Content –** to give substance and sustainability to technical developments across multiple platforms, websites and Apps. This will require training for a large number of content generators. The basic skills for content generation should be offered through the Digital Causeway programme and the colleges should be encouraged to offer courses in digital content generation.

- **Infrastructure –** incorporating LPWAN to gather IoT data and Wi-Fi to deliver rich content to end users. Public realm Wi-Fi should be reinstated in the towns where it has been turned off and the LoRaWAN network should be extended to give full Borough coverage.

The impact of this work will be greatly enhanced if the Borough works with other tourism-intensive local authorities, and in particular with Belfast City Council.

"The visitor should not need to understand local government tourism provision to find out what they need to know to visit the attractions they are interested in."
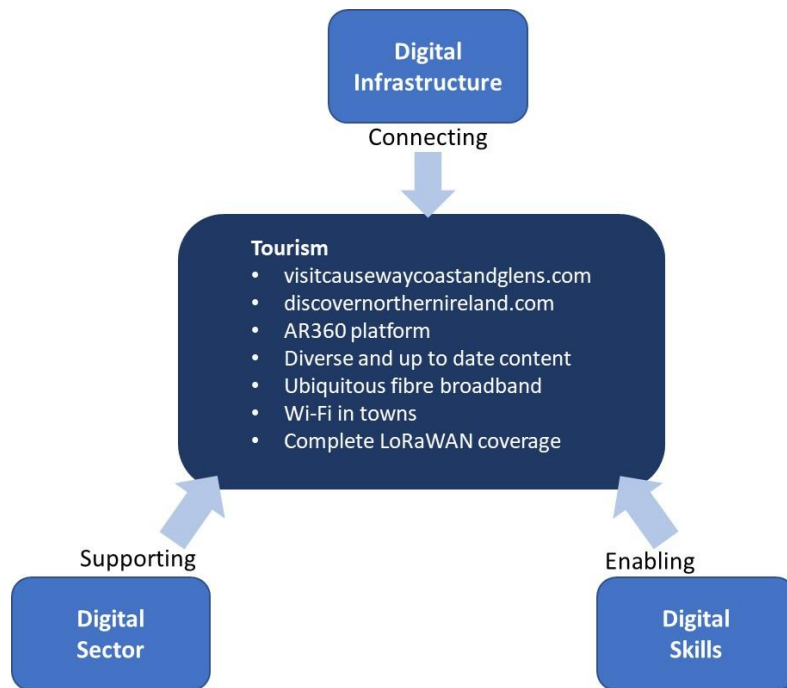(InvestNI)

Figure 35: How digital can transform tourism in Causeway Coast and Glens

5.4   Key Issues – Digital Sector

The digital sector in Causeway Coast and Glens has a critical role to play as a sector in its own right, as a part of the wider digital sector throughout Northern Ireland, and in supporting the digital transformation of businesses and service delivery in the Borough.

Four key actions are identified to support the digital sector development in the Borough:

- **Create Digital Sector Hubs** – buildings in suitable locations in the Borough to provide a physical focus for development activities in the sector.

- **Networking programme** – establishing a collaborative networking programme with Belfast and other local authorities to support sector and skills development throughout Northern Ireland.

- **Incubator support** – providing cost effective opportunity for new business start-ups within the wider Northern Ireland digital cluster.

- **Support for other key sectors of the economy** – being digitally enabled is a vital component for success of all business sectors. The digital sector has a key role to play in supporting tourism, manufacturing, agriculture and the delivery of public services. We explore in detail how digital technologies can help to transform the visitor economy as it recovers from the damaging effects of the COVID-19 pandemic.

6. Delivery

The Action Plan to deliver the aims of the **Causeway Coast and Glens – Digital Strategy** will be developed as detailed requirements are determined. Existing projects and programmes (including Project Stratum, Full Fibre Northern Ireland and Causeway Coast and Glens growth Deal) will provide significant developments for the Borough and provide a focus for the development of other activity.

This section provides a high-level view of the Action Plan and how key actions will deliver key priorities of the digital strategy.

6.1 Key Actions by Themes

Digital Infrastructure

Ubiquitous broadband

Identify the premises not reached by Project Stratum and put in place measures to ensure connectivity

Support Wireless Infrastructure

Ensure availability of Wi-Fi and LPWAN infrastructure and services

Reduce barriers to roll-out

Adopt the 'barrier busting' recommendations from DCMS to ensure efficient network roll-out

Digital transformation in the Council

Update Council IT systems and support to make them fit for purpose.

Digital Skills

Basic Skills

Ensure effective focus on in digital skills for all throughout education

Professional Skills

Support continuous professional development and apprenticeships programmes for digital companies.

Advanced Skills

Develop and maintain networking opportunities for digital sector throughout Northern Ireland and internationally.

Digital Sector

Create Digital Hubs

Develop innovation hub locations to support digital business development.

Networking Support

Develop a programme of events to encourage networking in the Borough and beyond.

Support Start-ups

Establish support programmes, focused at hub locations to encourage and support SMEs.

Support Key Sectors

Develop platform, systems and content to maximise performance of key economic sectors.

6.1.1 Digital Infrastructure Key Actions

The development of Project Stratum across Northern Ireland presents a clear turning point for the development of digital infrastructure. However, it is likely that not all will be served. A high value voucher scheme will need to be developed to deliver connectivity to those missed by Project Stratum.

However, other developments can be progressed in the shorter term. Extending LPWAN coverage across the whole of the Borough will allow the development of innovative IoT services which can be used by businesses and the council to innovate and improve efficiency.

6.1.2 Digital Skills Key Actions

The continued enhancement of digital skills throughout the Borough is a long-term objective. Initial activity can focus on the more immediate objectives of establishing advanced skills to support IoT. These present an opportunity to develop leading edge skills in the application of new digital technologies for direct economic benefit – particularly key areas of the rural economy (for example tourism and agriculture).

The development of the Enterprise Hubs will be supported by appropriate digital skills development and dissemination activities. The production of Outline Business Cases for these project developments will guide this development.

6.1.3 Digital Sector Key Actions

The key actions to support the digital sector in Causeway Coast and Glens are aligned to create a support infrastructure in the Borough to encourage the start-up of new digital businesses and connect them with the wider Northern Ireland digital cluster in Belfast and beyond and to support professionals to work from the Borough in the most effective way.

A key strategic objective for the development of the digital sector is to focus on the support of digital transformation of other key economic sectors in the Borough. A clear example is the digital transformation of the visitor economy. The success of this sector is vital for the future prosperity of the Borough and Northern Ireland more generally. As well as direct economic benefit, this presents a clear commercial opportunity for the development of the digital sector.

The next few years will see Causeway Coast and Glens transformed from one of the least well-connected places in the British Isles to one of the best connected. This strategy aims to ensure that the improved connectivity **reaches everyone**, that they **have the skills to benefit** from the improved connectivity and that the connectivity and skills are harnessed to **support the wider economy** to the benefit of all who live, work and visit here.

Annex 1: Glossary

4G — The fourth generation of Mobile Technology, currently extensively deployed and rolling further out across the UK

5G — The fifth generation of Mobile Technology. The standards for this are still in definition but deployments are happening ahead of full standards definition

bit — A binary unit of digital information (1 or 0)

Backhaul — The intermediate links between local access networks which connect the customer and the core backbone networks which distribute communications traffic more widely

BRCD — Belfast Regional City Deal - bespoke package of funding and decision-making powers negotiated between central government and Belfast City Council and surrounding local authorities

byte — A unit of data consisting of eight bits

FFNI — Full Fibre for Northern Ireland – a DCMS-funded initiative to roll fibre out to Local Authority buildings in Northern Ireland

Fibre to the Cabinet (FTTC) — A fixed broadband technology whereby traffic to and from a customer is delivered by optical fibre as far as the local street cabinet and thence over a twisted copper pair using VDSL technology.

Fibre to the Premises (FTTP) — A fixed broadband technology whereby traffic to and from a customer is delivered by optical fibre all the way to the customer premises.

Full fibre — A fibre optic connection all the way to the customer premises

FWA — Fixed Wireless Access – using radio to deliver the final connection in a fixed communications service.

GB — Giga Bytes – a volume of data consisting of roughly a thousand million Bytes of data.

Gbps — Gigabit per second – a transmission speed of roughly a thousand million bits of data per second.

Gigabit broadband — Broadband communications which offers speeds in excess of 1000Mbit/s for download.

GPON — Gigabit-capable Passive Optical Network – a standard for the last mile delivery of optical

	networks which does not require any electronics (and therefore does not require power).
IoT	Internet of Things - the ever-growing network of physical objects that feature an IP address for internet connectivity, and the communication that occurs between these objects and other Internet-enabled devices and systems
LoRaWAN	LOng RAnge Wide Area Network – a specific LPWAN technology implementation.
LPWAN	A generic term for a range of technologies that offer wide area coverage at relatively slow speeds – useful for IoT communications.
MB	Mega Bytes – a volume of data consisting of roughly a million Bytes of data.
Mbps	Mega-bit per second – a transmission speed of roughly a million bits of data per second.
Project Stratum	A £165 million initiative to bring superfast broadband to as many premises as possible that do not already have it (c. 80k premises).
SigFOX	A specific LPWAN technology implementation.
Superfast broadband	Broadband communications which offers speeds in excess of 30Mbit/s for download.
Ultrafast Broadband	Broadband communications which offers speeds in excess of 300Mbit/s for download.
USO	Universal Service Obligation – in broadband an obligation to give all customers minimum speed
Wi-Fi	A family of radio technologies commonly used for wireless local area networking

Annex 2: References

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