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THE STATES OF DELIBERATION
of the
ISLAND OF GUERNSEY

POLICY & RESOURCES COMMITTEE and COMMITTEE *for* ECONOMIC DEVELOPMENT

DELIVERING NEXT GENERATION DIGITAL INFRASTRUCTURE

The States are asked to decide: -

Whether, after consideration of the policy letter entitled 'Delivering Next Generation Digital Infrastructure' dated 13th September 2021 they are of the opinion: -

1. To endorse the policy objectives for the delivery of next generation digital infrastructure as set out in **Appendix 2**.

2. To agree the funding capped to a maximum of £12.5m in order to enable the accelerated roll-out of fibre cable connections.

3. To direct the Policy & Resources Committee to finalise the contract with Sure, and for such member of the Policy & Resources Committee as that Committee may determine, to sign the contract, on behalf of the States of Guernsey, to enable the accelerated roll-out of fibre cable connections to commence.

4. To direct the Committee *for* Economic Development to submit a Policy Letter on licensing of next generation mobile technology by no later than 31 December, 2022.

The above Propositions have been submitted to Her Majesty's Procureur for advice on any legal or constitutional implications in accordance with Rule 4(1)(c) of the Rules of Procedure of the States of Deliberation and their Committees.

THE STATES OF DELIBERATION
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ISLAND OF GUERNSEY

POLICY & RESOURCES COMMITTEE and COMMITTEE *for* ECONOMIC DEVELOPMENT

DELIVERING NEXT GENERATION DIGITAL INFRASTRUCTURE

The Presiding Officer
States of Guernsey
Royal Court House
St Peter Port

13th September 2021

Dear Sir

1 Executive Summary

1.1 This policy letter seeks States endorsement of the objectives and policy actions necessary to deliver a highly effective, resilient and safe 'next generation' digital infrastructure for the island of Guernsey. It seeks States approval for the States investment required to achieve an accelerated roll-out of fibre broadband to all premises in Guernsey.

The need for next generation digital infrastructure – a Digital Framework

1.2 Next generation digital infrastructure will deliver resilient, fast, future-proof and ubiquitous digital connectivity to homes and business through investment in fibre cable connections to premises and setting a clear pathway for future implementation of the latest mobile connectivity technologies. Networks will also need to be safe, secure and minimise environmental impact.

1.3 Delivering these next generation digital infrastructure capabilities is a critical part of the 'Digital Framework' suite of actions which are an important action in the Government Work Plan ("GWP"). This Framework builds on the Digital Sector Strategic Framework published in 2017[1] and will continue to be developed with industry and stakeholders. This will ensure that Guernsey continues to maximise and take advantage of its digital capability.

1.4 A world class digital infrastructure is a critical requirement for future economic growth and prosperity and is the foundation required for a successful and thriving digital economy. It will also enable delivery of social and cultural

[1] CHttpHandler.ashx (gov.gg)

outcomes through universal coverage and digital access. This will be achieved by promoting inclusivity of access to digital resources, enabling the people of Guernsey to maximise the opportunities that exists in this digital age.

1.5 More detail on the Digital Framework is set out in section 3 of this policy letter and summarised in **Appendix 1**.

Developing a Telecoms Strategy

1.6 Development of the Island's digital connectivity is an evolutionary process. In 2017, the Committee *for* Economic Development published a strategy document entitled "The Future of Telecoms"[2]. This document set out the strategic direction for digital connectivity for the period up to 2021. Three key objectives were set out, focusing on achieving fibre access to key business districts, attaining super-fast broadband access to residential properties and the provision of next generation mobile (5G) as this became available.

1.7 Whilst fibre access to business districts has continued to be rolled out by local telecommunications providers ("telcos"), there has been less substantive progress on the other two objectives. The impact of the pandemic on working practices, including the increased requirement to enable effective working from home, has underlined the critical strategic importance of fast and ubiquitous digital connectivity across the Island. Replacing the existing legacy copper-based telecommunications networks with fibre cables is critical in order to ensure islanders and businesses can make optimum use of digital technology for family life and for business growth and development.

1.8 A key first objective of the Digital Framework is therefore to establish a first-class digital infrastructure for the Island. This will ensure that:

- Guernsey is a first class, well connected, digitally enabled jurisdiction;
- digital connectivity acts as an accelerator for all businesses in the Island;
- innovation and business growth through test bed capability is enabled;
- the evolution of technical capability of networks over time as new technologies emerge is facilitated;
- economic recovery post COVID-19 and resilience is strengthened; and
- flexible working and productivity increases are enabled.

1.9 This policy letter therefore sets out the policy objectives and investment required to enable the rapid development of the Island's telecommunication networks with a key objective of completing a 100% island wide roll-out of fibre connectivity so that all premises are connected by 2026 and enabling deployment of next generation (5G or successor technologies) mobile networks

[2] CHttpHandler.ashx (gov.gg)

from 2023.

1.10 This includes the necessary funding that will be required from the States of Guernsey to ensure an accelerated and universal rollout of fibre to premises in Guernsey. Ubiquitous, fair and equal access to a fibre network will enable all islanders and businesses to access the speeds and services they need.

Next generation digital infrastructure – policy objectives

1.11 In order to achieve these outcomes, several policy actions will be needed throughout the chain of telecoms connectivity. This starts with the data cables connecting the Island to the outside world and ends with the operating practices and management of the networks which will make them safe, secure, robust and dependable. The strategy objectives needed to deliver a next generation digital infrastructure are set out in **Appendix 2**.

Evaluating the options – The Broadband Working Group

1.12 A Broadband Working Group, comprising representatives from the Policy & Resources Committee, the Committee *for* Economic Development, and the Committee *for* Education, Sport & Culture was formed by the Policy & Resources Committee immediately after the 2020 General Election in order to consider the required development of the Island's telecommunications network and the delivery of the objectives set out in **Figure 1** and **Appendix 2**.

1.13 The work of this Group included assessing the various network technologies available and how these would best serve to meet the telecommunications infrastructure objectives. The conclusion reached was that fibre technology will remain the best long-term infrastructure option that is able to deliver equality of access across all parts of the Island. This is explained in more detail in section 4 below.

1.14 A key area of focus has therefore been on how to deliver the objective of achieving roll-out of fibre to all premises within a five-year period (Objective 3 of the policy actions).

1.15 In order to reach the conclusions and recommendations made within this Policy Letter, extensive consultation and engagement has taken place with the telcos and other stakeholders.

Recommended solution – ubiquitous and equitable full fibre broadband network

1.16 The recommended solution is a proposal from Sure to achieve a ubiquitous and equitable full island fibre to the premises wholesale broadband network. This will comprise:

- A fibre network capable of initial speeds of up to 1 Gbps (Giga-bits per second, with the capability of access to higher speeds of up to 10 Gbps to fulfil future demand).
- A goal to achieve a single regulated wholesale fibre network with 100% ubiquitous coverage to all premises.
- 100% of premises to be able to access services at the same wholesale cost.
- All licensed telco operators will have non-discriminatory access to the wholesale network at the regulated rates approved by the Guernsey Competition and Regulatory Authority ("GCRA"), ensuring competition at the retail level.
- A time period of five years from start to completion – target completion by end 2026.
- Consumers who do not already have fibre, will be able to access fibre services as and when they are connected, with the last connections being made in 2026.
- Reinforcement of the critical network infrastructure role Sure provides for Guernsey leveraging and building on its existing sub-sea, fixed and mobile network assets.

1.17 To achieve this, the engineering programme delivered by Sure will require a capped (£12.5m) 'Digital Accelerator Investment' in the form of a grant from the States of Guernsey that will both assist accelerating the build time and also importantly cover uneconomic areas of the Island. The bulk of the costs of installing the fibre network (estimated at circa £37.5m) will be borne by Sure.

1.18 In order to enable universal access to fibre, when the roll-out is completed, the existing copper network will be retired, on a phased basis as the fibre network is rolled out. Copper networks comprise the copper-based telephone wiring that exists in homes and through phone lines. Digital Subscriber Line (DSL) networks like ADSL and VDSL have historically relied on copper networks, which is how most broadband services are delivered across the Island today. Whilst copper networks are created with bulky copper wires that use electrons for data transmission, fibre uses thin bundles of optical fibres, or strands of glass, that use photons to transmit data. In essence, copper networks use electrical pulses (electrons) versus light (photons) for fibre. Since light is faster than electrical pulses, fibre offers faster data transmission and higher bandwidth.

1.19 All households and businesses will need to agree to be switched over to fibre. Importantly there will be no additional cost to businesses and individuals in the switch over to like-for-like services. When completed, users will experience an upgraded service (faster connectivity for the same price) but also have the choice of faster-still connectivity if they need it, albeit at a higher price.

1.20 Civil engineering works will be required to install the fibre cabling, including the

need for road closures. However, where possible, existing ducts will be used, micro-trenching utilised, or existing telegraph poles employed. This will minimise disruption, but it must be expected that a certain number of road closures will be required over the five-year period of the roll-out. The impacts will be mitigated by the careful scheduling and planning of road closures over the period of the roll-out.

1.21 A commercial contract has been negotiated with Sure which will ensure that States funds are safeguarded and only used when services have been delivered. More details are set out in section 7.

Ensuring fair access and retail competition

1.22 An important element of the arrangement is to ensure that competition is maintained at the retail level (the point at which customers buy network services). This ensures that consumer choice is maintained with healthy competition encouraged amongst telcos. The GCRA already has an important role in this area, and this will continue to ensure that meeting consumers' expectations of the cost and quality of services is maintained. This will include ensuring that telcos are able to compete fairly and procure fibre broadband services at a wholesale level based on a level playing field.

Next generation mobile services – setting the pathway

1.23 A complementary network to the island fibre network will be the provision of a next generation mobile network. The current intention is that steps will be taken to license this from 2023. As such the States are not being asked to make a decision on this through this policy letter. Further work will be undertaken during 2022, with a licensing framework to be debated by the States Assembly prior to any licensing of 5G (or its successor) in 2023.

Definitions and technical terms

1.24 This policy letter contains a number of technical terms in the field of telecommunications and digital policy. A glossary of these terms can be found, for reference, in **Appendix 3.**

2 The 2017 Future of Telecoms document – setting the path for investment

2.1 In 2017, the Committee *for* Economic Development published a strategy document entitled "The Future of Telecoms"[3]. This set out three core objectives for delivering 'next generation' digital infrastructure. These were:

[3] CHttpHandler.ashx (gov.gg)

- Provision of fibre to business districts;
- Provision of high quality super-fast broadband to all residential properties; and
- Provision of next generation mobile technology in line with, or earlier than the UK.

2.2 Whilst roll-out of fibre to business districts has continued, there has been less substantive progress on the other two objectives. Most homes continue to have broadband services delivered over a network that uses a combination of fibre to roadside cabinets and a "final mile" of copper to the subscriber. Whilst speeds have increased due to technological advances, it is likely that speeds above 100Mbs (megabits per second) will be difficult to achieve using this legacy technology. Some properties that are a long distance from a cabinet are unable to access fast internet speeds as signals degrade over long lengths of copper wire.

2.3 Whilst local telcos are proceeding with programs to deliver fibre connections, these programs are long term, and unlikely to be completed within the next decade. In addition, even when these programs are completed, there will still be areas of the Island which will not have been connected because it is not commercially viable to do so. This is due to lower population densities and properties that would require long cable runs to be connected.

2.4 In terms of next generation mobile, whilst work has been done with the regulator and local telcos, there are still a number of policy steps to be completed before this can be rolled out. Issues such as network sharing, mast sharing, environmental impact and safety and security need to be carefully examined and addressed.

2.5 In addition, locally, there is not yet a compelling case for deployment of 5G. This is largely down to the fact that existing 4G services already provide good speed data connections. This contrasts with the position in some UK cities where the high number of users requires greater bandwidth.

2.6 The requirement to deploy a high speed 'next generation' mobile infrastructure does however, remain a key medium term policy objective. The Broadband Working Group considers that an appropriate time for deployment of this technology would be from 2023 onwards.

2.7 As such, a further policy letter will be submitted to the States in 2022. This will set out detailed policy objectives and considerations required for the deployment of next generation mobile through an appropriate licensing framework. This will include examination of use cases, economic, social and environmental impacts, network sharing, and safety and security of the network.

3 Strategic Context – the Digital Framework

3.1 The Government Workplan ("GWP") includes a recovery action entitled "Digital Framework – Invest in and develop the local digital economy". This includes an action to establish a future telecoms strategy, building on the 2017 Future of Telecoms Strategy. The Digital Framework comprises the actions to implement a universal fibre broadband network and establish a 5G licensing framework.

3.2 A revised Digital Framework is currently being developed. The Framework covers three themes: infrastructure, digital skills and innovation and entrepreneurship.

3.3 The first theme, *Investing in and facilitating critical digital infrastructure investment*, is a vital part of Guernsey's digital capability. It will act as a launchpad for further innovation and business growth in the economy. In addition to the 'hard' infrastructure requirements such as fibre and mobile networks, 'soft' infrastructure such as enabling regulation and legislation will be important so that Guernsey is able to capitalise on its digital capability.

3.4 The second theme focuses on improving digital skills at all levels in society. This will become increasingly important – both for businesses but also for individuals at all stages of life. This second theme is interdependent and linked to the development of a Skills Strategy / Human Capital Plan as part of the Government Work Plan.

3.5 The third theme will concentrate on unlocking and fostering a thriving entrepreneurial eco-system that is capable of delivering innovation and growth in new areas. There is already good progress being made in the area of Fintech (Financial Technology), but there is also potential to foster growth in other areas such as Creative Industries, Data and Healthtech. It will also be important to develop and promote to the outside world Guernsey's successes and digital capability. This in turn will attract inward investment.

3.6 The Framework reflects the fact that there are now important drivers for change surrounding the adoption of digital technology. Previously, digital policies focused on developing a specific digital sector within the economy. It is increasingly apparent that the developing strategy needs to be holistic rather than sector specific. This is because the following drivers for change are important:

- Technological change affects all sectors of the economy;
- Government is driving the digitisation of public service delivery to increase efficiency and support innovation;
- Digital inclusion is essential for community connectedness and wellbeing;
- New skills and cultural change are required by all across society; and
- Technology drives economic, social and environmental innovation.

3.7 A key foundation of the Digital Framework is to accelerate the ability for individuals and businesses to access a high speed, reliable and universal 'next generation' digital network.

3.8 By accelerating the Bailiwick digital capability, our ambition is to ensure our community, business and government can maximise the opportunities of the technological and information age to ensure economic, social and environmental resilience, sustainability and innovation.

3.9 Critical outcomes for the delivery of next generation digital infrastructure are set out below:

- **Economic outcomes:**

  - Guernsey is a first class, well connected, digitally enabled jurisdiction;
  - Digital connectivity acts as an accelerator for all businesses in the Island;
  - Enables innovation and business growth through test bed capability;
  - Facilitates the evolution of technical capability of networks over time as new technologies emerge;
  - Aids economic recovery post COVID-19 and strengthens resilience; and
  - Enhances flexible working and greater productivity for businesses.

- Delivery of **social and cultural** outcomes through universal coverage and digital access: this will be achieved by promoting inclusivity of access to digital resources, enabling the people of Guernsey to maximise the opportunities that exists in this digital age.

- Enabler for greater digitisation of the **public sector.**

- Maintaining and protecting our **environment** by efficient allocation and use of resources.

- Telecoms infrastructure delivered at the best possible **cost** for consumers and business users through the promotion of retail competition and **transparent** and effective regulation.

- Delivery of the **connectivity** speeds required to place Guernsey in the top 5% of jurisdictions in terms of connectivity. Using data from cable.co.uk, Guernsey currently ranks 45th compared to Jersey which ranks 4th. In 2019, the mean average download speed for Guernsey was 18.26mbs (megabits per second) and Jersey was 67.5mbs. For Guernsey to be in the top 10 would require a mean average download speed greater than

38.9mbs. Note: achieving this metric would require consumer uptake of faster speed services.

- Delivery of a **safe** telecoms infrastructure by ensuring international standards relating to any possible effects of mobile network electromagnetic field emissions are closely monitored and are complied with.

- Ensuring a **secure** telecoms infrastructure by meeting the recommendations of the UK Department of Culture, Media and Sport and the National Cyber Security Centre on the use of equipment for the provision of mobile networks.

3.10 An outline of the Digital Framework and the 11 action areas is attached in **Appendix 1**.

4 Technology options – the economic case for a ubiquitous fibre network

4.1 An important consideration in developing a Telecoms Strategy is what benefits any investment would bring. There are several studies and examples of economic and social benefits of increased digital connectivity.

4.2 A study conducted by WIK for OFCOM, the UK's Communications regulator, entitled "The Benefits of Ultra-fast Broadband Deployment" concluded that[4]:

"Our analysis of the supply and demand conditions for ultrafast broadband, as well as our analysis of the literature concerning its direct benefits and wider economic impact, leads us to reach the following conclusions:

- *Current and next generation applications including video, cloud computing and virtual reality (which has applications in the field of gaming, education and be-yond), will require an increasing amount of bandwidth – upstream as well as downstream. Homeworking is likely to add to bandwidth demand. Quality parameters such as low latency will also be vital for certain applications which require very quick response times. These developments alongside trends towards the use of multiple devices within each household, mean that it is reasonable to assume that a high proportion of households will require … bandwidths of 300Mbit/s and above by 2025, while some will require Gigabit connectivity.*

- *Meeting user needs in the longer term when speeds of 1 Gbit/s with a greater degree of symmetry may be demanded by some users is likely to require network upgrades … to replace the copper network with FTTP*

[4] See WIK-Consult report - The Benefits of Ultrafast Broadband Deployment (ofcom.org.uk)

[Fibre to the Premises]. Copper upgrades to VDSL supervectoring and G.fast[5] may serve users' shorter term needs, but they are unlikely to be readily upgradable to deliver on the bandwidth and quality needs of the most demanding groups of customers as substantial speed and quality increases would re-quire further significant investments to deploy fibre closer to the customer. 5G will provide an important complement but is unlikely to be a substitute for full-fibre for most households.

- *The experience in countries in which FTTP is prevalent suggests that it can bring benefits in fields such as digital homecare as well as fostering teleworking and increasing the attractiveness of specific regions for business incorporation. In turn, these benefits can translate into higher employment (including in rural areas) and reduced pollution. One of the effects may be to distribute social and economic benefits more evenly across the country.*

- *A number of academic and expert studies have also found links between increasing broadband speeds and economic growth. It seems plausible that the UK could reap economic benefits through an accelerated deployment of ultra-fast broadband. However, the scale of these effects cannot be estimated with any certainty, as literature is based on an analysis of previous data, and it is not clear to which extent the relationship can be extrapolated for much larger in-creases in speeds in the future."*

One study[6] of Organisation for Economic Co-operation and Development (OECD) countries dating from 2012 estimated that doubling the connection speed in a jurisdiction resulted in an additional 0.3 percentage points to annual GDP growth. WIK, together with Ecorys and VVA[7] also identified a correlation between broadband speeds across the EU and Total Factor Productivity across a number of sectors in the context of a study for the European Commission, and concluded that if past relationships between broadband speed and GDP growth were to be replicated going forwards, an accelerated deployment of FTTP (Fibre to the Premises) infrastructure which resulted in 55% of households using FTTP by 2025 could result in GDP levels 0.54% higher than the status quo.

4.3 GDP impact rises to 0.95% over the same period for a ubiquitous fibre network. Similarly, the FTTH (Fibre to the Home) Council (2014) provides an early overarching estimate on GDP increase. Based on evidence from the US, it suggests that providing full fibre to just half of all premises could result in a 1.1%

[5] See the Glossary in Appendix 3 for an explanation of these terms

[6] Rohman, I.K. and E.Bohlin (2012), Does broadband speed really matter for driving economic growth? Investigating OECD countires, SSRN.2034284.

[7] WIK, Ecorys and VVA (2016) support for the Commission in the Impact Assessment for the Review of the EU framework for electronic communications SMART 2015/0005

rise in annual GDP.

4.4 As these studies focus on countries with at least some comparable characteristics to Guernsey within the dataset, it also seems plausible that the effects described might apply to Guernsey, with impacts of doubling broadband speed resulting in a GDP increase of between 0.3% (conservative case) and 1% (optimistic case).

4.5 GDP for 2019 is estimated at £3,252m, so a 1% increase would equate to an annual increase of £32.5m and a 0.3% increase would equate to an annual increase of £9.7m in GDP. The conservative case estimate would therefore quickly repay the States investment in terms of economic benefit.

4.6 The WIK report also provided an analysis of future demand for broadband services. This demonstrated that increasing use for broadband services is being driven by demands for greater bandwidth and access to greater amounts of data. Data requirements are being driven by demands for use of streaming video services serving high end audio-visual equipment (such as 4K/8K televisions and virtual reality applications), the increased use of cloud computing services, and gaming applications.

4.7 In the future, home working and other new developments are expected to drive bandwidth demand.

4.8 **Table 1** below provides data presented in the WIK report for OFCOM illustrating the projected bandwidth required for certain application uses by 2025.

Table 1: Projected bandwidth requirements by applications by 2025

Application Category	2015 downstream bandwidth (Mbits/s)	Bandwidth requirement growth rate (%)	Projected 2025 downstream bandwith (Mbits/s)	Projected 2025 upstream bandwith (Mbits/s)
Basic internet	2	25	20	16
Home office / VPN	16	30	250	250
Cloud computing	16	30	250	250
State of the Art media and entertainment (4K, 3D, UHD)	14	20	90	20
Progressive media and entertainment (8K, virtual reality)	25	30	300	60

Communication	1.5	20	8	8
Video communication (HD)	8	15	25	25
Gaming	25	30	300	150
E-Health	2.5	30	50	50
E-home/E-Facility	2.5	30	50	50
Mobile offloading	2	30	15	12

Source: WIK (adapted)

4.9 **Table 1** shows that bandwidth requirements are growing rapidly. In terms of technology choices, these greater bandwidth and latency[8] requirements can only be achieved by full fibre connectivity and the demand for this bandwidth is approaching rapidly. Fibre connectivity will provide a long-term investment which provides the best 'future-proof' technology solution. Whilst mobile networks (such as 4G and 5G) may be able to meet these requirements, the investment costs and rapidly changing technology run the risk of costly investments being quickly superseded by new technology. This can result in stranded assets and lower the propensity for telcos to invest in new technology when it is available. This would result in slow adoption of new technology and significant impact on business, government and the community.

4.10 Fibre provides a more stable long-term environment and remains capable of taking advantage of new technologies that have not yet become apparent, but may be likely to emerge in the next 10 to 20 years (for example quantum computing).

5 Proposed objectives and the actions to achieve them – the Telecoms Strategy objectives

5.1 In order to achieve the outcomes set out above a number of policy actions will be needed throughout the chain of telecoms connectivity. This starts with the data cables connecting the Island to the outside world and ends with the operating practices and management of the networks which will make them safe, secure, robust and dependable.

5.2 The objectives and actions are set out in more detail in **Appendix 2** and cover six broad areas:

- Customers (home and business users experience);
- Connectivity in the home;

[8] In computing, latency is the delay before a transfer of data begins following an instruction for its transfer. Some applications (e.g. driverless cars) will require fast latency.

- On-island connections and networks (Fibre to the premises and 5G mobile);
- Off-island connectivity and resilience;
- The environment, resilience and health and safety; and
- Telecoms network security.

5.3 Further details of each of these is set out in **Appendix 2.**

6 Fibre Broadband – developing and evaluating the options

6.1 Bearing in mind the aims set out through the Digital Framework, the Broadband Working Group set out the following objectives for delivery of an island-wide fibre network:

- 100% of homes and business premises to be connected with fibre within 5 years (by end of 2026);
- Technology allowing high connectivity speeds and high-quality performance for users;
- A future-proof technology investment;
- Roll-out to be achieved within reasonable cost;
- Ensure equitable and fair access to the network for OLOs (other licensed operators) at the wholesale level;
- Minimal disruption and impact on the environment; and
- Achievable proposal with minimum complexity and minimum States investment.

6.2 Throughout 2020 and during the first part of 2021 a series of discussions were held with on-island telcos and other interested parties. Proposals were invited from each and these were considered and evaluated by the Broadband Working Group using the criteria set out above.

6.3 From the evaluation carried out by the Broadband Working Group, the proposal submitted by Sure was the only one that would deliver a near 100% roll-out of fibre across the Island within the desired timescale and was by far the most cost-effective proposal received to achieve that outcome. Other telcos, such as JT have fibre networks, but Sure's is the most extensive.

6.4 The recommended proposal from Sure will achieve a ubiquitous and equitable full island fibre to the premises wholesale broadband network. This will comprise:

- A fibre network capable of speeds up to 10 Gbps (Giga-bits per second);
- A goal to achieve a single regulated wholesale fibre network with 100% ubiquitous coverage to all premises;

- 100% of premises to be able to access services at the same wholesale cost;
- All licensed operators will have non-discriminatory access to the wholesale network at the regulated rates approved by the GCRA, ensuring competition at the retail level;
- A time period of five years from start to completion – target completion end 2026; and
- Reinforcement of the critical network infrastructure role Sure provides for Guernsey leveraging and building on its existing sub-sea, fixed and mobile network assets.

6.5 Other proposals submitted were attractive from the point of view of using a single shared network. However, it was not clear how achievable this would be, or what cost would be incurred in achieving this. It is likely that these proposals would require substantial investment from the States or potentially the purchase of one or more telcos by the States. These proposals would require the agreement of key telcos, which is uncertain, and may require legislation to achieve the required outcome. Critically, timescales for delivery were likely to be considerably longer than the Sure proposal.

6.6 Another factor was that other telcos currently have less extensive fibre networks than Sure. This means that more work would be required to lay fibre cables, resulting in greater costs and longer timescales to complete the work, and more disruption to island-life.

6.7 Sure has the greatest physical presence and ownership of assets in Guernsey (both in terms of on and off-island cables). It already has a considerable network of fibre laid in the Island (over 500km). Currently the broadband network is delivered through Fibre to the Cabinet (FTTC) with copper circuits providing the final connection to the home. Most households are currently using copper for the final connection, with VDSL technology allowing maximum connection speeds of circa 100Mbs (Mega-bits per second). There is already a limited program of fibre roll-out in place, but under normal investment cycles this is expected to take well over ten years to achieve and will not be inclusive.

7 Commercial agreement and funding considerations

7.1 It is critical to ensure that the benefits of fibre broadband are ubiquitous in Guernsey – across geographic areas and parishes, across the community and across the economy. It is imperative that there is equity of access to support digital inclusion, which is critical to the long-term upskilling of Guernsey's population and economy. That will require as close as possible to 100 per cent coverage in Guernsey.

7.2 It is also critical to economic and community recovery to further enhance

Guernsey's digital infrastructure at pace. A reasonable expectation for a project of this scale and complexity would be a time period of 8-15 years. Guernsey's business representative bodies have emphasised the importance of increased resilience, speed and security to support business; the ongoing digital transformation of government services requires the same. Waiting for up to two decades to achieve this will be too long and will put the brakes on recovery in the short-term and lead to barriers in the longer-term. Achieving the target in five years is in line with the quickest of roll-outs in other jurisdictions.

7.3 The role of the States, then, is to ensure that the 100 per cent target is met, and in an accelerated timeline. It would not be economic for any of the telcos to achieve that in Guernsey without some level of government intervention. For that reason, having considered the different mechanisms by which the States could provide that intervention, the recommendation is for the most transparent financial intervention – that is, where it will directly support and accelerate the engineering work required, and where it would not provide a competitive advantage to any of the telcos. The Guernsey Competition and Regulatory Authority has provided advice to the States on the heads of terms of the contract with the preferred provider, which has helped to ensure that this is the case. The regulator will also work to ensure that this continues to be the case.

7.4 The States are being asked to agree **up to** £12.5 million of funding in order to provide the financial support to ensure equity of access and accelerated delivery. This is an estimated cost to support engineering that will be capped at £11.25 million, plus a contingency of up to £1.25 million if there are significant changes to the scope of the technical demands of the project.

7.5 Appropriate and detailed financial due diligence has been undertaken. The States' contribution will be in arrears, following a detailed demonstration of the work that has been undertaken and the costs incurred, and will be based on an 'open book' financial relationship with the provider on this project.

7.6 The contract will be finalised subject to the States agreeing the Propositions in this Policy Letter. The regulator will have sight of the contract but the contract will not be published more widely due to its commercial sensitivity for both the States and the preferred provider.

7.7 There will also be economic benefits to the work being undertaken in this way. The overall project will lead to the creation of 75 jobs and of the overall £37.5 million of direct investment in this project, £30 million (80 per cent) will be in local engineering contractors and suppliers.

8 Ensuring competition – the role of the GCRA

8.1 An important element of the fibre roll-out proposal is to ensure that competition

is maintained at the retail level (the point at which customers buy network services). This ensures that consumer choice is maintained with healthy competition encouraged amongst telcos.

8.2 The Guernsey Competition and Regulatory Authority ("GCRA") is responsible for regulating the telecoms sector in Guernsey as well as encouraging competition. This is achieved by encouraging best practice in the telecoms sector, while giving new operators access to the existing network within realistic timescales and at realistic costs.

8.3 The GCRA licenses operators to provide services. Operators may also require spectrum licences, currently issued by Ofcom.

8.4 Although the fibre network will be owned and operated by Sure, other telcos will be able to provide services through this network using wholesale arrangements, with the wholesale charge being the same for all telcos. This means that competition can be encouraged at the retail level through innovation in terms of products, packages and service bundles. The wholesale arrangement will be no different to the one used for copper today.

8.5 The proposed fibre roll-out solution will enable 100% of properties to access services which will be delivered over a single regulated wholesale network *at the same cost with no postcode lottery or economic cherry picking.*

8.6 All licensed operators will have non-discriminatory access to the wholesale network at the regulated rates approved by the GCRA, ensuring competition at the retail level.

8.7 The GCRA's view is that wholesale network access provides a common, yet essential tool for increasing the intensity of competition, improving competitors' ability to provide bespoke products to better meet end user demand. Licence condition 34 provides a mechanism for commercial negotiations on new products and services between the network operator and other telcos.

8.8 To ensure the roll-out programme goes smoothly to the benefit of all parties, constructive engagement between all parties will commence immediately on agreement of the contract. Over the course of the roll-out, regular sessions overseen by the Broadband Working Group, assisted and advised by the GCRA as appropriate to its role, will take place. This group will co-ordinate the roll-out following the broad principles set out below:

- Input at an early stage by other operators into technology features;
- Customer freedom of choice at the point of switchover (with no pre-requirement to re-sign contacts with existing providers);
- Clear escalation path to ensure everything possible is done to avoid

disconnections;

- Co-ordination of road openings and road digs for use by all other utility companies in Guernsey, in a way that encourages full use to be made of such works;
- Linking States of Guernsey payments under the contract to clear annual connection targets, and also linked to a timeline for full completion of fibre rollout. The funding will be paid in arrears, dependent on properties passed, retail connections made and final completion of zoned phases of the project;
- Wholesale products and prices should be similar to those available in similar sized jurisdictions in which Sure operates, to ensure Guernsey remains competitive;
- Existing operators will collaborate and share experiences and learnings, engineering know-how and all intellectual property without applying charges;
- All homes should have the ability to access up to 1 Gbit/s speeds, to ensure Guernsey remains competitive and the rollout is future proofed;
- Opportunity to prioritise a number of connections per retail operator per month, such as a fast track process, where deemed to be in the economic interests of Guernsey (this was available to all operators in Jersey and worked really well, with government departments providing input);
- Clear and demonstrable 'Chinese walls' in place between the Sure network team rolling out the network and the retail arm that is competing with other operators in the market;
- Overarching presentation to be shared setting out rollout plans and follow-up workshops to allow collaborative engagement;
- Advance notice (at least 3 months) of planned rollout and migration with the ability of other operators to act on customers' behalf (to manage individual customer's migration from copper to fibre);
- All communications relating to the wholesale fibre network must be operator neutral and agreed in advance by all operators; and
- Approach to router subsidies and battery back-up arrangements to be agreed in workshops between the parties.

9 Transitioning to a fibre network

9.1 Civil engineering works will be required to install the fibre cabling, including the need for road closures. However, where possible, existing ducts will be used, micro-trenching utilised, or existing telegraph poles employed. This will minimise disruption, but it must be expected that a certain number of road closures will be required over the 5-year period of the roll-out. The impacts will be mitigated by the careful scheduling and planning of road closures over the period of the roll-out as set out in the principles mentioned above.

9.2 At the end of each phase of the fibre roll-out, all properties in each geographic

area will have been connected to fibre in Guernsey unless the property owner actively objects, and the old copper network within that area will be retired as this will be redundant. New buildings will be connected to fibre only. This will mean that a 'mandatory' upgrade to the fibre network will be needed for all households and businesses. Those property owners who do not wish to have fibre installed will be advised that this may result in occupants not being able to access a fixed telecommunications network.

9.3 This transition will require careful communications with islanders in order to ensure that property owners upgrade when the roll-out reaches them. Upgrading during the roll-out means property owners would have no cost to bear. Choosing not to upgrade as the roll-out passes a household could mean that connection incurs a cost at a later date. It is not anticipated that property owners will be 'forced' to accept the upgrade through legal means, since anecdotal evidence suggest most will be supportive of the additional connectivity offered by fibre. As such no specific legislation is planned.

9.4 It should be noted that as premises are connected to the fibre network, they will then be able to access those fibre services. In other words, many households and businesses in Guernsey will be likely to be able to access faster fibre services well before 2026 when the last properties are expected to be connected.

10 Next generation mobile – the pathway to 5G

10.1 The requirement to deploy a high speed 'next generation' mobile infrastructure for Guernsey remains a key policy objective. The Broadband Working Group considers that an appropriate time for deployment of this technology would be from 2023 onwards.

10.2 Environmental impact (especially visual and electro-magnetic spectrum) needs careful consideration in the deployment of mobile networks. Logic dictates that one single network would avoid duplication of effort and cost and have least environmental impact. However, downsides include less resilience and the need to ensure a level playing field access to this network. However, delivery of one network across multiple operators may be difficult to achieve practically, at least in the short term until technologies evolve and merge.

10.3 Another factor is the likely propensity and ability of local telcos to invest in the latest 5G technologies. Capability to invest is likely to be constrained where there is an obligation to replace current Chinese manufactured equipment in networks (Huawei and ZTE).

10.4 The need to replace Chinese manufactured equipment has come about because the UK Government is seeking to introduce a new telecoms security framework which imposes statutory duties for UK telecoms providers. This will be

introduced through a security framework comprising of a UK Telecoms Security Bill, a Code of Practice and Telecoms Security Requirements (TSR)[9]. In practice, these statutory duties require compliance, with key deadlines being set for the removal of High Risk Vendor (HRV) equipment from essential parts of telecoms networks and a suite of detailed TSR.

10.5 The Committee *for* Home Affairs has considered the UK Department of Culture Media and Sport's ("DCMS") policy position and conducted further work with the National Cyber Security Centre ("NCSC"). The Committee has concluded that local operators will need to remove Chinese High Risk Vendors supplied equipment by 28 Jul 2025 from the active core parts of their networks (this is the UK date plus 18 months due to supply chain issues). The remaining core network equipment, through the designation of local telecommunications companies as Tier 2 (regionally significant telcos) will need to be removed by 2027. This position is endorsed by the NCSC[10]. These dates therefore drive a timeline for replacement of the mobile networks in the 2023-2025 period and hence, in part, the need to complete 5G licensing in this timescale.

10.6 With these factors in mind, it is considered that the best solution in the short term would be to conclude the tender process through the GCRA for the issuing of a 5G licence or licences. The conditions of the issuing of a licence would be configured to ensure development of a network architecture that would *encourage and facilitate* network sharing as the optimal solution if possible. The intent would be to encourage retail competition, not network competition. This work will be undertaken during 2022, with a licensing framework to be debated by the States Assembly in 2022 prior to any licensing of 5G in 2023.

11 Conclusion

11.1 Next generation digital infrastructure will deliver resilient, fast, future-proof and ubiquitous digital connectivity to homes and business through investment in fibre cable connections to premises and setting a clear pathway for future implementation of the latest mobile connectivity technologies. Networks will also need to be safe, secure and minimise environmental impact.

11.2 First class digital infrastructure is essential for delivering economic, social and community benefits. A number of policy interventions will be needed in order to ensure that next generation digital infrastructure is delivered for the people of Guernsey.

11.3 A key policy objective will be to accelerate the provision of fibre connections to

[9] TSRs are statutory duties and requirements for the UK's public telecoms providers.
[10] Exact timings may change due to ongoing consultation between DCMS, NCSC and telcos. Further legislative delays of the 3rd Reading of the Bill (currently scheduled for Oct 2021) may occur.

properties in Guernsey within a five-year period. Fibre connections will be needed to deliver the expected bandwidth and data speed requirements needed by households and businesses by 2026. Only a ubiquitous fibre network will be able to deliver a future proof network to premises in the Island ensuring fair and equitable access for all users.

11.4 The Broadband Working Group has consulted with all the Island telcos to seek solutions for delivering these objectives. Having evaluated all submissions, the Group concluded that a proposal submitted by Sure was the best fit with the States' objectives.

11.5 To achieve this accelerated roll-out of fibre connectivity to all premises within a five year period, the States are being asked to agree **up to** £12.5 million of funding in order to provide the financial support to ensure equity of access and accelerated delivery. This is the cost to support engineering that will be capped at £11.25 million, plus a contingency of up to £1.25 million if there are significant changes to the scope of technical demands of the project.

11.6 The requirement to deploy a high speed 'next generation' mobile infrastructure in Guernsey remains a key policy objective. The Broadband Working Group considers that an appropriate time for deployment of this technology would be from 2023 onwards and the intention is to submit a further policy letter on licensing next generation mobile technology by the end of 2022.

11.7 Taken together these actions will deliver a strong, robust and future proof digital infrastructure for the Island that will have significant economic, social and community benefits. A first-class digital infrastructure is an essential foundation of the Digital Framework, the aim of which is to ensure that we can accelerate Guernsey's digital capability for the benefit of all members of society.

12 Compliance with Rule 4

12.1 Rule 4 of the Rules of Procedure of the States of Deliberation and their Committees sets out the information which must be included in, or appended to, motions laid before the States.

12.2 In accordance with Rule 4(1), the Propositions:

- Determine the approach to commence implementation of enhancing digital infrastructure which is one of the top ten recovery actions in the Government Work Plan to be significantly advanced in the remainder of this year;
- Have been developed in consultation with other States' Committees, including the Committee *for the* Environment & Infrastructure, the Committee *for* Home Affairs and the Development & Planning Authority;
- Have no additional recurring revenue funding implications for the States beyond the requested investment funding set out in this policy letter to

achieve accelerated fibre roll out as previously set out in the Funding & Investment Plan approved by the Assembly at its Meeting on 21st July 2021.

12.3 In accordance with Rule 4(2)(a), the Propositions relate to:

(a) The duties of the Policy & Resources Committee to co-ordinate policy, including leading the policy planning process, the allocation and management of resources, including the States' budget and facilitating cross-committee policy development; and

(b) the duties of the Committee *for* Economic Development to advise the States and to develop and implement policies on matters relating to its purpose, which is to secure prosperity through the generation of wealth and the creation of the greatest number and widest range of employment opportunities possible by promoting and developing business, commerce and industry in all sectors of the economy.

12.4 In accordance with Rule 4(2)(b) of the Rules of Procedure of the States of Deliberation and their Committees, it is confirmed that the Propositions above have the unanimous support of the both the Policy & Resources Committee and the Committee *for* Economic Development, which are jointly submitting this Policy Letter.

Yours faithfully

Policy & Resources Committee:

P T R Ferbrache
President

H J R Soulsby MBE
Vice-President

M A J Helyar
J P Le Tocq
D J Mahoney

Committee *for* Economic Development:

N R Inder
President

S J Falla
Vice-President

N G Moakes
A Kazantseva-Miller
S P J Vermeulen

APPENDIX 1: The Digital Framework

The Digital Framework 2021-2025, seeks to invest in the islands digital economy, with the primary aim of ensuring that *"by accelerating the Bailiwick's digital capability, our ambition is to ensure our community, business and government can maximise the opportunities of the technological age to ensure economic, social and environmental resilience, sustainability and innovation."*

The Digital Framework supersedes the Digital Sector Strategic Framework published in 2017 and has a wider focus, moving away from focusing solely on the so called "digital sector" to instead looking at the ability of digital technology to enhance Guernsey's entire economy.

The main drivers for the change in shift of policy can be summarised as follows:

- Technological change affects all sectors of the economy;
- Government is driving the digitisation of public service delivery to increase efficiency and support innovation;
- Digital inclusion is essential for community connectedness and wellbeing;
- New skills and cultural change are required by all across society; and
- Technology drives economic, social and environmental innovation.

There are 11 key action areas in the Framework, which are arranged into three main pillars as the key enablers of a successful digital jurisdiction. These are: "Establishing Infrastructure", "Developing Digital Skills and Pathways" and "Innovation, Transformation & Entrepreneurial Growth".

The 2021 – 2025 Digital Framework Action Areas

By accelerating the Bailiwick's digital capability, our ambition is to ensure our community, business and government can maximise the opportunities of the digital age to ensure economic, social and environmental resilience, sustainability and innovation

1 Enabling Infrastructure

1. World-class digital connectivity
2. Digitally visionary government
3. Responsive legislation and regulation
4. Inclusive access to technology

2 Developing Digital Skills and Pathways

5. Digital leadership in Business, Community & Government
6. Grow and develop external (off-island) pipelines to digital talent
7. Increased digital skills across the economy

3 Innovation, Transformation & Entrepreneurial Growth

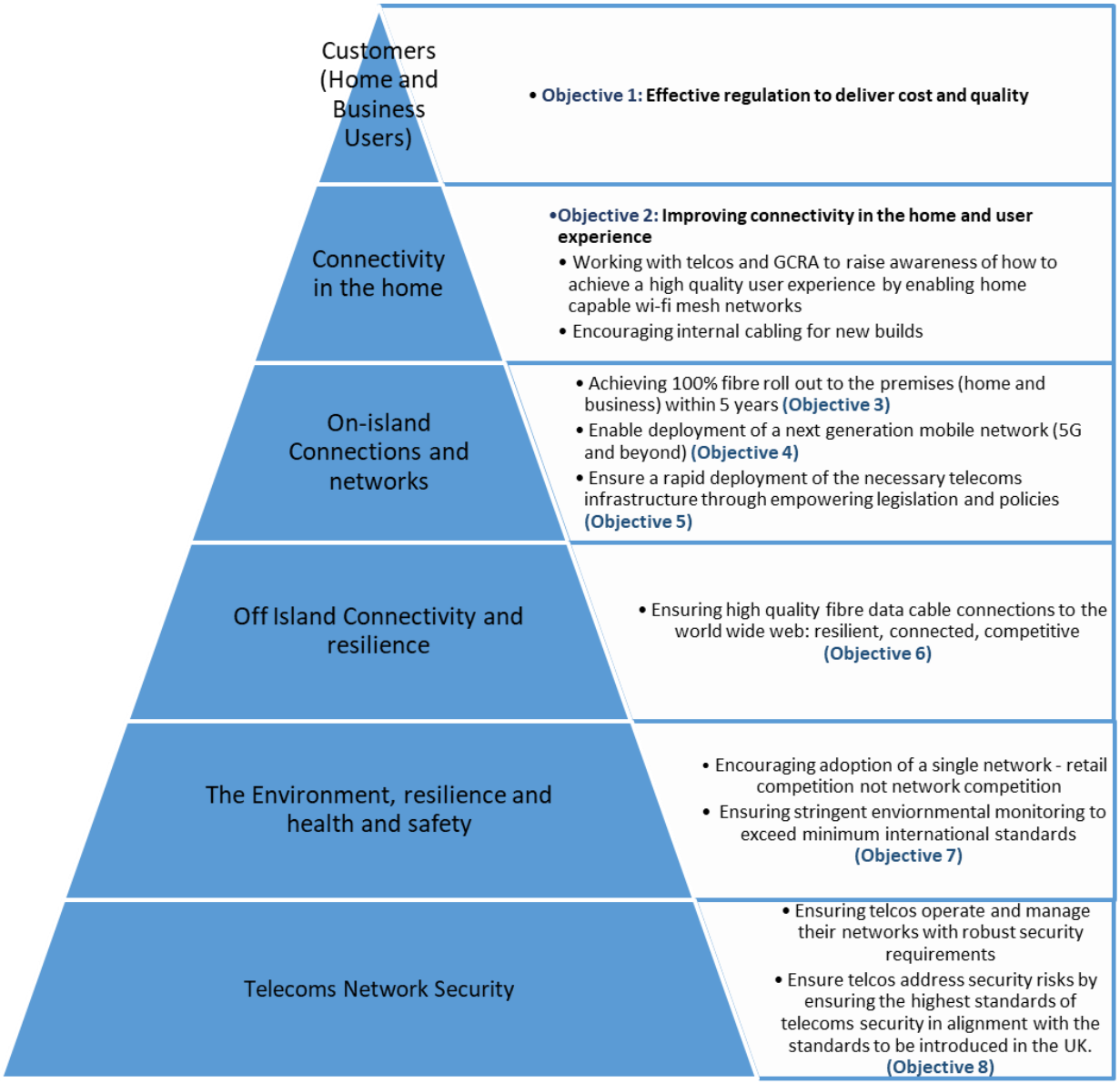
8. Digital transformation across all sectors
9. Economic, environmental & social innovation
10. Unlock and foster the entrepreneurial ecosystem
11. Promote Guernsey's digital capability to a wider audience

APPENDIX 2: DELIVERING NEXT GENERATION DIGITAL INFRASTRUCTURE: SUMMARY OF OBJECTIVES and ACTIONS

KEY OBJECTIVE: To ensure the Bailiwick of Guernsey is one of the most digitally connected jurisdictions in the world where society, culture and the economy can leverage, and maximise, the opportunities of the digital age whilst ensuring maintenance and protection of the environment.

To achieve this key objective several policy interventions are required at all points of the connectivity journey – from off-island cables to maximising connectivity in the home. These are set out in summary below (**Figure 1**) and in more detail through a series of summary tables setting out the objectives and the actions required to achieve the key objective set out.

Figure 1: Summary of Policy interventions required across the telecoms connectivity journey



Actions to deliver objectives

1. <u>Customers (Home and Business Users)</u>

OBJECTIVE 1: Effective regulation to deliver cost and quality
This objective will ensure that the experience of home and business users when they use telecommunication services meets cost and quality expectations for the level of service purchased. This will continue to be an important part of the work of the GCRA.

ACTIONS:

- Continue to work with GCRA to ensure delivery of high-quality telecommunication services ***Responsible Committee: CfED***

2. <u>Connectivity in the home</u>

OBJECTIVE 2: Improving connectivity in the home and user experience
Although the States of Guernsey will not mandate which connection speeds users subscribe to, government should consider ways of enabling better connectivity by identifying opportunities to improve fixed wiring in homes or delivering modern wi-fi networks (e.g. Mesh networks) in new builds, and working with telcos and the GCRA to raise awareness of best practice to maximise connectivity in the home.

ACTIONS

- Work with GCRA to ensure that telcos deliver the expected and advertised user experience standards.
  Responsible Committee: CfED.
- Work with GCRA, telcos and other bodies to enable access to, and reasonable cost of, enhanced accessibility within the home ***Responsible Committee: CfED.***

3. <u>On-island connections and networks</u>

Fibre to the home
OBJECTIVE 3: Achieve 99+% fibre to the premises within 5 years
This objective will ensure accelerated roll out of fibre connectivity to all premises. Fibre connectivity ensures the best 'future-proof' solution for fixed data and voice connections.

ACTIONS:

- Work with telco provider(s) to achieve a rapid programme for fibre roll-out to ensure all premises are connected to fibre within 5 years (end of 2026)
  Responsible Committee: P&RC and CfED
- Work towards creating a single regulated network infrastructure – GCRA to ensure retail competition not network competition
  Responsible Committee: CfED

- Agree mechanism for possible States investment which may be required where this is of most benefit to the economy and the community to achieve an accelerated roll-out.
  Responsible Committee: P&RC

Telecoms infrastructure enablement through enabling legislation
OBJECTIVE 5: Explore and implement enabling legislation to allow rapid deployment of enhanced telecoms networks:
This objective deals with the States legislation and processes which will need to be eased or temporarily suspended to allow rapid deployment of infrastructure.

ACTIONS:

- Investigate the need to amend existing or implement enabling legislation in order to allow the rapid deployment telecoms infrastructure (Fibre and 5G). This may include, inter alia, the need to suspend road embargoes, and enable wayleaves.
  Responsible Committee: E&I / STSB/ P&RC
  Continue to review and adapt planning policy to encourage the rapid rollout and densification of the 5G network.
  Responsible Committee: E&I
- Investigate ways in which the States of Guernsey should take a role in the commercial aspects of the future 5G network. (Note: The States of Guernsey, either directly or indirectly, owns a range of transmitter sites, street furniture, buildings, underground ducts and off-island cables. In addition to direct funding, as identified in the Medium-Term Financial Plan, these physical assets may be made available to accelerate the delivery of a 5G network. This may include the purchase/lease of new telecommunications infrastructure subject to a commercial business case being made.)
  Responsible Committee: P&RC

Next generation mobile network (5G)
OBJECTIVE 4: Delivering a next generation mobile network (5G and its successors)
This objective will ensure the delivery of a 'next generation' (5G) mobile network. Mobile networks will be essential for Internet of Things (IoT) applications and devices that operate away from a fixed network (home or office) environment. The optimum solution is a single 5G network – due to economic and environmental considerations.

ACTIONS:

- Conclude a tender process through the GCRA to build and operate a (preferably) single 5G network (Mobile National Network "MNN")
  Responsible Committee: CfED
- Ensure the criteria for the 5G network licence provide connectivity to meet the current and future needs of the Island and encourage multiple service providers to offer services using the MNN
  Responsible Committee: CfED
- Ensure steps to develop a single network sharing architecture to enable transition from 4G legacy services to a 5G single network

Responsible Committee: CfED

- Ensure 5G network licence will promote and facilitate retail competition, not network competition

  Responsible Committee: CfED
- 5G Backhaul - GCRA to ensure the regulation of the interconnect cost of fibre backhaul to 5G transmitter sites. In this way no existing fibre operator can extract a commercial advantage when it comes to rolling out 5G to areas where fibre is scarce.

  Responsible Committee: CfED
- 5G Spectrum - GCRA to consider the availability of spectrum with the obligation to develop a single network and to ensure sufficient spectrum is available.

  Responsible Committee: CfED
- Licence conditions to be set to ensure maintenance and protection of the environment:
  - Exceed minimum health and safety standards
  - Minimise mast proliferation

  Responsible Committee: CfED

4. <u>Off-island connectivity and resilience</u>

OBJECTIVE 6: Maintaining off-island connectivity and resilience

Off-island connectivity is the lifeblood of a truly connected society and key to economic growth. Driving digital sector growth, one of the key elements of government policy, can only be achieved if connectivity is available, affordable, reliable and competitive with other jurisdictions.

ACTIONS:

- Work with telcos and the GCRA to review off-island connectivity and capability, ensuring that this connectivity is competitive

  Responsible Committee: P&R and CfED

  Investigate future opportunities for States of Guernsey investment with a suitable partner to provide additional/new cable capacity (when life expired) with a modern cable system, opening up new capacity and encouraging new business models.

  Responsible Committee: P&R and CfED

  Investigate strategic links to the internet back-bone, including point of presence on island.

  Responsible Committee: P&R and CfED

5. <u>The environment, resilience and health and safety</u>

OBJECTIVE 7: Ensuring protection of the environment and health and safety

This objective ensures that the benefits of an enhanced digital infrastructure are delivered whilst ensuring the maintenance and protection of the environment, and the safety of users at the same time as ensuring the resilience of data connectivity.

ACTIONS:

- Implement policies to deliver single shared networks to minimise duplication of resources and inefficient delivery of services

  Responsible Committee: CfED

- Encourage single 5G network to minimise mast proliferation and equipment on the masts
  Responsible Committee: CfED
- Ensure licence conditions are set to ensure that mast emissions must not exceed minimum international Health and Safety standards.
  Responsible Committee: CfED
- Ensure regular monitoring and reporting of mast emissions through the GCRA
  Responsible Committee: CfED
- Work with the GCRA to ensure that the telecoms network is resilient, secure and future proofed – achieved through licence conditions.
  Responsible Committee: CfED

6. Telecoms network security

OBJECTIVE 8: Ensuring network security and secure operational practices

This objective will ensure that telcos operate their networks and manage their supply chains in accordance with robust security requirements, and addresses the security risk posed by suppliers, in particular, high risk vendors. These security requirements will ensure the highest standard of telecoms security, in alignment with standards to be introduced in the UK.

ACTIONS

- Develop and introduce Bailiwick Telecoms Security Requirements (TSR) and ensure alignment with the UK TSRs.
  Responsible Committee: CfHA
- Develop and introduce guidance and legislation to ensure that telecoms operators, overseen by the GCRA and Government, design, manage and operate their networks to meet the new security requirements.
  Responsible Committee: CfHA
- Ensure alignment of telco security requirements across the Crown Dependencies to ensure parity and consistency of approach.
  Responsible Committee: CfHA
- Ensure that changes required by the TSR are implemented by the agreed timeframes.
  Responsible Committee: CfHA

APPENDIX 3: Glossary of Terms

- **ADSL-** This stands for “asymmetric digital subscriber line”, and is a type of technology that is used to transmit digital data over telephone lines
- **Bitstream Access-** This refers to when third parties are able to access existing broadband infrastructure in order to be able to offer their own products and services
- **Chinese Walls-** A term used to describe a ethical barrier which is set up to block the exchange of information between two different arms of the same organisation.
- **Digital Subscriber Line (DSL)-** This is a type of technology that is used to transmit digital data over telephone lines
- **Downstream Bandwidth-** The speed/extent to which data is able to download directly from the internet onto one’s device.
- **Ecorys-** A research and consultancy company originally from the Netherlands.
- **FTTC-** Abbreviation for “fibre to the cabinet”. This refers to when broadband is delivered to people’s homes via an external cabinet. Fibre cables transport data to an external cabinet and this data is then transferred from the cabinet to various homes through copper cabling.
- **FTTH-** Abbreviation for “fibre to the home”- This refers to when fibre cables go directly to someone’s home/premises, rather than via an external cabinet, thereby leading to faster speeds.
- **FTTP-** Abbreviation for “fibre to the premises”. This means the same thing as FTTH.
- **Gbps-** Abbreviation for “Giga-bits per second”
- **GCRA-** Abbreviation for “Guernsey Competition & Regulatory Authority”
- **GFast-** This is an enhanced and faster form of FTTC.
- **Internet Backbone-** A term which refers to the largest and highest performance networks in the internet and the routers and connections between them.
- **Internet of Things (IoT)-** The concept of embedding physical objects with internet connectivity so as to allow it to perform new functions. Examples include smart microwaves, self-driving cars and wearable fitness devices.
- **Micro-trenching-** Micro-trenching involves digging a narrow trench of one or two inches wide and up to two foot deep. These trenches can then hold conduits for fibre cable.
- **OFCOM-** Abbreviation for the Office of Communications. They are the UK government-approved regulatory and competition authority for broadcasting and telecommunications industries.
- **Spectrum-** This refers to the invisible radio frequencies, allocated to the mobile industry, that allow wireless signals to travel over the airways.
- **Supervectoring-** A technical term for a specific technique that is sometimes used to improve broadband speeds.
- **telco-** Abbreviation for “telecommunications provider”
- **Upstream Bandwith-** The speed/extent to which data is able to be uploaded from one’s device onto the internet.

- **VDSL-** This stands for “very high-speed digital subscriber line”, and is a type of technology that is used to transmit digital data over telephone lines
- **VVA-** A consultancy company originally from Italy.
- **Wayleave-** An agreement between two parties, where the landowner grants rights for the grantee to access their land in order to carry out specified activities e.g. the installation of fibre cabling.
- **WIK-** The name of a German telecommunications consultancy.