

IN THE MATTER

AND

**IN THE MATTER of Porirua City Council's Proposed District
Plan**

Hearing Stream 4 – Infrastructure, Strategic Objectives FC-O3 and FC-O4, Earthworks and Noise

JOINT STATEMENT OF EVIDENCE OF

GRAEME IAN MCCARRISON FOR

SPARK TRADING NEW ZEALAND LTD

AND

ANDREW KANTOR FOR

CHORUS NEW ZEALAND LTD

AND

COLIN CLUNE FOR

VODAFONE NEW ZEALAND LTD

**IN RELATION TO HEARING STREAM 4 OF PORIRUA CITY COUNCIL'S
PROPOSED DISTRICT PLAN**

19 JANUARY 2022

1. EXECUTIVE SUMMARY

- 1.1 Spark, Chorus and Vodafone, along with other telecommunication providers, invest significantly every year in our networks to ensure New Zealanders have access to world class digital services. New Zealanders and businesses depend on access to these networks, as proven during the current Covid-19 pandemic and resultant economic matters.
- 1.2 We rely on regulatory frameworks both nationally, via the National Environmental Standards for Telecommunications Facilities 2016 (NESTF), and locally, via the Operative and Proposed Porirua City District Plans, to appropriately enable the planning and funding for upgrading of existing networks and construction of new networks to support new growth areas.
- 1.3 Spark and Vodafone are two of the three national mobile network operators who compete for customers over their own national network of cell sites, utilising radio spectrum licensed from the Government. Chorus owns and operates the national copper line network and provide an ultra-fast broadband fibre network. There are 80 organisations registered to build and/or operate network within New Zealand, refer to appendix 1. Within Porirua City the companies building or providing network to ensure it is a well-functioning city includes Spark, Vodafone and, Chorus.
- 1.4 We recognise that New Zealand depends on our construction and the provision of resilient telecommunication networks, especially during emergencies, is critical, as has been highlighted in the case of the Kaikoura and Canterbury earthquakes and more recent civil emergencies triggered by flooding. Telecommunications networks, along with the other critical networks such electricity have proven to be reasonably resilient.
- 1.5 Spark, Chorus, and Vodafone have been involved with the planning team from the commencement of the review of the Operative District Plan. Our initial information provided and submissions on the draft District Plan (DDP) Network Utilities chapter objectives and policies requested that these be replaced by those in the potential draft National Planning Standards for Network Utilities document. The project team that created this document, which is now referred to as draft Network Utilities best practice provisions, disbanded in early 2020. We acknowledge and appreciate that over the years of engagement leading up to the proposed district plan that the Porirua City Council planning team and appointed consultants worked closely with infrastructure

providers including Spark, Chorus, and Vodafone. The Infrastructure Chapter is generally considered appropriate subject to a small number of amendments as requested by our Planning Consultant, Mr Tom Anderson, and provide a practical framework to support telecommunications infrastructure in Porirua City.

- 1.6 Over height buildings have the potential to impact on our existing regionally significant networks. The impact on our existing networks should be a matter of discretion for over height buildings.
- 1.7 Telecommunications is a regulated industry sector in New Zealand, with the Commerce Commission overseeing the industry to ensure there is market competition. A wide range of regulatory requirements and expectations beyond District Plans impact on the networks and services we provide.

2. INTRODUCTION

Graeme McCarrison

- 2.1 My full name is Graeme Ian McCarrison. I am the Engagement & Planning Manager at Spark New Zealand Trading Limited ("Spark"), a position I have held since February 2015. I am authorised to give this evidence on Spark's behalf.
- 2.2 I hold the qualification of Bachelor of Regional Planning (Honours) from Massey University. I am a full member of the New Zealand Planning Institute and have 3 years' experience in New Zealand and overseas. I have been on the board of the New Zealand Planning Institute ("NZPI") since April 2018. Between 2012 and April 2015 I was the chairperson of the Auckland branch of the New Zealand Planning Institute. In 2016 I was honoured with a NZPI Distinguished Service Award, and I received a best practice award for iwi engagement from NZPI in 2015.
- 2.3 During the last 37 years I have worked in the public sector in Auckland including as Director of Regulatory Services at Papakura District Council, Planning Manager for Waitakere City Council and in the private sector as a self-employed consultant and as a consultant at Murray North Partners. For the last ten years I have worked in the telecommunications sector. Prior to Spark I held the equivalent position at Chorus NZ Limited ("Chorus") (November 2011 to January 2015), where I advised both Chorus and Spark on resource management and government matters. I am involved in the review of all regional and district plans plus any related local government documents that have the potential to enable or impact the telecommunications industry. During the review of the Christchurch District Plan process, I led and facilitated the combined approach of Spark, Chorus, Vodafone, 2degrees and Enable during the three years of our involvement.
- 2.4 I facilitate and co-ordinate a wide group of network utility organisations with interests in Auckland and nationally. The purpose of this group is to share information, identify opportunities to collaborate and engage on key documents relevant to network utilities. To ensure that the telecommunication industries interests are represented I organise a shared approach and resources that enables Spark, Chorus and Vodafone to be involved at a national level in every relevant Plan review across New Zealand and relevant legislation which includes a submission on the Natural and Built Environments Act exposure draft. With Chorus and Vodafone, we are currently involved in 29 plan reviews including: Porirua, Dunedin, Auckland, Timaru, Selwyn, Wellington, Waimakariri, Napier, Nelson, Tasman, Upper Hutt, Hutt City, New Plymouth, Waikato, Far North, and Central Hawkes Bay.

- 2.5 I represented the Telecommunications Forum (TCF) on the Technical Advisory Group for the NESTF alongside my colleagues Andrew Kantor – Chorus, Colin Clune – Vodafone, and Ben Blakemore – 2 Degrees. Since the NESTF 2016 amendments, the group made up of representatives from the Ministry of Business, Innovation and Employment ("MBIE"), Ministry for the Environment ("MfE"), and Local Government New Zealand ("LGNZ") meet at least annually to discuss and review the effectiveness of the NESTF.

Colin Clune

- 2.6 My full name is Colin William Clune. I am the Resource Management Planning Advisor at Vodafone New Zealand Limited (Vodafone). A position I have held since October 2014. Previously, I was an in-house contractor for Vodafone, (September 2010 to September 2014), where I advised Vodafone on resource management and government matters. I am authorised to give this evidence on Vodafone's behalf.
- 2.7 I hold the qualifications of Bachelor of Urban Planning and Master of Planning from the University of Auckland. Currently I am on the Technical Advisory Group for the National Environmental Standard Telecommunication Facilities amendments (NESTF amendments). I am also a participating member of the New Zealand Telecommunications Forum, which works to efficiently resolve regulatory, technical and policy issues associated with network telecommunications.

Andrew Kantor

- 2.8 My full name is Andrew Robert Kantor. I am the Environmental Planning and Engagement Manager at Chorus New Zealand Limited ("**Chorus**"), where I have worked since September 2015. I am authorised to give this evidence on Chorus' behalf.
- 2.9 I hold the qualification of Master of Science (Environmental Science) from the University of Auckland and am an associate member of the New Zealand Planning Institute. I am also a participating member of the New Zealand Telecommunications Forum's local government working group.
- 2.10 I have 15 years of resource management experience, comprising of roles for various infrastructure providers in New Zealand and overseas.

Scope of evidence

- 2.11 This statement of evidence covers the following areas:
- a. Telecommunications networks explained;

- b. What it means to be a Regulated Industry;
- c. Impact of development on existing telecommunication infrastructure;
- d. Telecommunications within coastal and natural hazard areas; and
- e. Working within the dripline of protected trees.

3. TELECOMMUNICATIONS INFRASTRUCTURE NETWORKS

3.1 Telecommunications infrastructure is critical and essential to a modern economy and connecting the 'system of systems' that supports New Zealand's economy and wellbeing of people and communities. Telecommunications plays a vital and important role in national resilience, demonstrated most recently through our national response to Covid-19, as recognised by the Infrastructure Commission.

3.2 The Infrastructure Commission's discussion document on Infrastructure for a Better Future recognises the critical nature of telecommunications infrastructure. The report notes that *"Increasing reliance on communications makes telecommunications infrastructure more critical."*¹

3.3 The Infrastructure Commission Aotearoa 2050 survey states *"Submitters also recognised the role of population and economic growth in driving infrastructure needs. Telecommunications and digital infrastructure is important for ensuring access for everyone living in regional New Zealand, including those who are vulnerable or disadvantaged. It can complement and sometimes be a substitute for transport networks."*²

3.4 Communities need access to safe roads, health services, reliable electricity, mobile phone and internet services and clean water. This can be more challenging outside cities, particularly in our more remote areas. But without these services, economic and social opportunities are limited, and people face disadvantage.

"The lack of accessible, affordable high-speed digital connectivity in rural areas remains a significant issue. It is an impediment to business, but it goes well beyond this; it is a significant barrier to maintaining vibrant rural communities." - Agribusiness Agenda 2021.

3.5 Telecommunications plays a vital and important role in national resilience, demonstrated most recently through our national response to Covid-19, as recognised by the Infrastructure Commission: The Covid-19 pandemic is a reminder

¹ <https://www.infrastructure.govt.nz/assets/Uploads/Infrastructure-Strategy-Consultation-Document-June-2021.pdf>; p. 34

² <https://www.tewaihanga.govt.nz/strategy/new-zealand-infrastructure-strategy/> p57

of the importance of a resilient, flexible and agile infrastructure system in rural and urban areas, as demonstrated, for instance, in the move to working from home, where telecommunications infrastructure has become a substitute for physical transport infrastructure.’³ It has also become a substitute for in person meetings, such as this Hearing.

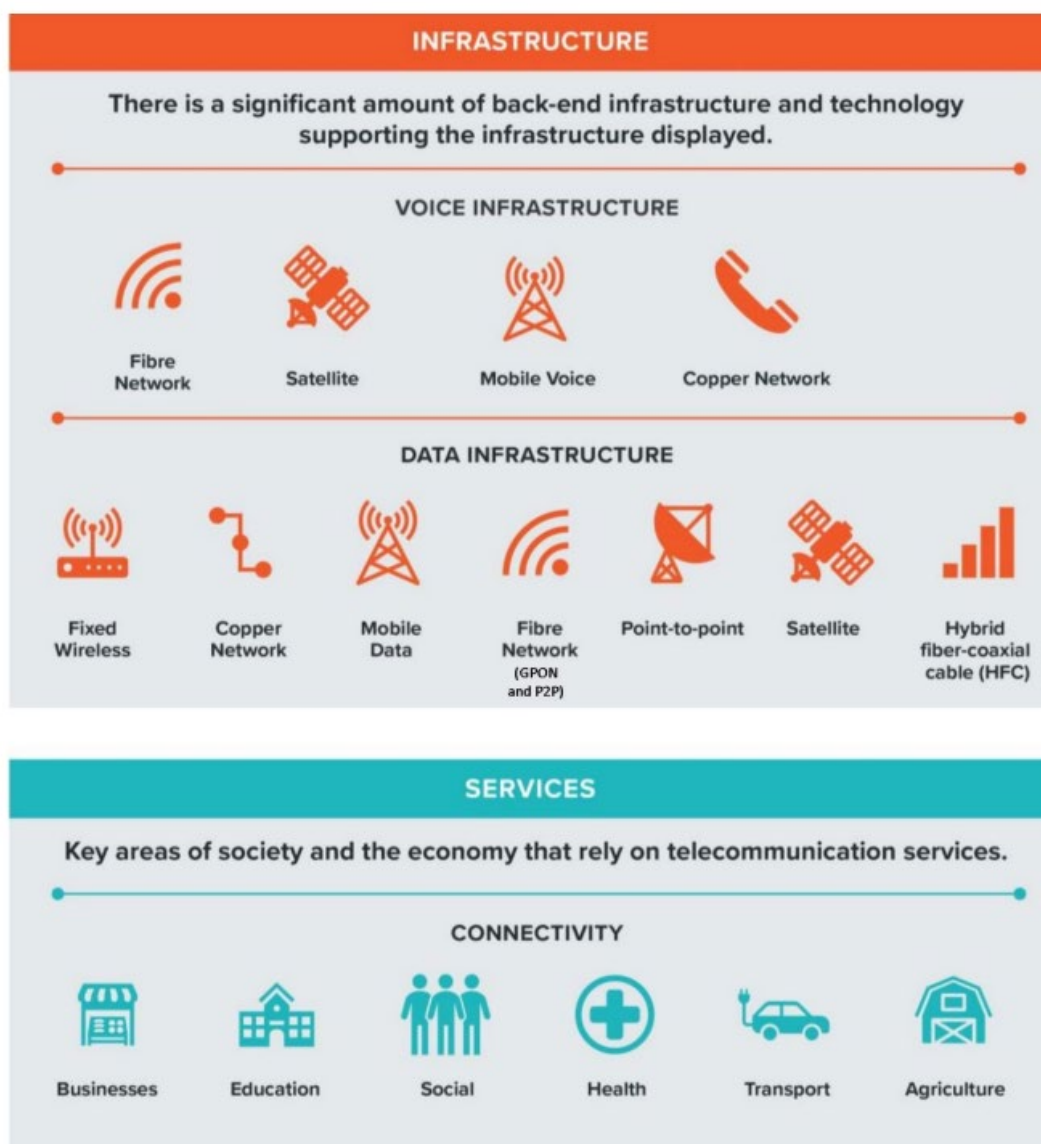
- 3.6 Telecommunications infrastructure is a key enabler of future technologies that are expected to be one of the solutions to many of today’s challenges, from climate change to lifting productivity and innovation including across the rural sector. It is also a key enabler of better use of other types of existing infrastructure and will support efficient deployment of new infrastructure. Telecommunications infrastructure could be considered the high-performing invisible infrastructure that underlines other sectors as the conduit to enabling connection, and the ever-increasing expansion of the Internet of Things (IoT).
- 3.7 A recent report by The Carbon Trust, commissioned by Vodafone Group, shows the potential for carbon emissions cuts fuelled by hybrid working (home and office based), using technology to reduce lengthy commutes and large office spaces, and deliver other societal benefits such as the potential for more efficient use of existing infrastructure stock⁴.
- 3.8 Our wireless telecommunications networks enable the provision of Emergency Mobile Alerts by the National Emergency Management Agency. These are messages about emergencies sent by authorised emergency agencies to capable mobile phones. The alerts are designed to keep people safe and are broadcast to all capable phones from cell towers within the emergency area. The alerts have been used numerous times for local and national emergencies, including nationwide alerts for the Covid-19 pandemic, to more localised emergencies such as flood event warnings to potentially affected people. The alerts are increasingly becoming the way by which significant emergency events and information are communicated to New Zealanders in an immediate and succinct manner. The rollout of 5G and digital technology that it enables is critical to a well-functioning rural and urban environment as it is widely expected to transform our communities and the ways in which we use other types of infrastructure⁵.

³ <https://www.infrastructure.govt.nz/assets/Uploads/Infrastructure-Strategy-Consultation-Document-June-2021.pdf>; p. 37

⁴ <https://www.nzherald.co.nz/sponsored-stories/83-million-ways-to-help-climate/NOMMPKDLWFJMF4G74LQDXU2KUU/>

⁵ <https://www.5gradar.com/features/what-is-5g-these-use-cases-reveal-all>

- 3.9 The telecommunications services that are relied on by many areas of society and the economy are provided via different types of infrastructure and technologies, as illustrated by the following graphic from the New Zealand Infrastructure Commission, State of Play: Telecommunications discussion document December 2020⁶



Source: New Zealand Infrastructure Commission, Te Waihangā and TCF

- 3.10 New Zealand has multiple layers of telecommunications networks (wireless, IoT and fixed line, plus satellite) and providers include:
- Wireless networks of Spark, Vodafone, 2degrees, and Rural Connectivity Group (RCG) (a joint venture between Spark, Vodafone and 2degrees). Chorus is a fixed line national fibre operator and also owns and operates the national copper network. Note that Spark and Vodafone also have large fibre networks.

⁶ <https://infracom.govt.nz/assets/Uploads/Telecommunications-State-of-Play-December-2020.pdf> Source: New Zealand Infrastructure Commission, Te Waihangā and TC

- Police network.
- Vital (ex TeamTalk) is the major provider of analogue and digital mobile radio in the country (used for handheld VHF communication devices).
- Satellite services via Farmside.
- Other fibre networks e.g. electricity lines companies or Transpower shared cables.
- Kordia owns and manages the broadcasting network in New Zealand, which includes FM radio.
- Johnston, Dick & Associates (JDA) operates a private television, radio and telecommunications network throughout New Zealand.
- Private networks e.g. Kiwirail.
- Wireless Internet Service Providers (WISPs) - 30 of these nationally providing local network services.
- Vertical and private networks via network slicing.
- International companies e.g. Starlink (SpaceX service), Amazon, Google.

3.11 Spark, Vodafone and 2degrees are the three national mobile network operators who each compete for customers over their own national network of cell sites, utilising radio spectrum licensed from the Government.

3.12 There are 80 organisations registered to build and/or operate telecommunications networks within New Zealand. Within the Porirua City the companies building or providing network are mainly Spark, Vodafone and 2degrees, Rural Connectivity Group, Chorus, Ultra-fast broadband and Powerco. As Starlink⁷ expands its service remote areas will be able to access satellite broadband services especially if one of the other operators are not able to provide service. Additionally, Spark, Vodafone and 2degrees established and jointly own Rural Connectivity Group ("RCG") to share a wireless network that will provide wireless coverage under a programme to extend mobile and wireless broadband coverage to remote areas of rural New Zealand as part of the Government's Rural Broadband Initiative.

3.13 Crown Infrastructure Partners manages projects worth \$1.7plus billion in Ultra-Fast Broadband (UFB), rural broadband and mobile coverage under the Rural Broadband Initiative phase two and Mobile Black Spots Fund (RBI2/MBSF). The Government's objective is to provide fibre-to-the-premise (FTTP) to 87% of New Zealanders by 2022. Under the UFB Programme, FTTP will be deployed to 1.8 million households and businesses in 390 cities including Porirua.

⁷ <https://www.starlink.com/>

- 3.14 The RBI2/MBSF programme will deliver improved rural broadband to more than 74,000 rural households and businesses and new mobile coverage for around 1,000 kilometres of state highways and more than 100 tourist destinations. The RBI2/MBSF programme will be substantially completed this year. UFB is one of the largest and most ambitious infrastructure projects ever undertaken in New Zealand. Currently the project has achieved “Fibre-to-the-home network” that reaches more than 85% of the population. Total Broadband coverage will have extended to 99.8% of the population by 2022 via fibre (UFB) and mobile/wireless (RBI/MBSF) coverage.
- 3.15 When it comes to fixed services provided over fibre lines, the industry structure is quite different. The local line networks are owned by wholesale companies such as Chorus, Enable and Ultra-Fast Fibre which must be separate from the retailers like Spark and Vodafone that provide services to customers. It is a bit like the network companies own and maintain the train tracks, while Spark and Vodafone run trains over these tracks.
- 3.16 Chorus owns the national copper line network, and most of the fibre network being built in cities and towns, under the UFB programmes. Chorus is the fibre network operator within Porirua City under the UFB programme.
- 3.17 The Infrastructure Commission in its report on the state of telecommunications in Dec 2021⁸ states
- “..inspite of the substantial progress the sector has made, there are still issues that create barriers to wellbeing for some New Zealanders. Not everyone can access telecommunications services. This may be due to factors such as access to devices, having the necessary skills, trust, motivation, or the cost of connectivity.*
- Similarly, in a sector dominated by private capital, it is not always economic to provide affordable infrastructure. Rural communities across New Zealand feel this most acutely. While significant progress has been made through Crown-Private cooperation and infrastructure sharing, the long-term solution to addressing internet connectivity for rural communities is not clear.*
- 3.18 As part of this regulation, telecommunications companies are required to pay an annual Telecommunications Development Levy, which is used to improve New Zealand's telecommunications infrastructure via programmes such as UFB and RBI2/MBSF.

⁸ [Telecommunications-State-of-Play-December-2020.pdf](#)

Spark

- 3.19 Spark is New Zealand's largest digital services company delivering mobile, fixed and IT products and services to millions of New Zealand consumers and businesses. Our vision for New Zealand is 'To help all of New Zealand win big in a digital world'.
- 3.20 Spark is a multi-brand business, with principal brands Spark (supporting home, consumer mobile and small business customers) and Spark Digital (supporting government and business customers with strong Cloud services, mobility and Information and Communication Technologies ("ICT") capabilities). Specialist and flanking brands include Skinny (consumer mobile and broadband), Revera and CCL (data hosting services), Digital Island (business telecommunications), Lightbox (internet TV), Qrious (data analytics), Bigpipe (consumer broadband and Spark Sport (sport streaming platform).
- 3.21 Fully privatised since 1990, Spark is listed on the NZX and ASX stock exchanges. Spark New Zealand contributes significantly to the community via the Spark Foundation, whose activities included the establishment of Givealittle (now sold), New Zealand's first 'zero-fees' online crowdfunding platform through which generous New Zealanders donate millions of dollars annually to thousands of charities and deserving causes. Spark Jump offers heavily subsidised broadband to families with school-aged children who cannot afford commercial broadband. Spark also supports a range of other education-focused initiatives by partnering with national not-for-profit organisations.
- 3.22 Spark is expanding the access to broadband services through Skinny Broadband, a prepaid service, and Wireless Broadband. All these wireless broadband services deliver a fast and reliable internet connection using 4G/4.5G mobile technology instead of a connection using the traditional copper line ADSL network. Spark aims to lead the race to deploy the next generation mobile network 5G technology in New Zealand. The Spark 5G Lab was primarily designed to be a collaboration space for New Zealand innovators and entrepreneurs. The lab showcases some of the possibilities and benefits of 5G such as robotics, virtual reality, facial recognition, IoT, smart cities, emergency services drones and driverless cars.
- 3.23 The New Zealand mobile market is growing. Success in wireless-based products and services is underpinned by our investment in the mobile network. The delivery of a 5G network is reliant on the availability of spectrum. We are also replacing the ageing Public Switched Telephone Network ("PSTN") with our new Converged Communications Network ("CCN"), which will enable richer and better customer

experiences with voice, video, and collaboration features over whatever Spark service is available at the moment customers want to use it.

- 3.24 Spark is a commercial partner in a number of international submarine cables including Southern Cross and its replacement Southern Cross Next for which construction has commenced, and Tasman Global Access. Currently Spark owns 1337kms fibre.
- 3.25 Sparks two low-power networks, with one of these now covering more than 98% of the population. One of these networks, referred to as LoRaWAN, is a Low-Power, Wide Area ("LPWA") wireless networking protocol for the Internet of Things ("IoT"). LoRaWAN network operates separately to the 5G/4G mobile networks. Our IoT capability is enabling a range of opportunities, such as Smart City Infrastructure, video surveillance, smart wearables, outpatient monitoring including voice and video features, metering, smart lighting and environmental monitoring, connected vehicles and trackers on industrial vehicles to monitor location of packages and condition of vehicles. Several interesting use cases for IoT sensors include in agribusiness to better manage farms, orchards and other agricultural use cases such as beehives. IoT enables businesses to adopt new technology that will give them the data and information they need to make better business decisions. Spark continues to provide a paging service network for emergency services such as New Zealand Fire Service, in particular volunteer fire officers in rural areas and health boards and customers for whom paging is also business-critical. The network is being upgraded and expanded for coverage.

Vodafone

- 3.26 Vodafone New Zealand is one of Aotearoa's leading connectivity companies that offers a range of broadband, mobile and technology products. Vodafone is focused on creating a better future for Aotearoa New Zealand through remarkable technology solutions that simplify lives and businesses and operate New Zealand's largest 5G network. Vodafone maintains almost three million connections with consumer, business, public sector and wholesale customers via Vodafone and FarmSide, New Zealand's rural broadband specialist. Vodafone help other Kiwi businesses to thrive by partnering with world-leading brands to offer best-in-class ICT services. Vodafone New Zealand is owned by Infratil and Brookfield Asset Management and are a partner market in the Vodafone Group, one of the world's largest telecommunications companies.
- 3.27 Vodafone have invested over \$1 billion in building and upgrading their mobile network. As the first telecommunications company to introduce 2G, 3G and then 4G, Vodafone

has a proud history of investing in innovative technology to deliver faster data speeds. Since 2012, Vodafone has partnered with the Government in helping ensure rural New Zealanders have better access to mobile coverage and data speeds through the Rural Broadband Initiative. As telecommunications continue to evolve, Vodafone have rolled and are expanding our 5G network technology, and developed platforms to support the nascent IOT (or Machine to Machine) applications that will facilitate massive change to the economy.

- 3.28 Vodafone's commitment to providing telecommunication services across New Zealand, is matched by their commitment to supporting communities across New Zealand. In 2002 Vodafone established the Vodafone NZ Foundation and have subsequently donated \$25 million to communities in need. The Foundation is also home to Instant Network, a suite of mobile devices that allows specially trained staff to establish local communications networks in disaster situations. Recent examples include the Christchurch and Kaikoura earthquakes, and the tropical cyclones in Vanuatu and Fiji.

Chorus

- 3.29 Chorus was formed on 1 December 2011 when it demerged from Telecom (now Spark). Structural separation of Telecom's retail business from the business that owns and operates the Fibre-To-The-Premise (FTTP) network was a pre-requisite for participation in the Government's Ultra-Fast Broadband programme ("**UFB**").
- 3.30 The UFB is one of the largest and most ambitious infrastructure projects ever undertaken in New Zealand. It will see around 87% of New Zealanders, in over 390 towns and cities, able to access fibre by the end of 2022.
- 3.31 Chorus is the Government's largest UFB partner and is contracted to deliver UFB to over 1,300,000 properties – approximately 69% of the entire UFB deployment.
- 3.32 The core of Chorus' business is the nationwide network of fibre optic and copper cables connecting homes and businesses together. The fibre network continues to grow rapidly with approximately 1,486,000 fixed line connections and 1,186,000 broadband connections. Cables typically connect back to local telephone exchanges, of which Chorus has approximately 600 nationwide.
- 3.33 The Chorus fibre network also connects many mobile phone towers and facilities owned by mobile service operators.

- 3.34 Chorus has committed to a significant, ongoing infrastructure investment, building a world-class fibre network across New Zealand in order to help bring economic and social benefits that come with access to high-speed reliable broadband infrastructure.
- 3.35 The successful rollout of the fibre infrastructure necessary to support the current UFB rollout and any future extension to the current footprint together is reliant on an appropriate and enabling regulatory framework.

4. WHAT IT MEANS TO BE A REGULATED INDUSTRY

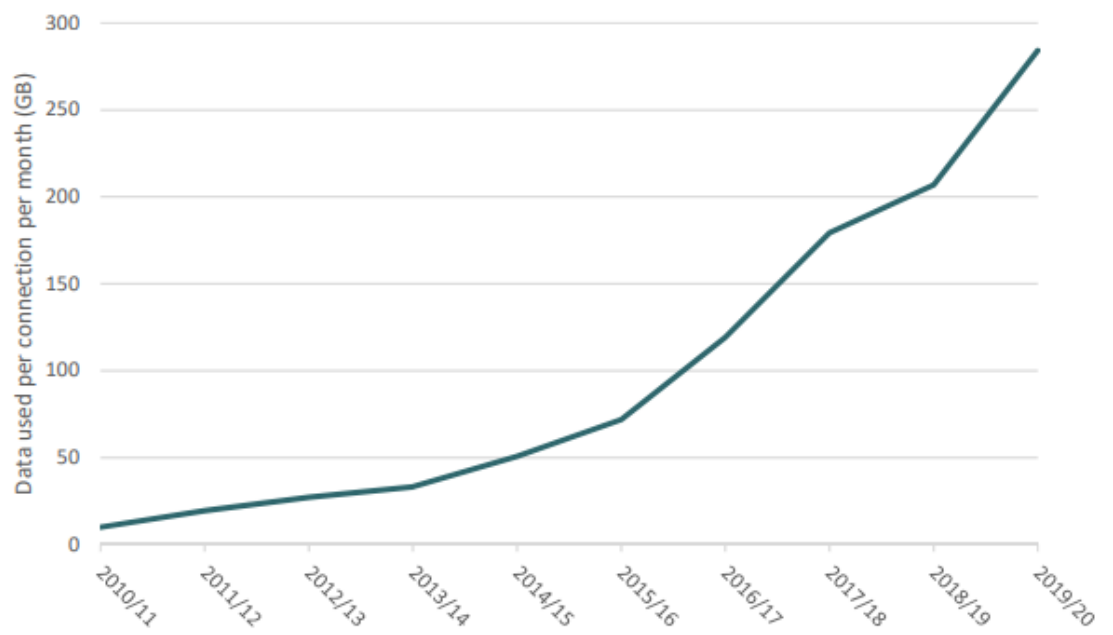
- 4.1 In New Zealand, telecommunications is a Commerce Commission regulated industry, with the aim to ensure competition in the market and diversity of connectivity access.
- 4.2 The Commerce Commission is the regulator of telecommunications as required under the Telecommunications Act 2001. The Commerce Commission has two primary functions.
- Regulate certain fixed-line and mobile services by setting the price and/or access terms for that service; and
 - Monitor and report on competition, performance and developments in telecommunications markets.
- 4.3 Both of these functions are focused on promoting competition and transparency in telecommunications markets for the benefit of consumers. In addition, the Commerce Commission is also responsible for allocating the exact amount telecommunications providers must pay in Government levies each year.
- 4.4 The Commerce Commission as the regulator of telecommunications works to ensure broadband and mobile markets are competitive through regulation of wholesale telecommunications services and monitoring how the retail market is performing. Annual monitoring reports⁹ are prepared, the latest report dated 2020, released in March 2021. Unlike the Electricity distribution industry, telecommunication companies have no geographic restrictions establishing networks, which is why there is for example three national mobile/wireless networks i.e. Spark, Vodafone and 2degrees. The following graph shows the continued high growth in data consumption on the fixed line networks¹⁰.

⁹ https://comcom.govt.nz/_data/assets/pdf_file/0030/247377/2020-Annual-Telecommunications-Monitoring-Report-Revised-version-16-March-2021.pdf

¹⁰ https://comcom.govt.nz/_data/assets/pdf_file/0030/247377/2020-Annual-Telecommunications-Monitoring-Report-Revised-version-16-March-2021.pdf

COVID-19 accelerates growth in fixed broadband data usage

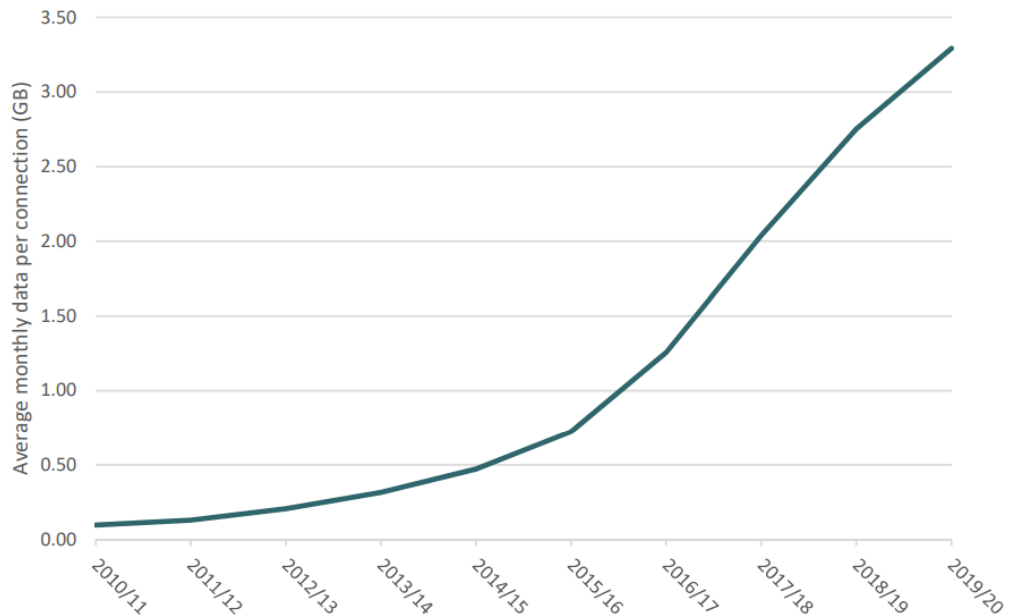
Figure 5: Average fixed-line broadband data consumption



4.5 Similar growth is seen on the wireless (mobile networks).

Mobile data consumption continues to grow

Figure 7: Mobile data consumption¹²



¹² Calculated based on connections who have used mobile data

- 4.6 Ministry Business Innovation and Employment (MBIE) is responsible for maintaining a robust regulatory environment for the ICT sector. The Telecommunications Act 2001 provides for investigations and reduce incentives for regulated parties to “game” the process or proceed slowly for strategic reasons’ (MBIE 2018).
- 4.7 The National Code of Practice for Utility Operators' Access to Transport Corridors (the Code) under the Utilities Access Act 2010, which has a process for requiring a local authority to comment and request information when a network utility is proposing to work in the road.
- 4.8 Regional Lifeline assessments and reviews including post specific significant events reports such as Christchurch earthquakes, provide recommendations for improving network resilience.
- 4.9 MBIE is the lead agency responsible for the NESTF and the 5 yearly reviews provided for under the RMA. Due to the Resource Management Reforms that review has been delayed. The 2013 review resulted in the 2008 NESTF being amended in 2016. The NESTF 2016 Regulation 57 makes it clear that natural hazard rules in district plans do not apply to a regulated activity under the NESTF 2016. This is because network

resilience is already factored into industry practice, and they will either avoid hazard areas or engineer structures to be resilient to the hazard risk including flooding, instability, earthquake, and climate change¹¹. The NESTF review discussion document explored the issue of natural hazards and asked for public feedback¹². The 2015 cabinet paper comments that no information was provided that demonstrated having councils involved would improve telecommunications resilience outcomes¹³.

- 4.10 Ministry for the Environment has provided research¹⁴ on effects-based approach of the RMA as a risk-based approach, using the risk management language of probability and impact. The RMA enables regional and district rules to be established for natural hazards. In the case of telecommunications, the Government has established under the NESTF no need for natural hazard rules to apply to regulated activities.
- 4.11 New Zealand Infrastructure Commission, Te Waihanga (Infracom) was officially formed on 25 September 2019. Infracom will be shaping New Zealand's future through infrastructure planning and investment via the 30yr Infrastructure Strategy and performance reporting on sectors such as State of Play; Telecommunications report released in December 2020. Reporting infrastructure investment is a way that the government via the commission will ensure that the public and private sectors are focused on investing to ensure NZ has the future infrastructure it depends for growth and to maximise the wellbeing of New Zealanders.
- 4.12 The Productivity Commission provides advice to the Government on improving productivity in a way that is directed to supporting the overall well-being of New Zealanders. Various investigations including technological change and the future of work¹⁵ explored the dependence on digital technologies and networks.
- 4.13 Local government via District Plan rules and administration of NESTF and National Code of Practice for Utility Operators' Access to Transport Corridors (the Code).

¹¹ <https://www.mbie.govt.nz/dmsdocument/1347-nestf-2016-draft-users-guide-pdf%20>

¹² Proposed amendments to the National Environmental Standards for Telecommunication Facilities: Discussion document, March 2015 page 31

¹³ https://environment.govt.nz/assets/Publications/aug2015-cabinet-paper-nestf-for-release_0.pdf

¹⁴ https://environment.govt.nz/assets/Publications/Files/NPS_Natural-Hazards-Framework_FINAL-Report-TT-June-2016.pdf

¹⁵ <https://www.productivity.govt.nz/inquiries/technology-and-the-future-of-work/>

5. IMPACT OF INTENSIFICATION AND BUILDING EXCEEDING THE PERMITTED BUILDING HEIGHT STANDARDS

5.1 The PDP intentionally allows antenna, whether they are building mounted or on a cell phone tower, to be at a permitted height which is at least 5m higher than the permitted building height in all zones. However, when a building exceeds the permitted height levels the impact on our networks are not recognised as a matter of discretion. This has a potential significant cost and impact on service provision to our customers.

5.2 When Spark and Vodafone submitted on the RMA Enabling Housing Supply Amendment Bill, now enacted, we undertook a high level potential cost impact of our networks in Tier 1 growth regions. The estimated impact was as follows:

- (i) Spark has 601 sites today within the Tier 1 areas, and of these 372 are poles with a height of less than 18.5m and therefore likely to be affected by the changes to the urban environment enabled by the Amendment Act.
- (ii) At \$250,000 a site, a relocation or replacement that could conceivably result in almost \$100million in additional costs to get mobile coverage back to the same performance levels as we have today.
- (iii) 220 of these poles are very likely to be materially affected as they also have residential premises within 35m of them, which means -irrespective of any performance degradation – we would need to relocate the sites because their electromagnetic emissions would be outside acceptable bounds. If we use \$250k as a relocation/replacement cost that's around \$55 million before we consider the additional costs of increased infill sites to mitigate coverage loss from higher dwellings.

The impact on the Vodafone network would be similar impacts, results in around \$55 million financial consequences.

5.3 We rely on regulatory frameworks both nationally, via the National Environmental Standards for Telecommunications Facilities 2016 (NESTF), and locally, via the Proposed District Plan, to protect the existing network and appropriately enable the upgrading of existing networks and construction of new networks. The permitted rules for height of new or upgraded telecommunication facilities are where possible to ensure that the antennas are of a height above the permitted building height to ensure:

- Radiofrequency emission compliance with the NESTF regulation 55
- Certainty of network coverage and capacity to service customer needs



5.4 While telecommunication network technology requirements are constantly changing and evolving at a fast rate, it remains expensive to have to relocate a site because of unanticipated changes in buildings due to permitted height infringements. Over height new or existing buildings can lead to the need to relocate an existing site, as the above diagram shows. For Spark nationally this occurs approximately 4 times a year costing on average \$250,000 to \$350,000 per site and between \$1.0 to \$1.5 million. Occasionally the loss of a site leads to replacement with 2 or more sites to achieve the same coverage footprint as it is increasingly difficult to acquire new locations especially in residential areas for a range of reasons:

- a. Physical environment e.g. contours of the locality, height of existing buildings or shelter belts/vegetation that interfere with coverage.
- b. Site characteristics e.g. wind, soil conditions, access to the site and power, slope of the property.
- c. Converting a streetlight pole under the NESTF to combined telecommunication facility may not be possible as the streetlights in new residential development are too low and narrow in width to achieve a permitted outcome.
- d. Opposition by residents to telecommunication facilities, even if permitted under the NESTF or the District Plan. Spark and Vodafone follow the TCF engagement guidelines when establishing new sites or undertaking significant upgrades in residential areas or near public facilities such as school or a childcare facility.
- e. Regulatory requirements i.e. development controls such as height and consideration of significant cultural sites or outstanding natural landscapes,
- f. Compliance with radiofrequency emission standards (NESTF).

- g. Build costs.
- h. Proximity to potential customers – generally the aim is to have within proximity to the customers.
- i. Access to appropriate property/s i.e. reasonable lease agreement with the owner/s.

5.5 The process to find new sites can be anywhere from 3 to 18 months. Complexity of this is partly given the wide range of disciplines involved in:

- Radio Frequency (RF) Engineers who predict expected coverage areas;
- Deployment Engineers;
- Civil Engineers;
- Acquisition Project Managers;
- Resource Management experts; and
- Property Consultant experts.

5.6 It is our experience that telecommunication infrastructure is not assessed as being an affected party nor are the impacts of the height infringement on our infrastructure reported on or taken into account. We do not understand why the impact on existing infrastructure of development is not taken into account. Our infrastructure is visually easy to see and locate without the need for the infrastructure to be mapped in the District Plan. It is our opinion impact on our regionally significant and critical infrastructure should be included in any professionally prepared resource consent application and assessment of effects. It is simple to contact us and start a conversation around any potential impacts on our network/s and explore solutions that will benefit any new development and ensure that our customers continue to receive the service they rightly expect.

5.7 Typically, a telecommunication facility (cell site) should be at least 3m to 5m above adjacent buildings – sometimes the telecommunications take the risk they don't think they will be built out due to existing site configuration e.g., large car park in front of commercial building. Permitted zone height is a factor considered when establishing a facility. A small height infringement can impact on the site's performance.

- a. The site antennas must be high enough to enable a device to have reasonable line of sight.
- b. Compliance with radiofrequency exposure standards (NESTF).
- c. Flexibility to design the facility to the coverage and capacity needs of locality impacted by the over height building.

5.8 We do not have examples of conditions that may be imposed on consents granted for a building height infringement that impacted a telecommunication facility. Depending on the scale of height infringement we would be seeking potentially:

- A decline;
- Explore options for the re-design of the building;
- Explore opportunities for the relocation of the telecommunication site;
- Compensation for the cost of relocation; and
- Opportunity to communicate and work with Council and applicant.

5.9 Generally, we only get to find out about new buildings that impact on our sites once construction starts, often via the real estate agent or construction workers raising concerns about being near a telecommunication facility. Our focus is ensuring health and safety and on-going customer connectivity.

6. COASTAL ENVIROMENTS & NATURAL HAZARDS – TELECOMMUNICATIONS LIFELINE UTILITIES

6.1 Telecommunications networks (being the whole network) are recognised as Essential Infrastructure and a critical lifeline utility under the Civil Defence Emergency Management Act 2002 (CDEM). Spark, Chorus and Vodafone are designated lifeline utilities both nationally and for the Wellington region. Under section 59 CDEM Act 2002 a lifeline utility is required to take *“all necessary steps to undertake civil defence emergency management”* and be able, under section 60, to function to the fullest possible extent, even though this may be at a reduced level, during and after an emergency.

6.2 We recognise that New Zealand depends on our construction and provision of resilient telecommunication networks especially during emergencies, as has been highlighted in the case of the Kaikoura and Canterbury earthquakes and more recent civil emergencies triggered by flooding. Telecommunications networks, along with the other critical networks such electricity have proven to be reasonably resilient¹⁶.

6.3 Wellington Region Emergency Management Organisation is one of the sixteen that operates under that National Civil Defence Management organisation. One of the functions of each CDEM group is to understand and manage risk in the context of their region i.e. Greater Wellington. The risk assessments and reporting is undertaken to provide a broad picture of the social, natural, built and economic environments in the region to get a better understanding how each natural hazard such as earthworks,

¹⁶ [canterbury-cdem-group-plan-updated-june-2018.pdf](#) page 29

flooding, landslips, liquefaction, avalanches, tsunamis, is likely to impact on the community and infrastructure that they rely on. The hazard assessments also review the risk of network failure such as electricity, fuel, telecommunications. As a lifeline organisation we provide information on our networks as part of the risk assessments and plan for and manage the range of emergency impacts identified relating to our networks.

6.4 As Lifeline Utilities we have developed and maintain response arrangements for the provision of service and response during an emergency event. New Zealand Lifelines Council (NZLC) and 15 Regional Lifelines Groups, New Zealand's lifeline utility organisations work together on projects to understand and identify ways to mitigate impacts of hazards on lifelines infrastructure. NZLC in 2017 undertook its first infrastructure vulnerability assessment which was updated in 2020¹⁷. This report highlights the resilience of our telecommunication networks and some areas for focus on improving resilience. Our network resilience comes from a variety of ways and is constantly evolving and learning from the events response assessments:

- multiple networks (different providers offering alternative networks) provide for redundancy.
- multiple technologies (fibre fixed networks available alongside mobile networks).
- robustness (design codes for strength) with specific engineering design and certification taking into account the natural hazard information available. Consultancy companies such as Aurecon and WSP provide design and engineering certification for each new site (includes guidance that influences new-site selection in regard to natural hazard risk and mitigation requirements) and upgrading existing sites. Refer in Appendix 2 to photos of examples of site variation due to local natural hazards including liquefaction at Christchurch airport.
- providers building their own networks with resilience in mind (building redundancy into their networks so that network component failures have a minimal impact).
- 111 emergency calls Commerce Commission in 2020 in preparation for the transfer of connections from copper to mobile and fibre networks finalised a 111 contact code that sets out mandatory requirements on the providers of

¹⁷ [nzlifelines Council-nva-2020-full-report.pdf](#)

certain telecommunications services with appropriate means of contacting 111 in the event of power failure.

- fleet of temporary network solutions such as Cells on Wheels (CoW) or Cell on Platform (CoP) photos in Appendix 3 to restore networks damaged during an emergency while the permanent asset is being repaired.
- commercial imperative to keep customers connected.

6.5 It is recognised that telecommunications are probably the most complex of the lifeline utilities given that users have access to multiple networks including the mobile networks of Spark, Vodafone, 2 Degrees and RCG and the fixed line fibre and copper networks of Chorus and in Porirua. The diversity of interconnected networks has the advantage that via automatic failovers arrangements between the operator's connectivity for customers will continue. NZLC has identified that the CDEM Act obligations on private operators' infrastructure such as telecommunications is difficult to measure or enforce for private companies. The Building Code does mandate standards around critical buildings housing telecommunications equipment, though design standards for other components of the network are not prescribed. Crown Infrastructure Partners as part of Government managed initiatives such as UFB 1 & 2 and RBI 1 & 2 rollouts or Blackspots initiative, does have a prescribed construction standard. Although there is no network construction standard outside those contractually managed by Crown Infrastructure Partners our networks are subject review and oversight including via:

- Commerce Commission as the regulator assess and reports on the industry annually looking at competition in, and the performance and development of, telecommunications in New Zealand¹⁸.
- Commerce Commission monitors asset quality in areas without competition.
- Ministry Business Innovation and Employment (MBIE) is responsible for maintaining a robust regulatory environment for the ICT sector. Telecommunications Act provides for investigations and reduce incentives for regulated parties to "game" the process or proceed slowly for strategic reasons' (MBIE 2018c).
- The National Code of Practice for Utility Operators' Access to Transport Corridors (the Code) under the Utilities Access Act 2010 a local authority

¹⁸ https://comcom.govt.nz/_data/assets/pdf_file/0030/247377/2020-Annual-Telecommunications-Monitoring-Report-Revised-version-16-March-2021.pdf

to comment and request information when a network utility is proposing to work in the road.

- Regional Lifeline assessments and reviews including post specific significant events reports e.g. Christchurch earthquakes, provide recommendations for improving network resilience.

6.6 The NZLC report noted that several critical components of the infrastructure such as a loss of a major exchanges such Spark's Mayoral Drive in Auckland could impact with resulting limitation from network failure perspective. For this reason, the three main network operators are heavily protected with redundant links and automatic failovers. Furthermore, there is major dependence on the electricity network, with critical infrastructure buildings such exchanges, data centres in the form of batteries and generators and most cell sites having backup electricity supply often in the form of batteries and the ability to connect to generators in an emergency. However, we note, if electricity outages are widespread and access to fuel is restricted after a reasonable period of time would impact telecommunications services. This highlights the critical importance to have a robust electricity supply network to other infrastructure and our communities.

6.7 Going forward new technology such as the ever growing LEO satellite networks solution of SpaceX via Starlink and other providers have the potential to offer further network resilience for telecommunication services in an emergency especially to rural and remote communities.

6.8 However, our experience of the telecommunications industry during civil emergency events is that it is extremely rare for customers to have no access to telecommunications when there is access to multiple telecommunication services. Evidence from the Christchurch earthquakes supports this, with most mobile services restored within 24 hours¹⁹. The industry has focused on ensuring our networks preparedness and response arrangements. In response to Climate Change especially there is change toward planning and investing for risk mitigation.

6.9 It is our experience and belief that regional and local authorities supported by the government (CDEM, MBIE, MfE) provide and should continue to provide public information on actual and potential natural hazards. This information is essential for our engineers to analyse when designing the proposed structure to meet the local conditions e.g. flood plains or geotechnical soil conditions.

¹⁹ The Treasury, Infrastructure Evidence Base, Telecommunications Sector. Published February 2014.
<https://treasury.govt.nz/sites/default/files/2017-12/nip-evidence-telecommunications.pdf>

- 6.10 We are not aware of any situations where our networks have been assessed by a Council as contributing to flooding or any other natural hazard situation. We have no evidence or information related to masts failing structurally during a flood event.
- 6.11 Even in extreme events such as the Kaikoura earthquake which snapped the fibre link, the resultant telecommunications outage was reasonably short. Since that event an additional alternative fibre link has been constructed.
- 6.12 It is therefore considered that in relation to network utilities operators there is no need for rules or a requirement for resource consent to be placed on the telecommunication facilities in natural hazard areas. The existing regulatory and industry engineering requirements and processes will ensure that the infrastructure is resilient.
- 6.13 The NESTF 2016 under Regulation 57 precludes any natural hazard rules from applying to regulated activities under the NESTF. Non-NESTF regulated infrastructure is not structurally different in design and integrity therefore what value will requiring a resource consent have when we must locate in an area to service customers subject to natural hazard/s? Council and the Government should be focused on providing up to date hazard information that our engineers can use to advise on locations for new infrastructure and structural design advice on mitigating and protecting the network from the hazards so that services our communities depend on continue to operate.

7. CONCLUSIONS

- 7.1 Telecommunications infrastructure is essential for shaping and enabling the future of Porirua and the Greater Wellington region by ensuring that residents and businesses continue to have the opportunity to be connected internationally and across New Zealand. Changes in the way people access and use telecommunications and data networks is rapidly evolving. It is critical that the regulatory framework provides certainty and enables efficient roll out of current and future technology.
- 7.2 While it is recognised that the telecommunication industry is complex and requires involvement of multiple company's, local authorities should be proactively working with the industry specially to support all customers to get access to the digital services they demand, without unnecessary regulatory intervention.

- 7.3 Having had the opportunity to review and reflect on the Network Utilities chapter objectives and policies Spark, Chorus and Vodafone accept that the framework is reasonable with the need to change as proposed in our submissions.
- 7.4 We appreciate the on-going and constructive engagement that Council and its consultants have undertaken during the development of the Infrastructure chapter. The chapter provides a practical framework to enable network utilities including telecommunications to meet the needs of Porirua City residents and our customers.

GRAEME MCCARRISON, COLIN CLUNE AND ANDREW KANTOR

19 January 2022

Appendix 1 – List of Registered Telecommunications Network Operators

The following are the Network operators (that build and/or operate network) under the Telecommunications Act 2001

1. Amuri Net Ltd(external link) – April 2013
2. Ashley Communications Limited – June 2021
3. Auckland University of Technology(external link) – July 2008
4. Backchat Limited(external link) – November 2018
5. Blue Reach Services Ltd(external link) – March 2016
6. Central Radio Services Ltd(external link) - March 2019
7. Chorus Ltd(external link) – November 2011
8. Christchurch International Airport Ltd(external link) – February 2010
9. Compass Communications Ltd(external link) – December 2005
10. Counties Power Ltd(external link) – May 2002
11. Dense Air NZ Ltd(external link) - May 2019
12. Enable Networks Ltd(external link) – November 2011
13. Enable Services Ltd - August 2007
14. Enhanced Solutions Limited(external link) – June 2017
15. Evolution Networks Limited(external link) – December 2018
16. Gisborne.Net NZ Ltd(external link) – March 2013
17. Hawaiki Submarine Cable New Zealand Limited(external link) – April 2015
18. Infrastructure Services Ltd – December 2018
19. Inspired Networks Ltd(external link) – October 2003
20. Ionica Limited – February 2017
21. KiwiRail Limited(external link) – March 1993
22. Kiwififi Limited(external link) – October 2016
23. Kordia Ltd(external link) – November 1990
24. Lightwire Limited(external link) – March 2013
25. Lrae Comms Group Limited(external link) – December 2016
26. Mainland Television Ltd(external link) – April 1997
27. Maitai Valley Limited – July 2019
28. Marlborough–Nelson Marine Radio Association Incorporated (external link) – February 2021
29. Metrolinx Limited(external link) – March 2012
30. Mount Campbell Connect Limited(external link) – June 2020
31. Nelspecs Limited(external link) – June 2020

32. Netspeed Data Limited(external link) – September 2018
33. Network Tasman Ltd(external link) – August 2005
34. Northpower Ltd(external link) – March 2008
35. Northpower Fibre Ltd – October 2012
36. Now New Zealand Ltd (external link) –October 2006
37. PowerCo Ltd(external link) – June 2001
38. PrimoWireless Limited(external link) – April 2017
39. RexNetworks Limited(external link) – August 2017
40. Rural Connectivity Group(external link) – December 2017
41. Satcom (NZ) Ltd – November 1996
42. Sky Network Television Ltd(external link) – May 1990
43. Skyline Networks NZ Ltd – March 2019(external link)
44. Smartlinx3 Ltd(external link) – September 2005
45. Southpark Utilities Ltd(external link) – June 2017
46. Spark New Zealand Trading Ltd(external link) – April 1989
47. StrataNet Limited(external link) – December 2013
48. Taitokerau Fibre Networks Ltd(external link) – June 2015
49. Taylor Communications Ltd(external link) – November 2015
50. TeamTalk Ltd(external link) – October 2001
51. Telnet Telecommunication Ltd(external link) – February 2017
52. Te Wānanga o Raukawa(external link) – November 2013
53. The Broadtech Group Ltd(external link) – February 2021
54. ThePacific.Net Ltd(external link) – September 2004
55. Trans Power New Zealand Ltd(external link) – August 1992
56. Tussock Networks Ltd(external link) – December 2018
57. Two Degrees Mobile Ltd(external link) – March 2002
58. Two Degrees New Zealand Ltd – May 2011
59. Uber Group Ltd(external link) – September 2018
60. Ultimate Mobile Ltd(external link) – November 2015
61. UltraFast Fibre Ltd(external link) – May 2011
62. Unison Fibre Limited(external link) – September 2011
63. Unison Networks Ltd(external link) – August 2009
64. Unifone New Zealand Ltd(external link) – May 2018
65. University of Auckland(external link) – July 2002
66. University of Canterbury(external link) – February 1998
67. Vector Communications Ltd(external link) – October 2000
68. Vector Ltd - September 2000

69. Velocitynet Ltd(external link) – February 2017
70. Venture Networks Limited(external link) – February 2021
71. Vital Data Ltd(external link) – July 1996
72. Vital Ltd – October 2001
73. Vocus (New Zealand) Ltd(external link) – October 2003
74. Vodafone New Zealand Ltd(external link) – August 1999
75. Waikato Networks Ltd - May 2011
76. WASP New Zealand Ltd(external link) – April 2009
77. WheroNet Ltd(external link) – May 2019
78. WIZwireless Ltd(external link) – April 2017
79. WombatNet Ltd(external link) - May 2020
80. Yrless Ltd(external link) – November 2014

