IN THE MATTER **of the Resource Management Act 1991**

AND

IN THE MATTER **of Proposed Far North District Plan**

Hearing 13 Hazards and Risks

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

FORTYSOUTH & ONE NEW ZEALAND GROUP LTD

AND

FIONA MATTHEWS FOR

CONNEXA LTD

30 MAY 2025

1. EXECUTIVE SUMMARY

1.1 Spark, Chorus, One NZ (formerly Vodafone), FortySouth and Connexa (Companies) along with other telecommunication providers, invest significantly every year in our networks to ensure New Zealanders have access to world class digital services. The core of Chorus' business is the nationwide network of fibre optic and copper cables connecting homes and business together. FortySouth build, own, and maintain the passive network assets (mobile pole and cabinets infrastructure for One NZ to attach their network equipment. Spark and 2degrees have a similar arrangement with Connexa. Spark and One NZ continue own and operate telecommunication network equipment including antennas and ancillary equipment, required to provide customers digital connectivity. The diagrams in appendix 1 give a general understanding of what each organisation is responsible for and highlights the split between passive structures owned by Connexa and Forty South and the active components of the Spark and One NZ wireless networks.

1.2 To enable this, we rely on regulatory frameworks both nationally, via the National Environmental Standards for Telecommunications Facilities 2016 (NESTF), and locally, via the Operative and Proposed Far North District Plans to appropriately enable the planning and funding for upgrading of existing networks and construction of new networks to support the growing Far North district population.

1.3 Our network requirements are constantly changing and evolving unlike any other infrastructure sector, as reflected in the fact that we commenced rolling out the new 5G networks in 2020 at the same time as completing the 4G network. New Zealanders and businesses completely depend on access to these networks, as proven during the current Covid-19 pandemic and resultant economic crisis. The Companies networks traverse and are in existing natural hazard environments.

1.4 The companies then have resilience requirements as essential infrastructure networks and lifeline utilities under the Civil Defence Emergency Management Act 2002 (CDEMA). Under section 59 of the CDEMA 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.

1.5 Government is in the process to replace the Civil Defence Emergency Management Act 2002. Submissions on an initial discussion document closed 13 May 2025.

Telecommunications are recognised as critical lifeline infrastructure. Critical infrastructure must be able to function and recover quickly to support the wellbeing of affected communities. Post `natural hazard event the timely restoration of power and communications is essential and should be prioritised.[1] The CDMA expects that critical infrastructure providers will maintain, upgrade and design networks that serve communities. This includes network that is in natural hazard areas or must traverse natural hazard environments. The natural hazard provisions are duplication of our obligations as critical infrastructure operators.

1.6 Telecommunications infrastructure has very small footprint e.g. a poles and cabinets. In our experience telecommunications infrastructure has not caused or contributed to the adverse effects of natural hazard events.

1.7 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 we see no value in requiring a resource consent, when we locate in an area to service customers that are subject to natural hazards. Council and the government should be focused on providing up to date hazard information to enable our consultant engineers to give the best available advice on locations for new infrastructure and structural design advice on mitigating and protecting the network from the natural hazards so that services our communities depend on, continue to operate.

1.8 Proposed amendments to the NESTF 2016[2] have been publicly notified by MfE, with submissions closing on 27 July 2025. Minister Chris Bishop his indicated that the amendments will be in place by the end 2025. The proposed amendments expand as permitted activity new poles for antennas into all zones other than residential. Consequently, these poles will be regulated by the NESTF and therefore exempt from natural hazard rules via Regulation 57.

1.9 We note that the proposed National Policy Statement for Natural Hazards (NPS-NH)[3] does not apply to infrastructure (as defined in the RMA) or any activities ancillary to these activities.

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[1] www.civildefence.govt.nz/assets/Uploads/documents/publications/reports/Strengthening-disaster-resilience-and-emergency-management.pdf

[2] https://environment.govt.nz/publications/attachment-1-5-proposed-provisions-amendments-to-the-resource-management-national-environmental-standards-for-telecommunication-facilities-regulations-2016/

[3] attachment-1.8-national-policy-statement-for-natural-hazards.pdf

INTRODUCTION

1.1 We presented corporate evidence and details of our experience and qualifications for Hearing Stream 11 Energy, Infrastructure and Transport. That evidence can be referred to if required.

Graeme McCarrison

1.2 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.

Colin Clune

1.3 My full name is Colin William Clune. I have been the Planning Manager, Fortysouth, a new independent digital infrastructure partner, founded in 2022. Until July I was the Resource Management Planning Advisor at One NZ New Zealand Limited (One NZ). A position I have held since October 2014. Previously, I was an in-house contractor for One NZ, (September 2010 to September 2014), where I advised One NZ on resource management and government matters. I am authorised to give this evidence on Fortysouth and One NZ's behalf.

Andrew Kantor

1.4 My full name is Andrew Robert Kantor. I am Environmental Planning and Engagement Manager at Chorus, where I been employed since 2015. I am authorised to give this evidence on Chorus' behalf.

Fiona Matthews

1.5 My full name is Fiona Elisabeth Matthews. I am the Planning & Engagement Lead at Connexa Limited (Connexa). I have held this position since October 202. Previously, I was a Planner for Spark New Zealand, (May 2018 to September 2022), where I advised Spark on resource management and regulatory matters. I am authorised to give this evidence on Connexa's behalf.

Scope of evidence

1.6 The key focus of our evidence is:

a. Introduce the telecommunications industry and the companies we represent.
b. What we build.
c. Telecommunications networks exemption from natural hazards requirements.

2. NESTF 2016

2.1 The following table summarises what telecommunications infrastructure is NESTF 2016regulated and exempt from District Plan natural hazard rules and non-NESTF subject to PDP natural hazard provisions. Note antennas and all operating equipment including batteries on poles or in cabinets plus any fencing is NESTF regulated.

Infrastructure	NESTF	Non-NESTF
Existing pole in the road for telecommunications lines	Yes	
New pole for telecommunications lines	No	Yes
In road convert existing pole to cell-site. Commonly streetlight and cell-site	Yes	
New pole in road or on Rural Zoned land for cell site	Yes	
New pole (cell-site) outside the road & non-rural zoned	No	Yes
Existing pole (cell-site) outside the road	Yes	
In a NESTF – Subpart 5 environment e.g. ONL, ONF, Heritage	Yes, for underground lines in the road in a sub-part 5 area	Only applies if there are rules in the District Plan

2.2 The largest footprint enabled is a 5.0m^2 cabinet outside the road and not on a residential zoned site. Commonly cabinets are around the 2.0m^2. Under the NESTF cabinets can be designed to accommodate flood hazards as shown in appendix 3. The companies recognise the importance of designing our networks to minimise disruption from natural hazards as set out in Section 3 below.

2.3 Proposed amendments to the NESTF 2016 have been publicly notified by MfE, with submissions closing on 27 July 2025. Minister Chris Bishop his indicated that the amendments will be in place by the end 2025. The proposed amendments expand as permitted activity new poles for antennas into all zones other than residential. Consequently, these poles will be regulated by the NESTF and therefore exempt from natural hazard rules via Regulation 57.

2.4 The proposed National Policy Statement for Natural Hazards (NPS-NH)[4] does not apply to infrastructure (as defined in the RMA) or any activities ancillary to these activities Infrastructure and primary production activities require a nuanced approach. The reason for the exclusion of infrastructure from NPS-NH include, "*linear infrastructure networks are likely to have sections of their networks that cross areas of differing hazard intensities creating issues in how the proposed NPS-NH would be applied. Another example being that there is often a functional or other needs for infrastructure development in high hazard areas*."

3. NATURAL HAZARDS – TELECOMMUNICATIONS LIFELINE UTILITIES

3.1 Telecommunication networks are critical lifeline infrastructure. We recognise that New Zealand depends on our construction and provision of resilient telecommunication networks especially during emergencies is critical, as has been highlighted in the case of the Cyclone Gabriel or the Kaikoura, Canterbury earthquakes and more recent civil emergencies triggered by cyclones and flood events. The Northland lifelines group shared work programme of activities aims to improve the resilience of Northland's lifeline infrastructure to hazards. Telecommunications networks structures and lines, along with the other critical networks have proven to be reasonably resilient. Lifeline networks recognise that there will hazard events that may disrupt services for short periods of time. As required as a lifeline utility we prepare for, respond to and recover from emergencies.

3.2 Telecommunications are recognised as Essential Infrastructure i.e. the whole network, and a critical lifeline utility under the Civil Defence Emergency Management Act 2002 (CDEM). Spark, One NZ, Chorus, FortySouth and Connexa are designated lifeline utilities both nationally and for the Northland 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.

3.3 Government (previous) introduced in June 2023 an Emergency Management Bill to replace the Civil Defence Emergency Management Act 2002. Submissions on the Bill closed in November 2023. The Select Committee is expected to report back in mid-2025. The Bill continues to recognise that Telecommunication is critical infrastructure. Critical infrastructure must be able to function and recover quickly to

[4] attachment-1.8-national-policy-statement-for-natural-hazards.pdf

support the wellbeing of affected communities. As with the CDEMA the Bill expects that critical infrastructure providers will maintain, upgrade and design networks that serve communities. This includes network is in natural hazard areas or must traverse natural hazard environments. The FNPDP natural hazard provisions are duplication of our obligations as critical infrastructure operators.

3.4 Northland Civil Defence Emergency Management Group 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. Far North and Northland. The CDEM Group Plan[5] recognises that Northland Lifelines Group (NLG) is a collective of lifeline utility organisations that help the CDEM Group to prepare for, respond to and recover from emergencies. 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, flooding, landslips, liquefication, avalanches, tsunami, is likely to impact on the community and infrastructure that they rely on. The hazard assessments also review the risk of network failure such electricity, fuel, telecommunications. As lifeline organisations 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.

3.5 New Zealand Lifelines Council (NZLC) and 15 Regional Lifelines Groups, excluding Chatham Islands, 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 2023[6]. This report highlights the dependence of New Zealand businesses and residents on telecommunication networks, 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).

[5] https://www.nrc.govt.nz/media/luegn0l3/northland-civil-defence-emergency-management-group-plan-2021-2026.pdf
[6] www.nzlifelines.org.nz/site/assets/files/1019/nva_part_b_main_report_v1_0_sept_2023.pdf

- 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 regarding natural hazard risk and mitigation requirements) and upgrading existing sites. Refer in Appendix 3 to photos of examples of site variation due to local natural hazards including liquification at Christchurch airport.
- providers building their own networks with resilience in mind (building redundancy into their networks so that network component failures have a minimum impact).
- 111 emergency calls Commerce Commission in 2020 in preparation for the transfer of connections from copper to mobile and fibre networks has finalised a 111-contact code that sets out mandatory requirements on the providers of 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 4 to restore temporarily replace network damaged during an emergency while the permanent asset is being repaired.
- commercial imperative to keep customers connected.

3.6 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, One NZ, 2 Degrees and RCG and the fixed line fibre and copper networks of Chorus and Northpower. The diversity of interconnected networks has the advantage that via automatic failovers arrangements between the operator's connectivity for customers will continue.

3.7 Post Cyclone Gabrielle the telecommunication industry via the New Zealand Telecommunications Forum (TCF) development a Plan - Enhancing Resilience in Telecommunications[7]. The plan firstly reflects on the challenges faced by telecommunications during the recent major natural hazard events and secondly outlines the actions required to address resilience that is needed by other sectors. Additional regulation is not going to address and ensure resilience.

3.8 Crown Infrastructure Partners as part of Government managed initiatives such as ultra-fast (UFB 1 & 2) and rural broadband infrastructure (RBI 1 & 2) rollouts or

[7] https://www.tcf.org.nz/news/2023-telecommunications-resilience-plan

Blackspots initiative, does have a prescribed construction standard. Although there is no network construction standard outside those contractually managed by National Infrastructure Funding and Financing (NIFF) our networks are subject to review and oversight including via:

- Commence Commission as the regulator assess and reports on the industry annually looking at competition in, and the performance and development of, telecommunications in New Zealand[8]. Commence Commission is in the process of gathering network resilience information from each telecommunication network operator.
- 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 information and communications technology (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 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. Cyclone Gabrielle, Christchurch earthquakes, provide recommendations for improving network resilience.
- MBIE as the lead agency with Ministry for the Environment is responsible for the NESTF and the 5 yearly reviews provided for under the RMA. 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 change[9]. The NESTF review discussion document explored the issue of natural hazards and asked from public feedback[10]. The 2015 cabinet paper comments that no information was provided that

[8] 2023-Telecommunications-Monitoring-Report-15-August-2024.pdf
[9] https://www.mbie.govt.nz/dmsdocument/1347-nestf-2016-draft-users-guide-pdf%20
[10] Proposed amendments to the National Environmental Standards for Telecommunication Facilities: Discussion document, March 2015 page 31

demonstrated having councils involved would improve telecommunications resilience outcomes[11].

- Ministry for the Environment has provided research[12] on effects-based approach of the RMA is 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.
- New Zealand Infrastructure Commission, Te Waihanga was officially formed on 25 September 2019. The 30yr Infrastructure Strategy is shaping New Zealand's future through infrastructure planning and investment and performance reporting on sectors such as State of Paper; Telecommunications report released in Dec 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.
- 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 work[13] explored the dependence on digital technologies and networks.

3.9 The telecommunications networks are dependence on the resilience of electricity network. Battery backup is provided to most cell sites. In the critical exchanges and other facilities have backup electricity supply often in the form of batteries and generators. Temporary generators are used to power cell-sites during electricity outages of more than a few days. However, we note, if electricity outages are widespread and access to fuel is restricted after a reasonable period of time would impact telecommunications services. In the situation that a cell-site cannot operate the operators use temporary facilities known as Cell of Wheels (COW) or Cell on Platform (COP), see appendix 3 for examples.

3.10 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

[11] https://environment.govt.nz/assets/Publications/aug2015-cabinet-paper-nestf-for-release_0.pdf
[12] https://environment.govt.nz/assets/Publications/Files/NPS_Natural-Hazards-Framework_FINAL-Report-TT-June-2016.pdf
[13] https://www.productivity.govt.nz/inquiries/technology-and-the-future-of-work/

network resilience for telecommunication services in an emergency especially to rural and remote communities.

3.11 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 hours[14]. The experience of the telecommunications industry during an emergency is that it is extremely rare for customers to have no access to telecommunications when there is access to multiple telecommunication services. Even in extreme events such as the Kaikoura earthwork which snapped the fibre link that telecommunications outage is reasonably short. Noting that since this event an additional alternative fibre link has been constructed.

3.12 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.

3.13 It is 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 analysis when designing the proposed structure to meet the local conditions e.g. flood plains or geotechnical soil conditions.

3.14 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 flooding and storm events.

3.15 It is therefore considered that in relation to telecommunication network utility operators there is no need for rules or a requirement for resource consent to be placed on the telecommunication facilities in natural hazard areas as proposed by FNPDP. The existing regulatory and industry engineering requirements will ensure that the infrastructure is resilient. 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 when we must locate in an area

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

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 advice 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.

3.16 On this basis, there is no need for a territorial local authority to further regulate the resilience of telecommunication networks. Such an approach has been accepted by Kaikoura District Council through their Plan Change 3 and Whangarei Plan Change 1, and is up for consideration in other current processes, including the Mackenzie PC28, Waimakariri Proposed District Plan, Proposed Wellington City District Plan and Nelson PC29.

4. TELECOMMUNICATION NETWORK CONTEXT

4.1 Modern telecommunication networks are about enabling the opportunity to create and connect data and provide digital services such as being able to communicate with family, friends and businesses or other services.

4.2 Every day, it is estimated that roughly 2.5 quintillion bytes of data are created globally. By 2025, the amount of data generated globally each day is expected to reach 463 exabytes. In 2019 the World Economic Forum estimated that the amount of data globally was 44 zettabytes in 2020. A zettabyte is 1,000 bytes to the seventh power (one zettabyte has 21 zeros). By 2025 the global amount of data is predicted to be 175 zettabytes. Some examples of the way data are generated or consumed include social media sites, financial institutions, medical facilities, shopping platforms, vehicles, and mobile calls, gaming, video conferencing, streaming films/series including via Netflix or YouTube and smart technology machine to machine.

4.3 The critical and essential nature of the telecommunications network infrastructure to a modern economy was only highlighted during the COVID-19 pandemic where a significant portion of people's businesses, working ability and life transitioned to an at home online set up. Overnight COVID-19 disrupted and changed the way we work, where we work, live and human interaction. Face to face meetings, travel (overseas and domestic), or meetings at a restaurant just stopped. Video conferencing via Zoom and Microsoft Teams gained critical importance even though neither was a new tool for digital communication. Long periods of time working and learning from home made the realities of living in a ‘digital world’ very real. Connectivity to those ‘invisible’ telecommunication networks that deliver the calls, digital services, internet to our

devices, were no longer a “nice to have” but essential and critical to economic activity and daily life wherever you were. Access to and awareness of the quality/speed of your connection became and remains today a topic of conversation and need especially for communities in rural or more remote locations.

4.4 The COVID-19 pandemic demonstrated just how much we rely on access to ‘public digital infrastructure’. A lack of, or limited access, to telecommunications for whatever reason is referred to as digital inequity.

4.5 Public digital infrastructure, even though privately owned and funded, is commonly used to describe telecommunication technologies, equipment and systems/networks that connect people, communities, businesses, and public infrastructure (including transport, social education, health) with data, products, and services. Our physical networks/infrastructure include fibre, satellites, IoT devices, high-powered computing facilities and data centres, to support telecommunication services such as the mobile network, fixed phone and broadband services and location-based services that enable the digital economy with access to data. This public digital infrastructure is critical and is fundamental to digital transformation of private and public (social and network) infrastructure if New Zealand is going to remain competitive internationally and face up to challenges such as climate change.

4.6 Telecommunication connectivity appears simple. For example, via my device I dial a phone number and I am connected. I can ask Siri or Google a question, and in a fraction of a second, I have an information response. The telecommunications network provides an invisible connectivity that the user does not need to understand. However, the invisible infrastructure is a complex, ever changing and expensive technology that has a lot of dependencies and components including cell towers, cabinets, cables, antennas, buildings with a variety of functions (i.e. switch software technology) and data centres for cloud services cooling systems. These components are connected as a global network which all come together to provide a seemly instant digital service for most users wherever they are. New Zealand’s networks are part of the global networks of connectivity on which we depend on a few international submarine telecommunication cables. Approximately 98% of our digital traffic travels via these submarine cables.

Digital connectivity underpins a number of services

4.7 Digital connectivity and services, provided by Spark, One NZ, Fortysouth, Connexa, and Chorus, underpin, and transform a range of services delivered by Local and Central Government and businesses alike, including (to name a few):

(a) Remote environmental sensing for early fire detection network in forests or areas at risk from fire. The 360-degree cameras and IoT sensors are continuously monitoring conditions, supported by Artificial Intelligence ("**AI**") analytics providing valuable real-time data on statistics such as air quality and ground temperature. Warning data is transmitted to Fire and Emergency New Zealand who can then act if appropriate.

(b) Smart pay apps on your device and other payment services including payWave.

(c) Infrastructure management i.e. monitoring movement and traffic flow, monitoring and managing water, electricity and other utility services including waste management providing customers real-time information.

(d) Monitoring and real-time reporting of air flow and quality; or water quality for swim ability or drinking; flood warning accompanied with real-time mapping and predictions.

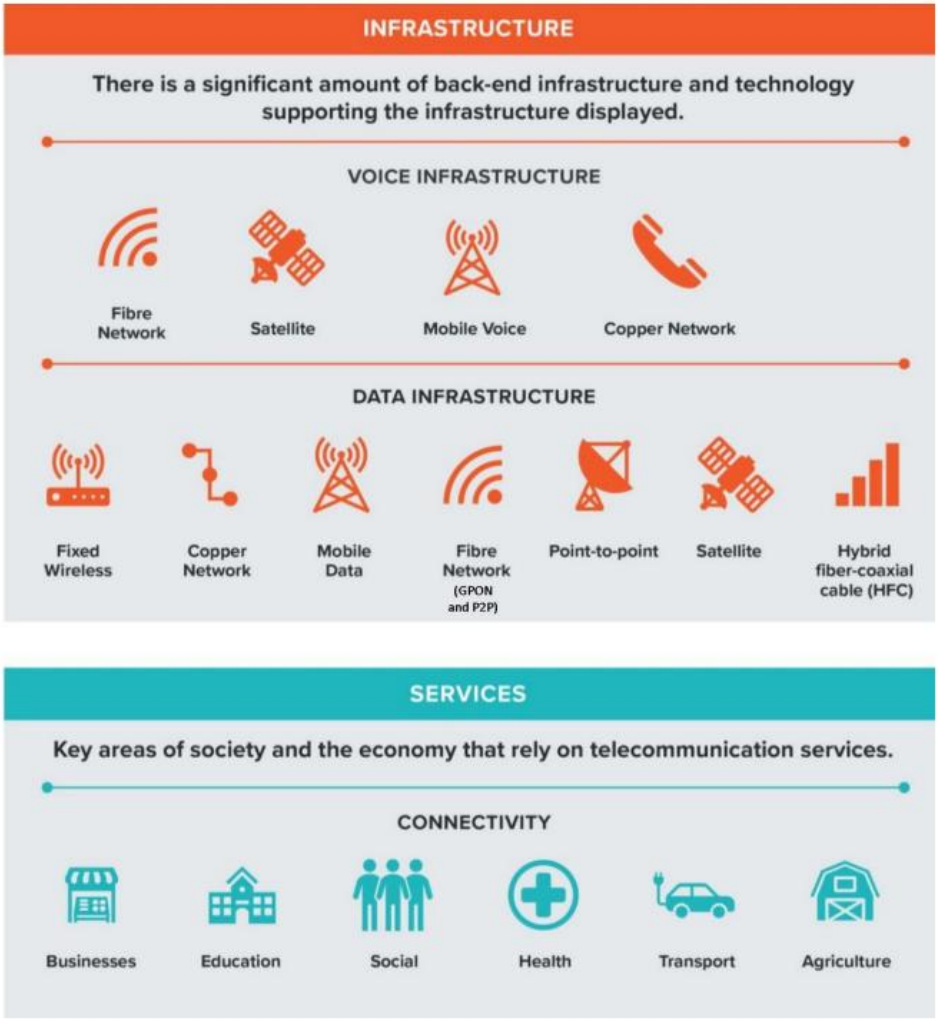
(e) Drones for monitoring especially in high hazard environments e.g. during a forest fire or a flood event when it is unsafe to fly other aircraft; reporting fires and managing search and rescue situations; mapping for hazards or size of forests for carbon credit assessments.

(f) Health and safety monitoring, for example GPS tracking sensors.

(g) Communication in all its forms from calling, text, social media, Microsoft Teams or Zoom to evolving VR meeting and collaboration interaction services in 3D platforms such as MeetinVR.

4.8 The telecommunications services that are relied on by many areas of society and the economy are provided via several different types of infrastructure and technologies, as illustrated in the diagram below by New Zealand Infrastructure Commission, State of Play: Telecommunications discussion document December 2020.[15]

[15] New Zealand Infrastructure Commission / Te Waihanga *State of Play: Telecommunications Discussion Document*, (December 2020) www.tewaihanga.govt.nz at page 9.



Source: New Zealand Infrastructure Commission, Te Waihanga and TCF

New Zealand's Telecommunication Networks

4.9 Rapid advances in technology are driving transformational changes as our products and services become increasingly important in the daily lives and businesses of New Zealanders. These advances have seen the telecommunications industry collectively investing on average $1.6 billion each year to deliver new services and network technology. The latest Commerce Commission industry monitoring report[16] shows the industry has invested $15.7 billion over the past decade. At the same time, fierce competition is delivering more value to consumers at lower prices, meaning New Zealand is now in the enviable position of having world-class networks and services, at below OECD average prices, for both fixed and mobile communications.

4.10 In mobile services, Spark, One NZ and 2degrees are the three major mobile network operators who each compete for customers over their own network of cell sites, utilising radio spectrum licensed from Central Government. Sometimes we can co-

16 Commerce Commission New Zealand / Te Komihana Tauhokohoko *Annual Telecommunications Monitoring Report 2021* (17 March 2022).

locate our electronic equipment on another operator's facility to save the cost of building a separate facility. Additionally, Spark, One NZ and 2degrees established and jointly own Rural Connectivity Group ("**RCG**"), a wireless network that is extending mobile and wireless broadband coverage to remote areas of rural New Zealand as part of the Government's Rural Broadband Initiative.

4.11 The national line networks are owned by wholesale companies such Chorus, and Northpower. Note that Northpower is a provider of fibre network in Far North. Chorus a network company provides fixed line connections within Northland. Retailers like Spark, and One NZ that provide customers connectivity for digital services via fixed, and/or wireless networks.

4.12 Chorus owns the national copper line network, and most of the fibre network built in cities and towns, under the Government-sponsored ultra-fast broadband ("**UFB**") programmes UFB 1 & 2.

Ultrafast Broadband

4.13 The Ultrafast Broadband (UFB) network comprises cable, duct and cabinet or exchange based electronics, to provide GPON (Gigabit Passive Optical Network) equipment and routing equipment, between the end customer the Point of Interconnect ("**POI**"). Multiple cables emanate from GPON locations to clusters of end users within a geographic area.

4.14 The UFB network is an open access network, which allows a variety of internet service providers and resellers to operate off the fibre network infrastructure, ensuring end users have a variety of choice as to the ISP as well as packages, pricing, and service levels on offer. Fibre is a future-proofed technology that offers a scalable, low-cost pathway to major ongoing performance upgrades. The UFB network is continually developed and expanded to meet demand within the existing coverage area and grown to meet demand where economically feasible.

Benefits of wireless telecommunications networks

4.15 Our wireless telecommunications networks have a number of benefits, including enabling the provision of Emergency Mobile Alerts by the National Emergency Management Agency. The alerts have been used numerous times for local and national emergencies, including:

(a) the COVID-19 pandemic; and

(b) natural emergencies such as fire or snow flood event warnings to potentially affected people, such as flooding in Nelson, Marlborough, and Westport areas and regularly in Otago for snow events. The alerts are becoming the means by which nationally significant events and information are communicated to New Zealanders in an immediate and succinct manner.

4.16 The rollout of 5G and the digital technology that it enables is critical to a well-functioning urban environment. It is widely expected to transform our cities and the ways in which we use other kinds of infrastructure.[17] 5G into the rural communities enables access to the 600Mhz band, which is particularly important for rural areas given its ability to provide 5G connectivity over greater distances, including 3.5GHz.

4.17 New Zealand has multiple layers of networks (wireless, IoT and fixed line, plus satellite) and providers include:

- Wireless networks of Spark, One NZ, 2degrees, supported by Connexa and FortySouth and Rural Connectivity Group (RCG) (a joint venture between Spark, One NZ and 2 degrees).
- Fixed line networks operated by Chorus nationally. Note that Spark and One NZ have large fibre networks of their own.
- Wireless Internet Service Providers (WISPs) – including StrataNet in the Northland
- International companies e.g. Starlink (SpaceX service), Lynx, Amazon, Google

4.18 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.

4.19 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 our productivity and innovation. The Climate Change Commission's final advice to the government for its emissions reduction plan notes precision agriculture as an example of the ways in which technology will help to improve efficiency and reduce environmental impacts in agriculture – it requires digital connectivity and networks to be possible[18].

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[17] Nicola Brittain "5G use cases: 31 examples that showcase what 5G is capable of" https://www.5gradar.com/features/what-is-5g-these-use-cases-reveal-all

[18] https://ccc-production-media.s3.ap-southeast-2.amazonaws.com/public/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa/Inaia-tonu-nei-a-low-emissions-future-for-Aotearoa.pdf; p. 306

4.20 The rollout of 5G and digital technology that it enables is critical to a well-functioning urban environment as it is widely expected to transform our cities and the ways in which we use other types of infrastructure[19].

Satellite

4.21 Telecommunication connectivity infrastructure continues to be fast evolving and ever changing as we integrate new technology to expand customer opportunity to connect when they want it anywhere. One of the newer frontiers is non geostationary constellations of multiple satellites that orbit earth. SpaceX Starlink service is one such global company that retail broadband services into New Zealand. Lynk Global is a satellite service provider that is expanding services into Aotearoa. Spark and One NZ have announced they will set providing satellite-to-mobile services. The first services expected in 2024 will be text to mobile phone/devices. It is worth remembering that the technology is still evolving, so the service and experience will improve and expand as the number of satellites in the sky increases. While satellite can't provide 100% coverage, as you need a clear line of sight to the sky to get connected. Satellite services adds an additional layer of resilience, particularly now, as we face increasingly severe and frequent weather events due to climate change. Once there are more satellites launched and the service is available more broadly, it will allow our mobile customers to start to use their phones in more areas that aren't reached by traditional mobile coverage.

4.22 Satellites are part of the integrated communications network solution and are not expected to replace the need for cell towers. A satellite has finite capacity (e.g. when a satellite service is used for making calls, connectivity is lost inside a building). Hence the continued need for cell towers. To address this, there will continue to be an increasing number of new infill cell towers constructed across Aotearoa, including in sensitive environments such as natural hazard areas, outstanding natural landscapes, or in the coastal environment.

4.23 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.'[20]

[19] https://www.5gradar.com/features/what-is-5g-these-use-cases-reveal-all
[20] https://www.infrastructure.govt.nz/assets/Uploads/Infrastructure-Strategy-Consultation-Document-June-2021.pdf; p. 34

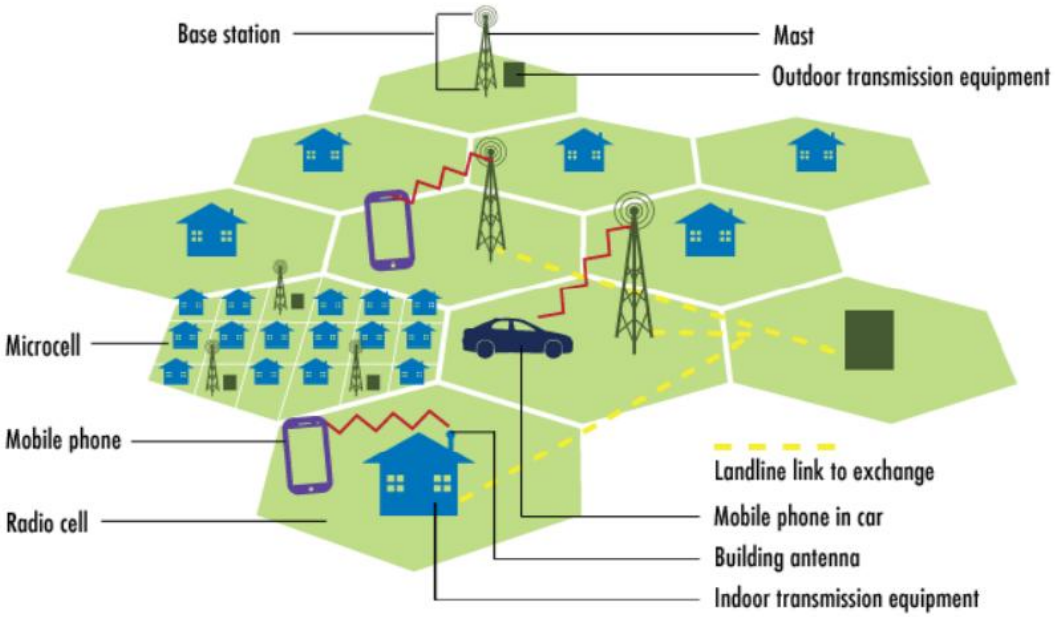
5. SCALE OF TELECOMMUNICATION NETWORK INFRASTRUCTURE

5.1 Telecommunications networks and facilities have a very small physical footprint as they are made of:

- Lines – copper and fibre attached to poles and underground.
- Poles to attach antennas and other equipment.
- Cabinets to house network equipment and batteries for resilience
- Electricity lines to provide power to operate a cell site.

Examples of telecommunications infrastructure is provided in appendix 2.

5.2 The following shows the basics of a mobile network.



6. CONCLUSIONS

6.1 Telecommunications infrastructure is essential for shaping and enabling the future of Far North district by ensuring that is residents and businesses 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.

6.2 Telecommunication network resilience to natural hazards is provided by avoiding the hazard in the first instance, but where the hazard cannot be avoided for the infrastructure to provide its function, designing the infrastructure to be as resilient as

possible to the hazard. The NESTF 2016 alongside other statutory obligations ensures that telecommunication infrastructure is designed for resilience to natural hazards or from recovery to be within a short period of time. Exempting telecommunications from the natural hazard requirements is consistent with the existing national direction. What would be of value from Council and central government is access to up-to-date natural hazard information.

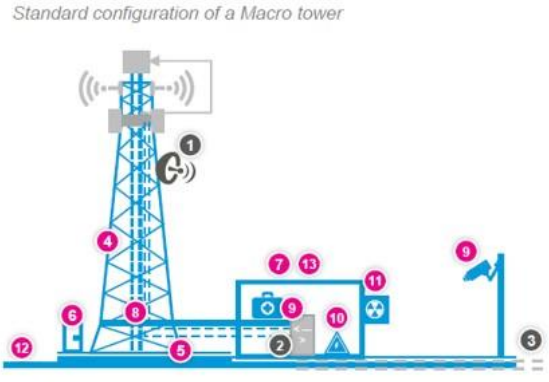
Graeme McCarrison, Colin Clune, Fiona Matthews, and Andrew Kantor

30 May 2025

Appendix 1 Passive and Active Network

Connexa

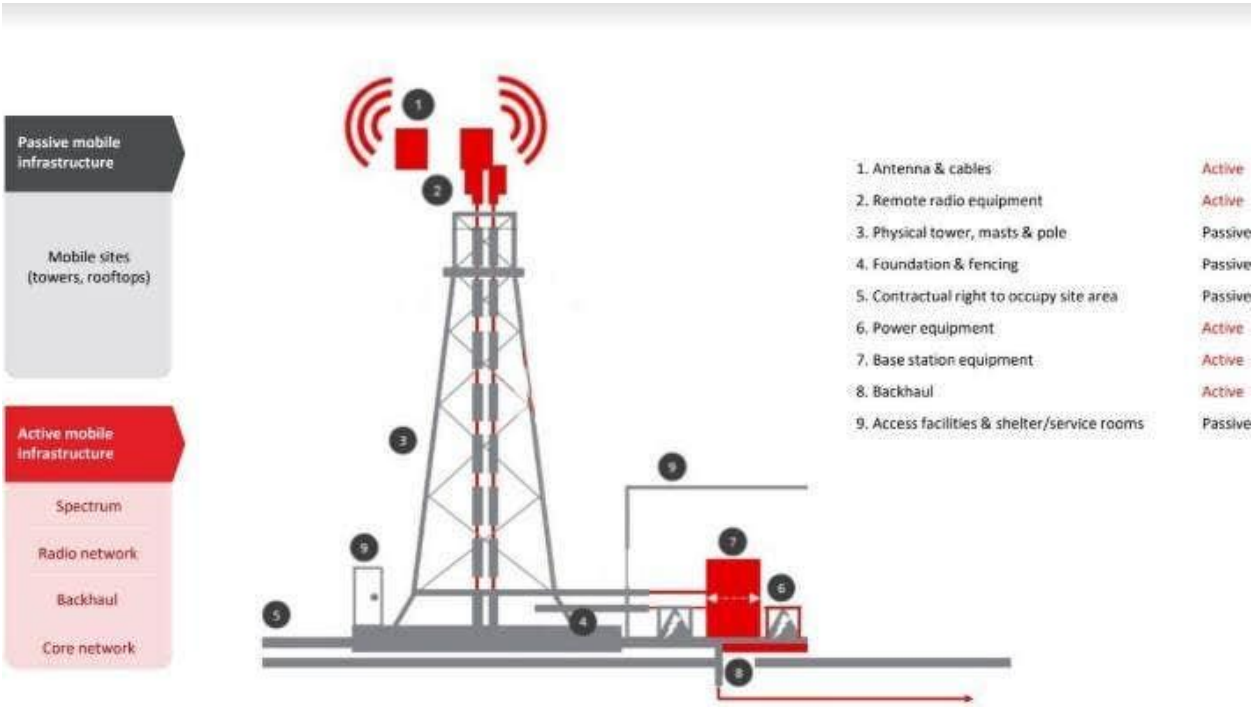
Spark / Connexa asset split on a typical macro tower



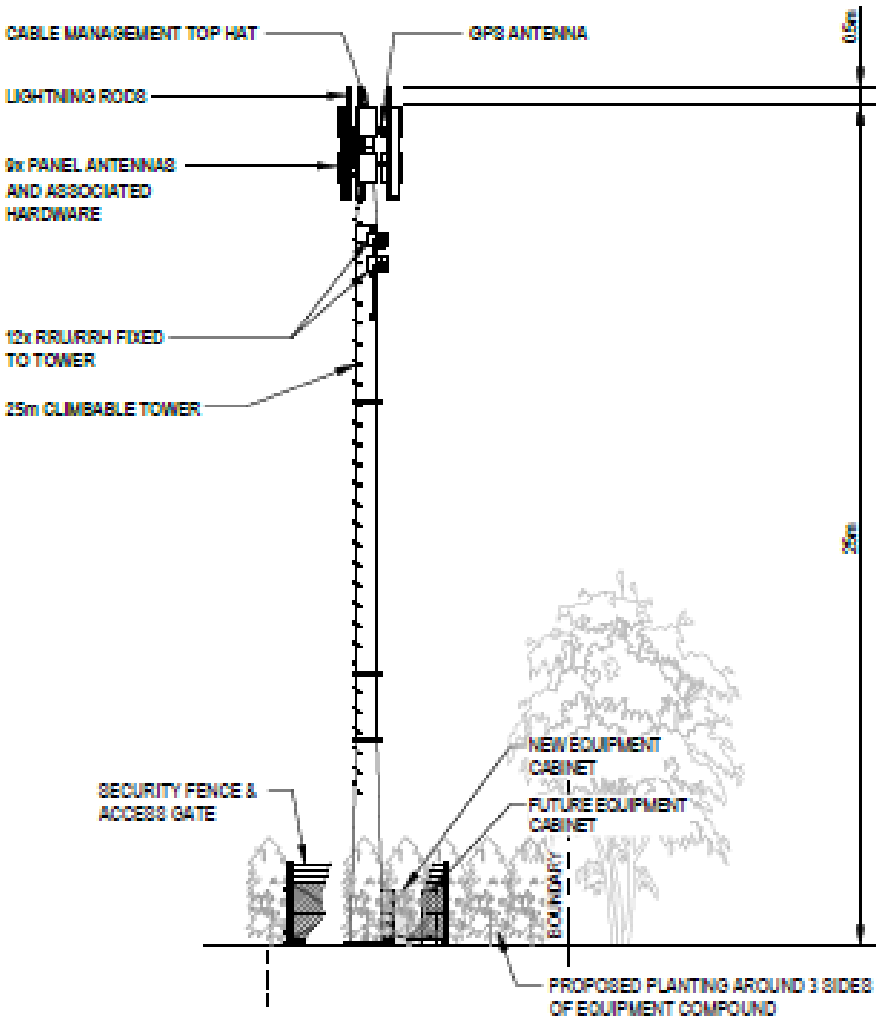
	Asset / Equipment	Ownership
1	Active radio-transmission equipment	Spark / third parties
2	Backhaul router	
3	Backhaul fibre	
4	Transmission masts and towers	Connexa
5	Fencing / gates	
6	Access facilities	
7	Huts (incl. rack space and cabinets)	
8	Rooftop walkways / ladders	
9	Fire suppression and security systems[2]	
10	DC power, back-up generators and batteries	
11	Airconditioning units	
12	Mobile only freehold sites	
13	Other passive equipment	

1

FortySouth



Appendix 2 –Telecommunication Network examples



SOUTH EAST ELEVATION

3 Wanaka Street Tikipunga – outside road consented for being over height.

New Plymouth in the road example with cabinets

Appendix 3

Examples of sites designed to mitigate natural hazards


GREEN


Hertz
DANGER

Appendix 4

Examples of Temporary sites – CoW and CoP

Cell on Wheels

Cell on Platform