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

AND

IN THE MATTER **Proposed Te Tai o Poutini Plan**

Hearing - Energy, Infrastructure and Transport

Te Pūngao, Te Tūāhanga and me Te Tūnuku

JOINT STATEMENT OF EVIDENCE OF

GRAEME MCCARRISON FOR

SPARK TRADING NEW ZEALAND LTD

AND

ANDREW KANTOR FOR CHORUS NEW ZEALAND LTD

AND

COLIN CLUNE FOR

ONE NZ GROUP LTD (FORMERLY VODAFONE NEW ZEALAND LTD)
AND

FORTYSOUTH

27 OCTOBER 2023

1. EXECUTIVE SUMMARY

1.1 Spark, One NZ (formerly Vodafone), Chorus, and FortySouth welcome the opportunity to provide this evidence. The core of Chorus' business is the nationwide network of fibre optic and copper cables connecting homes and business together. Since making the submission FortySouth has become responsible for, building, owning, operating, and maintaining the mobile tower infrastructure for One NZ to attach their network equipment. Spark and 2degrees have the same arrangement with Connexa. Spark and One NZ remain telecommunication network operators providing customers the opportunity for digital connectivity. The diagrams in Appendix 2 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 Telecommunications providers provide critical communications infrastructure that connects communities, promotes inclusivity, supports economic and environmental objectives, and is a critical part of our response to climate change. Telecommunications infrastructure is highly dynamic and - unlike other infrastructure sectors - our network requirements are changing and evolving constantly and at a fast pace.

1.3 In parallel, Spark and One NZ are currently rolling out new 5G mobile networks, deploying over 1,000 new mobile sites and extending network coverage to regional communities. Work has started on planning for the 6G network. Chorus continues to expand its fibre network in urban and small rural settlements. The continuous technology upgrades are needed to keep up with the increasing demand from consumers and businesses – exponential growth in the use of data is continuing and each year the amount of data handled by telecommunications networks roughly doubles[1]. Chorus, Spark, One NZ, and FortySouth, along with other telecommunication providers, invest significantly every year in our networks to ensure New Zealanders have access to world class digital services.

1.4 The companies would like to commend the officers on the engaging process to create the Proposed Te Tai o Poutini Plan. The opportunities workshop and provide feedback on early drafting versions of the Plan has we believe has resulted in a Plan that is practical and generally works well for telecommunications.

[1] The New Zealand Commerce Commission, *Annual Telecommunications Monitoring Report – 2021 Key Facts*, 17 March 2022

1.5 We rely on regulatory frameworks both nationally, via the National Environmental Standards for Telecommunications Facilities 2016 (NESTF), and locally, via the Operative and Te Tai o Poutini Plans, to appropriately enable the planning and funding for upgrading of existing networks and construction of new networks to support growth as well as to increase the resilience of the networks in response climate change and natural hazards.

1.6 It is to have the height of cell-sites to be 5m above the permitted building heights for a zone to ensure radio emission compliance with the regulation 55 of the NESTF. 25m in the General Industrial Zone is appropriate when the permitted building height is 20m.

1.7 Back-up generators are an important part of site design in remote areas and as we design hub sites for resilience during and post natural hazard events.

2. INTRODUCTION

Graeme McCarrison

2.1 My full name is Graeme Ian McCarrison. I am the Environment & Planning Manager at 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 35 years' experience in New Zealand and overseas. I was on the board of the New Zealand Planning Institute ("NZPI") between April 2018 and April 2022. 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 part of the team that received a best practice award for iwi engagement by NZPI in 2015.

2.3 During the last 38 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. I have worked the last eight years in the telecommunications sector. Prior to Spark I held the equivalent position at 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 proposed Unitary Plan process, I led and facilitated the combined approach of the Auckland Utility Operators Group (Spark, Chorus, Vodafone, Counties Power and Vector) over the four years of our involvement.

2.4 I continue to co-ordinate a wider group of network utility organisations with interests in Auckland and nationally. I organise a shared approach and resources that enables Spark, FortySouth, One NZ, Connexa and Chorus to be involved at a national level in every relevant Plan reviews which currently comprises 23 plan reviews including: Horizons, Gore, Wairarapa, Wellington City, Dunedin, Gisborne, New Plymouth, Timaru, Selwyn, Waimakariri, New Plymouth, Timaru, McKenzie, Waitaki, Waikato, Far North, Napier and Nelson. In addition we are engaged with the Future Development Strategies across NZ.

2.5 I represent the Telecommunications Forum (TCF) on the Technical Advisory Group for the NESTF alongside my colleagues Andrew Kantor – Chorus, Colin Clune – FortySouth, Fiona Matthews Connexa, and Robert Munroe – 2degrees. Since the NESTF 2016 amendments, the group made up of representatives from the Ministry of Business, Innovation and Employment, Ministry for the Environment ("MfE"), and Local Government New Zealand meet at least annually to discuss and review the effectiveness of the National Environmental Standards for Telecommunication Facilities Regulations 2016(NESTF). The NESTF has been integrated to the draft Transitional National Planning Framework (dTNPF) under the Proposed Natural and Built Environments Act. Chapter 13.2 of the dTNPF contains standards for telecommunications facilities.

2.6 I have submitted on behalf of Spark and/or combined with Chorus (Andrew Kantor) and/or One NZ/Vodafone (Colin Clune) on a wide range of Resource Management Act and Resource Management reform documents including:

a. Spark, Connexa and Vodafone Submission - Spatial Planning and the Natural and Built Environment Bills, February 2023.

b. Spark Trading New Zealand Limited and Vodafone New Zealand Limited Submission - Resource Management (Enabling Housing Supply and other matters) Amendment Bill, November 2021.

c. Spark Trading New Zealand Limited and Vodafone New Zealand Limited Submission - Natural and Built Environments Bill Exposure Draft, August 2021.

d. Spark Trading New Zealand Limited and Vodafone New Zealand Limited Submission - Urban Development Bill, February 2020.

e. Spark Trading New Zealand Limited Submission - Proposed National Policy Statement Urban Development, October 2019.

f. Spark Trading New Zealand Limited - Submission National Policy Statement for Highly Productive Land, October 2019.

g. Spark Trading New Zealand Limited Submission – Te Waihanga/Infrastructure Commission Infrastructure for a Better Future, July 2021.

h. I represented the telecommunications industry on the MfE established project and working group to draft a potential draft National Planning Standards for

Network Utilities, which first met on the 12 October 2016. However, the change in government in November 2017 meant that MfE's work programme, priorities and budget commitments did not include the National Planning Standards for Network Utilities ("dNPS-NU") project. In February 2018 it was confirmed by MfE that funding was no longer available for the independent consultant. Post February 2018, I co-ordinated the project working group of experts and specialist knowledge from in-house and external professionals representing a range of network utilities including telecommunications, rail, electricity distribution, gas transmission, 3 waters, road transportation which continued to fund and develop as draft provisions until early 2020. The work has in part been adapted into the Transitional National Planning Framework under Chapter 13.2.

Colin Clune

2.7 My full name is Colin William Clune. I am the Resource Management Manager at FortySouth, previously I held a similar a position at One NZ/Vodafone since October 2014. I was an in-house contractor for Vodafone (September 2010 to September 2014). I advise FortySouth and One NZ on resource management and government matters. I am authorised to give this evidence on FortySouth and One NZ behalf.

2.8 I hold the qualifications of Bachelor of Urban Planning and Master of Planning from the University of Auckland.

2.9 I am currently on the Technical Advisory Group for the NESTF amendments. I am also a participating member of the New Zealand Telecommunications Forum, working to efficiently resolve regulatory, technical and policy issues associated with network telecommunications.

Andrew Kantor

2.10 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.

2.11 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.

2.12 I have 15 years of resource management experience, comprising of roles for various infrastructure providers in New Zealand and overseas.

2.13 I am currently on the Technical Advisory Group for the NESTF amendments. I am also a participating member of the New Zealand Telecommunications Forum, working to efficiently resolve regulatory, technical and policy issues associated with network telecommunications.

Scope of evidence

2.14 This statement of evidence covers the following areas:

a. Telecommunication in New Zealand.
b. National Environmental Standards for Telecommunication Facilities
c. Network Height
d. Temporary Activities
e. Back-up generators

3. TELECOMMUNICATION IN NEW ZEALAND

3.1 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.

3.2 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.

3.3 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.

3.4 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. The consequences of digital inequity are explored in later sections of this evidence.

3.5 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.

3.6 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 (ie 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

3.7 Digital connectivity and services, provided by Spark, One NZ and Chorus, underpin and transform a range of services delivered by 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 take action if appropriate.

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

(c) Infrastructure management ie 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.

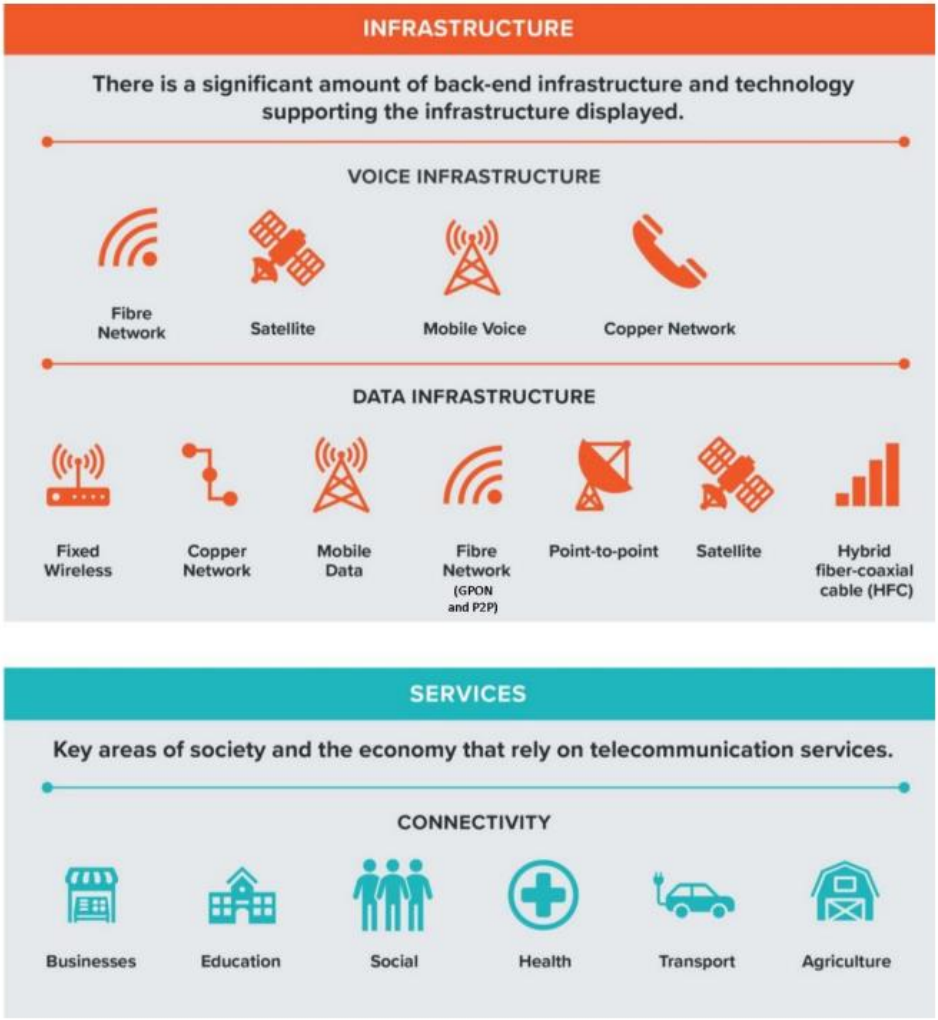
(e) Drones for monitoring especially in high hazard environments e.g. during a forest fire or a flood events when it is unsafe to fly other aircraft; reporting fires and managing search and rescue situations; mapping for hazards or size of forests for carbon credit assessments.

(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.

3.8 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.[2]

[2] 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

3.9 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[3] 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.

3.10 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,

3 Commerce Commission New Zealand / Te Komihana Tauhokohoko *Annual Telecommunications Monitoring Report 2021* (17 March 2022). **Error! Hyperlink reference not valid.**

utilising radio spectrum licensed from Central Government. Sometimes we are able to co-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.

3.11 The national line networks are owned by wholesale companies such Chorus, Enable and Tuatahi First Fibre (previously Ultra-Fast Fibre). Chorus is the line network company providing fixed line connections within the West Coast. Retailers like Spark, and One NZ that provide customers connectivity for digital services via fixed, and/or wireless networks.

3.12 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

3.13 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.

3.14 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

3.15 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.

3.16 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.[4] 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.

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

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

3.18 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.

3.19 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

[4] Nicola Brittain "5G use cases: 31 examples that showcase what 5G is capable of" (5Gradar, 9 September 2021). **Error! Hyperlink reference not valid.**

efficiency and reduce environmental impacts in agriculture – it requires digital connectivity and networks to be possible[5].

3.20 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[6].

Satellite

3.21 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.

3.22 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 outstanding natural landscapes, or in the coastal environment.

3.23 The Infrastructure Commission's discussion document on Infrastructure for a Better Future recognises the critical nature of telecommunications infrastructure. The report

[5] 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
[6] https://www.5gradar.com/features/what-is-5g-these-use-cases-reveal-all

notes that 'Increasing reliance on communications makes telecommunications infrastructure more critical.'[7]

4. NATIONAL ENVIRONMENTAL STANDARDS FOR TELECOMMUNICATIONS FACILITIES

4.1 We rely primarily on the regulatory framework of the NESTF to upgrade the existing network and build new telecommunications infrastructure in roads and in rural zoned areas. Significant elements of telecommunication networks are provided for as permitted activities, reflecting their importance as a significant physical resource. However, regulated activities not complying with the relevant permitted activity standards in the NESTF remain subject to the relevant district plan. This essentially means that all new cell-sites (pole with antennas) outside the road and rural zones depend on being provided for in District plans. Once a cell-site is established the maintenance and upgrading is covered via the NESTF. Further, subpart 5 of the NESTF identifies certain types of district plan rules relating to sensitive natural and built environments which still apply to regulated activities and where resource consent would otherwise be required in the relevant district plan.

4.2 Poles, antennas and cabinets are subject to all of these controls, whilst customer connection lines, aerial lines following existing telecommunications or power lines and underground lines may only be subject to some of these matters depending on circumstances. It is critical that District plans are clear on how they regulate telecommunications not controlled under the NESTF.

4.3 As set out in Mr Horne's evidence, District Plan rules still apply to regulated activities in regard to the following:

(c) Regulation 44 – Trees and vegetation in road reserve;
(d) Regulation 45 – Significant (scheduled) trees;
(e) Regulation 46 – Historic heritage (including cultural heritage);
(f) Regulation 47 – Visual amenity landscapes (e.g. significant ridgelines, view shafts etc);
(g) Regulation 48 – Significant habitats for indigenous vegetation;
(h) Regulation 49 – Significant habitats for indigenous fauna;
(i) Regulation 50 – Outstanding natural features and landscapes;

[7] https://www.infrastructure.govt.nz/assets/Uploads/Infrastructure-Strategy-Consultation-Document-June-2021.pdf; p. 34

(j) Regulation 51 – Places adjoining the coastal marine area (in regard to specific coastal protection rules such as coastal yards etc); and

(k) Regulation 52 – Rivers and lakes (the regulations do not apply to works in, on, under or over the bed of any river, except, that they apply to anything done over a river or a lake such as on a bridge).[8] Regulation 52 confirms that any relevant regional rules apply in addition to the regulations that may be relevant.

4.4 Given the above, we constantly face challenges as a result of councils administering the NESTF particularly when it comes to determining which or if any regional or district plan provisions apply to a proposal. It can be difficult and complex especially when a proposal is in one or multiple sensitive environments (NESTF Subpart 5 environments). Consistency across the national, regional and district planning frameworks is fundamental to the industry having certainty and clarity around what is supported and enabled in each region.

4.5 A clear example of the way the NESTF constrains telecommunications infrastructure is the recently constructed new fibre link between the West Coast and Otago via Haast Pass. This new cable was required to increase to fibre diversity and resilience for both regions and to support the construction of RBI2 cell sites constructed by Rural Connectivity Group (RCG). The fibre cable is generally within the road corridor and was therefore permitted under the NESTF even through the route traversed many sensitive environments and natural hazard areas. In this project, many of the RCG sites were constructed in the road environment to avoid the complexity of the planning provisions which would apply if the cable were to traverse a sensitive environment.

5. NETWORK HEIGHT

5.1 As set out in this evidence above, the telecommunication network technology requirements are constantly changing and evolving. We rely on the NESTF and district plans 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 an effective 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

[8] National Environmental Standards for Telecommunications Facilities 2016, Regulation 8.

5.2 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 increased development and building height. The common reasons for relocation being required include where changes to property ownership leads to a lease being terminated or a new building is constructed that blocks some of the coverage footprint of a cell site. For Spark/Connexa, each time a site has be relocated or significantly rebuilt it costs on average $350,000 per site. The process to find new sites can be anywhere from 3 to 18 months. Complexity of this is partly due to the wide range of disciplines involved, including engineers, project managers, resource management experts, council, mana whenua and the community.

5.3 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 and rural locations in sensitive environment overlay 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, fibre and power, geotechnical conditions and slope of the property;
(c) Finding a new landowner to establish a site and in agreeable position for both parties;
(d) Opposition to telecommunication facility by residents, even if permitted under the NESTF or the various Otago planning documents;

(e) Regulatory requirements i.e. development controls such as height and consideration of significant cultural sites or outstanding natural landscapes, or tower height restricting the opportunity for colocation of multiple operators.

5.4 Industrial, Commercial and Mixed Use zones are the locations that the industry has constructed taller and larger cell-sites. Commonly the height of these facilities is up to 25m. To ensure radio emission compliance with regulation 55 NESTF we prefer to build new and upgrade existing cell-sites to be 5m above building height. Within the General Industrial zone building are permitted to 20m. Consequently, increasing the permitted height for cell-sites to 25m in our opinion is a sensible change. Further 25m provides the opportunity to have a 25m pole and headframe that enables the facility to accommodate multiple operators away from residential areas. The height of these facilities delivers a larger coverage footprint, which is essential in less densely populated urban areas. The Industrial zones have the ability to absorb the effects of 25m tall infrastructure.

5.5 Existing 25m & 30m cell-sites in various zones in the West Coast include:

- Ross Tower - located off Ross Beach Road is 30m tall, located in the mineral extraction zone.
- Kumara Township - located off Seddon Road is 25m tall, located in the open space zone.
- Lake Brunner - located off Cashmere Bay Road is 30m tall, located in the general rural zone.
- Dobson - located off Taupo Terrace Road is 25m tall, located in the general industrial zone.
- Blackball - located off Taylorville Blackball Road is 25m tall, located in the general rural zone.
- Barrytown - located off Cargill Road is 30m tall, located in the general rural zone.

Attached in appendix 2 are photographs and plans for various 25m cell-sites including Dobson and Kumara township.

5.6 It should be noted that Chapter 13.2 of the dTNPF contains standards under rule. 13.2.33 New telecommunications poles with antennas: permitted activity that provide for permitted heights up to 25m in commercial, industrial and rural zones 30m is permitted where there are 2 or more users of the same pole. The Council are seeking only 25m for the General Industrial, so a little bit more relaxed than the dTNPF.

6. TEMPORARY TELECOMMUNICATION FACITIES

6.1 The companies regularly deploy temporarily mobile sites to support local events, temporary replacement of facilities while reconstructed or a new location can be acquired, and the facility constructed. These facilities know as CoW (Cell on Wheels) or CoP (Cell on Platform) have heights up to 18m currently, refer to appendix 3. These are essential to provide additional capacity to support a large event or natural hazard recovery from local event which are not always subject to a declaration. These facilities have independent power supply or the ability to be plugged into the mains. The companies requested change in INF-R4 to provide for up to 12 months for the deployment of a temporary facility while an existing site is being reconstructed due vandalism or replacement or due a new site build to ensure existing service disruption is minimised. It is not uncommon for the temporary facilities to be in place for at least 12 months and to be located on a different property to permanent site. We recently had to locate a CoP in Norsewood while the rural located 2 sites that normally provide coverage were being repairs due to arson and damage to equipment. The temporary was in part for approximately 3 months. Currently in Queenstown our site at the Skyline building is being moved while the Skyline complex is replaced. The reduced coverage from the temporary Skyline location has triggered the need for 2 temporary sites within Queenstown. These maybe required for 10 to 12 months. It is our opinion that INF-R2, INF-R4, INF-R4 and Temporary Activities TEMP-R2 do not provide entirely for all the situations that we deploy CoWs and CoPs.

7. BACK-UP GENERATORS

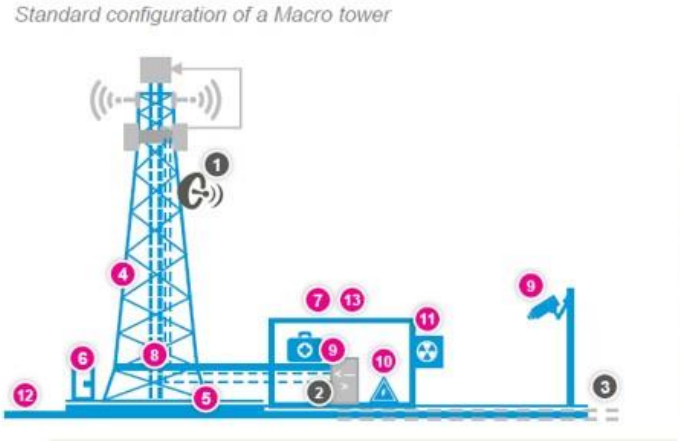
7.1 The industry has deployed back-up generators in our exchange buildings for their operational needs. The increasing risk of disruption to power supply and the dependence that our communities have on ensuring digital connectivity especially during after climate change and natural hazard events. We also have more sites that are located in remote areas that have no access to electricity or supply is higher risk of outages. In combination we are building sites that have independent and back-up power supply which often includes, solar panel, a small wind turbine and fuel (currently diesel) generators. In urban areas we are looking to have ‘hub’ sites that support and collocate with other emergency services. These sites potentially will have an emergency generator. Clearly the generators will be designed to comply with the relevant noise standard. In appendix 4 are some examples of back-up generation.

GRAEME MCCARRISON, COLIN CLUNE, AND ANDREW KANTOR,

27 October 2023

Appendix 1 Connexa, FortySouth and Chorus

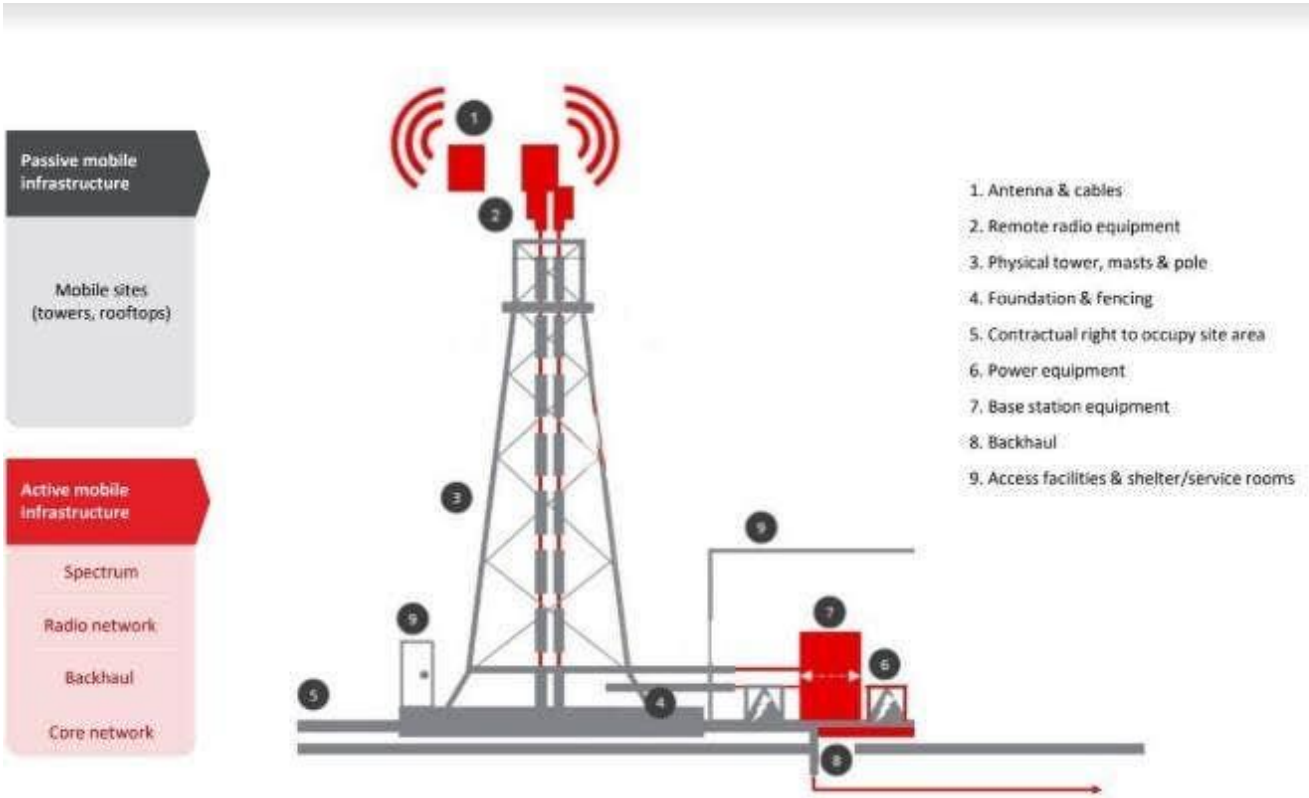
Spark / Connexa asset split on a typical macro tower



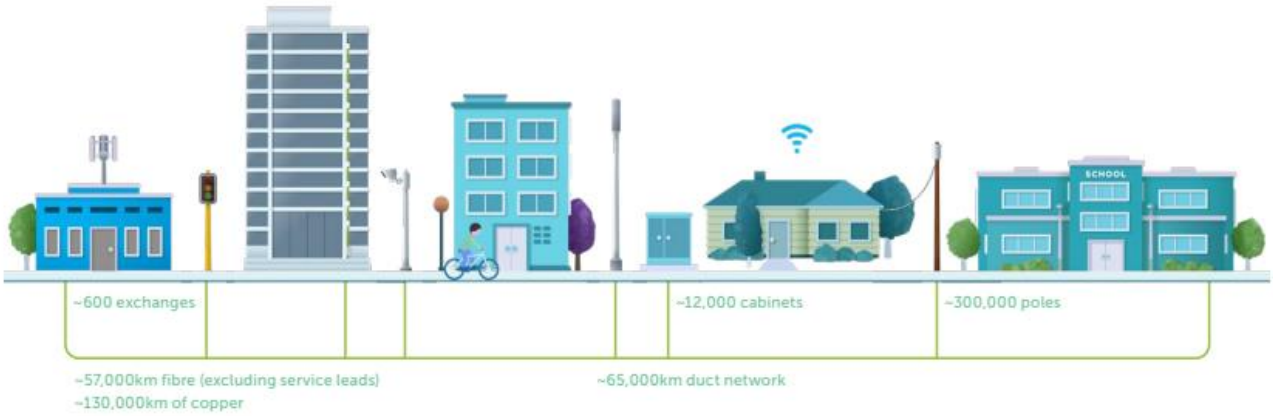
	Asset / Equipment	Ownership
1	Active radio-transmission equipment	Spark / third parties
2	Backhaul router	
3	Backhaul fibre	
4	Transmission masts and towers	Connexa
5	Fencing / gates	
6	Access facilities	
7	Huts (incl. rack space and cabinets)	
8	Rooftop walkways / ladders	
9	Fire suppression and security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

1

FortySouth

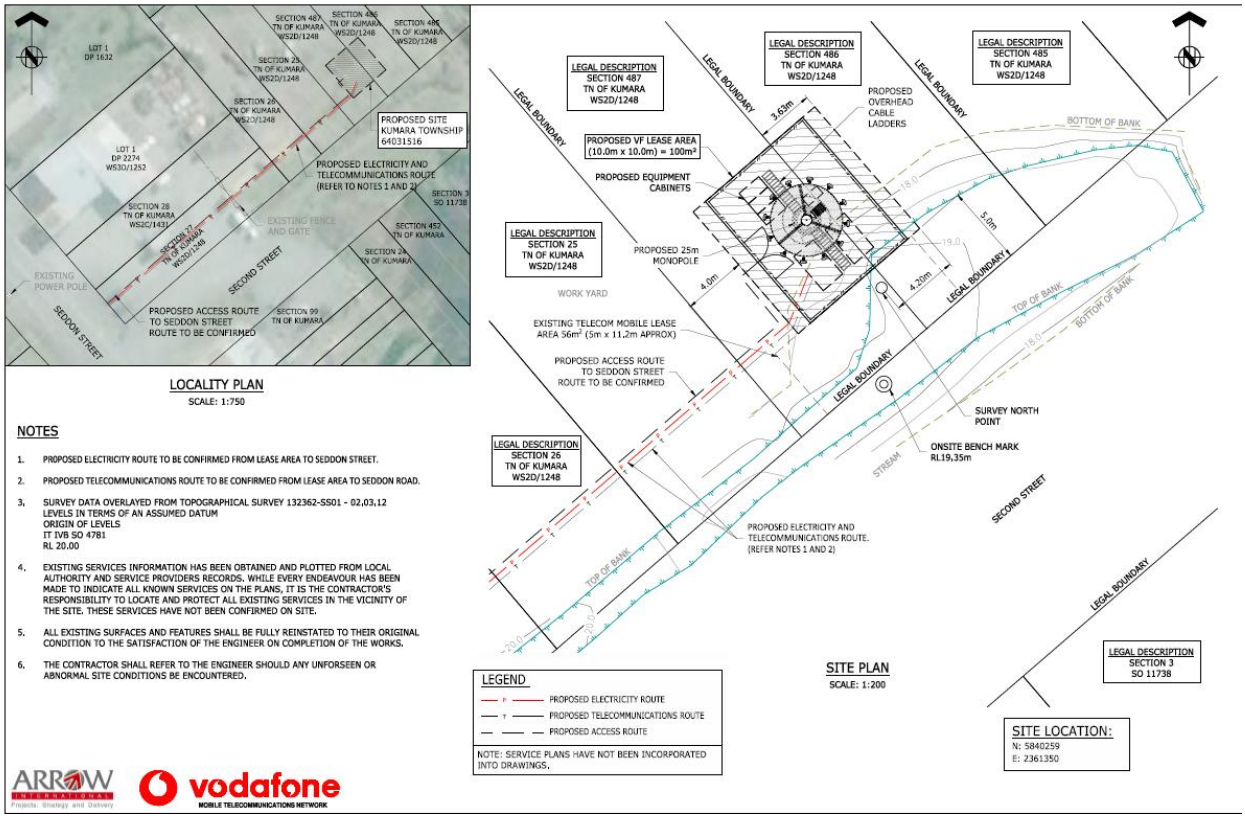


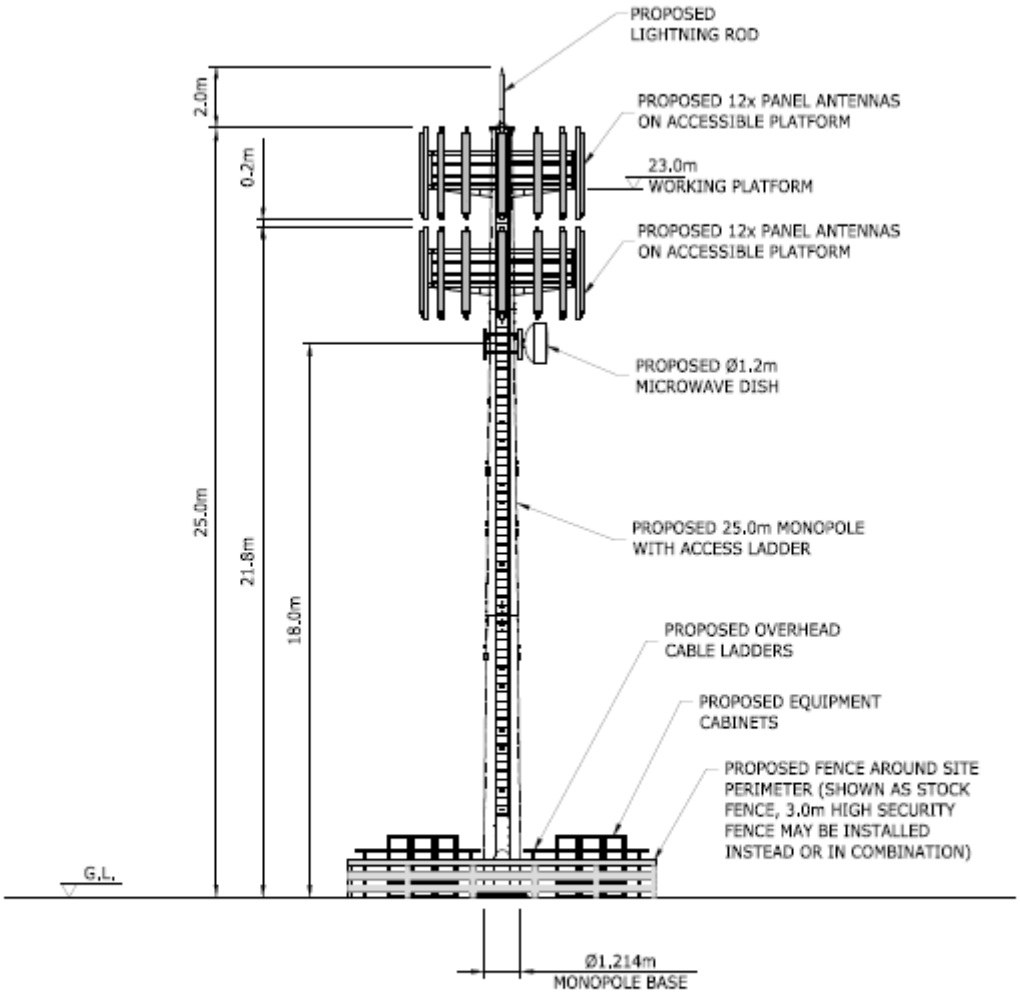
Chorus


SCHOOL
~600 exchanges
~12,000 cabinets
~300,000 poles
~57,000km fibre (excluding service leads)
~130,000km of copper
~65,000km duct network

Appendix 2
Examples of 25m Cell-sites

Kumara 25m General Industrial Zone





NORTHEASTERN ELEVATION

SCALE: 1:200

Note the second (lower) headframe was not constructed.

Auckland Industrial site

Carterton

Appendix 3
Examples of Temporary sites – CoW and CoP

Cell on Wheels

Cell on Platform

Appendix 4
Backup power generation

RCG - Te Akau East 20m monopole with diesel generator and solar power

RCG – Waikaretu – 20m with wind and diesel generator