

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Waikato District Proposed District Plan

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 WAIKATO DISTRICT PROPOSED DISTRICT
PLAN**

20 October 2020

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.
- 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 Waikato District Proposed District Plan (Proposed Plan), to appropriately enable the upgrading of existing networks and construction of new networks.
- 1.3 Our network requirements are constantly changing and evolving unlike any other infrastructure sector, as reflected in the fact that we are rolling of the new 5G network 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.
- 1.4 The key focus of our evidence is to better recognition for.
- a. Telecommunication connections for new lots
 - b. Heritage buildings need to be able to upgrade or construct customers connections.
 - c. The importance of NESTF to enabling telecommunications.
- 1.5 While each company lodged separate submissions and further submissions, the content in each was identical other than in regard to Chorus designations. The three companies, being national network operators, work collaboratively on district plan reviews in an attempt to provide a nationally consistent approach to district plan matters.
- 1.6 Graeme McCarrison and Chris Horne had a without prejudice discussion on 16 June 2020 with the reporting planner Trevor Mackie before the s42A report was released. The purpose of the meeting was a general discussion on the companies' submissions.

2. INTRODUCTION

Graeme Ian 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 36 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 by 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. I have worked the last nine years 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 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, Chorus and Vodafone to be involved at a national level in every relevant Plan review which currently comprises 18 plan reviews including: Dunedin, Queenstown, Marlborough, Porirua, Timaru, Selwyn, Wellington City, Waimakariri, Napier, Nelson, New Plymouth, Waikato, Far North, and Central Hawkes Bay.
- 2.5 I represent the Telecommunications Forum (TCF) on the Technical Advisory Group for the NESTF alongside my colleagues Andrew Kantor – Chorus, Colin Clune – Vodafone, and Ben Blakemore – 2degrees. 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.

- 2.6 In late 2016 I was instrumental in the establishment of the MfE project group focused on exploring the opportunity to create a best practice or potential National Planning Standard for network utilities (waters, roading – national and local, telecommunications, rail, gas, and electricity distribution – local networks excluding generation and the national grid). The project group represented by NZTA, Kiwirail, TCF, Electricity Networks Association, First Gas and LGNZ and an independent consultant appointed by MfE has developed draft national provisions for network utilities. This project continues but outside the formal MfE work programme to develop a national set of network utility provisions. The goal of the project working group is for the draft provisions when completed to be offered back to MfE for evaluation and consideration as a potential National Planning Standard. It is recognised that there is a comprehensive process that must be followed and for which there is no certainty that our goal will be achieved. In the meantime, the draft provisions are being used as the basis for engagement, feedback and submissions by the network utilities during current district plan review processes e.g. New Plymouth, Selwyn, Waimakariri, Porirua, Waitomo, Wellington City, Central Hawkes Bay and Timaru.

Colin William Clune

- 2.7 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.

- 2.8 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). A participating member of the New Zealand Telecommunications Forum. Working to efficiently resolve regulatory, technical and policy issues associated with network telecommunications.

- 2.9 I am currently on the Technical Advisory Group for the National Environmental Standard Telecommunication Facilities amendments (NESTF). 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 an Environmental Planner and Resource Management Act 1991 Advisor at Chorus New Zealand Limited ("**Chorus**"), a position I have held since September 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 14 years of resource management experience, comprising of roles for various infrastructure providers in New Zealand and overseas

Scope of evidence

- 2.14 This statement of evidence will:
- a. Introduce the telecommunications industry and the companies we represent.
 - b. Explanation of the provision of telecommunication connections for new lot subdivisions and how compliance with the provisions can be achieved.
 - c. Support for the inclusion of a controlled activity for service connections to the façade or item specifically listed in Schedule 30.1
 - d. Outline the importance of the NESTF 2016.

3. CONTEXT

Telecommunications industry

- 3.1 Telecommunications is essential and critical infrastructure to a thriving local economy and social inclusion:
- a. New Zealanders expect and demand access to digital services for the wide range of devices they use. This includes such things as being able to make and receive voice calls, access websites, streaming services and working from home. There is a presumption that they will be able to access high speed data services via their mobile devices at home and on the move and have fast fibre broadband service at home.
 - b. Businesses need access to digital telecommunications services for their payment solutions, taking orders from customers, accessing online accounting, online payroll systems, placing orders with their suppliers etc.
 - c. New developments are likely to make use of internet of things technology, using smart devices and remote probes which communicate in real time over telecoms networks for a range of applications including road management and environmental monitoring
 - d. Covid-19 has demonstrated that people rely on fixed and mobile telecommunications to run their lives, including entertainment, staying in touch with loved ones, education and work remotely from home. Our expectation is that this could be a watershed moment

where even more of our lives are online in the longer term. The telecommunications network and digital technology has enabled the Waikato hearings proceed even at Level 2. Submitters now have choice around appearing in person or virtually.

e. It would be unthinkable for a new urban development to be built without high speed broadband access in homes, businesses and public spaces at its core. However, there is a real risk this could happen. The issue is that these services are provided by substantial physical infrastructure.

- Fixed network connections need cables laid under streets and along driveways.
- Mobile connections need wireless equipment fixed to buildings, or for masts to be built, with backhaul fibre and power.

3.2 Telecommunication network operators need district plan provisions that provide flexibility to design the network to meet our requirements for coverage and those of a developer we can plan locations for key infrastructure, including things like street cabinets, antennas and masts and place them in locations which will have the minimum impact on residents and are mindful of the visual impact. It is far more efficient to identify the network requirements and opportunities during the planning and designed phase and install them during the initial build rather than trying to retrospectively add them later. Adding fixed network later increases costs, requiring network operators to dig up roads and private driveways and causes significant disruption.

3.3 New developments are likely to make use of internet of things technology, using smart devices and remote probes which communicate in real time over telecoms networks for a range of applications including road management and environmental monitoring. Providing high quality connectivity and services to homes and businesses throughout New Zealand can be challenging. 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 \$1.6 billion each year on average to deliver new services and network technology to New Zealanders. 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.

3.4 In mobile services, Spark, Vodafone and 2degrees are the three major mobile network operators who each compete for customers over their own network of cell towers, utilising radio spectrum licensed from the Government. Sometimes we co-locate our electronic equipment on another operator's cell tower, to save the cost of building a separate tower. Additionally, Spark, Vodafone and 2degrees have formed the 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.

- 3.5 When it comes to fixed services provided over fibre or copper lines, the industry structure is quite different. The local line networks (sometimes referred to as the "last mile") are owned by wholesale companies which must be separate from the retailers like Spark, Vodafone or 2degrees that provide services to customers. It is a bit like the network companies own and maintain the train tracks, while Spark and Vodafone run our trains over these tracks.
- 3.6 Chorus owns the national copper line network, and most of the fibre network being built in cities and towns, under the Government-sponsored ultra-fast broadband (UFB) programmes UFB 1 & 2. It is worth noting that it is proposed that the mandatory requirement for properties with copper lines to move to fibre could start in March 2021.
- 3.7 Telecommunications is a regulated industry sector in New Zealand, with the Commerce Commission overseeing the industry. 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.

Spark

- 3.8 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'.
- 3.9 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), and Bigpipe (consumer broadband). Spark has transformed the way New Zealanders view sport with the introduction of Spark Sport streaming platform when it secured the rights a wide range of sporting events such as the Rugby World Cup 2019 and English Premier League football (from the 2019 season).
- 3.10 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.

- 3.11 The New Zealand mobile market is growing. Success in wireless-based products and services is underpinned by our investment in the mobile network. Spark have now rolled out 4.5G to 31 locations across the country, bringing customers faster speeds and giving the network more capacity. Our initial roll out of the next generation of wireless network technology commenced in late 2019 in Heartland south including Alexandra. The continued delivery a 5G network is reliant on the availability of spectrum. The government has in April 2020 allocated initial spectrum for 5G. The permanent spectrum is expected to be auctioned by the Government in 2022. 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.
- 3.12 Spark recently has rolled out two low-power networks, such as LoRaWAN, with one of these now covering more than 98% of the population. LoRaWAN is a Low-Power, Wide Area ("LPWA") wireless networking protocol for the Internet of Things ("IoT"). LoRaWAN network operates separately to the 4G mobile network. 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 smarter 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.
- 3.13 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. Spark and Emirates Team New Zealand opened New Zealand's first interactive 5G test lab in November 2018. The Spark 5G Lab was primarily designed to be a collaboration space for New Zealand innovators,

entrepreneurs and companies like Emirates Team New Zealand to have early access to 5G. 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. Spark is providing Emirates Team New Zealand with telecommunications and digital connectivity, both on and off the water.

Vodafone

- 3.14 Vodafone is New Zealand's largest mobile phone operator, and second largest Internet Services Provider. Beginning operations in 1998 with 138,000 customers, we now have 2.4 million Kiwis using our services. Each day our customers make over 7 million mobile calls and send 13 million TXT messages. In a month, they use 4,500 terabytes of mobile data (that's more than 2 million uploads of photos to Instagram) and 55,000 terabytes of fixed line data. To provide coverage across New Zealand, we have built a network of 1560 cell sites from Cape Reinga to Bluff covering 98.5% of locations where Kiwis live, work and play. In October 2012 Vodafone acquired TelstraClear, becoming a total communications company covering both mobile and fixed line based telephone and internet services. On July 31, 2019 Vodafone New Zealand Limited changed ownership to a consortium comprising Infratil Limited and Brookfield Asset Management Inc.
- 3.15 Because our customers are at the heart of what we do, we have invested over \$1 billion in building and upgrading this mobile network. As the first telecommunications company to introduce 2G, 3G and then 4G, we have a proud history of investing in innovative technology to deliver faster data speeds. Since 2012, we have partnered with the Government in helping ensure rural New Zealanders can access better mobile coverage and data speeds through the Rural Broadband Initiative. As telecommunications continue to evolve, we have also begun trials of 5G network technology, and developed platforms to support the nascent IOT (or Machine to Machine) applications that will create massive change to our economy.
- 3.16 Our commitment to providing telecommunication services across New Zealand, is matched by our commitment to supporting communities across New Zealand. In 2002 we established the Vodafone NZ Foundation and have subsequently donated \$25 million to communities in need. The Foundation is also home to our 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, Kaikoura earthquakes, and the tropical cyclones that have wreaked havoc in Vanuatu and Fiji.

Chorus

- 3.17 Chorus was formed on 1 December 2011 when it demerged from Telecom (now Spark). Structural separation of Telecom's (now Spark) 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**").

- 3.18 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.
- 3.19 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 including over 440,000 properties within the Auckland Region.
- 3.20 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.
- 3.21 The Chorus fibre network also connects many mobile phone towers and facilities owned by mobile service operators.
- 3.22 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.
- 3.23 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. ESSENTIAL INTEGRATED NETWORK

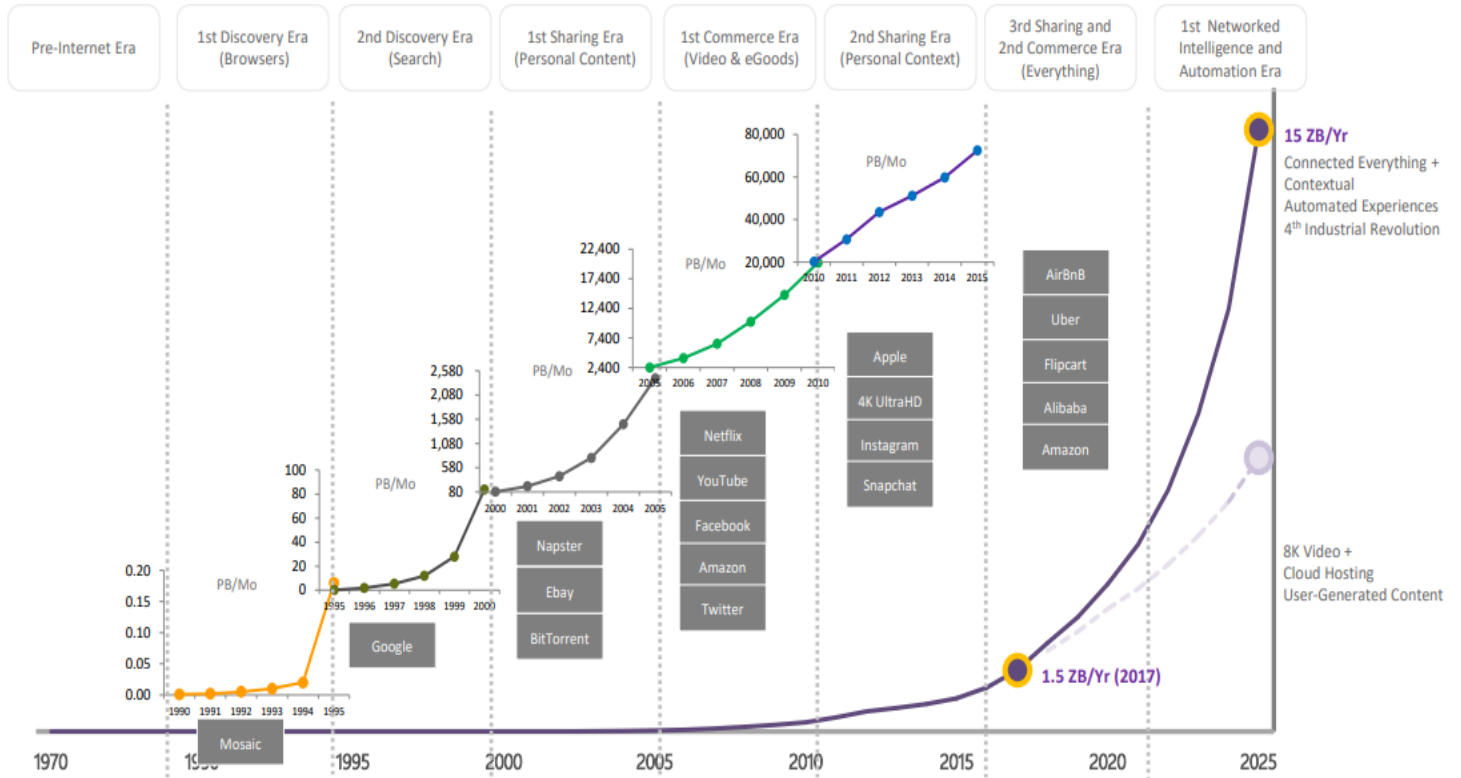
- 4.1 The telecommunications industry is in a unique position of comprising a group of businesses that operate networks on a national scale. The applications and services that these networks enable are essential for businesses, tourism and residential users who expect high speed, reliable services wherever they are and whatever they are doing. It is vital that the district plan recognises the importance of telecommunications to the wider economy.

MBIE noted in a recent consultation document¹ that:

¹ Ministry of Business, Innovation & Employment Review of the Telecommunications Act 2001, Regulating Communications For The Future, September 2015

“Digital communications technologies are impacting almost every aspect of our lives. We rely on them for business, government, education, health and in our communities. The communications sector is a critical enabler of economic growth in the twenty-first century.”

4.2 The demand for data is trending the same way as internationally.



Above diagram is sourced from Bell Labs

WIRELESS (MBB + WBB) DATA DL BH TRAFFIC (TB)



Wireless broadband within New Zealand is significantly growing as shown in the above diagram.

5. SUBDIVISIONS

5.1 The Telecommunications Carriers' Forum (**TCF**) in 2010 published non-statutory guidelines for Territorial Authorities on minimum standards for telecommunications infrastructure for new subdivisions. TCF is the telecommunications industry organisation that works within the industry to resolve regulatory, technical and policy issues and provides a bridge to government. The objective of the TCF is

Our objective is to actively foster cooperation among the telecommunications industry to enable the efficient provision of regulated and non-regulated telecommunications services. Our goal is to promote competition for the long-term benefit of consumers.

5.2 The guideline document was developed in response to enquiries from Local Government were received by the TCF regarding standards for telecommunications infrastructure for new subdivisions. The TCF via the Local Government Working Party agreed established principles for new subdivision infrastructure. The document recognised

- That the inclusion of telecommunications infrastructure by property developers at an early stage of subdivision development is essential to ensure future generations of property owners can obtain the telecommunications services they reasonably expect and avoid future disruption to the community and degradation of pavement surfaces.
- Telecommunications infrastructure and services are deployed on a commercial basis only. No telecommunications operator has an obligation to provide services.

- That the challenge for developers is to find a cost effective infrastructure solution that will endure for many years beyond the developer's direct interest in a subdivision, provide for all future technology and service enhancements, and provide for the services from service providers that property purchasers will find attractive.
- Councils have the opportunity to ensure future proof, yet affordable infrastructure solutions are deployed via subdivisions or other resource consents.

5.3 The guideline document recommends that:

- a. All district plans should have a minimum requirement for developers to provide telecommunications infrastructure and the ability to supply telecommunications services to each subdivided lot.
- b. That prior to the release of final local authority clearance for a subdivision developers should be required to provide written confirmation that the telecommunications infrastructure owner's installation requirements have been met along with written evidence from a telecommunications provider that the appropriate network capacity is available or planned to be available to service the subdivision.
- c. Costs to install telecommunications infrastructure is a commercial arrangement between the developer and their selected telecommunications infrastructure provider.
- d. That all district plans or related codes of practice should consider zoning and suitable locations for wireless telecommunications infrastructure to support increasing demand for high speed internet access and mobility. The location of these sites should afford good line of sight coverage of the subdivision.

5.4 10 years on the TCF has commenced a review of the effectiveness of the guidelines for a number of reasons including:

- Changing technology and customer demands
- Wireless broadband
- Impact and change in expectations due to the government's ultrafast broadband (UFB1 & 2) and Rural Broadband Infrastructure (RBI 1 & 2) programmes of work
- Requests from a number of Councils for improved guidelines or best practice provisions to determine that telecommunications services are available or not for a proposed subdivision or development

5.5 Auckland Unitary Plan requires that a subdivision must comply with the relevant standards including E39.6.1.3 below. This places the onus on developers of providing or proving that the services such as telecommunications are available.

E39.6.1.3. Services

(1) For all proposed sites capable of containing a building, or for cross-lease, unit title, strata title or company lease, each building must be designed and located so that provision is made for all of the following services:

- (a) collection, treatment and disposal of stormwater;
- (b) collection, treatment and disposal of wastewater;
- (c) water supply;
- (d) electricity supply; and
- (e) telecommunications.

5.6 The Waikato Proposed Plan under 14.3.1.P12 as set out below requires all new lots to have access to telecommunications that is either hard wired (fixed line) or wireless.

P12	Service connections for subdivision	<p>14.3.1.8</p> <p>(1) All new lots created as part of a subdivision other than a utility allotment, access allotment or reserve allotment, must be designed and located so that provision is made for access and service connections up to the boundary of the lot for:</p> <ul style="list-style-type: none"> (a) Wastewater; (b) Water supply;
		<ul style="list-style-type: none"> (c) Stormwater (a management system that complies with Rule 14.11.1.1); (d) Electricity supply; (e) Telecommunications that is hard-wired or wireless; and (f) Vehicle access that complies with Rule 14.12.1.1.

5.7 The industry has not specified the type of telecommunications e.g. fixed line or wireless services or does this require vocal and broadband services or what is the minimum service standard beyond access to emergency services via being able to call 111.

5.8 New Zealand's original telecommunication network ensured that all properties had access to a copper line. The advent of the mobile networks and the replacement of the copper network with fibre and wireless. The governments UFB and RBI projects focused on the delivery of fibre to urban areas and wireless/mobility services to rural communities that do not have access to existing commercial networks such as those provided by Spark and Vodafone.

5.9 Compliance with rule 14.3.1.P12 should be via formal confirmation from the relevant telecommunication network operator such as Chorus, Spark, Vodafone, 2degrees or RCG but not retail telecommunication service providers. Telecommunication network operators are the only companies that assess that there are telecommunication services available and what these are at the site of the proposed subdivision. These companies can work with developers of subdivisions to upgrade existing or construct new network to meet the potential demand services created by the new lots. Reliance on indicative service provisions websites

as provided by Internet NZ <https://broadbandmap.nz/home> are designed to assist potential consumers of the likely providers options. As with the network operators own coverage maps the sites make it clear that there is no guarantee availability of service and potential customers need to contact the network operator.

Connections to Heritage

5.10 To assist the owners of heritage protected buildings remain economic we believe that it is critical that there be certainty to achieve the replacement or upgrading or new telecommunication connections. Normally connections will be designed to at the rear of the building where normally the existing connections for telecommunications and other services are located. As previously mentioned as the copper network is transitioned to fibre building owners and tenants will need to explore new options including replacing copper with fibre. Owners and occupiers of protected buildings need to be able to have access to the critical telecommunication services that residents and businesses depend on. The provision of a controlled activity enables the assessment of a connection proposal to ensure that it is appropriate. It worth remembering that a proposal will normally be first subject to the building owner's approval and that of Heritage NZ Pouhere Taonga depending on the level of protection the building has.

5.11 Our submissions requested a new controlled activity in 14.3.2, as follows:

A service connection to an area façade or item specifically listed in Schedule 30.1.

Matters of Control:

- *Design and placement of the service connection to minimise impacts on the values and attributes of the listed area, façade or item*

Heritage NZ Pouhere Taonga has previously during discussion at a national level supported controlled activities service connection to an area façade or item specifically listed. Within the Opotiki District Plan as a result of consent order the following controlled activity has been included.

Controlled Activities

Application must be made for a Controlled Activity for the following:

A customer connection in a similar position attached to a primary feature or a front façade of the heritage building or structure.

A new customer connection attached to a primary feature or a front façade of the heritage building or structure list in appendix 14.9.1.

Matters of which Council will exercise its control:

1. *The design and external appearance of the customer connection*

2. *The design and extent of any associated earthworks*
3. *Effects on historic heritage values*

5.12 Within the Marlborough Environmental Plan, we requested the following new controlled activity. Heritage NZ Pouhere Taonga supported the new controlled activity. The Councils reporting planner recommended the addition of the rule however the rule did not apply in the decision version of the proposed plan. Chorus and Spark have lodged an appeal to the Environment Court for its inclusion. The parties are working toward a consent order for the inclusion of a controlled activity.

New customer connections to a Heritage Resource from an adjacent utility network are a Controlled Activity in respect of:

- *The design and external appearance of the customer connection;*

6. NESTF ENABLING CONNECTIONS

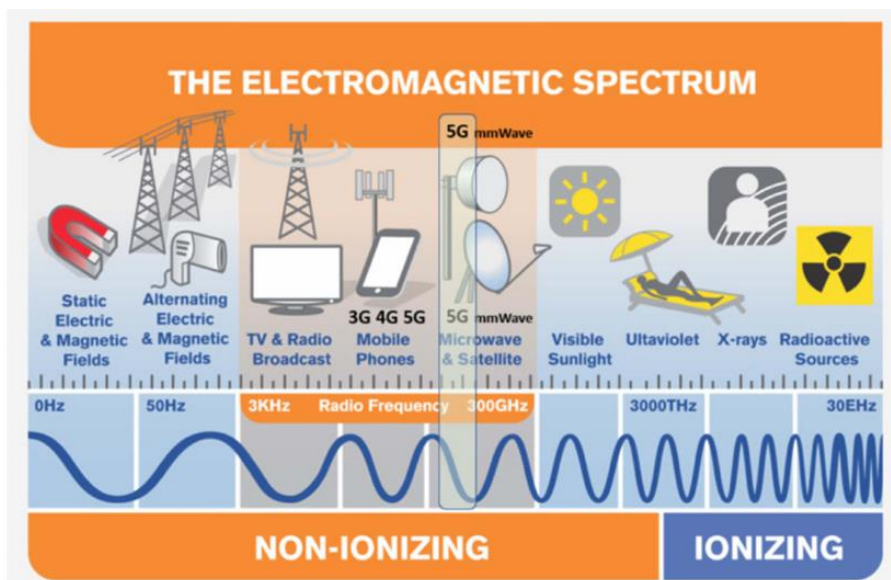
NESTF 2016

- 6.1 The extended scope of the NESTF 2016 beyond the original NESTF 2008 that focused on the road reserve has significantly enabled network operators under the Telecommunications Act to ensure existing networks can be upgraded with new technology. The limitations of the NESTF are that the range of permitted activities do not extend to include new facilities outside the road reserve in urban areas. This has complicated the relationship between District Plans and NESTF 2016.
- 6.2 Further it is not mandatory for organisations developing and operating telecommunication facilities to use the NESTF. Local government, civil defence and smaller local telecommunication operators commonly rely on District Plans. The list of organisations that have registered as a network operators can be found on the MBIE website, at www.mbie.govt.nz/info-services/sectors-industries/technology-communications/communications/telecommunications-broadcasting-network-operators
- 6.3 NESTF Regulation 55 set outs the compliance requirements for all telecommunication facilities that generate radiofrequency emissions. Any telecommunication facilities are required to comply with New Zealand standard *NZS 2772: Part 1: 1999 Radiofrequency Fields Part 1 – Maximum Exposure Levels – 3 kHz to 300 GHz*, and *AS/NZS 2772.2:2016 Radiofrequency fields – Part 2:Principles and methods of measurement and computation – 3 kHz to 300 GHz*. For a facility to be permitted operators are required to comply with NZS 2772 throughout New Zealand. Failure to comply with Regulation 55 will trigger requirement for a non-complying resource consent in relation to RF fields. The following table from the NESTF User Guide sets out the RF reporting requirements.

	RF Exposure level	Provide pre-commencement report to authority	Provide post-commencement report to authority
Compliant with Regulation 55	Less than 25%	Yes – submit report in accordance with AS/NZS 2772.2, including an uncertainty estimate.	Not required to be submitted (facility must still operate in accordance with AS/NZS 2772.2).
	Equal to or more than 25%	Yes – submit report in accordance with AS/NZS 2772.2, including an uncertainty estimate.	Yes – submit report in accordance with AS/NZS 2772.2, including an uncertainty estimate.
Non-Compliant with Regulation 55	N/A	Non-complying activity in terms of radiofrequency fields requiring resource consent from relevant local authority.	Non-complying activity in terms of radiofrequency fields requiring resource consent from relevant local authority.

Reporting is required when establishing a facility, changes to or upgrading of the equipment generating emissions e.g. the antennas. Reports are provided to the relevant council. It is uncommon for sites to exceed the 25% of public health level. Spark’s sites are designed for as low as possible emissions generally well below the 25% public health level for space generally accessible by the public. Such spaces include inside homes or workplaces, balconies, or roof tops of the buildings or public and private open space.

6.4 The following graphic shows where the telecommunications networks (3G to 5G) sit in comparison to other common activities on the electromagnetic spectrum.



While the central government, being MBIE, Ministry for Health and MfE are responsible for the regulations and setting the radiofrequency emissions standards no independent monitoring of our telecommunication facilities is undertaken by central government. Spark and Vodafone commission randomised independent monitoring of our facilities by EMF Services Ltd. The

following are the criteria used the independent expert for the sites selected for monitoring

Sites selected for testing fall into one of four categories:

- They have been of particular interest to the public, or because of their location, might be so in the future;
- Calculations of exposure have significant uncertainty;
- It is difficult to determine the areas near a site with reasonable public access;
- Theoretical assessment of compliance is difficult due to the proximity of other transmitters (eg co-siting with another operator).

6.5 These are reported annually and publicly available on the MoH website.

<https://www.health.govt.nz/our-work/environmental-health/non-ionising-radiation/independent-cellsite-monitoring>

The latest report for the period 2018-19 shows that none of the 48 sites monitored exceeded the 25% of the public exposure limit. 85% of the sites were less than 1% of the public limit. On 6th May Ministry of Health published a report on the results of measurement of exposures to radiofrequency (RF) fields near Vodafone 5G cell sites in Queenstown and Auckland. The measurements were made during the day on 25 February and on 2, 3 and 4 March 2020. Fig 3 below indicates that the maximum possible 5G exposures, as a fraction of the total exposure from the Vodafone 5G transmitters, varied between one fiftieth and one quarter of the total, but were mostly around one tenth. The report can be accessed <https://www.health.govt.nz/publication/exposures-radiofrequency-fields-near-5g-cellsites>

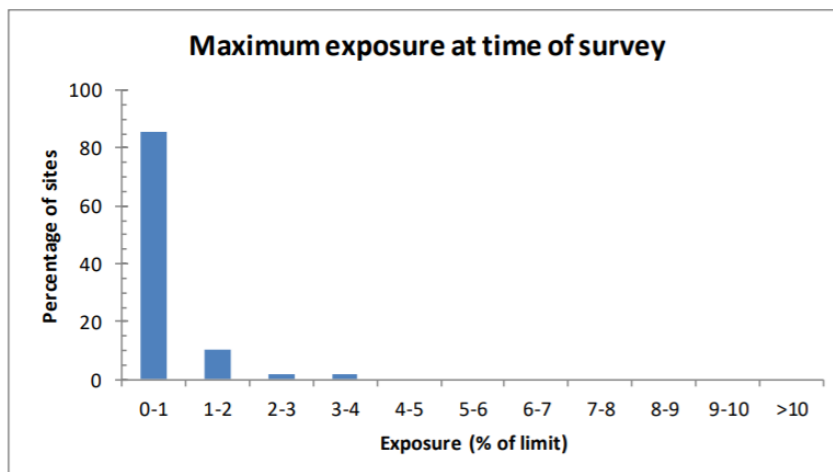


Fig 1. Histogram of maximum exposures found at the time of measurement at the 48 sites surveyed in 2018-19.

This graph shows that, for example, at 85% of the sites tested (41 out of 48), exposures at the time the measurements were made were less than 1% of the public limit. The highest exposure measured at the time of the survey was equivalent to 3.1% of the public limit.

Figure 2 shows the maximum possible cumulative exposure at the 48 sites, if all the Spark transmitters, and transmitters belonging to other cellular network operators nearby, were to transmit simultaneously at full power.

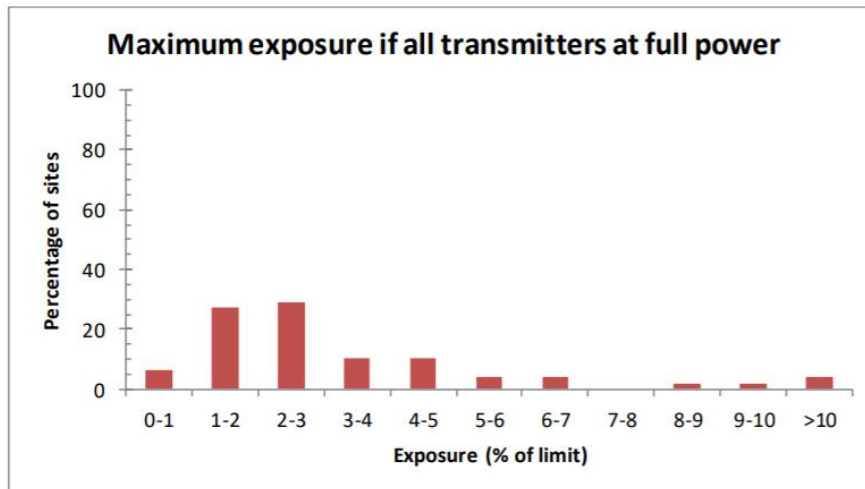


Fig 2. Histogram of maximum possible exposures at the 48 sites surveyed in 2018-19, if they and all other sites nearby were to transmit at full power.

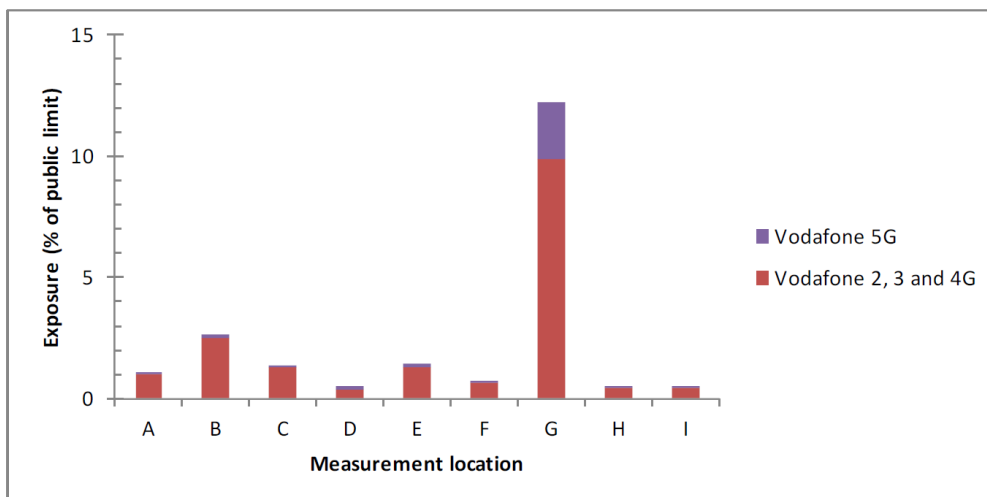


Fig 3. Maximum possible exposures from 5G-equipped sites, shown as a percentage of the public limit in NZS 2772.1.

6.6 Maintaining and constructing networks is not as simple as complying the district plan or NESTF 2016 as there is a wide range of relevant legislation and regulations for telecommunication facilities include, but are not limited to:

- Telecommunications Act 2001
- Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011
- Utilities Access Act 2010, and the National Code of Practice for Utility Operators' Access to Transport Corridors
- Heritage New Zealand (Pouhere Taonga) Act 2014

6.7 Members of the New Zealand Telecommunications Forum Inc have guidelines for Community Engagement when proposing to significantly upgrade an existing site or

constructing a new facility near properties zoned and occupied for Primarily Residential Purposes, and managers of Public Facilities. Through the process of communicating with residents/owners sometimes leads to changes in the location or design of the facility even when it is a permitted activity.

7. CONCLUSIONS

- 7.1 Telecommunications infrastructure is essential for shaping and enabling the future of Waikato by ensuring that 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.

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