



Key Trends in New Zealand Telecommunications

2020 Industry Report





About the TCF

The New Zealand Telecommunications Forum (TCF) plays a vital role in bringing together the telecommunications industry to resolve regulatory, technical and policy issues.

In doing so, we enable the best possible outcomes for New Zealand consumers. The TCF also provides a range of services for consumers.

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The information in this document is presented in good faith using the information available at the time of preparation (June 2020). The TCF appointed an independent research company (Network Strategies) to undertake industry research sourced from publicly available information. Unless otherwise referenced, all of the data in report is from the Network Strategies research. Full details on data sources and references are listed in the full Network Strategies research report, a copy of which is available from the TCF.

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Introduction

By Geoff Thorn, Chief Executive

New Zealand Telecommunications Forum

An internet connection, a laptop, tablet or smartphone, a video conferencing app and an entertainment platform. For many of us, that's all the technology we actually needed to keep earning, learning and enjoying life when our country went into lockdown.

During those seven weeks in Alert Levels 4 and 3 when we were confined to our 'bubbles', almost every outside interaction – with the exception maybe of going to the supermarket – was enabled by an internet connection. Digital activity surged as business operations moved from the office to the home, and education shifted from the classroom to the living room.

It was a significant test for the telecommunications sector, and collectively the industry stepped up to meet unprecedented levels of demand. The importance of what the industry does gave new meaning to the phrase 'essential services' and cemented widespread recognition that telecommunications is vital to the nation's wellbeing. Previous investment by the industry – totalling about \$15 billion over the past decade – meant the country's telecommunications infrastructure had the capacity and resilience to serve New Zealanders well in this time of crisis.

What matters now is what comes next. The COVID-19 pandemic has transformed the way in which New Zealanders use digital technologies, with the lockdown experience awakening the possibilities for future changes to the way we work, learn and play. It also highlights the need to ensure that no New Zealander is left behind, and that despite the economic difficulties we anticipate many households will face in the short to medium term, we continue to bridge the digital divide.

In this report we explore the current state of the industry and consider the future. We discuss four interconnecting trends:

- telecommunications is an essential enabler;
- the growing impacts of the digital divide;
- the relentless demand for data; and
- the need for ongoing investment to ensure industry sustainability.

During COVID-19, our fixed and mobile networks proved to be world-class in terms of capacity, speed and reach. This is due to a decade of investment, as well as the industry's ability to work together in a way that is underpinned by a regulatory model designed to promote competition and innovation. While the industry is proud of what has been achieved, we are most excited about what lies ahead.



Geoff Thorn, CEO
New Zealand Telecommunications
Forum (TCF)







Four Key Trends in New Zealand Telecommunications

1 Telecommunications is an essential enabler

The COVID-19 pandemic showed just how important internet access is to enabling people to earn, learn and live well. Although the lockdown caused major impacts right across the New Zealand economy, the situation would have been far worse if whole sectors of the working population were not able to rely on their fixed and mobile services to continue to be productive.

COVID-19 is shaping up as a defining moment for digital connectivity in New Zealand. Prior to the pandemic reaching our shores, the telecommunications sector had experienced a decade during which demand for both fixed and mobile services increased relatively progressively – and while demand growth often exceeded initial forecasts, the industry ensured investment kept pace with the expanding needs of consumers and businesses. But the few months

since March 2020, especially during lockdown, have seen massive and unprecedented changes in both the scale and the way New Zealanders use telecommunications services. The lockdown experience has the potential to accelerate and entrench some far-reaching changes.

THE DECADE PRE COVID-19

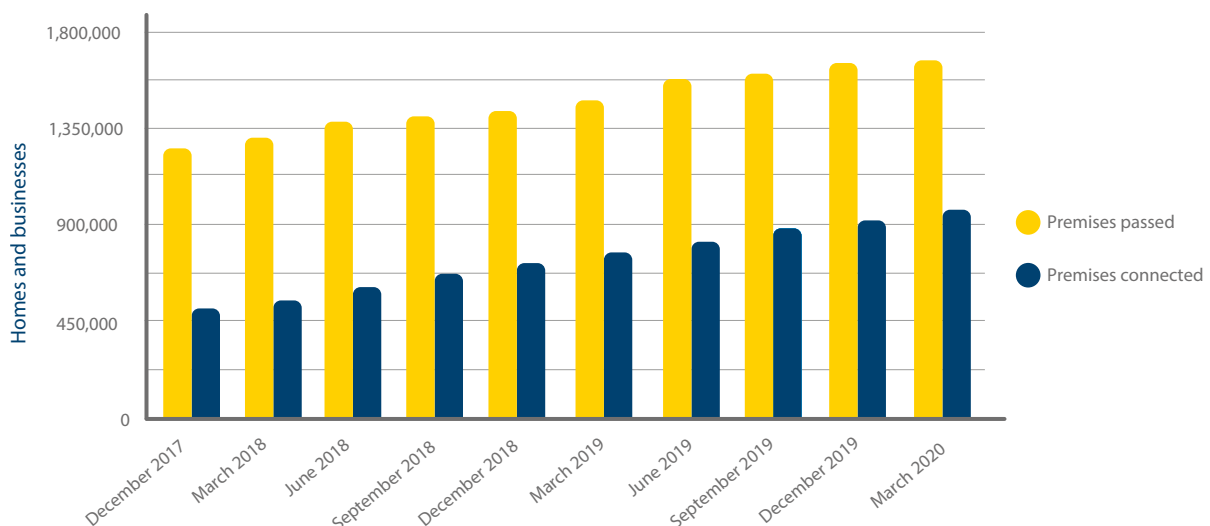
Fibre has, in less than a decade, surpassed copper to become the dominant fixed broadband technology in New Zealand. The first phase of the Ultra-Fast Broadband rollout was completed in December 2019. By March 2020, almost 1.7 million (82%) New Zealand premises had access to fibre¹ and of these, 966,773 (58%) were taking a fibre service – that's more than double the initial take-up expectation when the UFB rollout began in 2012.

As with fixed line, mobile infrastructure and services have

also seen huge changes. Ten years ago, most mobile users communicated by voice and SMS, and mobile data use was modest. The evolution of 4G technology since its New Zealand launch in 2013 has seen mobile data become more widely used. According to the international industry organisation GSMA, we now rank third in the world – after Australia and Singapore – for mobile connectivity. It is an ideal setting for the move to 5G, which is being progressively rolled out since its introduction in late 2019.

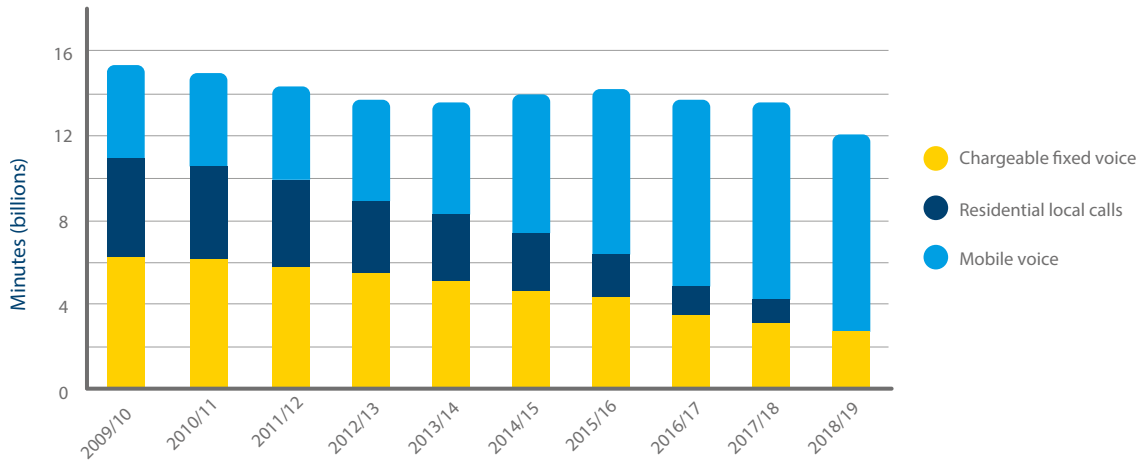
In line with international trends, traditional voice services – in both fixed and mobile – have been declining. Residential telephone calls have become just a small fraction of total network capacity, with many users opting for 'over the top' voice applications that use data services instead of traditional telephony services.

UFB rollout progress and connections



Source: MBIE, Crown Infrastructure Partners

Voice traffic, fixed and mobile



Source: Commerce Commission

Note: In 2018/19, the Commerce Commission ceased collecting data on residential local (non-chargeable) call minutes.

MARCH TO JUNE 2020

When New Zealand went into lockdown on 25 March 2020 two things became rapidly apparent – demand for data skyrocketed, and voice calling surged.

Overall data usage went up at all hours, but in particular during the workday. Chorus usage statistics show that during Alert Level 4 its networks experienced an increase in daytime traffic of up to 85% and an increase in evening traffic of up to 40%. While

overall data traffic has dropped back, the graph below depicts upload traffic which demonstrates that people are continuing to use productivity applications such as video conferencing. The jagged lines in this graph represent half hour breaks – in line with the way video conference calls are often scheduled.

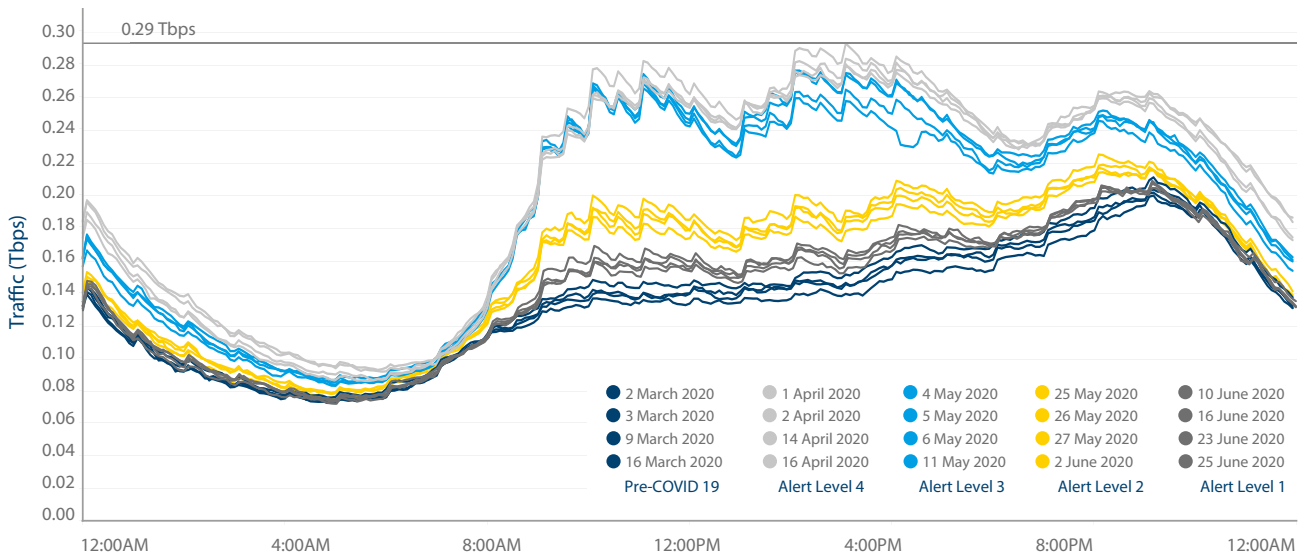
Meanwhile, traditional voice calling came back into vogue – it was up to 70% higher compared to the pre-COVID-19 baseline

but, at the time of writing, has moved to near to normal levels.

Throughout the lockdown, telecommunications companies worked hard to support New Zealanders by maintaining high network resilience and connectivity, ensuring essential services premises could get connected to fibre, and boosting mobile cell tower capacity where it was needed.

Whatever sustained changes to consumer and business behaviour eventuate, the industry proved

Network Traffic - Upstream



Source: Chorus



Keeping connected at sea

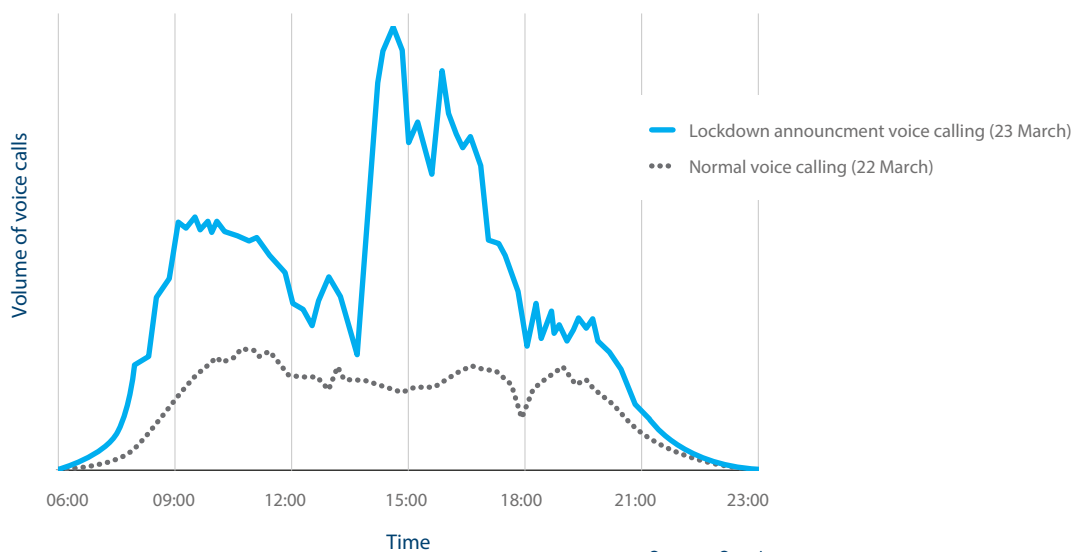
Vodafone came to the rescue of seafarers on ships in Lyttelton Harbour during the lockdown, ensuring they could be connected to their loved ones.

Most ships don't have wireless internet, which means seafarers would usually make shore visits to the Lyttelton Seafarer's Centre to use their free WiFi. Due to lockdown restrictions, crews could not leave their vessels.

Vodafone worked with the Lyttelton Port Company to supply temporary wireless broadband modems to the ships, which connected to a Rural Broadband Initiative (RBI) mobile site, to bridge the distance digitally for these sailors.



Voice calls volumes on 23 March, the day the Prime Minister announced New Zealand would be moving to Alert Level 4, versus a normal calling day



during COVID-19 that it is well positioned to support such rapid, fundamental shifts in society. Ongoing significant investment in new technologies will mean it can continue to meet the needs of New Zealanders in the long term as well.

In fixed line, investment in fibre connectivity continues at pace. When the full UFB programme completes by the end of 2022, almost 400 communities and towns in New Zealand will be connected

and 87% of the population will have access to fibre services. Currently most New Zealanders can access speeds of up to one gigabit per second (1Gbps), but the next generation of fibre connectivity, already available in many areas, boosts speeds to up to 10Gbps.

In mobile, New Zealand operators are busy upgrading their networks to 5G technology. This will enable them to cater to the growing demand for mobile data with users

able to experience data speeds up to ten times faster with 5G, compared to 4G. 5G will deliver more efficient solutions, such as real-time data analysis for businesses, and usher in a whole range of exciting new technologies including virtual learning applications, connected appliances and eventually the much-heralded driverless car. We're well positioned to ensure New Zealand businesses remain competitive on the world stage.



Broadband provides life-line for Waipuna Hospice



Trustpower internet customer Waipuna Hospice, situated at Te Puna just outside Tauranga, provides specialist palliative care for patients living with a life-limiting illness and support services for them and their families. The hospice cares for around 1,000 patients and their families each year. The hospice's focus is on 'Hospice at Home', supporting patients and their families so they can remain in their own homes as long as they can. Last year their nurses made more than 14,320 home visits.

When fibre was initially rolled out in the Western Bay of Plenty, Waipuna Hospice's rural position meant that, although they are only a few minutes' drive from Tauranga's CBD, they were not on the roll out. Trustpower worked with the hospice and the District Health Board to connect the hospice to the

fibre network, enabled by funding from the DHB and Trustpower.

This fibre connection was invaluable to Waipuna Hospice during lockdown. Although it was necessary to close the inpatient unit, and home visits were more restricted in frequency, it was vital that the hospice was able to continue to provide palliative care and support to over 240 patients and their families. Like many companies and organisations, Zoom video conferencing was the solution for the hospice team to keep in touch with patients and each other. There was a steep learning curve both for staff and patients, most of whom were using video calling for the first time, but the hospice's fast, stable fibre connection meant their vital work providing care in the community could continue, despite the challenging circumstances.



Trustpower worked with the Waipuna Hospice and the District Health Board to connect the hospice to the fibre network which proved to be vital during the COVID-19 lockdown.



🔍 Text service delivering the pizza

The use of automated text services rose during Alert Levels 4 and 3 as they enabled organisations to send rapid-response notifications and messages to staff and customers.

Vodafone set up Sal's Authentic New York Pizza chain with their Ready Messenger and multiTXT text service to complement their online 'click & collect' service during Alert Level 3.

Sal's Pizza Managing Director, Nick Turner, says the multiTXT service was helpful in communicating safety protocols and customer order confirmations under Level 3 restrictions.

"Once we knew we were going to be able to operate at Level 3,

we set about ensuring we could do so safely, including setting up a contactless pick-up and delivery system. Within 24 hours Vodafone was able to get us going with a text service that meant we would be able to communicate efficiently with customers regarding their orders and make sure they adhered to the government restrictions around distancing and contactless operations," he says.

"Our 'click & collect' service provides our customers with a text when their order is ready. They show their order confirmation text at the door, making sure we are getting the right order to the correct person every time."



2 The growing impacts of the digital divide

With more activity taking place online, more attention is being placed on those without ready access to online services. The digital divide impacts people in different circumstances for different reasons – anything from geographical location, economic disadvantage, age, to a lack of knowledge, confidence and trust in technology.

Whatever the reason, for households a lack of connectivity means reduced access to:

- social connections with family, friends and community,
- services such as banking, social services, libraries, job search and other important mechanisms,
- education in schools, virtual learning opportunities and online learning for adults,
- employment opportunities, including the ability to search and apply for jobs, and
- healthcare, with doctors able to provide online consultations.

The digital divide has been a challenge for many years and although much is being done to close the gap, the increasing prevalence and importance of online services means the negative impact on those who don't have the necessary access, skills and confidence is greater than ever.

The digital divide is not an easy problem to solve as it requires more than a broadband connection. Cost, motivation and an understanding

of the benefits of being connected are also factors impacting digital inclusion. The 2019 Digital Inclusion and Wellbeing report to the Department of Internal Affairs² noted that “those with internet access tend to have higher wellbeing and richer social capital outcomes (e.g. voting) than those without access.”

“Solving the digital divide requires more than a broadband connection.”

The telecommunications industry is in a unique position to support Government on potential ways to address how digital solutions can bring positive change to the groups and communities that are currently missing out.

RURAL CONNECTIVITY

The program of infrastructure investment to connect people in rural and remote geographical locations is ongoing. Rural coverage is being enhanced through the Rural Broadband Initiative Phase 2 (RBI2) and the Mobile Black Spot Fund (MBSF). Cell sites under both the RBI2 and MBSF are being deployed by the Rural Connectivity Group (RCG) – a joint venture between 2degrees, Spark and Vodafone – with all operators having equal access

to the cell sites. This is a public private partnership between RCG and the Crown, funded by the mobile operators themselves, and Crown funding from the industry-wide Telecommunications Development Levy and the Provincial Growth Fund.

To date, the RCG has built more than 100 cell towers in some of New Zealand's most isolated rural areas, and across rugged terrain where it can be difficult to get coverage to. By March 2020³, the new infrastructure has provided broadband access to almost 46,000 households and businesses, and mobile services to over 443km of state highway and 36 tourism hotspots, where previously, coverage was poor or non-existent. By December 2023, the infrastructure built by the RCG across New Zealand will see at least 84,000 rural homes and businesses, 1400km of state highway and 168 tourist destinations gain mobile and high-speed wireless broadband coverage.

The UFB programme has been expanded to cover 87% of the population by 2022, while all mobile operators have coverage to over 97% of the population (of which 95% is within 4G coverage areas).

These programmes are deploying essential infrastructure that will enable more Kiwi households and businesses to access better broadband services, now and in the future.

2. http://motu-www.motu.org.nz/wpapers/19_17.pdf

3. <https://www.crowninfrastructure.govt.nz/wp-content/uploads/CIP-Quarterly-Report-March-2020.pdf>





AFFORDABILITY

One of the most vulnerable groups in terms of the digital divide are those on low incomes, who struggle to afford many goods and services that most of us take for granted. There are also others who will experience a sudden fall in income due to job loss or business failure because of COVID-19.

In response to COVID-19, the industry engaged with Government and other stakeholders to ensure it is responsive to the needs of New

Zealanders in these tough times – including working with the Ministry of Education on its distance learning

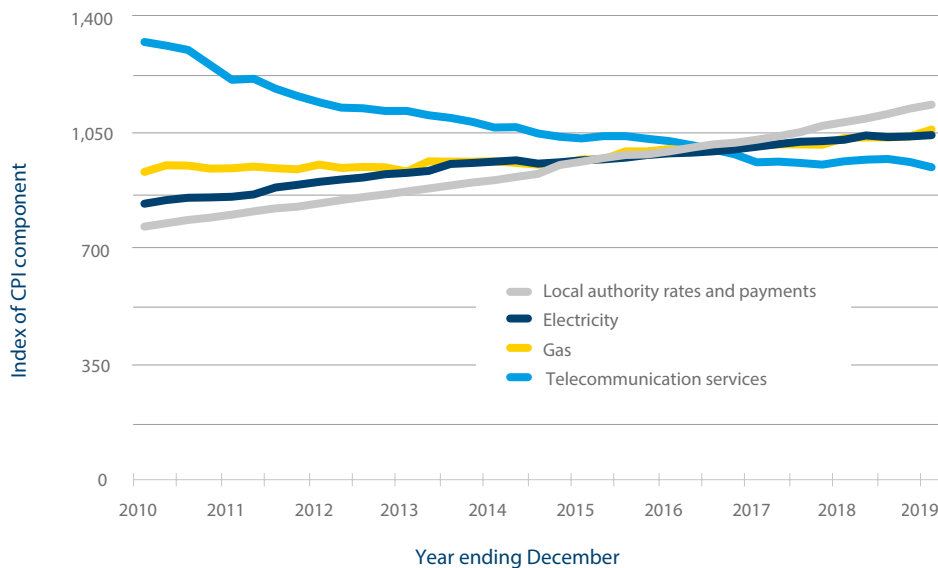
“The digital divide has been a challenge for many years.”

education package, supporting customers by removing data caps where possible, and not charging late fees or disconnecting those

experiencing financial hardship because of the pandemic.

It is important to note that for many New Zealanders the cost of their telecommunications services is lower than ever. In the twelve months between December 2018 – 2019, telecommunications costs as measured by the Consumer Price Index fell by 1.9%. By comparison the cost of other utilities rose – electricity increased by 1.4%, gas by 2.5% and property rates and related services by 4.9%.

Consumer price index: telecommunications vs utilities



Source: Statistics New Zealand

3 The relentless demand for data



New Zealanders’ appetite for data has grown steadily as the cost has decreased over the past ten years - enabled by the evolution in network technology in both fixed and mobile networks, and fuelled by increasing smartphone penetration and new applications.

In 2018/19 the average fixed broadband connection used 208GB per month – just five years earlier, the average was 32GB per month, representing a compound annual growth rate (CAGR) of just over 45%.

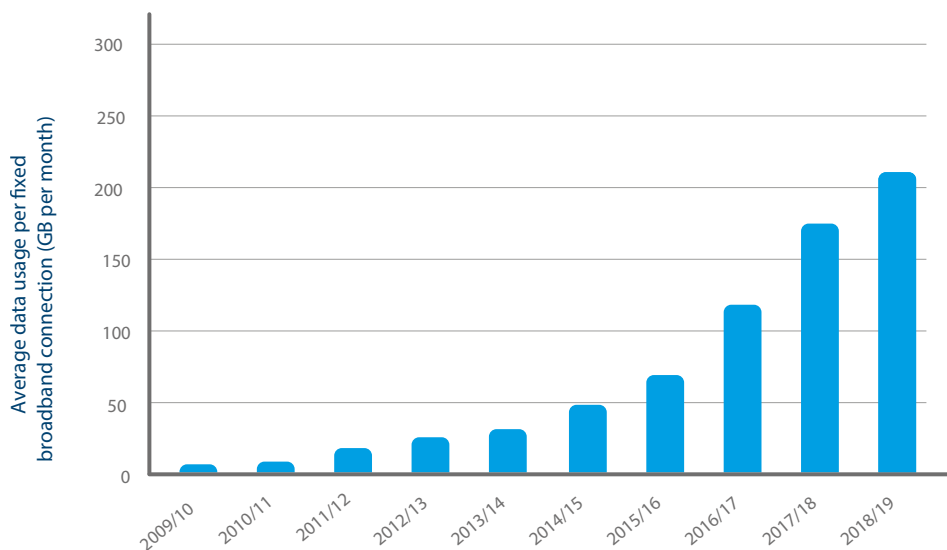
Meanwhile, mobile data usage by New Zealanders has

increased dramatically over the past decade, with average monthly usage per connection reaching 2.69GB in 2018/19.

Already at record levels, data usage surged during the COVID-19 lockdown, rising above the brief peak experienced as the Rugby World Cup was watched via broadband streaming in late 2019.

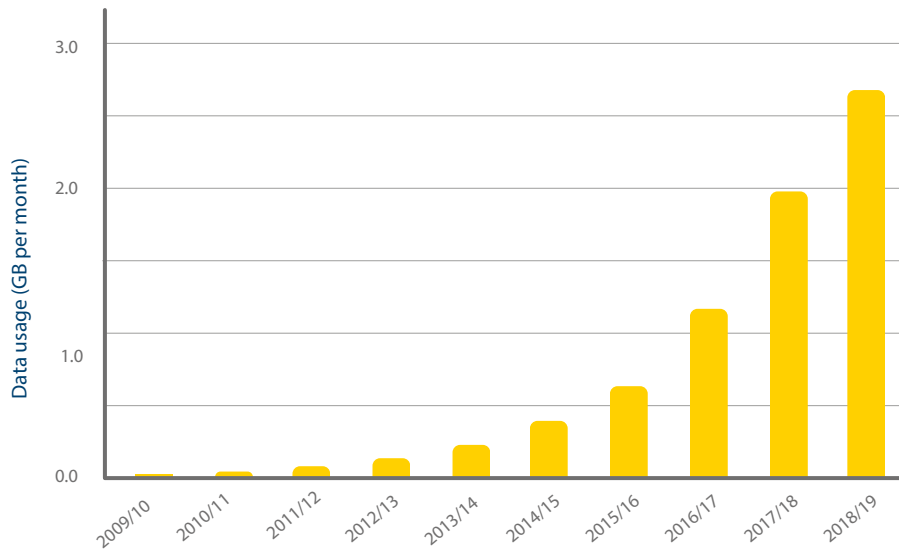
The graph from Chorus on the next page illustrates the rise in fixed data usage following the move to Alert Levels 4 and 3, and the continued increased demand for data during Alert Level 2.

Average data usage per fixed broadband connection



Source: Commerce Commission

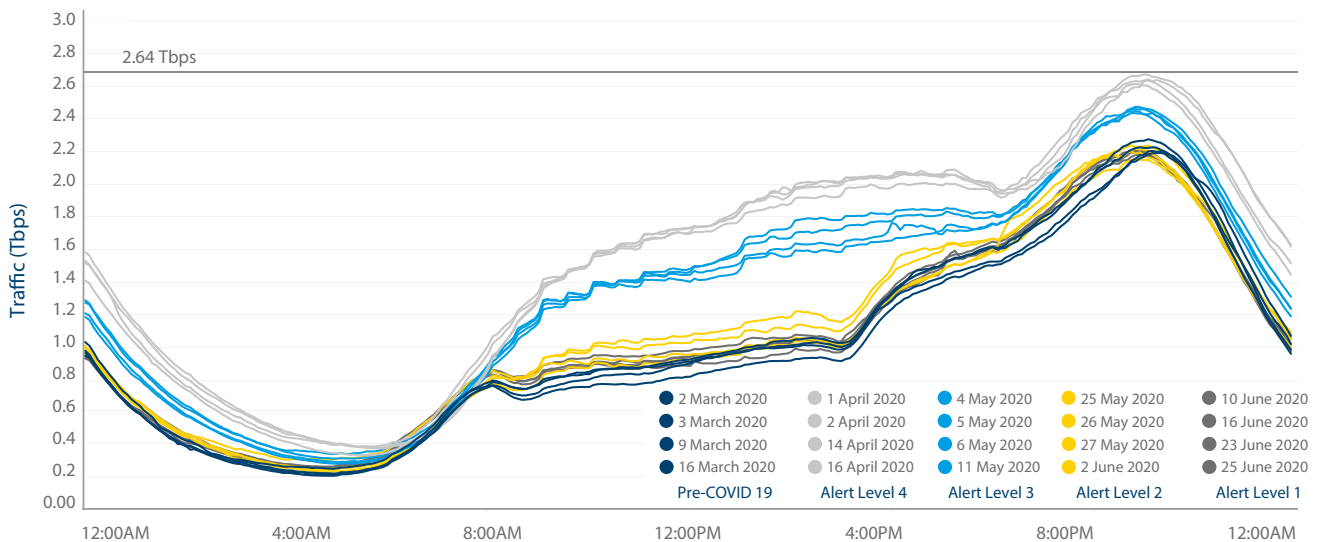
Average monthly data usage per mobile connection



Source: Commerce Commission

New Zealand has the **fastest uptake of fibre-optic broadband** in the developed world.

Network Traffic - Downstream



Source: Chorus



Moea Minhinnick with her moko and their new Skinny Jump modem



Getting Waiuku whānau connected during lockdown

When the nation goes into lockdown but your local community isn't connected, what do you do? Health Through The Marae in Waiuku acted quickly to get whānau connected to loved ones, health professionals and schools using Skinny Jump subsidised broadband.

Health Through The Marae (HTTM) is a small non-profit Māori health provider delivering a range of free services including GP, mental health, podiatry, social services and gym facilities to the marae whānau and wider community.

HTTM supports a range of vulnerable whānau and understands first-hand the need for better internet connectivity within their community. This was especially evident during the country's COVID-19 lockdown period when many local whānau endured financial and emotional hardship and many were without an internet connection at home. Additionally, with schools and workplaces closed, for these Kiwis this meant they couldn't work or study from home, further compounding inequality within these communities.

HTTM worked closely with Digital Inclusion Alliance Aotearoa (DIAA) who helped them with the application process for Skinny Jump delivery

to whānau. Through this initiative, HTTM were able to provide a subsidised broadband service to help bridge the digital divide in New Zealand by providing an affordable internet connection at home to those who currently go without.

Skinny Jump is a not-for-profit and is the result of collaboration between Spark, the Spark Foundation, Skinny and a network of community organisations around New Zealand. The service provided is \$5 for 30GB of data (with the option to renew up

“Broadband connectivity will make a huge difference to the future for whānau.”

to five times a month) and comes with a free Wireless Broadband modem. Skinny Jump provided a lifeline during the lockdown for local elderly and vulnerable whānau members in Waiuku by providing an essential communication service to get whānau connected.

Piri Minhinnick of HTTM said that a lot of whānau in Waiuku both elderly and vulnerable needed

training on how to use the modem and internet connectivity.

“But once they were connected, and they knew how to reach their moko/mokopuna nui, some people even cried, it was massive. The other big thing is affordability, many whānau had been using mobile phone data which was more expensive, but Skinny Jump broadband is very affordable.”

Piri said that the broadband connectivity will make a huge difference to the future for whānau in Waiuku.

“Accessing health care remotely via virtual consultations will make a big difference, whānau can stay in the comfort of their own homes, be surrounded by other whānau members during consultation and they won't have to travel as much. That's particularly important for moko living with kaumātua. Now that homes have WiFi and tamariki have the resources, they are able to continue learning online. We're also working with our rangitahi (youth) who will support and teach their elders the basics of email and internet use. Local whānau are good at traditional crafts such as weaving, so we're looking at supporting whānau to develop a web page to sell their products online.”

4 Need for ongoing investment and industry sustainability

Significant investment during the past decade has helped to ensure the telecommunications networks have been able to withstand the toughest test – the entire country in lockdown, relying on telecommunication services for business, education and entertainment. Fixed line and mobile networks are complementary and enable ubiquitous connectivity wherever people might find themselves.

The Commerce Commission's Measuring Broadband New Zealand report released in May 2020, shows that, on average, copper

and fibre broadband connections experienced no significant decrease in download speeds during lockdown, despite unprecedented demand on broadband networks⁴. Telecommunications Commissioner Stephen Gale said:

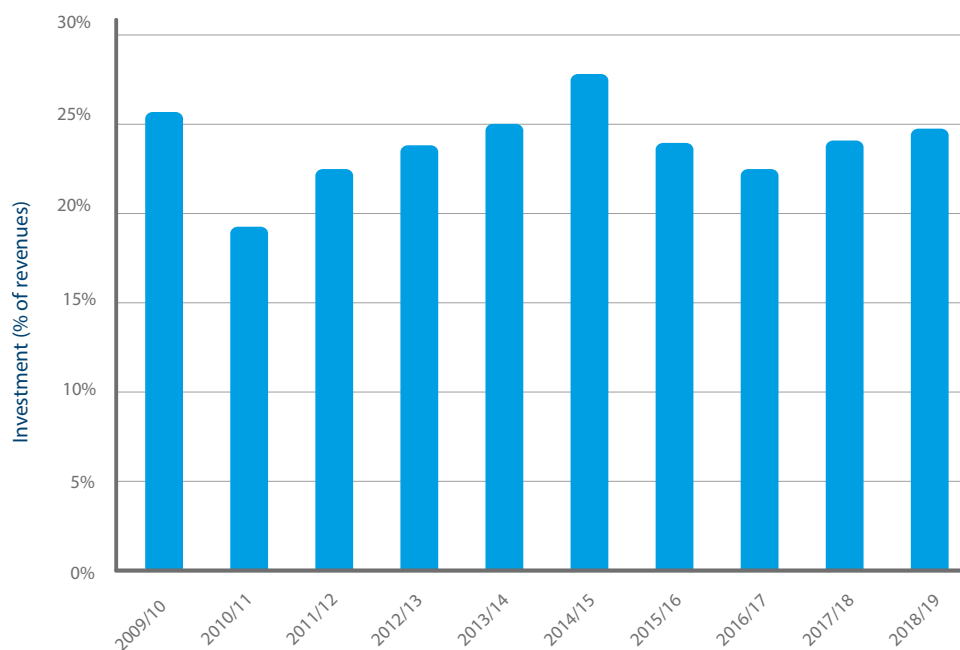
"Chorus and other providers reported record levels of online activity. But despite that increase, the latest report from our independent testing partner, SamKnows, shows that copper and Fibre 100 plans continued to perform well, with average download speeds unaffected."

Since 2012/13, annual public

and private investment in New Zealand has exceeded \$1.5 billion and by 2018 New Zealand ranked the fourth highest country in the OECD in terms of investment proportional to GDP. We were exceeded only by the Slovak Republic, Australia and Slovenia.

Annual investment by the telecommunications industry has consistently surpassed 20% of annual revenue during the past decade, peaking in 2009/10 and 2014/15 (driven in part by 3G and 4G mobile technology roll-outs) but steadily growing again over the past three years.

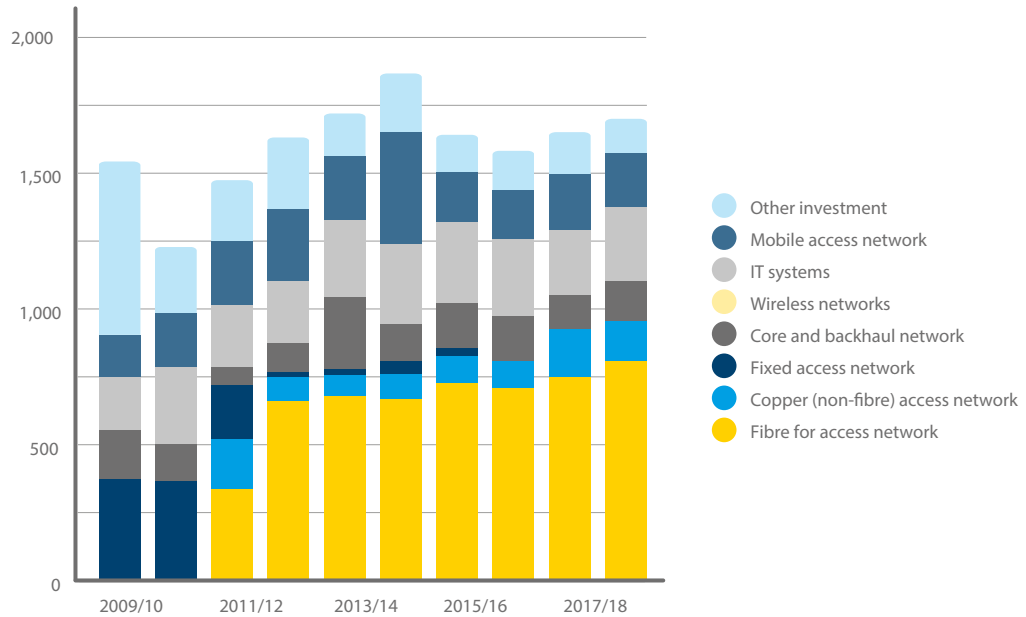
Telecommunications investment as a percentage of revenues



Source: Commerce Commission, Network Strategies

4. <https://comcom.govt.nz/news-and-media/media-releases/2020/independent-tests-show-nzs-broadband-performed-well-during-COVID-19-lockdown>

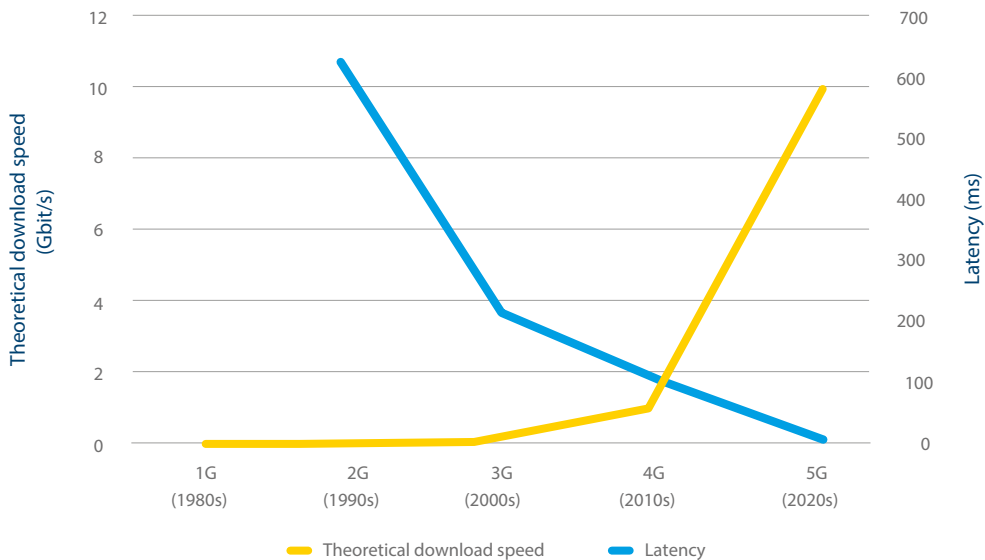
New Zealand telecommunications investment



Source: Commerce Commission

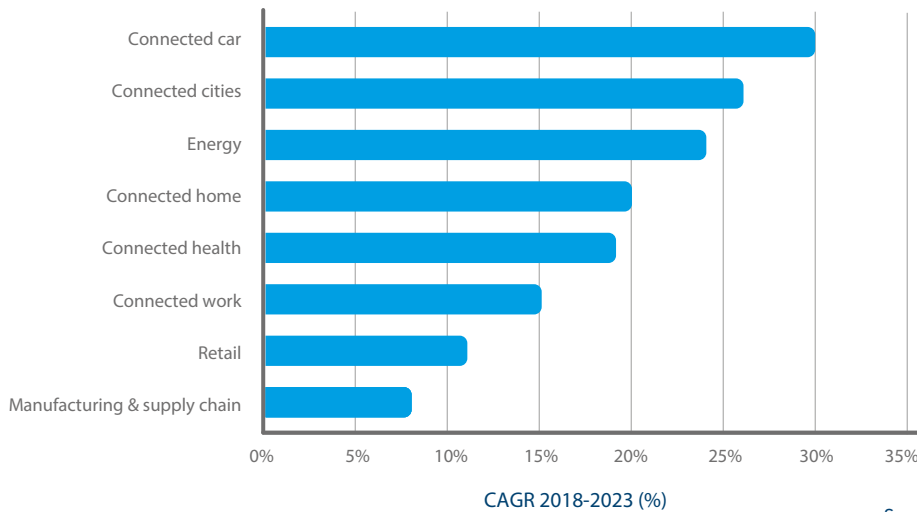
New Zealand telecommunications sector investment is 4th highest in OCED as percentage of GDP

Evolution of mobile networks



Source: ITU

Predicted global M2M connections by key verticals, CAGR 2018-2023



Source: Cisco

Whether it is fibre roll-out or the deployment of new technologies, continued investment in infrastructure and innovation will remain a hallmark of the New Zealand telecommunications sector.

A key driver for ongoing investment is technological change, and the need to continually upgrade network capability. A good example of this is the upgrade from 4G to 5G technology which will enhance the user experience through higher speeds, greater capacity and lower latency.

Another example of the next evolution in technology is the Internet of Things (IoT), enabled by Machine to Machine (M2M) connections. Traditionally M2M traffic has been much lower than that from other devices such as smartphones and personal computers but this is set to change. Cisco notes that the

increasing deployment of video applications on M2M devices, plus the rise in applications requiring greater bandwidth and lower latency – such as telemedicine and smart car navigation systems – will result in M2M traffic

“Continued investment in infrastructure and innovation is a hallmark on the New Zealand telecommunications sector.”

increasing at a greater rate than the number of connections.

Cisco forecasts that globally M2M connections will comprise 50% of all networked devices by 2023, up from 33% in 2018. Connected car applications (fleet management, in-vehicle entertainment, emergency calling) will be the fastest growing component.

The telecommunications sector is not only a key driver

of economic activity, it is a significant New Zealand employer with around 12,000 full time employees working directly for telecommunications companies, and tens of thousands of suppliers and sub-contractors employed

throughout the sector. The dramatic changes brought about by the COVID-19 pandemic have emphasised the need for all sectors to play their part in maintaining social and economic cohesion. While individual companies have their own corporate social responsibility initiatives, collectively the industry runs programmes aimed at supporting consumer wellbeing and the environment.



New Zealand Telecommunications Forum activities

The New Zealand Telecommunications Forum (TCF) plays a vital role in bringing together the telecommunications industry to resolve regulatory, technical and policy issues.

In doing so, we enable the best possible outcomes for New Zealand consumers. The TCF also provides a range of services for consumers.

BLACKLISTING

Mobile providers around New Zealand work together, facilitated by the TCF, to blacklist all lost and stolen devices across all mobile networks in New Zealand.

CONSUMER PROTECTION

Scams continue to be a problem for New Zealand consumers, and

generally it is the more vulnerable who are the victims. These scams can be perpetrated by phone, email and social media using a range of methodologies from romance fraud perpetrated over quite a long period of time, through to identity theft where the victim's personal details are transferred to the scammer.

The industry has been working



collectively to tackle scam calls. The TCF's Code for Scam Calling Prevention outlines a process among the telecommunications providers to notify each other of scam call incidents so they can be blocked across all New Zealand networks.

As consumers report scam calls to a variety of different organisations, the TCF has invited a range of agencies, including Netsafe, CERTNZ, Inland Revenue, the Commission for Financial Capability and banks, to sign a Memorandum of Understanding so they can report scam calls directly to the industry. This ensures that as many scam calls

as possible can be blocked.

In addition to blocking scam calls, the TCF is also working on a range of initiatives to block and prevent scam texts and prevent fraudulent sim swaps and number porting.

NUMBER PORTABILITY

Number portability is an important service that is managed and facilitated by the TCF. It is recognised by regulators as a key facilitator for competition because without it, consumers would be forced to change their number when switching between service providers. This would be a considerable disincentive for switching and a fundamental

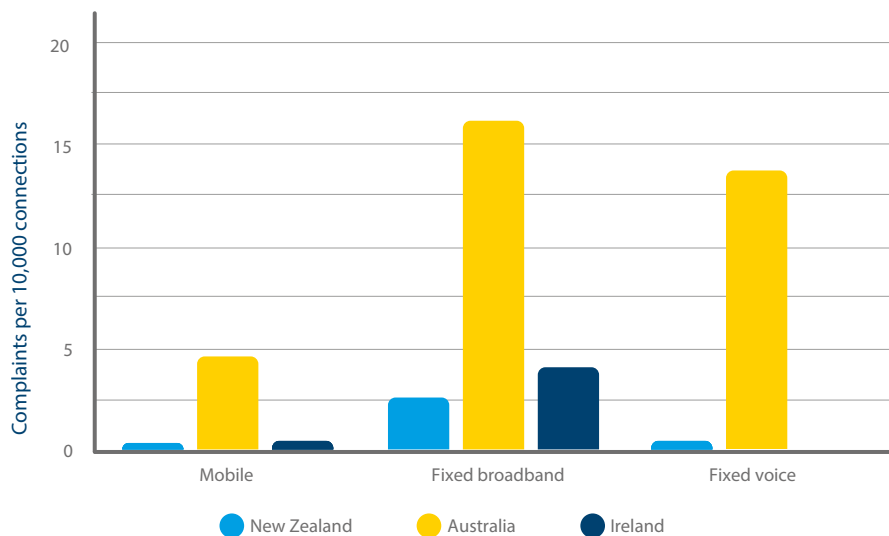
barrier for new entrants trying to capture market share.

CONSUMER COMPLAINTS

All TCF members are part of the Telecommunications Dispute Resolution (TDR), a free and independent service whose aim is to help consumers resolve complaints with their telecommunications providers.

In 2019, the TDR received 2,922 complaints and enquiries, which amounts to an average of 2.88 complaints and enquiries per 10,000 connections per quarter⁵. The graph below provides a comparison of New Zealand with Australia and Ireland for the final quarter of 2019.

Telecommunications complaints in New Zealand compared to Australia and Ireland, October to December 2019



Source: Telecommunications Dispute Resolution, Telecommunications Industry Ombudsman, ACMA, ComReg

Notes: 1. New Zealand data includes complaints and enquiries, Australia and Ireland data include complaints only.

2. Ireland fixed broadband data also includes fixed voice complaints

3. New Zealand fixed voice complaints and enquiries for the December quarter is estimated from data for July - December 2019

5. https://www.tdr.org.nz/sites/default/files/field/file_attachment/TDR-Bi-Annual-Report-2019-PT-2-infograph-page.pdf

RE:mobile

Our not-for-profit RE:MOBILE programme encourages New Zealand consumers to recycle their unwanted mobile handsets, with proceeds donated to charity Sustainable Coastlines.

RE:MOBILE is New Zealand's only mobile phone recycling scheme which is accredited by the Ministry for the Environment. This industry-wide programme aims to reduce the environmental impact of unwanted mobile handsets, increase mobile

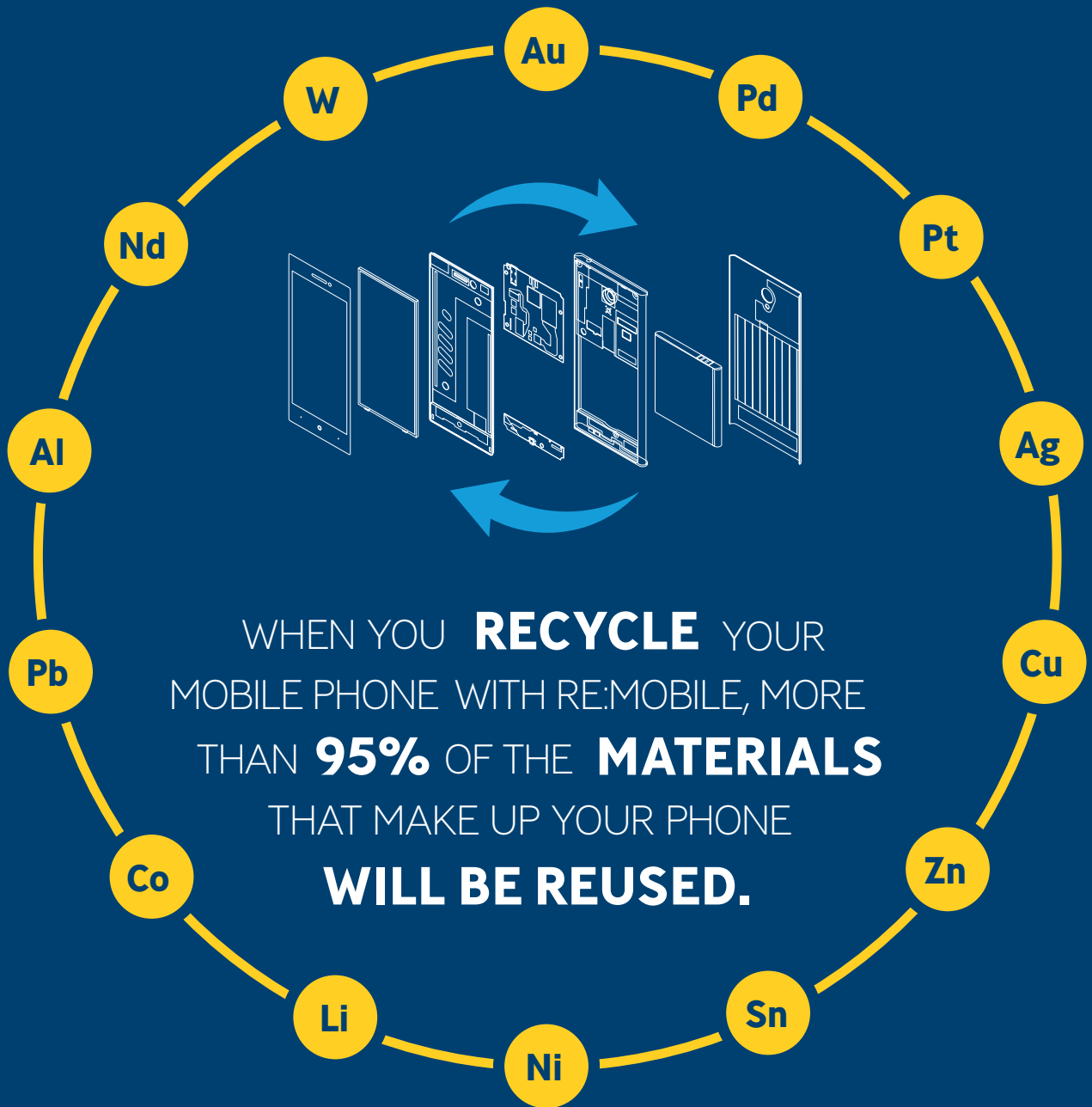
phone recycling awareness and encourage the responsible management of e-waste.

Since 2014 the following has been achieved:

- over 535,200 mobile handsets have been collected for re-use or recycling,
- over \$135,000 has been raised for Sustainable Coastlines, with the proceeds enabling more than 10,000 trees and plants to be planted along New Zealand waterways.



Olympian Eliza McCartney as RE:MOBILE ambassador in 2019



A TYPICAL IPHONE IS ESTIMATED TO CONTAIN APPROXIMATELY 0.034G OF GOLD AND 0.34G OF SILVER.



Snapshot: New Zealand's telecommunications industry by the numbers



2/3

of customers on fibre connections have services of 100Mbps or greater



4th

highest level of telecommunications investment in the OECD proportional to GDP



6 million

mobile connections



>100

celltowers in New Zealand's most isolated rural areas have been built by the Rural Connectivity Group



73,096

mobile phones recycled with RE:MOBILE in 2019



>10x

faster end-user speeds will be delivered by 5G, compared to 4G



2022

is when the second phase of the Ultra-Fast Broadband network will be completed and be available to 87% of New Zealand premises

The TCF comprises the following industry participants:



CHORUS



VOCUS



AWACS

Northpower FIBRE





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