

Vodafone Submission

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**Study of mobile telecommunications
markets in New Zealand**

26 October 2018



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Executive Summary

Vodafone welcomes the opportunity to comment on the Commission's Study of mobile telecommunications markets in New Zealand.

New Zealanders benefit from a high performing and competitive mobile market. This is evidenced with three national competing networks, significant and growing coverage, competitive offers, internationally low prices, diverse bundles, and the rapid rollout of next generation mobile technologies.

Most recently, the GSMA has ranked New Zealand #2 in the Global Mobile Connectivity Index, measured against key performance metrics of infrastructure, affordability and network performance. These measures, which deliver very real benefits to New Zealanders, should not be taken for granted and need to be recognised in this review process. Our submission sets out in further detail the extensive independent evidence showing the competitive health of the market.

New Zealand has been identified as a 'stand-out' economy for digital evolution, and mobile technologies will play a crucial role in this. We have high levels of existing digital development and a strong upward trajectory for the future. The future opportunities from the Internet of Things (IoT), Vehicle IoT, agriculture, health, smart working and public safety are significant. New Zealand is well positioned to leverage this ongoing digital development.

Mobile networks in New Zealand have largely been built without government intervention or investment, but with regulatory backstops in place. The nature of our industry and the pressure of competition ensures that MNOs continuously invest in network technology, including a commitment by current network operators to invest in 5G technology.

New Zealand has regulatory building blocks today that will continue to protect competition as the market evolves in the future. The mobile market is not 'lightly regulated' as suggested by some parties, and mobile regulation is consistent with other international markets. An important challenge in this review is to distinguish between regulation that benefits end users versus requests by individual companies that will distort and damage competition in the competitive mobile market.

The Telecommunications Act today provides the key components to facilitate entry and grow market share in the mobile market, including regulated roaming, co-location, mobile termination and number portability. The Government has put in place regulation to facilitate ongoing network deployment, and the TCF has developed many codes to facilitate competition between retail and wholesale providers.

Spectrum is available through management rights, licences and managed spectrum parks administered by MBIE. Opportunities exist for future entry with the auction of key 3.5GHz spectrum for 5G.



A competitive and dynamic sector

We are proud to be able to deliver New Zealanders a world class mobile network at razor sharp prices. This is a testament to a strong and competitive market and discerning customers that drive us to deliver the best.

Kiwis are getting a great deal on telco services

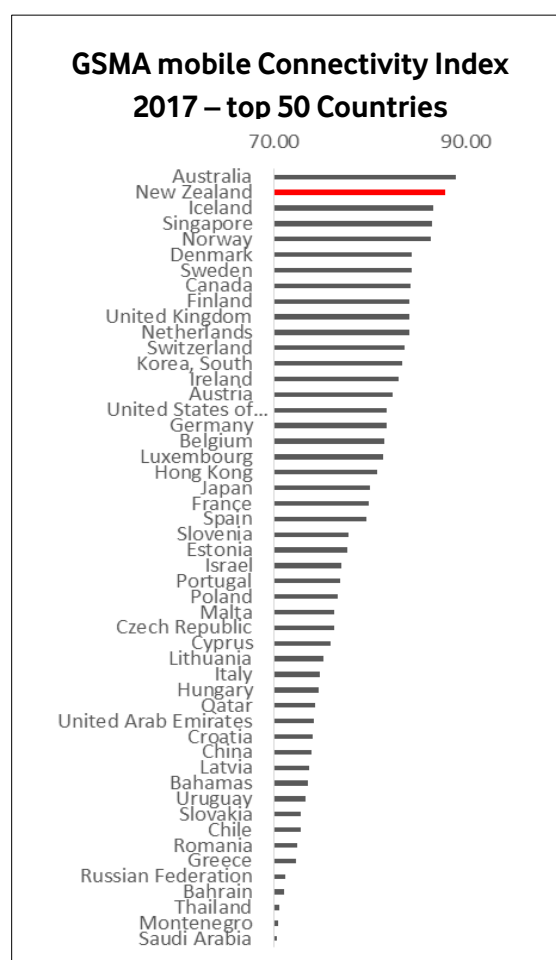
New Zealand is consistently amongst the leaders in international indices of mobile performance

For example, New Zealand scores very highly across the board in the GSMA mobile connectivity index.

- #2** Overall
- #5** for infrastructure
- #7** for affordability
- #10** for network performance

This is not a result in isolation. New Zealand ranks in the top half of the OECD across a range of indexes measuring mobile telecommunications performance, including:

- Huawei Global Connectivity Index
- ICT Development Index
- World Economic Forum Network Readiness index





Coverage reaching almost every New Zealander

Vodafone proudly has wide mobile coverage available across New Zealand, providing a network that delivers across most of the country's population.



98.5% 3G

&

95% 4G

Coverage in the places where Kiwis live work and play



295k

Coverage to rural homes

Among the fastest data speeds on the planet

New Zealand consistently ranks among the fastest mobile internet in the world.



8th

Fastest 4G speeds in OpenSignal's state of LTE report

13th

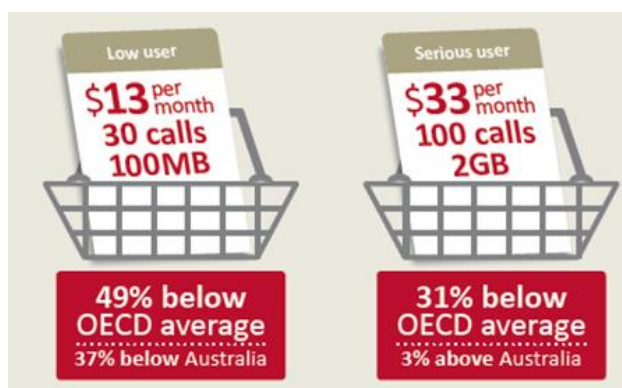
Fastest overall mobile speed in the Ookla Speedtest global index

The August 2018 Ookla Speedtest Global Index shows that New Zealand has more than double the global average download speed. Vodafone is also named as the fastest mobile network in New Zealand in the most recent rankings.

Great value for money

Despite New Zealand's small population and challenging geography, mobile telecommunications services are priced below international averages. This is consistently shown in the Commission's own Annual Telecommunications Monitoring Reports.

The new unlimited and high data plans released by each of the mobile providers over the last year further cement New Zealand's





position as a leader internationally on mobile prices. These plans more than address the concerns raised by the Commission in paragraph 96 of the market study paper.

For example, the table below compares our unlimited data plan with the most comparable plans across each mobile operator in Australia, removing any promotional discounts or promotional data.

Comparison of Vodafone NZ unlimited plan to comparable plans in Australia

	Vodafone NZ ¹	Telstra ²	Optus ³	Vodafone Aus ⁴
Monthly price NZ\$⁵	79.99	74.85	70.50	65.00
Data allowance	22GB	30GB	25GB	20GB
Data after cap has been reached	Unlimited at reduced speed	Unlimited at reduced speed	NZ\$10.8 per GB	NZ\$10.8 per GB
Coverage of population	98.5%	99%	98.5%	96%
Bundled services	12 Months Netflix	6 month Apple Music Free data on selected live sports	None	None
Contract Term	No term	12 Month	No term	No term

Average revenue per user has also been declining. In their report for Trustpower, Analysys Mason incorrectly conclude that average revenue is increasing. This appears to be based on data from the GSMA, which makes two key errors:

- It includes revenue across the entire business, fixed and mobile. This captures a spike in 2013 due to our acquisition of TelstraClear, which included many higher value fixed line enterprise customers.
- The GSMA data also shows a further spike in our average revenue in 2016. This is an error, and is inconsistent with our statutory accounts. We have contacted GSMA to correct their data.

¹ https://www.vodafone.co.nz/pay-monthly/unlimited-mobile/?gclid=EAlalQobChMltvMrYKM3qIVzQoqCh0itqCrEAYASAAEgJnafD_BwE

² <https://www.telstra.com.au/content/dam/tcom/personal/mobile-phones/pdf/mobile-byo-plans.pdf>

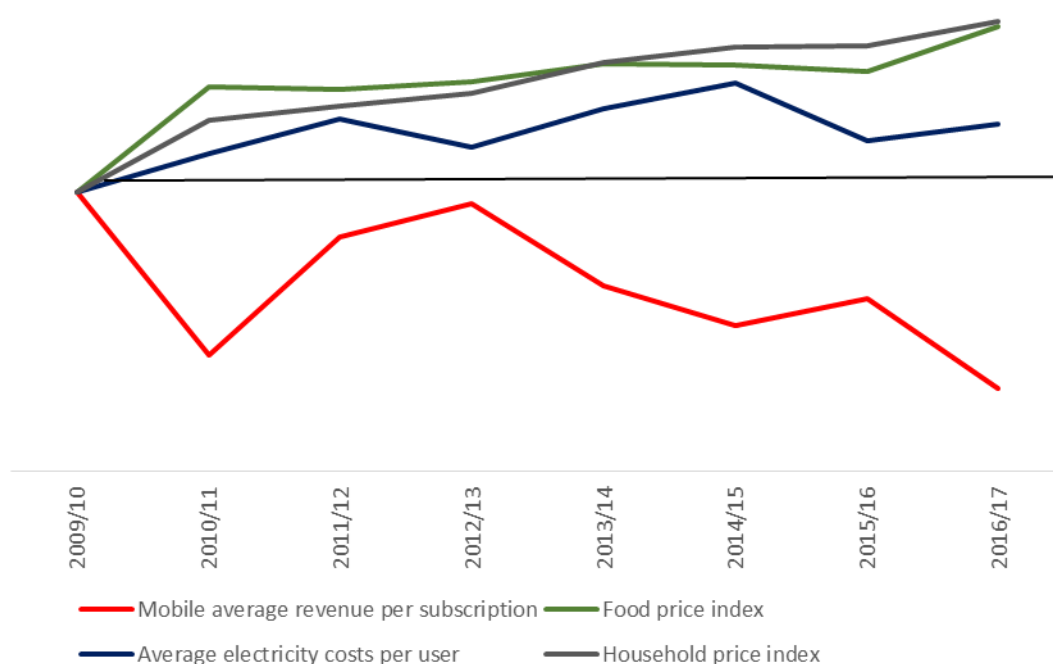
³ <https://www.optus.com.au/shop/mobile/phones/sim-only?plan=35&SID=con:home:1up:1:oct18:simbyo:3530:3530>

⁴ <https://www.vodafone.com.au/plans/sim-only/state/month-to-month>

⁵ Exchange rate as at 17 October of 1.08 NZD to 1 AUD



Index of price changes since June 2010



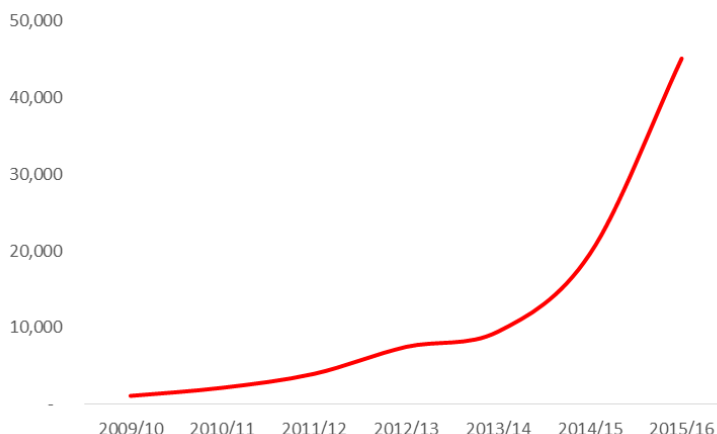
We supply accurate data on revenue and subscriber numbers to the Commission as part of the annual telecommunications questionnaire. This data shows that average revenue has been declining since 2010 and has not kept up with increases in prices for other key expenses for New Zealanders. It is disappointing that the Commission did undertake its own analysis to test the validity of the Analysys Mason conclusions.

Meeting the needs of an ever-increasing appetite

Despite declining average revenue, Kiwis are using and enjoying more and more telecommunications services every day. The increases over the last 10 years have been astronomical, and show no sign of stopping any time soon.



Total mobile data usage since June 2010



On Vodafone’s network:

- On a typical weekday, our customers make more than 7 million mobile calls. Including our fixed network, that adds up to over 1 billion minutes every month
- More than 12 million text messages are sent and received every day.
- Over 6,500 Terabites of mobile data every month



1 Billion



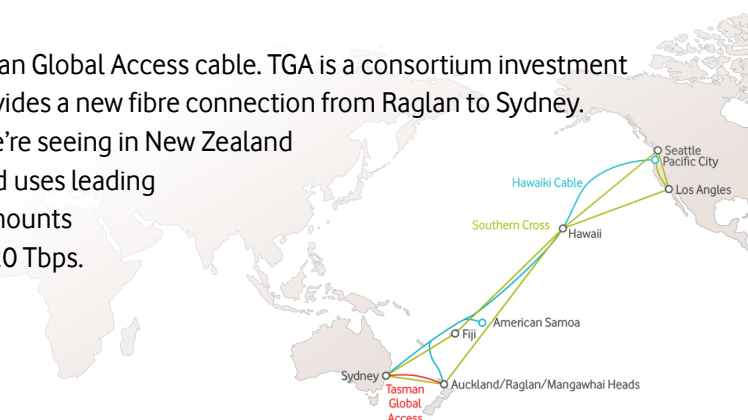
12 Million

6,500 TB



To support the significant growth in network traffic, we continuously invest into our network. We spend in excess of \$150 million every year on our fixed and mobile network building more mobile towers, acquiring more spectrum, and more backhaul capability.

Last year we went live with the Tasman Global Access cable. TGA is a consortium investment alongside Spark and Telstra that provides a new fibre connection from Raglan to Sydney. This investment reflects the pivot we’re seeing in New Zealand traffic towards Australia and Asia, and uses leading edge technology to provide large amounts of capacity, futureproofed for up to 20 Tbps.

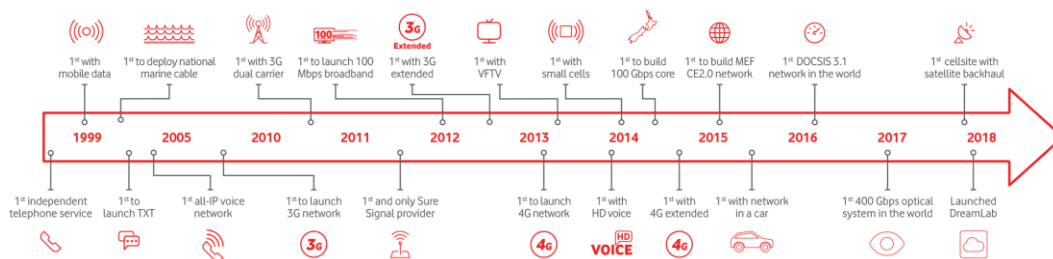




Delivering cutting edge technology

Vodafone New Zealand prides itself on bringing some of the most cutting edge technology to Kiwis, delivering a long line of 'firsts'.

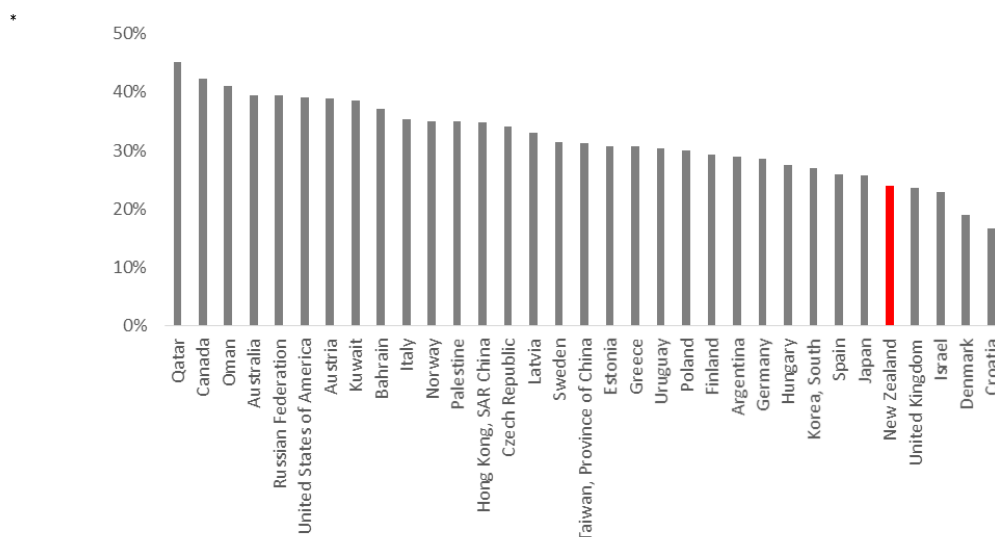
Vodafone NZ Firsts



The market conditions are right to continue to deliver great outcomes for New Zealand

Competition in New Zealand is among the strongest in any market we operate in. We compete very hard for the business of every New Zealander which has resulted in one of the lowest margins on telco services for any developed country.

EBITDA Margin for MNOs across Developed countries – 2017*



* Country data sourced from GSMA. NZ data sourced from annual reports of Vodafone, Spark and 2degrees.



This is a result of robust competition built on strong market fundamentals.

- A **42% churn** rate across all consumer accounts. The Commission regulates number portability to promote healthy churn, and as recently as December 2016 concluded that the rules are “working well and achieves its intended objectives”.^{6 7}
- **Co-location** agreements that facilitate network sharing where efficient, which is now common across the industry. This is supported by the Mobile Co-location Standard Terms Determination, a regulated service set by the Commerce Commission.⁸
- **Roaming services** which allow new players to offer nationwide coverage before building out to full scale. These agreements are underpinned by the regulated National Roaming service, a backstop roaming service administered and recently extended by the Commission.⁹



To survive in this market we have to bring our ‘A’ game. We strive every day to find new ways to offer the services and deals that Kiwi’s love.

Bundling together deals with the likes of Netflix is becoming increasingly important to New Zealanders. This gives Kiwis the chance to gain great deals by using us to leverage down the cost of international services.

⁶ Commerce Commission, *Determination for the designated multinet network services of ‘local telephone number portability service’ and ‘cellular telephone number portability service*, [2016] NZCC 32

⁷ By comparison, for the year up 31 December 2017, 22% of New Zealand electricity customers switched between electricity providers. See: https://www.emi.ea.govt.nz/Retail/Reports/3ZE3OF?RegionType=NZ&MarketSegment=Res&_si=ttlconsumer-switching,v|3

⁸ Commerce Commission, *Standard Terms Determination for the Specified service: Co-location on cellular mobile transmission sites*, Decision 661, 11 December 2008.

⁹ Commerce Commission, *Review of National Roaming: Final decision on consideration of deregulation of national roaming*, [2018] NZCC 14.



The market is focussed on improving consumer service quality

There has been significant public focus on telecommunications complaint levels in the last year and the Commerce Commission has identified retail telecommunications as a priority area of focus for it in 2018/19.

The Commission will receive greater powers to address these concerns through the Telecommunications (New Regulatory Framework) Amendment Bill. We look forward to working with the Commission to identify the best solution to these issues.

While there are clear improvements needed, our data shows efforts should be focused on the fixed line network which has more than 15 times more complaints per month than the mobile network.

For mobile services we are seeing a steady increase in satisfaction. While there is still some way to go, these are encouraging results, suggesting all our efforts to improve customer service are starting to pay off.

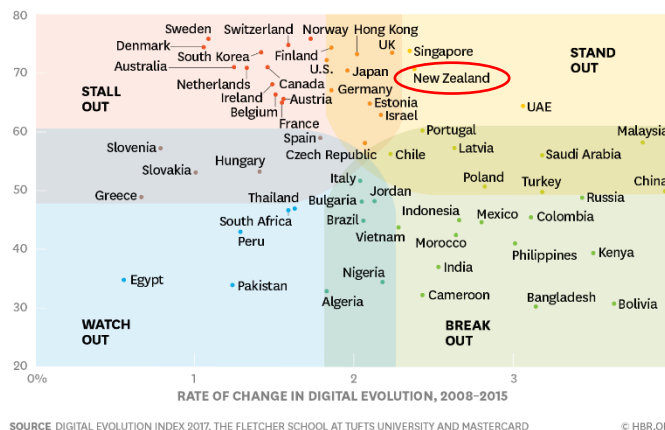


The future is exciting. Ready?

New Zealand has been identified as a 'stand-out' economy in Tufts University's Digital Evolution Index. We have high levels of existing digital development and a strong upward trajectory for the future.

We are proud of having helped to put New Zealand in this position, and also excited about the platform it gives the country to leap into the next phase of digital opportunities.

Digital Evolution Index 2017



In this section we explore some of the new technologies just on the horizon that a strong and independent mobile sector will help bring to New Zealanders. These advances are underpinned by two technologies – the internet of things (IoT) and 5G – where Vodafone is at the forefront, both internationally and domestically.

The Internet of things



Vodafone is recognised as a world-wide leader in IoT technology. For example, Gartner has placed Vodafone as the worldwide leader in managed machine-to-machine services. We received both the highest rating for “ability to execute” and “completeness of vision”.

We have built networks across the world based on the narrowband (NB-IoT) standard including right here in New Zealand. NB-IoT provides strong coverage over wide areas, even when devices are underground or deep within buildings. It also offers great power efficiency, so devices can run on batteries for ten years or more without the need for a charge.

This means a lot more SIMs in a lot more places. To help achieve this Vodafone Group has begun collaborating with Arm on their integrated SIM (iSIM) technology to help reach their vision of a trillion connected devices by 2035. This technology will allow the next generation of IoT devices to be delivered faster, cheaper and more securely than ever before.



All this is unlocking a new wave of applications that have not previously benefited from connectivity due to barriers such as power, cost and propagation. This includes, connected beer kegs in Australia,¹⁰ E-Bikes in Europe that can't be stolen,¹¹ or smart cities around the world using Vodafone networks to connect everything down to rubbish bins, which can report when they are full.¹²

5G

In 2005, we were the first with 3G and in 2014 took the country by storm with the arrival of our 4G network.

Now, we're incredibly excited to explore the future of possibilities with the fifth generation mobile network. This will be absolutely essential to meet the increasing appetite that New Zealanders have for more and more data, but also presents opportunities to use mobile connectivity like never before. 5G's resilience, reliability, immediacy and its ability to 'specialise' will render it the essential final connection between a plethora of devices and objects, increasingly acting autonomously to work for us as well as to entertain us.



While its applications will be transformative, the technology itself is largely incremental. Initially 5G will build off existing 4G networks, using them as a control plane, and physically locating on the same towers. We have already begun upgrading cell towers to be 5G ready by among other things upgrading the antennas to be compliant with the emerging standards.

The next step is for standards bodies, vendors and handset manufacturers to make 5G a reality. We expect that these will all come together by the early 2020s. We eagerly anticipate bringing this future to New Zealand.

¹⁰ <https://www.zdnet.com/article/vodafone-uses-iot-across-stolen-cars-mental-health-beer/>

¹¹ <https://www.vodafone.com/content/index/what/technology-blog/e-bikes.html>

¹² <https://www.vodafone.com/content/index/what/technology-blog/nb-iot-will-connect.html>



Vehicle based IOT



In recent years cars have been getting smarter and safer, partly due to the role of embedded cellular communications. The introduction of 5G and advances in IoT promise to accelerate this trend.

Driverless cars will one day be a reality, but before then there are tangible benefits that most car manufacturers are already exploring. For example new safety and security features, infotainment and navigation services.

Wouldn't it be great if there were fewer crashes, reducing the 300+ New Zealanders that die on our roads every year? While some of the features in new cars such as automatic braking, lane-tracking and blind spot warning already help to reduce crashes, they depend on sensors within the vehicle which have a limited range. Vodafone has recently concluded testing in the UK and Germany to enable vehicles to talk to each other and roadside infrastructure over greater distances.

These trials use a technology called cellular vehicle to everything (C-V2X), which allows a car to connect not only to the network but also directly to objects in its line of sight. Information about the surrounding environment and the movements of other cars can be fed into a cars adaptive cruise control system before they are perceived by the driver or radar system, allowing it to automatically adjust its speed. This will make driving safer, more relaxing and more energy efficient – vehicles will go with the flow, even in rush hour.

For example, a car will be able to tell other cars of its intention to change lane or to signal an emergency stop. The vehicle could also be told the optimal speed to drive in order to avoid traffic congestion.

Scania

Scania is a Swedish manufacturer of commercial vehicles such as heavy trucks and buses. They have been trialing platooning for several years using vehicle based IoT technology. This enables a driving formation where a group of vehicles drive in a convoy or 'platoon' in very close proximity to each other, following the lead truck at constant speed. This reduces fuel consumption thanks to the reduced aerodynamic drag and hence reduced CO² emissions, as well as improved overall traffic flow.



Agriculture

The agriculture industry has already started to embrace ICT and connectivity to increase productivity and efficiency and lessen the impact on the environment. Farming companies are turning to real-time information systems to monitor and take informed decisions in a number of ways.



Halter

Halter is a New Zealand-based company that won the Vodafone Innovation Award at Fieldays 2018. They are revolutionising herd management by doing away with the need for fences, herding dogs, and keeping farm animals away from our precious waterways.

It is all based off a remotely connected cow collar that would track, manage, and communicate with cows using a specially designed 'Cowgorithm'. This builds a virtual paddock around the cows and trains their behaviour.

It all adds up to more efficient and environmentally sound farming, freeing up 2-3 hours of a farmer's time per day.

Connected cows – a market that is expected to grow to more than NZ\$16 billion per year by 2021, and is represented by New Zealand's own Halter (see box)

Connected sensors – improving monitoring and efficient use of resources. For example a New Zealand based firm 'Precision Farming' leads the world in helping farmers manage their fertiliser use. A special GPS farming device is installed in the vehicle spreading the fertiliser and data is sent via Vodafone's network to Precision Farming's secure server providing the farmer with accurate feedback to the farmer to instantly spot any wastage and adjust their next order.

Autonomous drones – to capture high-quality images of crops which are then transmitted to the cloud where advanced analytics determine things such as where to apply pesticide or fertiliser, or inspect critical infrastructure.

Autonomous farm machinery – such as smart milking equipment or driverless harvesting trucks will be able to be controlled remotely by a central operator.



Health

The mobile health market has shown significant growth over the past few years with innovative mobile solutions, applications and services being introduced in the market.

The advancements in mobile technology will accelerate this trend. This means that patients get better access to treatment, and health care workers can spend more time with patients through innovations like:



Remote care: enabling doctors to treat patients remotely and improving quality of life for people with chronic diseases, by enabling them to monitor and manage their conditions at home

Assisted living: using mobile technology to support assisted living, helping elderly people to live independently, in their own homes, for longer, such as the technology pioneered by Sensormind described in the box below.

Smart working: enabling healthcare workers to access patient records and hospital systems remotely to improve quality of care, reduce administration time and increase the time they can spend with patients, as well as helping to keep lone healthcare workers safer.

Sensormind

Sensormind provides a monitoring service to assist independent living for seniors. They use motion sensors in every room, and on every external door, linked by Vodafone data SIMs that automatically identify causes for concern, and generate alerts when something is wrong. Notifications can be directed to phones of family members, care providers or monitoring centres.

Unlike traditional 'panic button' systems, Sensormind can detect issues and alert automatically, without the vulnerable individual needing to press a button. A report by the British Medical Journal claims four out of five persons with a panic button do not press it in an emergency.



Public safety

When ensuring public safety, information is everything. Real time information coming from a deep network of devices across a connected city will allow faster reactions, saving lives. With the cost of connectivity getting lower by the day, devices as simple as smoke alarms are being connected, allowing fire services to be deployed faster and more effectively. And many more lifesaving applications are just on the horizon:

Instantly deployed networks on a

drone: Poor or non-existent cellular coverage can be life-threatening in emergency situations. Vodafone Group's New Technologies and Innovation team has been experimenting in the hills of northern Andalucía with mobile relays mounted on a drone. The drone delivered 4G coverage of up to 3 Megabits per second where before there was none.



NZ Police

Vodafone and NZ Police have partnered up to supply mobile services for 6,500 frontline officers, and together have established a bespoke application development centre that has delivered innovative applications to make policing smarter and easier.

These technologies are forecast to deliver productivity savings of more than 520,000 hours per year. This productivity dividend is now being re-invested in frontline crime prevention.

Seismic sensors: Increasingly, local authorities and organisations in earthquake prone areas are looking to technology to provide a means of issuing early warning alerts when an earthquake begins to take place. By interconnecting multiple seismic sensors, such a system can alert those living further away from the epicentre that tremors and shocks could be about to take place. For example in Mexico City residents are given up to 60 seconds warning, just enough time to get prepared and into the best position possible.

The future of policing: Just as mobile applications, tablets and smartphones have helped private sector organisations increase productivity, they are now supporting frontline police officers in their operations and enabling smarter use of resources, a development being led right here in New Zealand (see box). This capability is only set to accelerate with the advent of smart cities, bestowing significantly more data to the right people at the right time.



Mobile Regulation

Biggest challenge is to distinguish between requests for support of individual companies and promoting competition that delivers end-user benefit

Competition in the mobile market is delivering significant benefits for New Zealanders – in the form of competitive offers, internationally low prices, diverse service bundles, and the rapid rollout of next generation mobile technologies.

Despite this evidence, several submitters to the Commission's review argue for further intervention in a competitive market to support their strategies to grow market share in the telecommunications market. In markets where there is a monopoly or limited competition, intervention may promote competition for the benefit of end-users, as we have seen in the fixed market where last mile access is a competitive bottleneck.

In contrast, the mobile market has three competing nationwide mobile networks. In such markets, regulatory intervention risks promoting economically inefficient competition that will deliver little to no benefit to end-users, and in fact can cause harm to future investment. They seek to promote inefficient competition by tilting the playing field in a competitive market to assist their own entry.

While arguing for further intervention to support their own business case may be rational behaviour, it must not mean that the regulator further intervenes in the market, in the absence of factual data that demonstrates a competitive bottleneck, or lack of current remedies within existing regulation and policy.

Regulatory building blocks are in place for the mobile market

Today, the Telecommunications Act provides the key components to facilitate entry and grow market share in the mobile market, including regulated roaming, co-location, mobile termination and number portability. The mobile market is not 'lightly regulated' as suggested by some parties, and mobile regulation is consistent with other international markets.



Regulated Service under Telecommunications Act	Regulated determination in place	Commercial agreement in place
National Roaming		✓
National Co-location	✓	✓
Mobile Termination Access Service	✓	
Mobile Number Portability	✓	

The TCF has developed many codes to facilitate competition between retail and wholesale providers including customer transfer, co-siting, handset blacklisting and emergency services calling codes.

The Government has put in place regulation to lower the barriers to ongoing network deployment, including the National Environmental Standard for Telecommunications Facilities (NESTF) and the NZUAG National Code of Practice.

Mobile site co-location is available on both a commercial and regulated basis, and there has been significant growth in co-location. For example, over 80% of RBI sites built by Vodafone have Spark, 2Degrees or WISPs collocating on their sites.

Spectrum is made available through the Ministry of Business, Innovation and Employment through management rights, licences and managed spectrum parks. This has led to the proliferation of mobile providers, regional WISPs and BlueReach's roll out.

We expect that any future entrant would focus on a future rollout that would primarily rely on 3.5 GHz spectrum. MBIE is currently consulting on 3.5GHz and is expected to auction off this spectrum which will be available in 2021. MBIE is also exploring other bands that will be suitable for 5G, including opening up 600MHz spectrum for cellular use.

Mobile rollout has continued rapidly with 2degrees having rolled out to a significant proportion of the population – nearing the 98% population coverage of Vodafone. And where 2degrees does not have network, it has had a long standing commercial national roaming agreement with Vodafone.

Rollout by WISPs and BlueReach has also continued. BlueReach have rolled out high speed wholesale wireless internet services across New Zealand. BlueReach invites New Zealanders to become a 'founding member of our fixed-line replacement and mobile service", and are encouraging smaller scale operators to join together as part of a nationwide wholesale network.¹³

¹³ <http://www.blureach.co.nz/index.html>



Wholesale competition is alive and well

Competition between the three mobile networks and the government RBI programme has resulted in a growing wholesale mobile market, which includes:

- MVNOs spread across 3 mobile operators;
- Three retail providers, operating off BlueReach's wholesale fixed wireless service; and
- 15 wholesale rural wireless broadband providers – representing over 50% of RBI fixed wireless connections

Competition to provide wholesale mobile services has resulted in churn between mobile network operators. MVNOs have switched between providers, such as TelstraClear who switched their wholesale provider from Vodafone to Spark and back again to Vodafone. Similarly, Vocus companies have switched wholesale provider between Vodafone and Spark.

2Degrees has similarly become active with MVNOs through its wholesale partnership with The Warehouse, and its Warehouse Mobile offering.

Kogan Mobile is a successful MVNO in Australia, and have partnered with Vodafone to launch its services into New Zealand next year.¹⁴



¹⁴ <https://www.zdnet.com/article/kogan-mobile-launches-off-vodafone-in-new-zealand/>

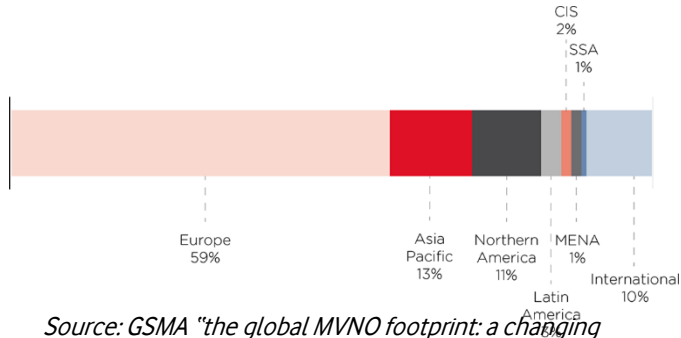


MVNO share in New Zealand is consistent with international experience

The market for MVNOs is limited to a small number of countries in very large markets, mostly in Western Europe and Northern America.

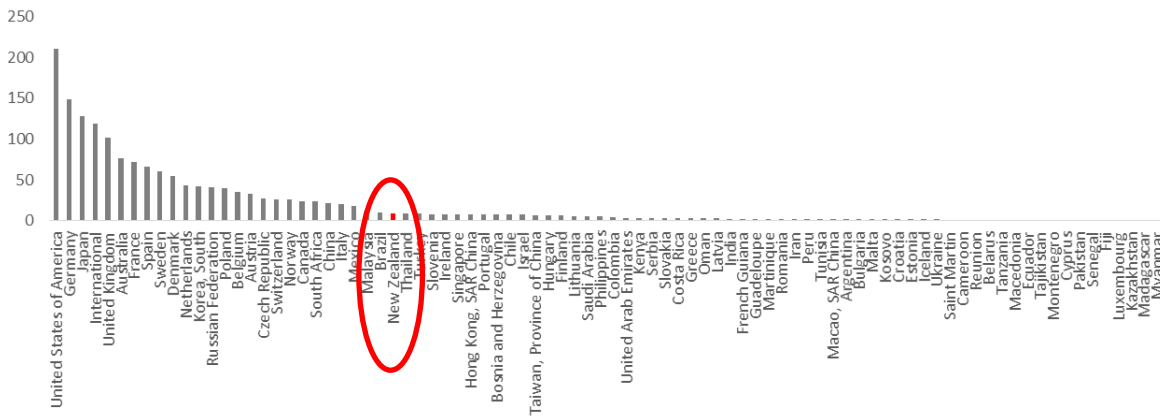
While the selective data presented by Trustpower, and then reproduced by the Commission makes New Zealand look like an outlier, this couldn't be further from the truth. We are firmly nestled amongst the majority of countries where MVNOs have failed to gain much of a foothold.

Where MVNOs are across regions



Source: GSMA "the global MVNO footprint: a changing environment" 2015

Number of MVNOs by country



Source: GSMA intelligence, 2018



Investment by MVNOs is small

As the Commission's paper identifies, there are a number of MVNO models internationally. They typically fall somewhere in-between two extremes.

'Light' MVNOs

These MVNOs focus on marketing and customer relations, and largely involve reselling the host MNO services (with wholesale arrangements based on per minute or per MB rates).



'Deep' MVNOs

These MVNOs require a greater level of investment where they take on additional functions (such as managing their own IT systems and billing systems) and purchase capacity in bulk from the host MNO

The New Zealand MVNO market to date sits towards the left hand side of this graph. MVNOs have chosen not made significant investments, and have not been the drivers of innovation that we have seen in other markets.

The market for MVNOs is challenging in New Zealand

As identified earlier in our submission, the New Zealand mobile market is highly competitive with New Zealanders enjoying internationally competitive prices, world-leading speeds, mobile penetration exceeding 123%, and global #2 in mobile internet connectivity. This already highly competitive market has made it challenging for MVNOs to find a compelling proposition.




This is not a situation unique to New Zealand. Many of the entry conditions and market segments that led to significant MVNO entry and growth up to now are no longer present. Around the world high levels of competition for mobile services, have led to declining MVNO market share. For example the GSMA notes:

many MVNOs have gone out of business in recent years due to the low margins and highly competitive nature of the market, especially in Europe.

Where MVNOs have been successful they have typically targeted one or more of three strategies: leveraging an existing business, offering discounted prices, or targeting unmet niches. We expand on these strategies in the table overleaf, which shows that where the MVNOs operate in a highly competitive market, they have struggled to gain significant traction.



MVNO strategies and opportunities

Strategy	Keys to success	Opportunity in NZ	Examples
Leveraging an existing business / brand	<p>An existing trusted brand, or a well-established business in a related sector, such as fixed line telecommunications</p> <p>These were initially the majority of MVNOs. However, more recently it has been acknowledged that it is difficult to succeed without also adopting one of the other two strategies as well.</p>	<p>Most MVNOs in New Zealand focus on this strategy.</p> <p>Only those who have been able to combine it with a discount or niche strategy have had major success.</p>	<p>In New Zealand a number of fixed line providers have established a mobile offering, such as Slingshot.</p> <p>Internationally a number of the world's biggest brands established MVNOs, such as Virgin and Tesco. However these have been declining in recent years</p> 
Discount MVNO	<p>Massive scale, or other business efficiencies allowing the MVNO to undercut the prices of the mobile operators</p>	<p>A challenging strategy in a small country that already has some of the lowest prices in the OECD</p>	<p>Warehouse Mobile focusses on a discount strategy, leveraging its significant customer base and retail footprint.</p> 
Targeting niches	<p>Identifying an unmet niche, such as a large ex-pat community, or a business segment not well served</p>	<p>The challenge is that New Zealand may be too small, or competition too mature, to sustain a niche market strategy.</p> <p>Mobile operators already meet the needs of most niches in New Zealand, and many other are sub-scale. However, this is the most likely area for success for an MVNO</p>	<p>New Zealand's largest MVNO – TelstraClear – targeted high ARPU post-pay business gaining over 35,000 connections.</p> <p>Currently Farmside operate an MVNO targeting the rural market, and Bluesky focusses on the Samoan ex-pat market.</p> <p>In the UK Lebara mobile and in the US Lycamobile both target ex-pats by offering cheaper international calls</p> 



Bundling

Bundling of telecommunications services has been a long term feature of telecommunications markets – both in New Zealand and internationally. In the New Zealand market, bundling occurs across a wide number of services.

Competitors compete in different ways with different bundles. What is clear from the myriad of fixed broadband bundles in market today, is that the bundling of mobile services itself is not determinative of fibre market share – for example, where Trustpower has been winning an increasing market share in the transition from copper to fibre services.

	Fixed broadband	Mobile	Content	TV	Electricity	Gas	Gaming
Spark	✓	✓	✓				
Vodafone	✓	✓	✓	✓			
2Degrees	✓	✓					
Orcon	✓	✓			✓		
Slingshot	✓	✓			✓		
MyRepublic	✓						✓
TrustPower	✓		✓		✓	✓	
Stuff	✓		✓				
Contact	✓				✓	✓	

All these providers offer discounts where a customer purchases a bundle of services with fixed broadband.

Bundling provides customers with significant benefits including convenience, interoperability between services, single bills and lower prices reflecting lower costs to serve. This benefits were summarised in the ACCC review of bundling in telecommunications markets¹⁵:

Bundling can allow carriers or CSPs to exploit economies of scope between bundled goods, and economies of scale if the bundling conduct has significant impacts on consumer demand. Consumers can gain when these benefits are passed on in the form of lower retail prices or quality improvements. [p5]

¹⁵ ACCC, Bundling in Telecommunications Markets, An ACCC Information paper, August 2003



The ACCC also identified potential risks of bundling:

Bundling may be anti-competitive if it forecloses or reduces competition by enabling the leveraging of market power from one market to another. ... The pricing of a bundle of services may also raise anti-competitive conduct concerns, particularly if it is predatory or results in a vertical price squeeze. [p5]

Analysys Mason, on behalf of Trustpower, have attempted to apply these risks to the New Zealand market. They note that "...if bundled offers of fixed and mobile services become highly attractive, the lack of competitive dynamism of the current mobile market might adversely affect the relatively more competitive fixed retail market".

This conclusion builds on errors in their analysis of competition in the mobile market discussed earlier in this submission. All real evidence points towards the mobile market in New Zealand being one of the most competitive in the world. There is no evidence that bundling has changed this, and no reasonable argument that it will in the future.

We agree with the Commission's draft conclusion that "absent adverse changes in the market, the potential for the MNOs' bundles of fixed and mobile services to lead to the foreclosure of non MNOs may be limited. This is a sound conclusion, built on facts:

- **Fibre market share is not dependent on mobile bundling:** Smaller broadband providers, such as Trustpower, have been winning an increasing market share in the transition from copper to fibre broadband.¹⁶ This has not been reliant on having mobile services as part of a bundle. There is also a decreasing emphasis on this strategy amongst mobile operators, for example Spark has recently dropped its bundling discount on its headline fixed 'un-plan'
- **Low barriers to entry into the mobile market:** Providers such as Trustpower have the option to either seek a wholesale MVNO agreement from three competing mobile networks, or alternatively invest in their own network to provide coverage, just as BlueReach has done. All the regulatory conditions are in place including roaming, co-location, mobile termination and number portability.
- **Mobile market is highly competitive:** Analysys Mason suggest that the mobile market is comparatively less competitive than the fixed market. This is not supported by the facts. For

¹⁶ Commerce Commission, Annual Telecommunications Monitoring Report 2017, p.15. "The smallest two retailers have continued to grow with Trustpower and 2degrees both increasing their share by one percentage point to an estimated 5% and 4% of the market respectively. There has been growth in the 'other' providers due to growth by smaller players and new fibre retailers."



example, the Commission's own monitoring concludes the mobile plans are 27 – 47% below OECD averages, while fixed plans by comparison are only 5 - 15% below OECD averages.

Spectral efficiency is key to 5G investment

With a history of bringing innovation to New Zealand, Vodafone is committed to delivering a 5G network as an evolution of our existing mobile network.

The Government must not be distracted by unrealistic claims by Chorus regarding supposed efficiencies of a single-provider government-funded 5G network. Such a regime risks creating a behemoth monopoly, that may ultimately result in higher prices for New Zealanders, and less incentives for innovation, not to mention the time and costs involved in setting it all up. This would jeopardise the benefits New Zealand stands to gain by keeping pace with global deployments through network competition.

Network sharing, where it is efficient, will occur commercially.

Government must make efficient decisions on the 3.5 GHz band

The 3.5 GHz band will be the cornerstone of 5G networks. It is relatively abundant globally so has been favoured by standards agencies, and has sufficient bandwidth to meet the demands of high capacity enhanced mobile broadband. Lower frequency bands (such as 600 MHz, 700 MHz, 900 MHz etc) do not have sufficient bandwidth for high capacity services, so will be focussed on less bandwidth hungry applications, such as massive machine type communications.

Further down the track we expect higher frequency bands (mm Wave and above) to complement the 3.5 GHz band in high demand areas. But the short physical propagation of these bands make them unsuited for wide area deployment.

A successful commercial launch of 5G will therefore be dependent on efficient access to spectrum in the 3.5 GHz band. Getting clarity on the expanded and re-planned spectrum band will be important before planning, testing, and deployment of 5G networks.

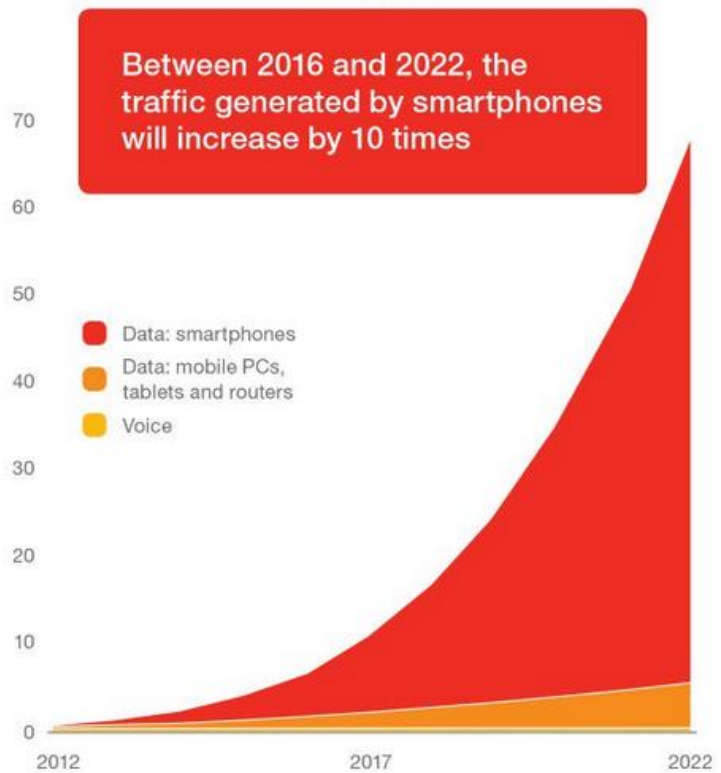
Enough bandwidth must also be freed up to meet expected future demands. In MBIE's consultation on 5G spectrum, we recommended an initial spectrum cap of 100 MHz over the first 3-5 years for nationwide Management Rights in this band. This is in line with the industry standard and vendor recommendations that allow MNOs to provide customers with a good 5G experience.



Ericsson forecast that demand for mobile data is expected to increase 10-fold between 2016 and 2022.

Meeting demand will require additional spectrum. At our busiest sites we are reaching spectrum capacity using our current 2 x 65 MHz spectrum for 4G. 100MHz of 3.5 band spectrum would increase capacity by 75%, and together with technical advances, may just be enough to meet the wave of demand coming down the track.

This need has already been recognised by many other countries, who have made provision to offer 100 MHz or more of bandwidth for each mobile operator in recent and coming spectrum auctions. For example, Finland have just finished their 3.5GHz band auction, and allocated 130 MHz for each of the 3 winners (Telia Finland, Elisa and DNA).



Source: Ericsson mobility report on future mobile data usage and traffic growth



Answers to consultation paper questions

Commission Questions

Vodafone Comments

Market shares

Q1. How, and to what extent, do competitive conditions for mobile services vary by customer segment in New Zealand?

Q2. In the on account business segment, what evidence is there that the issues identified in our business study have changed since 2015? Specifically;

Q2.1 what are the most important features of a mobile service for business consumers?

Q2.2 how have business consumer perceptions towards 2degrees changed since 2015?

We have fought hard for a strong enterprise market share by delivering on what New Zealand businesses value:

- Reliable coverage – our network covers 98.5% of Kiwis, and is complemented by roaming to over 125 destinations
- Reliable data – Vodafone boasts the fastest 4G download speeds on average in New Zealand¹⁷
- Reliable connection – Crystal clear sound with HD calling, and 'best in test' for NZ voice¹⁸

¹⁷ According to test results in P3 benchmark report published March 2018 (testing conducted February 2018). Visit www.p3-networkanalytics.com for more details.

¹⁸ Ibid



Commission Questions

Vodafone Comments

Bundling of Mobile Services

Q3. How, and to what extent, have consumers benefited from bundling of mobile services (the discount vs the increased complexity of switching provider)?

Bundling has been a long term feature of telecommunications markets – both in New Zealand and internationally. In the New Zealand market, bundling occurs across a wide number of services, including fixed broadband, mobile, content, TV, Electricity, Gas and Gaming. The variety of bundles and the level of competition across the market clearly shows that there are no ‘must have’ services that others cannot replicate.

Q4. What are the constraints on non MNO fixed line broadband providers' ability to compete by supplying their own bundles, such as bundling of fixed line broadband and electricity by Trustpower and Vocus?

Bundling provides customers with significant benefits including convenience, interoperability between services, single bills and lower prices reflecting lower costs to serve.

Pricing

Q5. What are the reasons for high retail prices for higher volume bundles of mobile services in New Zealand compared to other countries?

The new high data and unlimited plans released by each of the mobile operators in the last year have brought New Zealand much more in line with other OECD countries for high usage plans. For example, our unlimited plan compares well to comparable offers by each of the mobile operators in Australia.

Q6. What are the reasons for high retail prices for standalone mobile data services in New Zealand compared to other countries?

Usage Trends

Q7. How are mobile data usage trends expected to evolve in the next few years, and how might that affect suppliers of mobile services?

Ericsson forecast that demand for mobile data is expected to increase 10-fold between 2016 and 2022. To meet this demand and continue to provide value to New Zealanders, the Government must free up more spectrum.

As discussed in more detail in the body of this submission, it is critical that up to 100 MHz of 3.5 GHz spectrum is made available in the upcoming auctions.



Commission Questions

Vodafone Comments

Q8. How do you view mobile calling and messaging services evolving, given the emergence of OTT services?

OTT service providers are increasingly direct competitors to our messaging and voice services. It is important that New Zealand based companies do not become hampered in this market by domestic regulations that have no effect on OTT players.

We are currently comfortable with the regulatory environment, but it is important for the Commission to keep an eye on these developments and remove regulations as they become out-dated.

Investment

Q9. Do you agree that we have identified the relevant measures of mobile service quality?

Metrics of quality should focus on the experience of consumers rather than arbitrary measures of the technology utilised, as the Commission focusses on in paragraph 119. When measuring the New Zealand experience, our mobile networks continue to perform very well:

- 13th fastest overall mobile speed in the Ookla speedtest global index
- 17th fastest in the 2017 OpenSignal Global State of Mobile Networks (the last time the measured overall speed across all network technology)

Consumer service is currently a focus across the industry and something we are all committed to improve on. However, across all three mobile operators we find that fixed service is a bigger area for improvement, reflective of the complexities in that part of the market. We see more than 15 times more complaints regarding fixed services to mobile services.

Q10. What further measures and evidence may be relevant for monitoring retail service quality?

As part of the Telecommunications (New Regulatory Framework) Amendment Bill the Commission will be given significant new powers to collect data on service quality across all telecommunications services. We look forward to working with the Commission to build a set of measures that matter to Kiwi's.

Q11. What are the competition incentives and constraints in New Zealand for improving customer service quality?

Service is one of the key differentiators between RSPs. We are all working hard to get service better to stand out from the crowd.



Commission Questions

Vodafone Comments

MVNO based entry

Q12. Do you agree we have described the key factors relevant to wholesale competition both currently and into the immediate future? Are there any other factors likely to influence wholesale competition for mobile services, going forward?

Wholesale competition is alive and well in New Zealand. Competition between the three mobile networks and the government RBI programme has resulted in a growing wholesale mobile market, which includes:

- MVNOs spread across 3 mobile operators;
- Three retail providers, operating off BlueReach's wholesale fixed wireless service; and
- 15 wholesale rural wireless broadband providers – representing over 50% of RBI fixed wireless connections

Q13. Please describe how you see wholesale competition evolving over the next 2-5 years.

Q14. Why do MVNOs account for a small share of subscribers and revenue in New Zealand?

The small number of MVNOs in New Zealand has been identified as a potential weakness of our market, despite great performance across the board on the metrics that matter to consumers, such as coverage, speed and price. However, when looking at the broader context of MVNO uptake across the world, we can see MVNOs are largely focussed in large markets such as Europe and North America, failing to gain much of a foothold across the rest of the world.

Q15. How have the competitive conditions changed in the wholesale mobile services market? What impact has 2degrees had in the wholesale market in recent years?

Competition between the three mobile operators has ensured that there are MVNO wholesale choices. Finding the reasons more MVNOs are not present in New Zealand requires a deeper assessment of the market dynamics. We'd suggest the Commission focus on the two key questions we have started to address in the body of our submission:

Q16. Has 2degrees' completion of deployment of its national network changed, or is likely to change, the competitive environment for wholesale mobile service going forward? If so, please describe.

- what market opportunities there are for MVNOs to succeed without giving them a regulatory advantage; and
- what problems could an increased number of MVNOs resolve in the highly competitive well performing mobile market in New Zealand.

Q17. Are MVNOs able to negotiate competitive wholesale access arrangements with MNOs? What are the key constraints facing MVNOs in New Zealand, and how do they differ from other countries?



Commission Questions

Vodafone Comments

Q18. Where MVNOs have entered the market and expanded in other countries, to what extent has such entry been the result of commercial agreements, or based on regulated MVNO access or other conditions imposed by regulatory or competition authorities (such as conditions of mergers and/or obligations on spectrum licences)?

Focussing on more arbitrary measures of the number of MVNOs, or their market share risks turning this consultation process into a platform for rent seeking behaviour to drive down prices to unsustainable levels. This would benefit a select few, while seriously undermining the viability of mobile investment in New Zealand ultimately hurting consumer outcomes.

Q19. To what extent has the emergence of MVNOs overseas resulted in improved outcomes for consumers in those countries? What effect has MVNO entry had in other countries on pricing, choice, and investment?

Q20. What are the risks that fixed line only broadband providers could be foreclosed by providers of mobile and fixed line broadband bundles and what are the potential consequences of that for competition?

MNO based entry

Q21. To what extent, and in what ways, do the current spectrum holdings constrain competition in the supply of retail or wholesale mobile services in New Zealand?

Spectrum is made available through the Ministry of Business, Innovation and Employment through management rights, licences and managed spectrum parks. This has led to the proliferation of mobile providers, regional WISPs and BlueReach's roll out.

We expect that any future entrant would focus on a future rollout that would primarily rely on 3.5 GHz spectrum. MBIE is currently consulting on 3.5GHz and is expected to auction off this spectrum which will be available in 2021. MBIE is also exploring other bands that will be suitable for 5G, including opening up 600MHz spectrum for cellular use.



Commission Questions

Vodafone Comments

Roaming, co-location, and infrastructure sharing

Q22. What evidence is there on whether or not national roaming, co-location regulation have promoted the efficient expansion of 3G and 4G coverage in New Zealand?

National Roaming, through a commercial agreement between Vodafone and 2Degrees, has enabled 2Degrees to build out its network footprint, with national network coverage now nearing Vodafone and Spark's.

Q23. What evidence is there that the infrastructure sharing such as provisions of RBI1 and the RCG, have been effective in allowing competing operators to expand their coverage?

Co-location on mobile sites continues to occur. Over 80% of RBI sites have co-location from Spark, 2Degrees and WISPs. Co-location has facilitated new and expanded coverage and competition.

The joint venture RCG will ensure that all three mobile networks have network and can compete for customers in the new coverage areas. This investment by single networks alone, without infrastructure sharing and government funding, would not have been possible or economic.

Q24. Have there been any problems in relation to the infrastructure sharing provisions of RBI1 that could inform infrastructure sharing arrangements in the future?

Commercial infrastructure sharing is delivering efficient and effective coverage expansion and competition.

Mobile interconnection services

Q25. What are your views on the current regulation of mobile interconnection services?

We are comfortable with the current mobile interconnection regulation. Traffic between networks is increasingly symmetrical, and with the emergence of OTT suppliers, voice and messaging services are less of a competitive constraint to new entrants than they have been in the past.

Q26. Does the current regulated MTAS, including the pricing principles, remain appropriate?



Commission Questions

Vodafone Comments

The ability of consumers to switch

Q27. What difficulties do consumers face in comparing retail offers for mobile services? How could consumers access better information about prices and plan packages, service levels and associated facilities like international roaming in order to identify the package that best suits their needs?

The New Zealand mobile market has a high churn rate of 42% across all consumer accounts. This data indicates that customers do not face problems comparing plans and changing providers. The barriers to churn are low, with number portability making transfer between providers seamless.

Q28. Should mobile providers be required to provide consumers nearing the end of a fixed term with information on options that could better meet consumer needs?

The market is already delivering on this front. For example we proactively contact our customers through our 'Plan Checker' service, where we use data on past usage to suggest the best plan suited, either larger or smaller, it is all about getting the right fit.

Customers can also request a plan check at any time to see if their needs can be better met.¹⁹

Q29. Should mobile providers be required to provide consumers with access to their data (usage, locations etc) in a format that facilitates comparison of services that best meet their needs?

Vodafone makes it easy to access information on their usage either through our app, or on our website. We also have detailed coverage maps to compare service quality in the locations where New Zealanders need access.

We do not currently store information on the location of users, and doing so would require a significant upgrade of our systems, for uncertain benefit.

Q30. What barriers and costs do consumers face when switching and what improvements could be made to make switching easier?

See answer to Q27 above.

¹⁹ <https://www.vodafone.co.nz/mobile/apps-services/plan-check/>



Commission Questions

Vodafone Comments

Consumer satisfaction

Q31. How would you describe the relationship between customer satisfaction and switching in New Zealand?

The rapid growth in market share for both 2degrees and Skinny shows that they have had no problem picking up customers.

Q32. To what extent have lower levels of customer satisfaction with Vodafone and Spark resulted in customers switching to Skinny and 2degrees?

The entire industry recognises that telecommunications service needs to improve, and we are 100% focussed on delivering for our consumers. We are already starting to see a steady improvement in satisfaction and expect this to continue.

However, we would seriously question reading too much into the results of the Consumer NZ study reproduced in the Commission's paper. Most of the industries reported have a very similar average satisfaction (between 52% and 63%), it seems unlikely that there is any true statistical significance to distinguish between them. It is also an opt-in survey of a small number of Consumer NZ subscribers, which is unlikely to be statistically representative.

Infrastructure sharing

Q33. How important is infrastructure sharing likely to be to facilitate the widespread and timely deployment of 5G services—urban and rural—in New Zealand by improving the economics of a 5G deployment?

Some infrastructure sharing may prove valuable in the roll-out of 5G. However, the current rules and regulations are sufficient to allow this to occur naturally where it makes business sense, much like current co-location agreements, and the establishment of the Rural Connectivity Group (RCG).



Commission Questions

Vodafone Comments

Q34. If 5G fixed wireless becomes a substantial substitute for fibre to the home, what is the right approach to setting the price of backhaul from mobile towers and from the additional cell sites?

Mobile backhaul can be delivered in a number of ways. Globally we are trialling IP microwave for wireless backhaul for smaller cell sites,²⁰ and domestically mobile operators self-supply a lot of their own fibre backhaul.

However, Chorus and the LFCs currently do, and will continue to supply a significant portion of 'last mile' mobile backhaul through the direct fibre access service (DFAS). This service is within scope of the proposed regulatory regime for fibre established in the Telecommunications (New Regulatory Framework) Amendment Bill.

Because of the potential for Chorus to impact the fixed wireless market by inflating the DFAS price, the Telecommunications Amendment Bill will allow the Communications Minister to set the DFAS price, which we understand will be fixed at its current price of \$355, and will then be increased for inflation over time.

Throughout the policy process we have consistently argued that \$355 is far too expensive for DFAS, artificially constraining the mobile market. After the first regulatory period the Commission will have the opportunity to review this price, and if it considers necessary, it will be able to set its own cost-based price. We encourage the Commission to take up this opportunity when it arises.

Q.35 What are the most likely forms, benefits, risks and costs of infrastructure sharing for 5G in New Zealand? Please provide reasons covering both cost and competitive effects.

See response to question 33 above.

Q36. What aspects of infrastructure sharing are most likely to facilitate the entry of a fourth MNO, or expansion of existing MNOs once 5G has been rolled out?

This is likely to be similar to the infrastructure sharing agreements that facilitated 3G and 4G roll-out covered in questions 22-24 above.

²⁰ <https://news.vodafone.co.nz/index.php/article/vodafone-and-huawei-test-applicability-ip-microwave-backhaul-5g>



Commission Questions

Vodafone Comments

Q37. How and in what ways could the current regulation of mobile services deter some 5G investment?

Based on our current understanding the regulatory settings are well placed for the emergence of 5G.

Q38. How well do regulated mobile services as currently framed in Schedule 1, both specified and designated (and associated STDs for designated services), support (a) efficient investment in 5G infrastructure (b) efficient sharing of 5G infrastructure? Are there any ways in which this could be improved?

Q39. What are the likely incentives for infrastructure owners to expand sharing arrangements and to provide access to their network infrastructure assets to third parties?

See answers to questions 33 and 36 above.

Q40. What are your views on the viability of three or more separate 5G networks, and what alternative models do you consider as potentially viable?

Three 5G networks is entirely viable, just as three 3G networks and three 4G networks were.

Q41. How important is access to the infrastructure established by the Rural Connectivity Group to rollout 5G services to rural areas and is their Deed of Open Access Undertakings adequate to facilitate the rollout of improved mobile services in rural areas?

We expect RCG to roll out 5G capability when the time is right.



Commission Questions

Vodafone Comments

Network slicing

Q42. Is network slicing likely to increase the presence of non-traditional providers such as Apple and Google in mobile markets, and are these providers likely to be able to negotiate competitive wholesale access arrangements with MNOs?

We expect that competition between the three mobile operators will result in these sort of deals being offered in the New Zealand market as the technology matures.

If large OTT providers start competing over mobile services this could raise regulatory issues. The Commerce Commission should keep a close eye on developments in the USA and Europe where these changes are likely to foreshadow New Zealand. This should give sufficient time to react and understand if there are any regulatory implications.

Q43. Given the non-traditional providers' economies of scale what are the likely benefits and harms that may materialise for both existing MNOs and consumers in New Zealand should a non-traditional provider enter the market?

Spectrum issues

Q44. To what extent can MNOs compensate for a reduction in network quality from having less spectrum by building or acquiring access to more mobile sites?

It is possible in some circumstances to compensate for less spectrum by building more mobile sites.

However, the costs of densifying a network are not trivial. Not only do we have to acquire sites, build towers and source backhaul, we would also need to re-configure existing sites to adapt them to the new spectrum holdings and network density.

Q45. What restrictions, if any, ought to be placed on the forthcoming 5G spectrum allocation to best facilitate competition in 5G services?

We have provided details of our views on upcoming auctions in RSM's recent consultations on this topic.



Commission Questions

Vodafone Comments

e-SIM

Q46. What impacts are e-SIMs likely to have on consumer switching costs?

Digital SIMs are an important part of the future, particularly for low cost IoT devices where installing connectivity, or changing provider would otherwise be impractical. Because of this Vodafone has begun collaborating with Arm on their integrated SIM (i-SIM) technology to help reach their vision of a trillion connected devices by 2035.

Q47. How will MNOs support the use of e-SIMs in mobile devices?

In New Zealand there has been a lot of talk recently about e-SIM since its adoption by Apple. The Vodafone network currently does not support e-SIM functionality. In fact, only 10 countries support the Apple e-SIM at this stage. However we do have plans to support this technology in the future
