Vodafone response to Infrastructure Commission's consultation on Aotearoa New Zealand Infrastructure Strategy

1 July 2021

Introduction

1. Thank you for the opportunity to provide our views on the Infrastructure Commission's (**Commission**) consultation on Aotearoa New Zealand Infrastructure Strategy.
2. Telecommunications infrastructure is critical to our modern economy and connecting the 'system of systems' that supports New Zealand's economy and communities. Our sector plays a vital and important role in national resilience, demonstrated most recently through our national response to Covid-19.
3. Vodafone New Zealand Limited is one of Aotearoa's leading digital services and connectivity companies, and we believe every New Zealander will thrive with access to the world's best digital services. We offer almost 3 million connections to Consumer and Business customers. Vodafone is owned by Infratil and Brookfield Asset Management and remains a partner market in association with Vodafone Group, one of the world's largest telecommunications companies. For more information, please visit https://www.vodafone.co.nz/about/.

Executive summary

4. Digital infrastructure will play an important role in realising the '2050 vision for infrastructure' as set out in this consultation document. Digital connectivity is a key enabler of better use of other types of existing infrastructure and will support efficient deployment of new infrastructure. For example, digital infrastructure supports applications and process improvements that will assist New Zealand in meeting its climate change goals. The Climate Change Commission's final advice to the government for its emissions reduction plan notes precision agriculture as an example of the ways in which technology will help to improve efficiency and reduce environmental impacts in agriculture – it requires digital connectivity and networks to be possible[1].
5. It is encouraging the paper recognises that New Zealand's telecommunications infrastructure is performing well by international standards – competition between industry players has led to mobile coverage being delivered to 95% of the population (soon to grow to 99.8%), as well as fast deployment of new technology. However, we recognise that to maintain our position, address upcoming challenges and ensure Aotearoa New Zealand continues to remain competitive and thrive, further large-scale investment is needed.
6. We have provided our view on selected parts of this consultation, and set out the challenges our sector faces and recommendations for addressing them below, including:
    a. The cost of building infrastructure and expanding networks in rural areas;
    b. Spectrum allocation;
    c. Planning and consenting regulation; and
    d. Digital exclusion.

Our position

Outcomes and principles

7. Vodafone supports the outcomes and principles set out in this consultation.
8. The outcomes that have been proposed for guiding infrastructure investment decisions already play an important role in our decisions to invest.

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

a. **Efficient** – digital connectivity enabled by investment in telecommunications infrastructure brings great value to New Zealand's communities, businesses and the wider economy. For example, research shows that the rollout of 5G in New Zealand could add between $5.7bn and $9.9bn to the economy over the next decade. The technology will also help foster greater digital inclusion by enabling community benefits such as improved health, education and social outcomes. Digital infrastructure delivers substantial value for money and economic, social, environmental and cultural wellbeing both in its own right and through the connectedness and greater effectiveness it enables in other infrastructure categories.

b. **Equitable** – ensuring that all New Zealanders are able to share the benefits of world-class connectivity is a key pillar of Vodafone's strategy.

c. **Affordable** – Costs paid by end users for digital infrastructure have fallen significantly over the last 10 years and continue to fall. The Commerce Commission recently reported that digital connectivity services in New Zealand are well below the OECD average for prices across the board[2]. We agree with the Commission's view that making the most of the infrastructure we already have is an important principle for efficient investment decisions. For the telecommunications sector, continuing to build duplicate, overlapping networks may not make sense anymore.

9. We also support the decision-making principles set out in the paper, particularly the concept of a real evidence-based approach to how infrastructure is thought about and planned, and the need to be future-focused to ensure our infrastructure is adaptable to future changes.

Digital infrastructure: a key enabler

10. Telecommunications infrastructure is a key enabler of future technologies that are noted in the consultation paper as one of the solutions to many of today's challenges, from climate change to lifting our productivity and innovation.
11. The rollout of fifth-generation mobile network (5G) will see new technologies like the Internet of Things (IoT) move from a data centric service to a control centric service. This means that the ever-growing volume of data being produced by IoT devices will increasingly inform decision making, which will in turn drive efficiencies across operations and industries. The unique combination of high bandwidth, low latency and

[2] https://comcom.govt.nz/__data/assets/pdf_file/0021/212763/2019-Annual-Telecommunications-Monitoring-Report-Revised-version-12-March-2020.pdf

quality control will enable organisations to do more with their resources, putting mobile operators at the heart of this new age of industry.

12. This technology will be critical to support our transition to a modern economy with structurally higher productivity levels. New digital business models that utilise 5G capabilities are predicted in almost all industry verticals, and we want New Zealand industries to be at the forefront of that innovation and growth.
13. We can expect 5G to be the catalyst for the IoT in the same way that 4G characterised the widespread adoption of smartphones; driven by increasing capacity and the huge potential that intelligent data analytics offers.
14. Cars, for example, are already becoming more than just a vehicle that gets us from point A to point B. 5G will create new opportunities to collect and compute all sorts of vehicle data in real time, as well as exchange that information with other devices on the journey. This could soon mean we have roads that can intelligently adapt, increasing car flow during rush hour and accommodating more cyclists and pedestrians during quieter times, as well as smart traffic lights that will ease congestion.
15. Other use cases include smart air purifying systems that have the ability to use real-time data on air pollution to intelligently target parts of a city where air quality needs improving, and better energy usage insights that will inform infrastructure spending.
16. International and emerging local case studies highlight the potential of 5G to deliver benefits across health, transportation, integrated manufacturing, utilities, safety, waste management and intelligent electricity networks amongst others. For example, digital infrastructure will play an important role as an input to network demand management tools like congestion charging.
17. 'Digital twins' is another example of the role digital connectivity will increasingly play to support and innovate infrastructure planning. A digital twin is a data-based digital replica of a physical object or system, which can be experimented with to prevent problems before they occur by analysing data, and inform decision making. The tool can be used for a range of activities, from designing and maintaining buildings and road junctions to optimising operations of a wind farm by using data to predict ideal angles for wind turbines.[3] The potential of digital twins is currently being explored by The National Digital Twin programme run by the Centre for Digital Built Britain (a partnership between the University of Cambridge and the Department for Business, Energy and Industrial Strategy).[4] The intended benefits of this programme include higher-performing and resilient infrastructure operating as a system, improved measurement of outcomes,

[3] https://infrastructuremagazine.com.au/2021/02/10/what-is-a-digital-twin/#:~:text=Digital%20twins%20offer%20several%20benefits,an%20asset%20in%20real%20time
[4] https://www.cdbb.cam.ac.uk/what-we-do/national-digital-twin-programme

better value for money and efficiency from higher-performing infrastructure, and more reuse and greater resource efficiency – a key enabler of the circular economy in the built environment.

18. Accordingly, we agree that the government should publish the National Digital Strategy, which should include:
    a. Removing regulatory barriers to more efficient and less costly deployment of infrastructure, including through joint investment;
    b. Reducing consenting and land access costs;
    c. Streamlining approvals for work to deploy and upgrade technology;
    d. Government funded support for digital inclusion;
    e. An enduring solution to rural connectivity challenges;
    f. Mandating minimum security and digital trust requirements to key government service agencies.

The digital strategy must avoid imposing additional costs on digital infrastructure providers (e.g. increased industry levy), creating regulatory uncertainty and distorting investment incentives.

Resilience and security

19. Vodafone agrees that delivering infrastructure that is resilient to stresses and shocks, and is ready for change, is crucial to achieving the 2050 vision set out in the consultation paper.
20. Covid-19 put the telecommunications infrastructure's resilience to test, as New Zealanders became fully reliant on our networks for work, education and staying connected with family and friends during the national lockdown. Our networks proved resilient despite significantly increased data usage. We are continuing to invest in maintaining and upgrading our networks so they remain future-proof and resilient to natural events. One example of this is Vodafone's significant additional investment in battery back-up and generators over the past two years.
21. Furthermore, Vodafone recognises that as we and everything around us become increasingly more connected, cyber-security risks will increase. We invest in technology solutions, including via our Cyber Defence Centre (CDC), and prioritise cybersecurity to protect customers and our network.
22. The recent cyber attack on Waikato District Health Board's (DHB) network serves as an example of the extent of problems that can be caused when critical networks are compromised. To prevent such incidents from happening in the future, the government should mandate security requirements for critical infrastructure.

Digital exclusion

23. Connectivity enabled by telecommunications and digital infrastructure is a significant contributor to social capital and wellbeing within cities and local communities. However, we do recognise that digital exclusion remains a challenge in New Zealand.
24. While exclusion issues are connected with wider issues of income distribution and inequality, ensuring that all New Zealanders are able to share the benefits of world-class connectivity is a key pillar of Vodafone's strategy. We need to work in tandem with the government and community organisations to achieve this goal.
25. The impact of regulated wholesale input prices (i.e. Local Fibre Company (LFC) prices) on the prices of broadband services for end users cannot be ignored. Vodafone offers a fixed wireless plan that is squarely aimed at addressing digital exclusion and is priced at $40 per month. This plan sets a retail price for end users that is less than the lowest wholesale fibre input cost that we would pay an LFC (if providing an alternative fibre service).
26. Furthermore, the Vodafone NZ Foundation is playing an important part in this area through work centred around the goal to halve the number of disadvantaged youth in Aotearoa by 2027. Our corporate philanthropy efforts have seen us support more than 1,000 charitable organisations since 2002 via the Vodafone NZ Foundation, with donations totalling over $43 million, meaning we are one of the largest corporate philanthropic donors in the country. One recent initiative was to launch the Thriving Rangatahi Population Explorer[5], a tool that draws on government data to better understand the needs of young people and highlight areas of the country that would benefit from systematic intervention.

Digital infrastructure sector challenges

27. Telecommunications sector is characterised by rapid evolution of technology, with each new generation requiring us to invest in and refresh infrastructure. Technology change is occurring in parallel with growing demands for more data, improved service, expanded coverage, faster speeds and so on.
28. We have set out some of the key challenges Vodafone faces and proposals for how they can be addressed to accelerate investment in digital infrastructure.

[5] https://news.vodafone.co.nz/thrivingrangatahi

Cost of building infrastructure

29. The Commerce Commission's 2020 market monitoring report notes that investment in the mobile access network increased by 24%. However, the total telecommunications revenue decreased by 4% in the same period[6].
30. There is a clear economic challenge posed by prices falling simultaneously with the relentlessly increasing demand for data and expectations for sector investment. Industry economics have now reached a point where other investment models are required to ensure efficient and timely investment. New models of investment are now required to ensure the industry can continue to meet these demands. These models should recognise that continuing to build duplicate, overlapping networks may not make sense, which links to one of the objectives set out in this consultation on the need to make the most of the infrastructure we already have as a way of promoting efficient investment.
31. It should also be recognised that the applications that are driving exponential data growth should contribute to the network investment that is required to support that growth (commercial user-pays is a common enough investment construct in other infrastructure sectors such as transport).
32. Challenging economics is the reason why the government should avoid imposing any further costs or levies on network operators who are the creators of digital infrastructure. Any incremental contribution to infrastructure investment should instead be obtained from firms operating in the digital services and applications layer (i.e. the firms driving demand for continuing expansion of infrastructure, such as Google, Netflix etc.)

Cost of rolling out networks in rural areas

33. Healthy competition between mobile operators has seen mobile coverage reach 98.5% of the places Kiwis live, work and play. However, we recognise the work to extend connectivity into the more regional and remote parts of the country is not yet complete and is becoming increasingly challenging.
34. One of the challenges we face is an increasing expectation to provide the same quality of connectivity in rural areas that exists in urban areas. However, in rural areas with lower population densities, it is not feasible for the private sector alone to fund the network infrastructure needed to meet continuously increasing service expectations.
35. When Vodafone first introduced Rural Broadband Initiative (RBI1) services, we brought

[6] https://comcom.govt.nz/__data/assets/pdf_file/0030/247377/2020-Annual-Telecommunications-Monitoring-Report-Revised-version-16-March-2021.pdf

mobile services to areas where none had existed previously. These services were then extended further through collaboration between all three mobile operators (RBI2).

36. RBI1 and RBI2 services utilise mobile networks that have been engineered to support a specific level of demand and ensure optimal experience based on that demand. Where demand increases, as it did during Covid-19, we will do our best to meet it within existing capacity. However, in some areas our networks are already at capacity and here it is not possible to meet the demands of an individual user without affecting the experience of all other users.
37. The capacity and quality of rural services can be improved by:
    a. Building more towers to support capacity. A single tower can cost up to $1m and take up to a year to secure land access and consents.
    b. Adding additional equipment to existing towers. However, this may not be possible at all towers – some are full.
    c. Obtaining additional spectrum (further details provided below).

Spectrum allocation

38. Mobile network operators' (MNOs) ability to obtain sufficient spectrum in the right bands will be key for a successful rollout of 5G right across New Zealand. The more spectrum that is available, the less infrastructure is required (and vice versa).
39. It is important that the future allocation of key mobile spectrum bands recognises that holding back spectrum from mobile operators will limit our ability to expand 5G coverage effectively.
40. In addition, we recognise that the new generation of fixed satellite broadband providers offer an alternative for connectivity in the hardest-to-reach parts of New Zealand. However, under the current licencing regime, they are effectively using radio spectrum for free. As large overseas companies offering fixed satellite broadband become more established in the New Zealand market, the direct competition with domestic MNOs that operate 4G and 5G networks will increase.
41. While satellite broadband providers will provide a further option for delivering services to New Zealanders in the most remote parts of the country, the limitations of this service also need to be recognised[7]. Traditional models of delivering digital infrastructure will remain necessary for the vast majority of end users and need to continue to be supported and enabled.

[7] https://www.ispreview.co.uk/index.php/2021/06/heat-is-the-next-enemy-of-starlinks-satellite-broadband-service.html

42. There is no justification for MNOs to face an unequal cost structure for spectrum access than is faced by satellite operators, particularly when the wider economic contribution of MNOs and the regulatory framework they are subject to as domestic connectivity providers is taken into consideration. Any allocation methodology must also recognise that spectrum costs faced by MNOs will impact directly on the funds available in invest in actual networks and services.
43. There are a few possible licence options that would help level the playing field by bringing the spectrum cost per customer or spectrum cost as the portion of relevant revenue on par with the system for the IMT MNOs. These include:
    a. Licencing individual user equipment on an annual fee basis
    b. A one-off fee similar to what MNOs pay for using the cellular spectrum
44. The need for symmetric regulation across the sector also extends to areas like retail service quality.

Planning and consenting regulations

45. We agree with the Commission's view that New Zealand needs a responsive planning system. This must also extend to telecommunications infrastructure. Covid-19 has demonstrated that telecommunications is a critical service – this should be recognised when it comes to network operators' ability to access land for maintaining existing and building new infrastructure.
46. Vodafone's priorities for changes in this area include:
    a. **Introduce legislation similar to the UK's Electronic Communications Code[8] to tackle the following issues:**
        i. Lease expiry negotiations can be protractive, and landowners often see lease expiry as an opportunity to enforce 'ransom rents' and less favourable lease terms;
        ii. The costs for accessing land in the telecommunications industry are significantly higher than those faced by other utilities. Rents should reflect the underlying value of the land and not the value attributable to the intention of the operator to use the site as part of its network, as is the case in the UK. Such approach ensures that property owners are fairly compensated for the use of their land, while restricting their ability to profit from the public need for telecommunications infrastructure. This could be achieved by applying national rent levels for various site types;

[8] https://www.legislation.gov.uk/ukpga/2017/30/notes/division/3/index.htm; Sections 12 - 20

iii. All site relocations should be based on the 'causer pay principle' (i.e. whoever causes site relocation should pay);
iv. Landowner consenting requirements should be removed where all that is involved is installation of new equipment and technology to existing infrastructure, i.e. no new build.

b. **The National Environmental Standards for Telecommunication Facilities (NESTF) regulations were put in place over five years ago and due to advances in technology there are several changes to the scope of the NESTF that would help support a more effective rollout of mobile networks. The NESTF should be expanded to cover:**
   i. The installation of new antennas and poles outside of the road reserve on land zones, including industrial, commercial, open space, residential, specialised major facilities (i.e. hospitals, universities, airports and ports), coastal marine areas or over the bed of a lake or river, conservation land, Subpart 5 areas;
   ii. The installation, operation and maintenance of self-contained power units, including solar power units, to generate power for the facility (or battery alternatives, and facility for charging batteries) and any associated earthworks (including the installation of any building required to house units);
   iii. The establishment, operation and maintenance of an access track to a telecommunications facility and any associated earthworks;
   iv. New telecommunications lines and associated support structures;
   v. Telecommunications exchanges;
   vi. The installation of security cameras;
   vii. Larger deployment sizes for mobile infrastructure aimed at 5G rollout.
   viii. District Plans should be allowed to be more permissive than the NESTF.
   ix. District Plan overlays should be prevented from diluting the NESTF.

c. **Promote the National Planning Standards for telecommunications equipment and services.** Whilst the NESTF has been successful in achieving some national consistency and certainty for the industry, operators still rely on regional and district plans to enable new networks, primarily outside the road and in urban areas. Operators are heavy users of planning documents as they seek to evaluate each site as to what is permitted or where resource consents are required. We would like to see the adoption of a set of National Planning Standards for the deployment of telecommunications equipment and services to provide consistency in resource management plans and policy statements

structure and format in order to reduce complexity, improve the clarity and make plans more user-friendly.

d. **Mobile infrastructure should be considered on equal footing as other vital infrastructure when it comes to developers' ability to gain resource consents.** For example, it is currently a requirement for developers to confirm that fixed line broadband infrastructure is in place at the proposed site as part of the process for gaining resource consents (as is also the case for water, power and electricity). However, the same rules do not apply to mobile infrastructure, which can be problematic as it is extremely difficult for us to install or upgrade services after construction is completed. Resource consents for new developments should be conditional on the developers confirming that there are no barriers to mobile services being made available at the proposed site.

e. **Exemptions for telecommunications network operators should be broader under the Overseas Investment Act.** The Act is currently too restrictive for network companies and results in reduced tenure for sites on sensitive land.

f. **Telecommunications to be recognised as critical infrastructure in civil disasters.** Telecommunications infrastructure providers do not currently exercise the same rights as other utilities during civil disasters and are required to apply for permission from Civil Defence to access the affected area for site repairs. Telecommunications operators should have automatic rights when it comes to gaining access and moving around affected areas during civil emergency events.

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