MINISTRY OF BUSINESS, INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

COVERSHEET

Minister	Hon Kris Faafoi	**Portfolio**	Broadcasting, Communications and Digital Media
Title of Cabinet paper	Connectivity in New Zealand	**Date to be published**	23 December 2019

List of documents that have been proactively released		
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Some information has been withheld for the reasons of commercial information, confidential advice to Government and free and frank opinions.

In Confidence

Office of the Minister of Broadcasting, Communications and Digital Media

Chair, Cabinet Economic Development Committee

Connectivity in New Zealand

Proposal

1. This paper provides an update to Cabinet on the progress of government mobile and broadband programmes, and explains the importance of a continued focus on connectivity to New Zealand's social and the economic well-being

Executive summary

2. Digitalisation is rapidly changing how New Zealanders work, live and do business. The potential of this is almost limitless, with digital healthcare, precision agriculture and integrated smart cities on the horizon set to deliver significant economic and social benefits to New Zealanders. However, digital transformation can only be realised with high quality access to communications networks.

3. Government's investment in mobile and broadband programmes is creating a strong foundation for New Zealand's digital future. The Ultra-Fast Broadband (UFB) programme and the Rural Broadband Initiative (RBI) are delivering improved broadband services to both urban and rural New Zealand. In addition, the Mobile Black Spot Fund (MBSF) is delivering new mobile coverage on stretches of state highways and in tourism locations.

4. When complete, the mobile and broadband programmes will have made a major contribution to digital inclusion in New Zealand and will allow New Zealanders to participate in our digital future. Contributions from the Provincial Growth Fund (PGF) have allowed the programmes to be rolled out further into our regions, connecting up marae and some of our most remote communities through the implementation of digital hubs. Greater connectivity is enabling the realisation of the productivity potential in our provinces and is keeping us connected to each other and the rest of the world.

5. While government programmes have made a major contribution reducing the digital divide, there is still work to be done to ensure that New Zealanders, no matter where they are in the country, have access to connectivity, and to ensure our communications networks support our digital future.

6. Growing demand is putting pressure on some rural areas where government funded wireless infrastructure is no longer meeting expectations, and where New Zealanders expected to be covered by existing programmes are not being served. In addition to these emerging capacity constraints within rural networks, there is still a small number of areas in New Zealand outside the scope of existing programmes that do not yet have access to broadband of at least 20 Megabits per second.

7. In order to support the adoption of emerging technology and enable New Zealanders to participate in our increasingly digital society, I consider that there is a need to upgrade the existing rural broadband networks to ensure that current levels of

service and availability are maintained in the face of rising demand. We need to also ensure that enhanced broadband services are available to the remaining New Zealanders who are beyond the reach of existing programmes.

Government's investment in telecommunications infrastructure

8. Over the last 10 years, government has been focusing on a major upgrade to New Zealand's telecommunications infrastructure. Improved connectivity is being provided by private network operators in partnership with government through the four programmes outlined in paragraphs 10- 13 below.

9. An overview of the progress of the roll out of the programmes, including funding and delivery targets is provided in **Annex One**. An accompanying overview of upcoming programme milestones is provided in **Annex Two**.

Ultra-Fast Broadband

10. The Ultra-Fast Broadband programme (UFB) is delivering high capacity and future proofed broadband for urban New Zealand by making fibre-to-the-premises connectivity available to households, businesses, schools and health centres. UFB roll out is not only for major urban centres, but is bringing connectivity to some of New Zealand's smallest towns.

Rural Broadband Initiative

11. The Rural Broadband Initiative (RBI) is progressively increasing the availability of mobile and broadband access throughout rural New Zealand. Investing in rural broadband infrastructure is intended to address the digital divide between urban and rural areas and achieve an inclusive digital transformation throughout New Zealand. Given the significantly higher costs of connectivity in rural areas, government programmes are unable to deliver the same high capacity broadband services for rural customers as urban customers. However, it is intended to achieve a step change in the quality of service available in rural areas.

Mobile Black Spot Fund

12. The Mobile Black Spot Fund (MBSF) is delivering new mobile coverage on state highways and at tourist areas, supporting safety on state highways and enhancing visitor experiences at key tourist destinations. We are already seeing improvements to public safety and wellbeing for remote communities like Haast, which was one of the first paces in New Zealand to receive a mobile tower under the MBSF.

Provincial Growth Fund – digital connectivity package

13. This Government has further invested in the provision of rural broadband by allocating $100 million for digital connectivity programmes through the Provincial Growth Fund (PGF). The PGF digital connectivity package, includes the delivery of new fibre links on the West Coast and in Southland, expansion of the RBI2 and MBSF even further in PGF priority regions, and provision of broadband services to marae and regional digital hubs in rural New Zealand.

14. Table 1 below provides a summary of the progress of the mobile and broadband programmes as at June 2019:

Table 1: Status and intend coverage of government broadband and mobile programmes

Programme	Intended coverage	Status	Programme completion date
UFB	87% of New Zealand will have access to fibre.	85% of UFB build is complete - 2% ahead of schedule.	Complete by 2022.
RBI1	New or improved broadband to over 300,000 rural households and businesses.	Completed in mid-2016.	Completed in mid-2016.
RBI2	Enhanced broadband of 20 Megabits per second (Mbps) to approximately 84,000 households and businesses.	46% of RBI 2 build complete – on track overall.	Complete by 2023.
MBSF	168 tourism sites and 1,400km of state highway will have mobile coverage.	15% of Tourism sites and 17% of State highways have mobile coverage – on track overall.	Complete by 2023.
PGF	Digital connectivity packages for eligible marae, 5 digital hubs, 12 new or expanded UFB towns and 360 kms of fibre links.	18% of eligible Marae connected – on track overall.	Complete by 2021.

15. While the UFB build is tracking ahead of schedule, there have been some delays within the RBI2 and MBSF programmes. The Government's main partner, the Rural Connectivity Group (RCG), has encountered some setbacks with its radio equipment vendor selection process and project ramp-up given the large number of mobile towers to be built. This has meant that some planned targets for this financial year have not been met. While this is disappointing, I am confident that the overall programme timing is still on track to be completed by 2023. CIP has ensured that corrective action is underway with RCG and the overall programme timing will not be impacted.

Becoming a world leading digital nation requires investment in digital literacy, as well as access infrastructure

16. Once complete our mobile and broadband programmes will have made a significant contribution to bridging the digital divide, notwithstanding the issues of affordability and digital literacy. The Digital Inclusion Blueprint, Te Mahere mo te Whakaurunga Matihiko is the government strategy for digital inclusion which will provide a steer on how we can address some of the digital divide challenges that cannot be solved through access to broadband services alone. It is worth noting that we cannot become a world-leading digital nation solely through investment in infrastructure – we also need to invest in our people and businesses to ensure they have the means to participate and receive the benefits of connectedness.

Remaining coverage gaps

17. Once completed, the UFB and RBI programmes are expected to have made enhanced broadband available to 99.8 percent of the country, including 87 percent having access to fibre.

Providing enhanced broadband services to the remaining New Zealanders who are as yet unconnected

18. I am looking at options for how New Zealanders that are beyond the reach of current programmes can best be served. Although the numbers are small (around 3,000 homes and businesses), the remaining end users are geographically dispersed and the costs of providing infrastructure are likely to be high.

19. The areas with the most significant coverage gaps are Northland, Waikato and Bay of Plenty. These regions are characterised by low population density and lack of existing providers.

20. I note that CIP is currently working with RBI2 partners to ascertain how many more of the approximately 3,000 remaining unserved New Zealanders could be covered with existing funding provided under the expansion of RBI2 Free and frank opinions However, until there is more certainty around this, I do not think we can rule out the possibility of more funding being required to close the coverage gap.

21. I will follow progress as the delivery of the programme continues and when more certainty on coverage becomes available, I will consider other options for those that remain outside of coverage area. As an example, one option is subsidising satellite home broadband services either through installation costs and/or plan costs.

22. As with any major infrastructure build, not everything can be completed at once and some rural areas will receive improved broadband before others. However, in some cases information on the timing of the infrastructure builds may not have been made accessible enough, and many people in rural areas are not aware that we are working to bring enhanced broadband to their region.

Mobile coverage

23. Mobile Network Operators provide mobile coverage that extends to about 95 percent of where new Zealanders live and work. This equates to around 50 percent of New Zealand's geography overall.

24. In general, programmes have focused more on providing broadband services to the regions rather than extending mobile coverage. However, a significant added benefit of the infrastructure built to deliver fixed wireless broadband as part of RBI is that it also enables the delivery of mobile services, which are important to rural users. This has been supplemented by the MBSF, a targeted programme for improving mobile delivery on state highways and in tourist centres.

25. Anecdotally, for many farmers and rural residents a lack of mobile coverage is one of their top health and safety concerns. There may be a question for us as to how far we want to go in providing ubiquitous mobile coverage in future, particularly given the rise of Internet of Things technology. However, I do not consider that this is purely an issue for government to solve, as there are currently technology solutions in the

market aimed at extending mobile coverage across rural properties. The issue may be more around lack of information on what options are available and I will consider looking to rural organisations such as Federated Farmers to help their members' access information on mobile coverage solutions.

Emerging capacity constraints

UFB provides a high degree of future proofing for urban networks

26. UFB provides a high degree of future proofing as there is the scope to significantly improve the capacity of services well beyond current consumer needs, to meet future demand. For a very large proportion of New Zealanders, there should be no need to address the challenge of high quality fixed broadband infrastructure availability for many years.

27. However, as demand grows and faster internet becomes the expectation and norm, technology solutions for digital connectivity can easily become unsuited to meeting the growing demands of end users. This is particularly true for most of rural and remote New Zealand where UFB is unlikely to reach for the foreseeable future, if ever.

28. While fibre to the premises is the 'gold standard' of connectivity, there will always be areas where this is not a realistic option due to New Zealand's geography. We therefore need to keep a close eye on these areas to make sure that they do not fall too far behind.

There is growing pressure on rural networks

29. There is a clear upwards demand trend across New Zealand for internet services requiring high capacity bandwidth, with an average of 40 percent usage growth per annum. This growing demand is already putting pressure on some areas, where existing government programmes such as RBI1 are no longer meeting expectations.

30. RBI1 wireless services are starting to show capacity constraints as a result of increasing demand. Capacity is limited by the radio spectrum available per tower. Vodafone has had to issue "stop sell" notices on certain towers that are oversubscribed in its fixed wireless networks, to preserve the experience of existing customers. Commercial Information

31. This means that some rural populations that were expected to be covered by RBI1 may not be able to benefit from fixed wireless broadband. The major firms in the industry are unlikely to invest significant amounts in extending the current network, or in continuing to expand capacity. I acknowledge there is a risk that the lack of investment is because the market is anticipating that government will continue to manage the funding of investment gaps in broadband.

32. I have asked officials to look into this further to ensure that we have the full picture of how many people may be affected by capacity issues in the networks. Free and frank opinions CIP is undertaking further work to quantify the scale of the growing problem across the whole RBI1 area.

33. To address the capacity issues of fixed wireless broadband, officials have identified a number of options, including subsidising the building of in-fill mobile towers where existing towers are reaching capacity, extending the fibre network where possible and subsidising equipment upgrades for households at the edge of the existing tower coverage. It may also be possible to work with wireless internet service providers (including existing RBI2 partners) to fund niche, case-by-case solutions.

Providing broadband services to the Chatham Islands

34. The Chatham Islands is a good example of where an agreed solution (a satellite link capacity of 20 Mbps to be shared among households on the islands) was specified in anticipation of internet usage at a lower level than consumers and businesses would now expect.

35. While RBI2 is solving for the access issues on the islands, with a number of new mobile towers providing mobile and broadband coverage, capacity of the backhaul link to the mainland remains a problem Confidential advice to Government

36. Better broadband services would improve the wellbeing of the islanders as well as helping to achieve the full extent of the social and economic opportunities on the islands, as recognised by the Chatham Islands Investment Strategy. Providing improved broadband services to the islands would increase the resilience of the islands' communications services in emergencies, contribute to the Government's goal of reducing digital divides and would also help to realise the benefits of recent capital investment in the islands, such as the new wharf at Waitangi.

Impact of the 5G roll-out

37. The 5G roll out promises to deliver greater speeds and capacity across networks, particularly in urban areas. Free and frank opinions . It also has a sizable fixed wireless network, but it has recently faced similar capacity challenges to Vodafone.

38. Industry views on whether new technologies, such as 5G, will address capacity issues in rural networks have been mixed and will ultimately depend on which spectrum is allocated to mobile companies.

39. The initial spectrum considered for 5G systems is the 3.5 GHz band which has much higher frequencies than other spectrum currently used for mobile broadband. The general limitation of the technology is that the higher the frequency the less useful it is to provide service for rural areas. Therefore, the benefits of 5G using 3.5 GHz spectrum would be less in the case of rural areas.

40. Unlike 3.5 GHz, radio spectrum in the 600 MHz band is a good fit for rural 5G broadband, and could potentially unlock future economic development opportunities in rural communities through having sufficient 5G connectivity. However, this spectrum is currently in use for other purposes. Confidential advice to Government

Funding

41. Current mobile and broadband programmes are funded in a variety of ways. UFB has been funded predominantly through concessionary loans. RBI and MBSF programmes have largely been funded by grant payments from the Telecommunications Development Levy (TDL) as well as funding recovered from UFB partners.

42. The TDL is an effective funding mechanism to improve broadband and mobile services to those New Zealanders. The TDL was previously set at $50 million per annum between 2011 and 2018/19 to fund RBI1 and 2 but has reverted to $10 million this year, which is the default amount (adjusted for inflation) set out in the Telecommunications Act 2001. Changes to the amount would require an amendment to the Act.

43. As I look to firm up options for network expansion and to address emerging constraints within rural networks, there are a number of funding mechanisms available, including seeking further funding through a Budget round or increasing the TDL.

44. In order to support the adoption of emerging technology and enable New Zealanders to participate in our increasingly digital society, I consider that there is a case for upgrading the existing rural broadband networks to ensure that current levels of service are maintained in the face of rising demand.

45. In light of this, I note that I am likely to come back to Cabinet to seek funding for upgrading the existing rural broadband networks in future.

Consultation

46. The Ministries for Primary Industries and Culture and Heritage, the Department of Internal Affairs, Te Puni Kokiri, the Treasury and Crown Infrastructure Partners have been consulted in preparation of this paper. The Department of the Prime Minister and Cabinet has been informed.

Financial Implications

47. There are no financial implications resulting from this paper.

Legislative Implications

48. There are no legislative implications arising from this paper.

Impact Analysis

49. No Impact Analysis is required as there are no legislative implications arising from this paper.

Human Rights

50. There are no human rights implications.

Gender Implications

51. There are no gender implications.

Disability Perspective

52. There are no disability implications.

Publicity

53. The communications approach will be managed by my office, in consultation with other entities as appropriate. I expect a low level of business and media attention.

Proactive Release

54. I intend to publicly release a copy of this paper in accordance with Cabinet's proactive release policy.

Recommendations

The Minister of Broadcasting, Communications and Digital Media recommends that the Committee:

1. note the progress that has been made on the roll out of broadband programmes to rural and urban New Zealand.

2. note that a large proportion of those who are currently outside government broadband programmes are likely to be connected to enhanced broadband through existing funding.

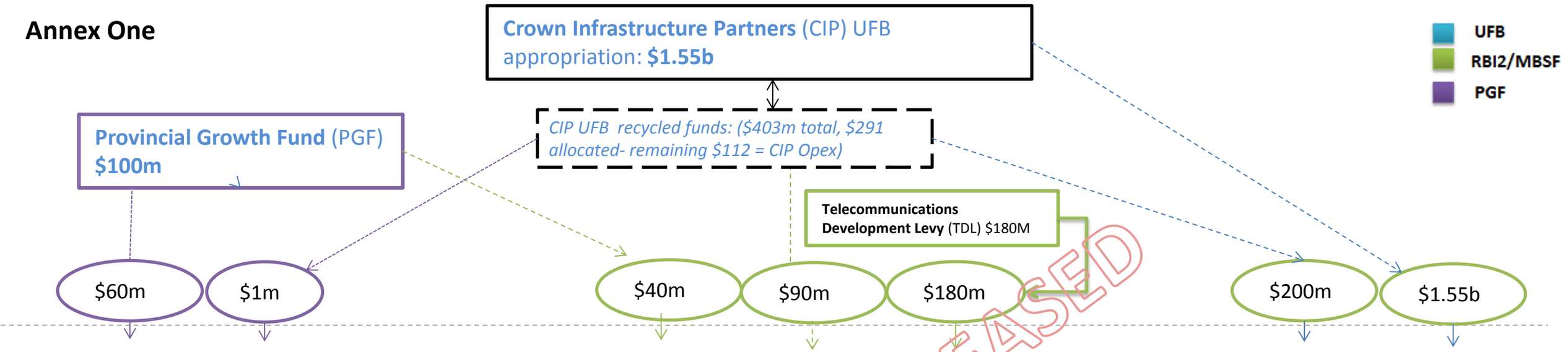
3. note that the Minister of Broadcasting, Communications and Digital Media will return to Cabinet following further policy development with a plan to address the emerging capacity issues presenting themselves in rural networks.

Authorised for lodgement

Hon Kris Faafoi

Minister of Broadcasting, Communications and Digital Media

Annex One



Marae Connectivity & Digital Hubs Progress ($15m)

812 Marae are eligible to receive PGF Marae digital connectivity packages.

145 applications received from marae wanting to be connected.

27 connected

730 more marae expected to be connected with implementation expected to begin in October 2019.

5 digital hubs being progressed

West Coast & Southland Fibre links progress ($40m)

12 towns UFB confirmed - 4 new UFB towns.

West Coast UFB & Mobile Expansion progress ($6m)

360km of fibre links.

Price negotiations underway and two providers shortlisted.

Target by 2023:

84,000 rural homes & businesses will receive improved broadband by the end of 2023.

1,400km of MBSF State highway.

168 MBSF Tourism sites will receive mobile coverage.

Progress:

38,662 out of **84,000** rural homes and businesses can access improved broadband.

26 out of **168** Tourism sites have mobile coverage.

238km out of **1,400km** of state highway have mobile coverage.

Target 2022:

1.8m homes and businesses will have access to UFB by the end of 2022.

400 towns and cities will have UFB by 2022.

TOP 5 NZ should be in the top 5 **countries** in the OECD for fibre availability, when UFB rollout is completed.

Progress:

110 out of **400** **UFB towns and cities** are now complete.

820,761 homes and businesses now connected.

85% of UFB build is complete & **2%** ahead of schedule.

820,761 out of **1.8m** homes and businesses are now connected.

Annex Two

Milestones & Upcoming events