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Public version

2022 Review of the Measuring Broadband New Zealand programme

Under section 9A of the Telecommunications Act 2001

Review of the programme and consultation on the approach for taking the programme forward

Date: 23 February 2022

Glossary, defined terms and abbreviations

Term	
Act	Telecommunications Act 2001
ADSL	Asymmetric Digital Subscriber Line – A copper-based broadband technology
Commission	Commerce Commission
Gbps	Gigabytes per second
HFC	Hybrid Fibre Coaxial
LFCs	Local Fibre Companies
MBIE	Ministry of Business and Innovation
MBNZ	Measuring Broadband New Zealand
Mbps	Megabits per second
Provider	A telecommunications service provider
ONT	Optical Network Terminal
RFP	Request for Proposal
RSPs	Retail Service Providers
RSQ	Retail Service Quality
TCF	Telecommunications Forum
VDSL	Very-high-bit-rate Digital Subscriber Line – A copper-based broadband technology
WISPs	Wireless Internet Service Providers

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Introduction

The Measuring Broadband New Zealand programme

1. The Measuring Broadband New Zealand (MBNZ) programme monitors and reports on broadband performance across New Zealand. This is a key part of our work under s 9A of the Act, which requires us to monitor and report on the performance and development of telecommunications markets. It is also relevant to our obligation to monitor and publish information on retail service quality (RSQ) in a way that informs consumer choice.

2. We first started providing independent testing of broadband performance in 2007. The programme has evolved since then, shifting from selective, network-specific testing, to assessing an increasing level of the end-to-end consumer broadband experience.

Reviewing the Measuring New Zealand programme

3. In 2018, we published "Broadband Performance Testing in New Zealand – Topic Paper".[1] This paper identified our aims and objectives for MBNZ as we embarked on a new phase of the programme using SamKnows – a world leader in internet performance measurement - as our new partner.

4. As our current contract with SamKnows is coming to an end, we are taking the opportunity to review the current MBNZ programme. The purpose of the review is to assess how we have performed against our stated aims and objectives, and to take these learnings forward into the next phase of our MBNZ programme. We are also considering how the programme could be delivered further into the future, beyond the next procurement phase.

5. We consider that the current programme has achieved a great deal of success against the programme's objectives. We have also identified current limitations that present opportunities for the future phases of MBNZ.

6. This review focusses on the current MBNZ programme – covering fixed-line and Fixed Wireless broadband performance. Following this consultation and subsequent procurement process, we will consider the testing of mobile broadband coverage and performance. We may seek stakeholder views on mobile testing later in the year.

Invitation to provide submissions

7. We invite submissions and feedback comments on:

    7.1 the questions and approaches set out in this paper; and

[1] Commerce Commission "Broadband Performance Testing in New Zealand – Topic Paper" (5 July 2018), Introduction, page 3. - https://comcom.govt.nz/__data/assets/pdf_file/0025/90727/Broadband-performance-testing-in-New-Zealand-Topic-paper-5-July-2018.PDF

7.2 any issues or opportunities for the future of the MBNZ programme that you consider relevant that may not be addressed in this paper.

Information for interested parties on making a submission

8. We are seeking submissions on our consultation paper by 5pm, 16 March 2022.

9. Please make your submission via the project page on our website which will direct you to a form with instructions on how to upload your submission.[2]

10. When including commercially sensitive or confidential information in your submission, we offer the following guidance:

10.1 please provide a clearly labelled confidential version and public version. We intend to publish all public versions on our website;

10.2 please provide reasons alongside any information in the confidential version as to why it is commercially sensitive or confidential information; and

10.3 the responsibility for ensuring confidential information is not included in a public version of a submission rests entirely with the party making the submission.

11. If we consider disclosure of information, for which confidentiality is claimed, to be in the public interest, we will consult with the party that provided the information before any public disclosure of that information is made.

12. Alongside this consultation document we plan to engage more directly with consumers to gain insights and feedback about what areas could be improved and to raise awareness for the future phases of MBNZ. These engagement materials and aggregated responses will be made available on our website.

Next steps

13. We will publish submissions received on our consultation document on our website in mid-March.

Next steps	Indicative date
Submissions on consultation due	16 March 2022
Submissions published on the Commission website	Late-March 2022
Commission publishes its RFP for the next phase of MBNZ	End April/early May 2022

[2] 2022 Review of the Measuring Broadband New Zealand programme - https://comcom.govt.nz/regulated-industries/telecommunications/projects/2022-review-of-the-measuring-broadband-new-zealand-programme/_recache.

Background

Our obligations and objectives

14. Section 9A of the Telecommunications Act 2001 requires us to monitor and report on the performance and development of telecommunications markets and on competition within those markets.[3]

15. In 2018, this requirement was further expanded to include obligations to monitor and report on RSQ of telecommunications services and provide information in a way that informs consumer choice. This includes providing information on service performance, speed, and availability. [4]

16. In 2018, we expressed our objectives for broadband performance testing in relation to these obligations, which were two-fold:[5]

    16.1 Providing consumers with accurate, accessible and independent information on broadband performance across different providers, plans, and technologies, to help them choose the best broadband for their household; and

    16.2 Shining a light on broadband performance by allowing comparisons between providers and encouraging providers to compete on performance and not just price.

Previous phases of MBNZ

17. Our broadband performance testing has developed over time to reflect changes in our obligations under the Act and the evolution of broadband services and testing approaches.

18. The Commission started residential fixed-line broadband performance testing in 2007, using Epitiro as the independent test provider, with 11 test sites spread across five cities. We produced our first report in June 2008.

19. In 2012, we began to conduct in-home testing with TrueNet, an independent test provider, who used around 400 test devices in the homes of volunteers to better measure consumer experience of broadband performance.

20. TrueNet's in-home testing covered the main retail service providers, and over time expanded to include technologies such as VDSL, Cable (HFC), Fibre and Fixed Wireless broadband as they emerged. Monthly reports provided consumers with up-to-date performance results and encouraged providers to improve any poor

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3 Telecommunications Act 2001, s 9A(1)(a) and (d).

4 Telecommunications Act 2001, ss 9A(1) and 5.

5 Commerce Commission "Broadband Performance Testing in New Zealand – Topic Paper" (5 July 2018), Introduction, page 3. - https://comcom.govt.nz/__data/assets/pdf_file/0025/90727/Broadband-performance-testing-in-New-Zealand-Topic-paper-5-July-2018.PDF

performance promptly. This phase of our testing and reporting finished in January 2018.

Current MBNZ phase

21. In 2018, we commissioned an enhanced broadband testing programme to monitor the broadband performance of up to 3,000 households.

22. The current programme is being delivered by SamKnows, a world leader in internet performance measurement covering almost half of the world's internet population. SamKnows was founded in 2003 and is based in London. It works with regulators from the UK, US, Europe, Hong Kong, Brazil and Canada to measure internet performance across the whole of Europe, North and South America, parts of Asia, and Australia.

23. The programme currently tests and reports on the performance of eight providers, and a range of technologies, including copper-based technologies (ADSL, VDSL), Fibre (100/20, Fibre Max), HFC (HFC Max, also called 'Cable') and Fixed Wireless (4G wireless broadband).[6]

24. The testing currently compiles results from 'whiteboxes' (a device similar to a modem), that volunteers plug in at home, which perform automated performance tests at different times of the day.[7] [8]

25. Volunteers also have access to their own personal broadband performance information through a personalised online performance dashboard. This information can help diagnose problems and improve their home broadband performance.

26. Testing results and reports are published 'seasonally' with around four reports released per year on the Commission's website and on a dedicated MBNZ website: www.measuringbroadbandnewzealand.com.[9]

27. Results from the testing are used by several audiences, including individual consumers when choosing a broadband service, comparison websites and wholesale and retail broadband providers in their representations of broadband products. We also use the results to inform our other monitoring, reporting and consumer engagement work for telecommunication markets.

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6 Providers tested are Trustpower, Orcon, Slingshot, 2degrees, MyRepublic, Spark, Vodafone and Skinny. Not all providers offer all the plans and technologies we test and we have not reported on all providers due to insufficient sample sizes.

7 The whiteboxes do not record any personal information or browsing history, and checks are performed to ensure it does not interfere with volunteers' use of the internet.

8 In a typical testing results from approximately 1,000-1,200 whiteboxes are taken into account. While the MBNZ programme has up to 3,000 whiteboxes available in any given testing period only a subset of these are actively plugged in by volunteers and are collecting data.

9 Reports are available at https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand.

Review of the current MBNZ programme

28. In this section, we set out our views on both the programme's success against each objective, and where we see its limitations.

29. We consider that the current programme has achieved a great deal of success against the programme's objectives. Equally, though, we have also identified a number of current limitations that present opportunities for the future phases of MBNZ.

Objective 1 - Provide consumers with accurate, accessible and independent information on broadband performance across different providers, plans, and technologies, to help them choose the best broadband for their household

Accurate, accessible and independent information

30. To make informed choices consumers need the ability to access information, assess the options they have and act upon that information to secure the right products and services for their needs.

31. As part of our MBNZ programme we have produced information and reports that consumers can use for this purpose.

32. Our regular reporting covers the most common broadband plans and technologies, with some provider and high level geographic breakdowns.[10] The number of participating volunteers and the sample sizes for each provider, plan and technology determines the level of detail we can report. We only report results where there is enough data collected during a testing period to ensure the results are statistically reliable.

33. Alongside SamKnows, we have also developed and refined a number of consumer experience measures which have helped us to measure and report on the impact of Covid-19 and remote-working essentials like Video Conferencing (via Teams/Zoom).[11] We also used our testing programme to assess performance during the 2019 Rugby World Cup which many New Zealanders streamed over their broadband connection for the first time.[12]

34. Our testing has also helped provide comparison information for consumers, including our dashboard, which allows consumers to see a selection of tested figures and do some comparisons between providers. Having said this, we think we can do better in how we provide MBNZ information to consumers. As this also applies to our wider RSQ activities, we intend to undertake a separate consultation later in the year to identify where and how we can improve in this area.

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10 Our reports can be found on our website - https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand.

11 Commerce Commission "MBNZ Autumn Report, May 2020" (21 May 2020).

12 Commerce Commission "MBNZ Spring Report December 2019" (16 December 2020).

35. Recently, as part of our guidelines for marketing alternative telecommunications services during the transition away from copper, we asked the New Zealand Telecommunications Forum (TCF) to create an RSQ Code to ensure that consumers are given appropriate information and are not misled about the performance characteristics of alternative telecommunications services, particularly in the transition away from copper-based services to newer technologies. We specifically highlighted that download and upload speed representations made in marketing materials should:[13]

> "…be objectively justified, demonstrably reasonable, and independently verifiable, by reference to the MBNZ programme"

36. We continue to see significant value for consumers in having easy access to independent broadband performance information at the time they are making purchasing decisions and considering which technologies and providers will best meet their needs. We therefore propose to maintain this as a key part of our monitoring and reporting activities going forward.

Choosing the best broadband for the household

37. Consumers have regularly raised issues of service performance and how well broadband products meet their expectations, particularly the alignment between advertised product information and actual service quality that is experienced. Our Improving Retail Service Quality Baseline Report identified that this remains an issue for many consumers, and noted consumers responses to two recent consumer surveys:[14]

    37.1 The Consumer Telecommunications survey 2021 found that 31% of internet users had an issue with service performance, and 41% of the respondents who had an issue said the biggest impact for them was an issue with service performance (speed, stability, fault).[15]

    37.2 MBIE's 2020 NZ consumer survey found that 41% of survey respondents whose most recent problem was in the Home-Based Telecommunications Services category, said a cause was the product/service was different from what was expected or did not work. A further 26% said it was because of an issue with quality. Another 23% said a cause was incorrect/misleading information.[16]

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13 Commerce Commission "Marketing alternative telecommunications services during the transition away from copper" (8 November 2021) Outcome 3(e), page 16.

14 Commerce Commission "Improving retail service quality – Final Baseline Report" (9 December 2021).

15 Commerce Commission "Improving retail service quality – Final Baseline Report" (9 December 2021) paras 90.2 and 91.2.

16 Commerce Commission "Improving retail service quality – Final Baseline Report" (9 December 2021) para 92.

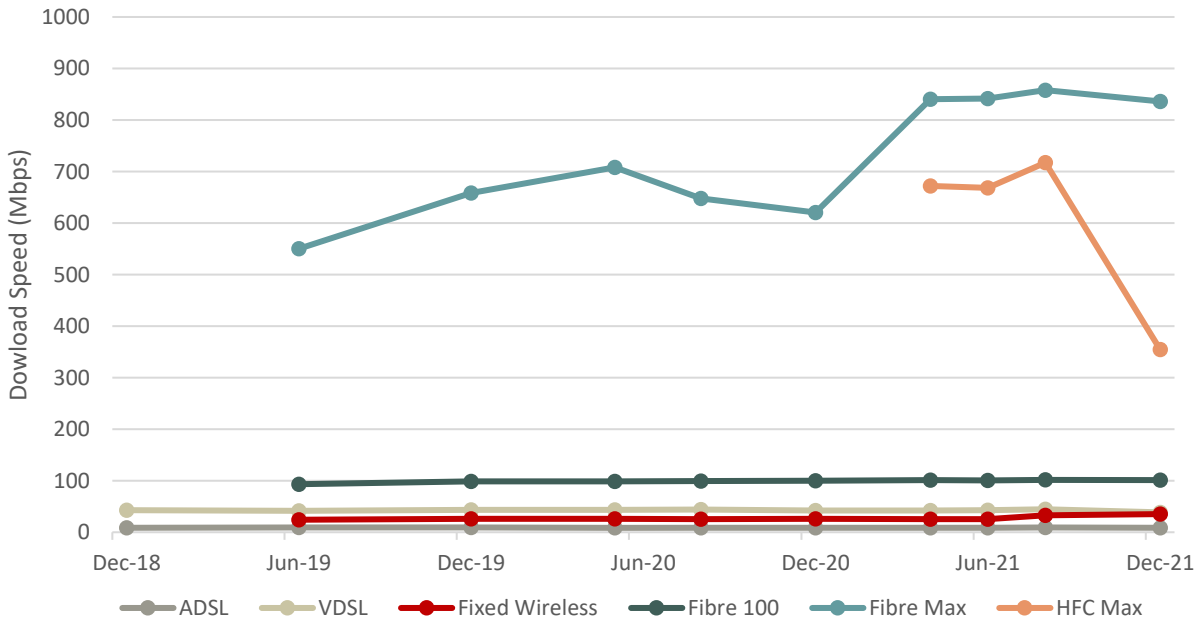
38. During the current MBNZ programme we have produced ten reports to help consumers know what they should generally expect, independent from the marketing from providers. Without the MBNZ programme it would be difficult for consumers to obtain accurate and independent information on the actual broadband performance experienced and that can reasonably be expected.

Objective 1: Achieved

Objective 2 - Shine a light on broadband performance by allowing comparisons between providers and encouraging providers to compete on performance and not just price

39. Our testing programme has allowed us to monitor and report on the performance of different broadband technologies, and on the differences between the larger broadband providers. This has included allowing us to track the performance of technologies over time, including the performance of VDSL, and Fixed Wireless broadband products as they compete with Fibre and HFC technologies. Figure 1 shows the average (mean) download speeds by product since the current iteration of the programme began in 2018.[17]

Figure 1: Average download speeds by product



40. The programme has enabled us to engage with industry to identify and resolve issues with broadband performance. The two notable examples of this relate to the higher speed plans offered over HFC and Fibre.

[17] 24/7 average speeds as reported in each of the Commissions MBNZ reports Dec 2018 - Dec 2021. https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand.

HFC Max

41. As Figure 1 shows, the average download speeds of HFC Max saw a decrease of around 50% in performance compared with that seen in the previous report, with average download speeds falling from 717.2 Mbps in May to 354.7 Mbps in September 2021. This result has prompted Vodafone to undertake technical investigations and experimental tests to determine the root cause.

Fibre Max

42. We initiated a Fibre Max investigation in 2020 to understand the cause of the performance variability we were observing through the MBNZ programme. The investigation and its outcome are summarised in the case study below. Improvements in performance resulting from this work can be seen in Figure 1's results for Fibre Max average download speeds from December 2020.

Case study – FibreMax investigation.[18]

When we began FibreMax testing in 2018 relatively few households consistently achieved more than the 800Mbps speeds which would be expected for Fibre Max lines. In mid-2020 a working group of RSPs, LFCs, the Commerce Commission and SamKnows was set up to investigate the inconsistent performance.

The investigation identified a number of issues including differing ONT performance, peering issues and a potential Linux kernel bug. The main driver for the inconsistent performance, identified by both the LFC and RSPs, related to packet loss occurring under high-burst conditions on certain models of ONT. These were found to be caused by configuration settings, rather than network congestion.

Changes to Improve Performance

Fixes were applied to the network at several levels in August and November 2020, and further improvements followed. Figures 1 and 2 below are indicative of the distribution of download speeds on Fibre Max plans and show the early results (Fig 1) and the improvements (Fig 2) seen on Fibre Max lines since the fixes were applied. Typical advertised average download speeds for Fibre Max plans range between 700Mbps and 950Mbps.

This graph shows the results drawn from testing between 24 July to 24 August 2020.

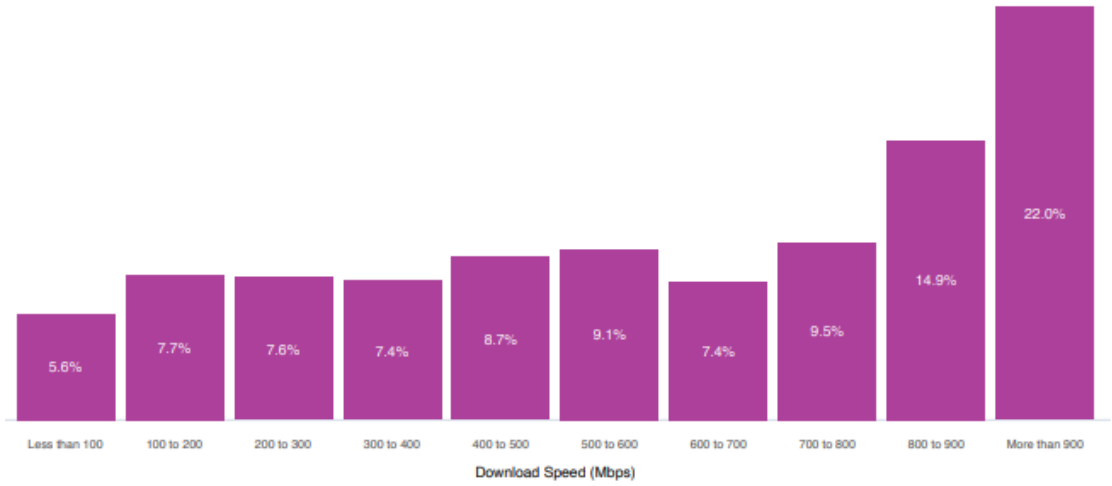
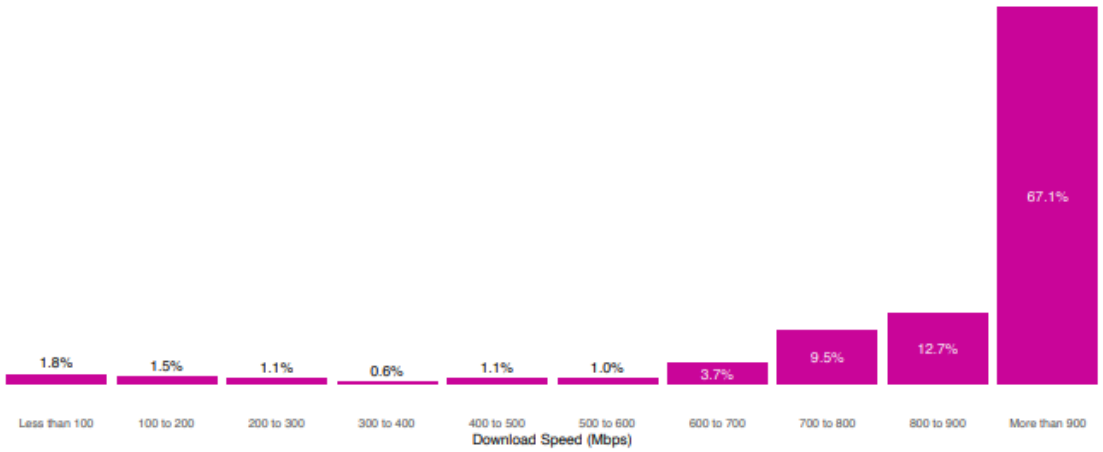


Figure 2 shows the results drawn from the 21 April 2021 MBNZ Report.



[18] Figures for this case study are contained in the MBNZ Summer report, April 2021 and the MBNZ Fibre Max Status update, Dec 2020 published on the Commissions website - https://comcom.govt.nz/regulated-industries/telecommunications/monitoring-the-telecommunications-market/monitoring-new-zealands-broadband/Reports-from-Measuring-Broadband-New-Zealand.

43. The performance improvements across Fibre Max plans as a result of our investigation would not have been possible without the MBNZ programme – in particular, its ability to shine a light on performance across the broadband network connectivity chain (between retailers and wholesalers).

Objective 2: Achieved

Limitations of the current testing model

44. The current programme has been a significant step forward for MBNZ. However, we have identified several limitations that are inherent in the hardware-based testing approach. These limitations have come into greater focus given the significant changes in the market since we started the current programme in 2018. In particular:

    44.1 The shift away from full-speed copper products to differentiated Fibre speed products, which have increased in number and capability during the current programme;

    44.2 The emergence of Fixed Wireless products as a viable alternative to fixed-line options for some consumers. The deployment of 5G has added greater differentiation and choice across the available Fixed Wireless products.

45. The current programme started with a target of 3,000 whiteboxes providing results. Over time, volunteers have switched providers or unplugged their whiteboxes, which has reduced the number available in a testing period and the whiteboxes are not able to be redistributed. We aim to only report results where there is enough data collected in a period to be statistically reliable.

46. The evolving nature of the market, increases in consumers need for information and the slowly reducing number of active whiteboxes, means the programme must evolve and seek to address a number of limitations.

Time lag for new technologies and plans

47. Difficulty recruiting and retaining a broad range of volunteers to host a whitebox in their home. This has meant we have only been able to provide limited breakdowns of popular plans by provider. This constrains the ease and speed with which new or emerging providers or technologies can be included in the programme in future, such as 5G wireless broadband, and satellite broadband services. It also reduces the information consumers can use to choose the right technology, provider and plan for their needs.

Limited geographic splits

48. Limited ability to monitor and report regional performance differences and greater geographical breakdowns. The current scope of the programme allows us to report results for the North and South Island with an Urban and Rural split for each island. This is unable to show any broadband provider regional performance differences and

offers a general picture but without being able to provide city or regional level information. This constrains our ability to monitor and report any regional or geographic performance differences and means consumers cannot assess providers on the performance they should expect to experience based on where they are.

Testing speeds above 1Gbps

49. The current programme is unable to test speeds greater than 1Gbps. This means we are unable to monitor the performance of newer 'Hyperfibre' products and provide consumers with information on the performance of these emerging products which can provide 2, 4 and 8 Gbps.

Smaller providers not included

50. Smaller providers are not tested as part of the current programme. This reduces our ability to provide consumers with information on alternative providers in the market and can affect consumers' willingness to switch providers. It also makes it difficult to shine a light on the performance of key competitors in rural areas, such as Wireless Internet Service Providers (WISPs).

Opportunities for the future

51. Addressing these limitations in future phases of the MBNZ programme will particularly benefit Objective 1 – providing more granular and more timely information on broadband performance to support consumer choice, while also supporting Objective 2 by encouraging suppliers to compete on performance.

52. We discuss the opportunities for future MBNZ programme phases in the following section.

Future MBNZ testing and reporting of broadband performance

54. This section sets out our approach for taking the MBNZ programme forward and seeks input from stakeholders on the future of the programme. The section sets out:

    54.1 The objectives of the programme going forward;

    54.2 Enhancing the next phase of the MBNZ programme; and

    54.3 Approaching the MBNZ programme beyond the next phase.

The objectives of the programme going forward

55. As noted above, the current MBNZ programme has two objectives:

    55.1 Providing consumers with accurate, accessible, and independent information on broadband performance across different providers, plans, and technologies, to help them choose the best broadband for their household.

    55.2 Shining a light on broadband performance by allowing comparisons between providers and encouraging providers to compete on performance and not just price.

56. We consider these objectives give effect to our obligations under s9A of the Act.

57. Having reviewed the current MBNZ performance against these objectives, we consider that they remain appropriate for the next phase of the programme and that they are likely to remain relevant in the longer term.

58. However, to achieve these objectives in the next phase of the programme, and into the future, the programme must continue to evolve. This will require adjustments to the design and delivery of the programme to respond to the limitations we have identified, ensuring the programme keeps pace with the evolving broadband landscape and consumer expectations.

Enhancing the next phase of the MBNZ programme

Ensuring the programme remains relevant

59. The broadband landscape in NZ has continued to evolve. There are now more broadband service providers competing in the market than ever before. New technologies and plans continue to be introduced and gain market share and relevance, while traditional copper broadband services are being replaced by the next generations of services.

60. In addition to the broadband services provided to consumers' homes, in-home performance (or quality of experience) has become increasingly important. For example, several providers now offer services and products (eg meshed Wi-Fi or Wi-Fi extenders) to ensure that the in-home Wi-Fi performance and experience for consumers meets their needs and caters to the increasingly wireless nature of connected consumer devices.

61. The programme will need to add to the technologies it tests as well as the plans that are tested to monitor the development of the market and provide information to consumers to inform their decisions on which plans, and products are likely to best meet their needs.

62. We consider that the programme will need to make provision for and include a number of adjustments to continue to deliver its objectives in the future. In particular:

    62.1 A greater coverage of broadband providers, particularly smaller providers, with a clear pathway to add new providers as the market develops.

    62.2 The ability to assess the in-home Wi-Fi performance of a broadband connection to provide consumers with information on how their connection is likely to perform for wireless devices.

        62.2.1 This is because consumers are increasingly dependent on the performance of their in-home Wi-Fi, and the performance they experience is heavily dependent on the quality, capability, and signal coverage of their Wi-Fi connection.

    62.3 Testing of 5G Fixed Wireless services, satellite services and other technologies as they emerge in greater numbers in 2022 and beyond, including other wireless technologies, such as those provided by WISPs, particularly in rural areas.

    62.4 Greater geographic breakdowns and local results to better support consumer choice.

    62.5 The ability to test services, particularly Fibre, with speeds greater than 1 Gbps.

    62.6 A reduction in the scope or scale of testing for legacy products.

        62.6.1 This could include a downscaling or re-targeting of approach to ADSL and VDSL products and, depending on market developments, HFC services and some Fibre plans. Copper services are expected to remain important for parts of New Zealand (particularly rural areas) but they are declining rapidly and are expected to number below Fixed Wireless broadband connections in the next year.

63. Making these adjustments is likely to require an increase in the number of volunteers and improvements to in-home probes (currently whiteboxes) unless they can be replaced by software-based testing embedded in consumers' modems/routers in the near future.

Q1	What providers, broadband plans, performance metrics and services should we consider removing or adding to the testing programme?
Q2	How should we approach onboarding or adding new providers, products and technologies?
Q3	Should we encourage greater collaboration between the testing provider and the broadband providers to facilitate the testing of new products?

Recruiting and maintaining volunteers

64. The MBNZ programme needs enough volunteers to host an in-home device (currently a SamKnows whitebox) or testing software to ensure sample sizes for each technology, plan and provider are statistically reliable. Typically, this means 40-50+ volunteers per provider, for each technology and each plan in a given testing period.

65. Recruiting and maintaining enough volunteers has been a challenge for the existing programme, with only Fibre 100/20 (NZ's most popular plan in 2021) and FibreMax (950/450 Mbps) regularly being able to show performance broken down by provider. Overall testing and reporting on performance for other technologies and plans (but not by provider) has been relatively easy to achieve, although the ongoing move to new technologies means that this has become more difficult for ADSL and VDSL over time as the numbers of consumers using those technologies continues to decrease.

66. Improving the ease and speed with which volunteers can be added to the programme would speed up the ability to add new technologies and plans. Targeted increases in volunteers, and being able to maintain them, would enable smaller providers to be added to the programme and improve the geographic performance information we can publish to assist consumers in their choice of broadband provider.

67. To build on the success of the existing programme, and maximise the value of the comparison information we can provide to consumers, adjustments to our approach for volunteer recruitment and retention will be needed. Possible options could include:

    67.1 Providers taking an active role in volunteer recruitment and incentivising uptake of the programme. This could include, for example, the introduction of a regulated requirement to support the programme, including volunteer recruitment and support, potentially via a Commission RSQ code. Alternatively, providers could offer various incentives to their customers to achieve the level of participation required for more extensive and granular testing.

    67.2 Providers sourcing their own volunteers, carrying out their own testing with the MBNZ provider, and providing their results to the Commission's programme for reporting of the results. This option could potentially include the current 'in-home probe' physical method, or providers embedding

appropriate testing software in their end user equipment and being able to bring their results into the MBNZ programme.

67.3 Applying different reporting thresholds for some testing, potentially by reducing sample sizes to allow smaller providers to be included in the programme more easily and allow us to report indicative information to consumers for a larger number of providers and technologies. This approach would need to be carefully managed when reporting the results to ensure indicative performance does not mislead consumers.

Q4	What options should we consider, to recruit and maintain volunteers to support greater coverage of products, providers and plans?
Q5	What level of support should providers offer to the programme and to volunteers to promote the programme?
Q6	Should we consider applying different reporting thresholds for some testing, for example smaller sample sizes, where it has been difficult to get enough volunteers?

Reporting results to monitor broadband and meet consumer needs

68. We consider that the four reports we release each year is the minimum number to ensure we can monitor the development of broadband performance and the broadband market.

69. However, consumers, providers and third parties need to have confidence that the reporting will be indicative of current performance. Longer periods between reports would not achieve this, while increased frequency of reporting would allow more up-to-date performance information for consumers and greater incentives for providers to address any performance issues.

70. We consider that report frequency could be increased, with reports released every two months (6 reports per year) or once a month (12 reports per year).

71. Reports of a similar style to the current publication, accompanied by the data that sits behind it, are likely to be sufficient for the Commission to monitor broadband performance, and to supply providers and third parties with information for their marketing.

72. We are also looking at how we use testing information to support consumer choice and the best ways that broadband performance information might be provided to consumers. We will be considering our wider consumer reporting approach and how best to provide this information to consumers in 2022.

Q7	How often do you think we should report test results? Why?
Q8	What changes should we make to our current testing and reporting to better support consumer choice?

Looking ahead to future MBNZ phases

73. While we are currently considering the next phase (3-5 years) of the MBNZ programme, we also have an eye on the future and what further phases may look like (beyond 5 years).

74. The precise form the MBNZ programme takes in future phases will depend upon how the market develops, the evolution of testing and reporting methods, consumers' needs, and the wider regulatory settings and requirements. For example, the programme could support future consumer data rights, will need to adjust to changing mixes of technologies, plans and services, and should take advantage of any opportunities to further address the limitations of testing to maximise its value.

75. With this in mind, we would like to explore a software-based testing approach, with software embedded in consumers' routers/modems. We understand that this approach has the potential to address all current limitations with hardware-based approaches – simplifying the recruitment process, removing the need for physical in-home probes, enable testing of new providers, pick up new technologies and plans as they launch, and provide granular geographic breakdowns.

76. However, moving to this type of approach would take time and there are a number of new issues that would need to be worked through – privacy, data ownership, opt-in/out for volunteers and providers, contractual relationships/costs.

77. We have chosen to share our initial thinking on future software-based testing, as we would like to start the conversation with industry on whether and how we transition MBNZ to such an approach, but also as there may be relevant considerations in our procurement of the next phase of the programme this year. At this stage we are looking to ask industry about the implications from their perspective of using such software.

Q9	What are the practical, technical or commercial implications for providers of moving to an embedded software-based testing approach?
Q10	What implications would an embedded software-based testing approach have for licensing for modems/third party firmware, warranties, network load and modem capability?
Q11	What implications does this approach have for privacy and trust for consumers and providers? What safeguards would need to be in place to ensure the privacy of consumer data including cybersecurity and privacy of consumer details?

Appendix 1 – Consolidated Questions

Ref	Question
Q1	What providers, broadband plans, performance metrics and services should we consider removing or adding to the testing programme?
Q2	How should we approach onboarding or adding new providers, products and technologies?
Q3	Should we encourage greater collaboration between the testing provider and the broadband providers to facilitate the testing of new products?
Q4	What options should we consider, to recruit and maintain volunteers to support greater coverage of products, providers and plans?
Q5	What level of support should providers offer to the programme and to volunteers to promote the programme?
Q6	Should we consider applying different reporting thresholds for some testing, for example smaller sample sizes, where it has been difficult to get enough volunteers?
Q7	How often do you think we should report test results? Why?
Q8	What changes should we make to our current testing and reporting to better support consumer choice?
Q9	What are the practical, technical or commercial implications for providers of moving to an embedded software-based testing approach?
Q10	What implications would an embedded software-based testing approach have for licensing for modems/third party firmware, warranties, network load and modem capability?
Q11	What implications does this approach have for privacy and trust for consumers and providers? What safeguards would need to be in place to ensure the privacy of consumer data including cybersecurity and privacy of consumer details?