



B.29 [16]

Crown Fibre
Holdings Limited:
Managing the
first phase of
rolling out ultra-
fast broadband



Photo acknowledgement: David Moynahan,
Office of the Auditor-General

Crown Fibre Holdings Limited: Managing the first phase of rolling out ultra-fast broadband

Presented to the House of
Representatives under section 20 of
the Public Audit Act 2001.

June 2016

ISBN 978-0-478-44241-0

Contents

Auditor-General's overview	3
Part 1 – Introduction	5
What is being “rolled out”?	5
Who is involved in rolling out the fibre-optic network?	6
Scale and time frame of the roll-out	8
Current state of the roll-out	10
What we looked at	10
What we did not look at	11
Structure of this report	12
Part 2 – Preparing for the roll-out	13
The design and approach to building the network were well informed	13
The process for selecting commercial partners was sound	15
The contractual documents are comprehensive	18
Agreeing detailed standards for building the network took longer than expected	21
Part 3 – Overseeing the roll-out	23
Crown Fibre monitors commercial partners' performance effectively and keeps the roll-out on schedule	23
Crown Fibre manages risks well	29
Crown Fibre reviews its strategies regularly	31
Part 4 – Working relationships and working together	33
There are constructive relationships with commercial partners after difficult starts	33
Crown Fibre works well with other stakeholders	36
Part 5 – Crown Fibre's limited role in broadband uptake	37
Connections are in line with expectations	38
Crown Fibre understands its role	39
The gap in business awareness of ultra-fast broadband opportunities	41
Figures	
1 – Scale of work involved in UFB1	8
2 – Geographic spread of the commercial partners' work	9
3 – Cumulative number of households and businesses able to connect to ultra-fast broadband, July 2011 to June 2015	10
4 – Example of a typical fibre access point, Lower Hutt	25
5 – Cumulative number of households and businesses actually connected to ultra-fast broadband, 2011/12 to 2014/15	38
6 – Innovation adoption curve, by adopter categories	39

Auditor-General's overview

The Government's ultra-fast broadband initiative commits it to providing most New Zealanders with access to broadband services that are faster, are more reliable, and have greater bandwidth than current services.

Crown Fibre Holdings Limited (Crown Fibre) was set up to form commercial partnerships with, then oversee the work of, commercial companies that would build a network of fibre-optic cables throughout the country. I wanted to provide assurance that Crown Fibre was making sure that its commercial partners were building the network well, on time, and within budget, because of taxpayers' \$1.345 billion investment.

My staff looked at how well Crown Fibre managed work to build the first phase of the network for 75% of the population and connect it directly to businesses, health providers, and schools. We did not look at other ultra-fast broadband projects, such as the rural broadband initiative. We also did not look at connecting broadband from the street to people's homes, because these are private arrangements with internet service providers.

So far, work to roll out the network is on time and within budget. Crown Fibre has a testing programme to assure quality. The commercial partners building the network get paid only when the work passes the quality tests. The proportion of the network that has been built and that has passed the testing programme is ahead of schedule. The network looks likely to meet all of the targets set by the Government.

Crown Fibre prepared well for the roll-out and ran a sound process to contract with suitable commercial partners. Crown Fibre can and does influence the performance of its commercial partners. Its relationships with its commercial partners have not always been smooth, and some difficulties have taken time to resolve.

Other government initiatives that use the skills and reach of the private sector could learn from Crown Fibre's experience. The lessons include:

- Good preparation helps set up a project for success. This includes being adaptable when the specifics of the task call for it. For its partnerships with commercial partners, Crown Fibre (and others) designed new public-private partnership models to suit the roll-out, rather than using existing models.
- Hiring and keeping the best people is important. Crown Fibre employed capable people who could negotiate and manage relationships in a tough commercial setting.

- Choosing the most suitable commercial partners to enter into partnership with is also important. Procurement principles used by public entities help to achieve this and to ensure fairness in the process. Crown Fibre followed good practice and knew what it wanted from commercial partners.
- Contracts should be negotiated purposefully. These negotiations need a careful balance between being firm when necessary and offering flexibility when appropriate. Crown Fibre took seriously its responsibility to invest taxpayers' money wisely.
- Contract negotiations set the tone for a healthy working relationship. Finding opportunities for both parties to be successful in the negotiation can help set this tone. Negotiations for the network contracts were tough and negatively affected some early working relationships.
- All parties should be held to agreed expectations, resolutely when necessary. Crown Fibre kept commercial partners to contract expectations and has been firm in overseeing commercial partners' performance. This has sometimes involved using enforcement rights and other strategies to influence and motivate the commercial partners to improve their performance.
- When government projects create new opportunities, it is important that the public are informed about the possibilities. This helps people make well-informed choices about opportunities and how to take advantage of them.

In my view, Crown Fibre has done well to keep the roll-out on schedule, and there are many examples of sound performance management in this report. I encourage other public entities to use these lessons to get the best possible outcomes when working with commercial partners.

I thank the staff of Crown Fibre and its commercial partners, the Ministry of Business, Innovation and Employment, the Treasury, and other stakeholders for their time and co-operation.



Lyn Provost
Controller and Auditor-General

10 June 2016

Introduction

- 1.1 In this Part, we describe:
- what is being “rolled out” and how it originated;
 - the parties in the roll-out of a fibre-optic network;
 - the scale and time frame of the roll-out;
 - the current state of the roll-out;
 - what we looked at and what we did not; and
 - the structure of this report.

What is being “rolled out”?

- 1.2 In 2009, the Government committed to giving most New Zealanders better access to broadband services. It launched a telecommunications infrastructure project known as “the ultra-fast broadband initiative” (the UFB Initiative).

- 1.3 The UFB Initiative would improve access to broadband with better speed, reliability, and bandwidth.¹ The Government’s objective for the UFB Initiative was:

To accelerate the roll-out of ultra-fast broadband to 75 percent of New Zealanders over ten years, concentrating in the first six years on priority broadband users such as businesses, schools and health services, plus greenfield developments and certain tranches of residential areas.²

- 1.4 The Government set six guiding principles³ for implementing the UFB Initiative. The UFB Initiative should:

- make a significant contribution to economic growth;
- neither discourage nor substitute for private sector investment;
- avoid entrenching the position, or “lining the pockets”, of existing broadband network providers;
- avoid excessive infrastructure duplication;
- focus on building new infrastructure, rather than on preserving existing “legacy assets”; and
- ensure that broadband services are affordable.

1 For the purposes of the UFB Initiative, ultra-fast broadband means broadband services at a minimum speed of 100Mbps downstream (from the internet to the user) and a minimum of 50Mbps upstream (from the user to the internet).

2 Ministry of Economic Development (2009), *New Zealand Government Ultra-Fast broadband initiative – Overview of Initiative*, Wellington, page 1.

3 Ministry of Economic Development (2009), *New Zealand Government Ultra-Fast broadband initiative – Overview of Initiative*, Wellington, page 1.

Building a fibre-optic cable network

- 1.5 The Government decided that a street-based fibre-optic network would be built. This would include connecting individual end-users (for example, households and businesses) directly with fibre, generally known as Fibre To The Premise or “FTTP”. Building a street-based fibre-optic network would involve laying fibre-optic cables underground and overhead along the streets of larger towns and cities. This network would be connected to the existing cross-country fibre network between these centres.
- 1.6 The first phase, which aims to make ultra-fast broadband available to 75% of the population, is called UFB1. There is a more recently announced initiative to increase the coverage to 80% and to make ultra-fast broadband available in smaller towns.
- 1.7 The Government committed \$1.345 billion to the roll-out of UFB1. It expected private-sector investment to at least match this amount in a “co-investment” arrangement. The Government’s commitment takes the form of funding that is released progressively as the roll-out work continues. This funding is eventually repayable to the Crown by commercial partners or realisable by Crown Fibre Holdings Limited (Crown Fibre) selling securities. Full ownership of the network will eventually be transferred to these commercial partners.
- 1.8 The Government required the network to be designed to support open access. This means that new and existing telecommunications service providers will have unobstructed access to the completed network.

Who is involved in rolling out the fibre-optic network?

Crown Fibre Holdings Limited – finding commercial partners and managing commercial arrangements

- 1.9 The Government considered that the up-front cost of building a fibre-optic network would be too high for the telecommunications industry alone to fund. Crown Fibre was set up as a new Crown-owned investment company to manage the Government’s investment in the network. Crown Fibre started operating in late 2009.
- 1.10 The shareholders of Crown Fibre are the Minister of Finance and the Minister for State-Owned Enterprises. The Policy Minister for the UFB Initiative is the Minister for Communications.
- 1.11 At a high level, Crown Fibre has two parts to its role:⁴
- to operate a contestable process to select commercial partners; and
 - to manage the Government’s investment in fibre networks.

4 Ministry of Economic Development (2009), *New Zealand Government Ultra-Fast broadband initiative – Overview of Initiative*, Wellington, page 1.

- 1.12 Crown Fibre’s role was broken down into the following tasks:
- assess responses to the tender documents against criteria set by the Government;
 - negotiate commercial arrangements with commercial partners to co-invest in “local fibre companies” and appoint board members to these companies;
 - monitor the performance of, and manage the Government’s investment in, local fibre companies;
 - approve technical and operational standards for national consistency; and
 - co-ordinate deployments, liaise with local government, and do what is necessary to ensure that the Government achieves the best possible outcomes from its investments.
- 1.13 As at 30 June 2015, Crown Fibre had 17 full-time equivalent staff, including a senior management team of six. It has a board of six (including the chairperson), which includes people with a strong mix of telecommunications, infrastructure project, and commercial experience. Crown Fibre also has other contractors that test the parts of the network that have been completed.

Connecting the network to homes and businesses

- 1.14 When a user opts for ultra-fast broadband, their home or business premise has to be connected to the network in their street. Connecting homes and businesses to the network is critical to achieving the project’s intended social and economic benefits. Although this is outside of its core activities, Crown Fibre has a limited role in encouraging the demand for ultra-fast broadband, which we discuss in Part 5.

The commercial partners – contracted to build the network and eventually own it

- 1.15 The commercial partners that Crown Fibre has contracted with to build the network are:
- Chorus Limited (Chorus) – to build 69.4% of the UFB1 geographical coverage;
 - Enable Services Limited (Enable), owned by Christchurch City Holdings Limited – to build 15.3% coverage;
 - Ultrafast Fibre Limited (Ultrafast Fibre), owned by WEL Networks – to build 13.7% coverage; and
 - Northpower Fibre Limited (Northpower), owned by Northpower Trust – to build 1.6% coverage.
- 1.16 Crown Fibre co-invests and shares ownership in the network with Enable, Ultrafast Fibre, and Northpower through special-purpose companies, called local

fibre companies. Crown Fibre distributes funding through these companies. The Government’s investment effectively takes the form of concessionary funding, eventually to be returned to the Government, with the network owned by the commercial partners.

- 1.17 Crown Fibre has a different financial arrangement with Chorus. Crown Fibre pays Chorus directly for work done to fulfil the terms of its contract. This approach is more like a traditional “principal and contractor” arrangement.

Scale and time frame of the roll-out

- 1.18 UFB1 is a 10-year project. Crown Fibre started preparing for the roll-out in 2009. The roll-out started in late 2010 and is expected to be fully completed by December 2019.
- 1.19 The commercial partners each have different schedules that reflect the scale of the work they are responsible for (see Figure 1). Each commercial partner’s roll-out scale is measured by residential population based on 2023 population estimates (not residential premises that the network has to be laid past) and the numbers of businesses, public hospitals, and schools that will be able to connect to the network (we refer to this as the network “passing” premises).

Figure 1
Scale of work involved in UFB1

Contracted entity	2023 estimated population to cover	Business end-users to pass	Public hospitals to pass	Schools to pass	Deadline
Northpower Limited					
Northpower Fibre Limited	52,000	3,500	1	26	Complete
Waikato Networks Limited					
Ultrafast Fibre Limited	460,000	22,000	8	183	Complete
Enable Services Limited					
Enable Networks Limited	433,000	20,000	9	149	December 2019
Chorus Limited					
Chorus Limited	2,772,000	166,000	36	1,055	December 2019

Note: Figures are supplied by Crown Fibre and are sourced from the UFB Agreed Premises Dataset (shared with the commercial partners), Network Deployment Plans (agreed with commercial partners), and 2023 population estimates from Statistics New Zealand.

1.20 Figure 2 shows the geographic spread of each commercial partner's work. The local fibre companies work in their regions, while Chorus works throughout the country.

Figure 2
Geographic spread of the commercial partners' work

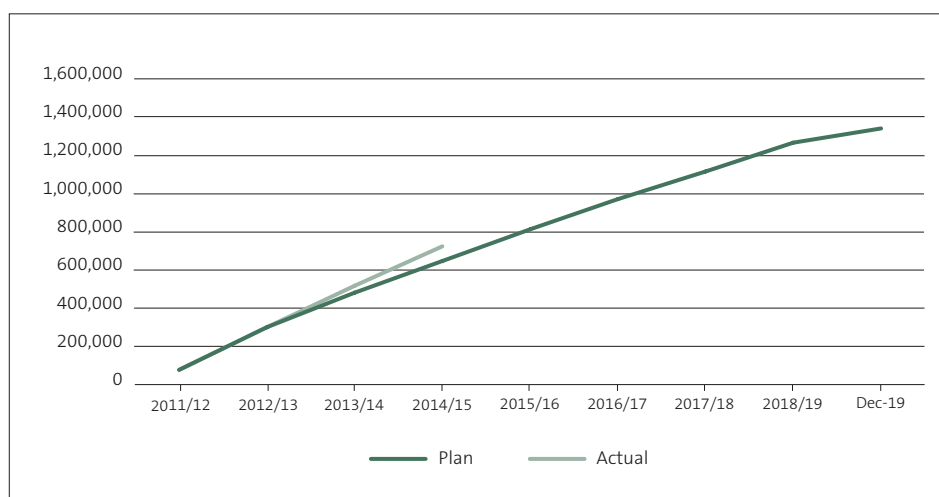


Source: Crown Fibre Holdings Limited.

Current state of the roll-out

- 1.21 The roll-out is now well advanced. All commercial partners are meeting or exceeding currently agreed time frames. (We discuss standards of quality, and how Crown Fibre assures them, in Part 3). The current progress of the roll-out is ahead of schedule overall. Figure 3 compares actual performance against the planned performance.

Figure 3
Cumulative number of households and businesses able to connect to ultra-fast broadband, July 2011 to June 2015



Source: Crown Fibre Holdings Limited.

- 1.22 As at the end of March 2016, the total number of end-users able to connect to ultra-fast broadband had increased to 921,625.
- 1.23 Crown Fibre advised us that, as at 31 March 2016, throughout the whole roll-out:
- all schools in coverage areas have been passed with ultra-fast broadband fibre;
 - all public hospitals in coverage areas have been passed; and
 - about 97% of businesses in coverage areas have been passed.

What we looked at

- 1.24 We looked at how well Crown Fibre has managed the performance of the commercial partners in building the network. Our objective was to assure Parliament and the public about how well Crown Fibre prepared for and met this responsibility.

- 1.25 We also sought to learn lessons that other parts of the public sector could apply when using the skills, experience, and reach of commercial partners.
- 1.26 Specifically, we looked at Crown Fibre’s contracting, performance management, and collaboration with the commercial partners during UFB1. We asked the commercial partners how well they considered Crown Fibre has performed.
- 1.27 We looked at how effectively the structures in place for partnerships supported Crown Fibre and the commercial partners in doing business together.
- 1.28 We reviewed more than 200 documents about Crown Fibre and the roll-out. These documents included publicly available information (such as Crown Fibre’s annual reports and information on various websites) and documents provided by Crown Fibre.
- 1.29 We interviewed 38 people to get their views about Crown Fibre’s performance. Some worked for Crown Fibre at various levels, and others were employed by the commercial partners. We also sought the views of Crown Fibre’s monitoring agencies (the Ministry of Business, Innovation and Employment and the Treasury) and of “priority users” – people representing schools, the health sector, and businesses.

What we did not look at

- 1.30 We did not review in depth all the procurement and contractual aspects of the network, nor all of the contract documentation between the parties.
- 1.31 We did not review all aspects of public-private partnership models (either existing or newly designed).
- 1.32 We did not look at technical aspects of the network, the standards set for building the network, or any other broadband-related initiatives (such as further ultra-fast broadband extensions or work in rural areas).
- 1.33 We did not look at Crown Fibre’s role in managing the Government’s investment. For example, we did not assess the overall investment and repayment strategies or the cash flow methods adopted.
- 1.34 We did not look at the financial performance of Crown Fibre or the commercial partners, the financial structures between them, or the asset ownership strategies.

- 1.35 The process of connecting the network to residential homes was not part of our work because it is an arrangement people make with the business that provides their internet services. This is not within Crown Fibre's control, but it does monitor the timeliness of these connections and provides that information to Ministers (see Part 5).
- 1.36 We did not seek the views of the public (because people's internet connection arrangements are with their internet service providers, not with Crown Fibre), but we did speak to a local authority to understand some of the experiences and effects of the building work.

Structure of this report

- 1.37 In Part 2, we discuss how Crown Fibre prepared for the roll-out and tendered for, and negotiated contracts with, commercial partners.
- 1.38 In Part 3, we discuss how Crown Fibre has overseen the performance of its commercial partners.
- 1.39 In Part 4, we discuss and evaluate the working relationships between Crown Fibre and its commercial partners, and between the commercial partners.
- 1.40 In Part 5, we discuss Crown Fibre's role in people's uptake of the ultra-fast broadband available in their streets.

Preparing for the roll-out

- 2.1 In this Part, we discuss how well Crown Fibre understood its purpose, prepared for the roll-out, and tendered for, and negotiated contracts with, commercial partners.

Summary of our findings

- 2.2 Crown Fibre prepared for its role of overseeing the performance of the commercial partners well. People at Crown Fibre understand its purpose, and this guides what they do.
- 2.3 Crown Fibre carried out a lot of preparatory work, including the high-level design of a fibre-optic network to meet New Zealand's future needs and selecting capable commercial partners to build the network.
- 2.4 Crown Fibre (and the then Ministry of Economic Development)⁵ designed contracts and other documents. People we spoke with considered that the contracts and other documents set out the roles and responsibilities of Crown Fibre and the commercial partners clearly. They also considered that time, cost, and quality expectations were clear and are now well understood.

The design and approach to building the network were well informed

- 2.5 We expected to see evidence that the network's design was informed by research and consultation. We also expected the partnership models to be described well enough for all parties to be clear about how they would work together and what was expected of them.
- 2.6 Overall, Crown Fibre prepared well for rolling out UFB1. The people we spoke to and the documents we reviewed showed that Crown Fibre had a clear understanding of its purpose. Crown Fibre drew on comparable local and international experiences when designing the network and planning its approach to implementing it.

Crown Fibre understands its purpose and role

- 2.7 Crown Fibre's purpose is to meet the Government's objective for the UFB Initiative. Understanding this purpose is critical. If everyone's activities are driven by a shared understanding of purpose, the objective is more likely to be achieved, and the intended societal and economic benefits are more likely to be realised.
- 2.8 Crown Fibre understands its role and responsibilities. Crown Fibre's role has two core parts and includes five main tasks (see paragraphs 1.11-1.12). These tasks

⁵ In July 2012, the Ministry of Economic Development, the Ministry of Science and Innovation, the Department of Labour, and the Department of Building and Housing were brought together to form the Ministry of Business, Innovation and Employment.

directly contribute to achieving the Government's objective. We saw that many references in the strategic documents and reports we examined aligned with this objective.

- 2.9 People at Crown Fibre told us how their particular roles contributed to meeting the Government's objective and ensuring the success of UFB1. They understood the potential value to New Zealand and were excited about being part of the project. One person said, "I'm involved in this project for my grandchildren."

The fibre network has been designed to meet New Zealand's future needs

- 2.10 Crown Fibre led the design of a network that is intended to remain fit for purpose for 50 years. Crown Fibre informed the design by researching experiences of, and approaches to, rolling out a telecommunications network in Singapore, South Korea, the United States of America, Australia, and the Netherlands. Crown Fibre also got advice from local industry experts on New Zealand's particular needs and challenges.
- 2.11 The specific and detailed requirements for bringing the network components together to form a system are set out in Network Infrastructure Project Agreements with each commercial partner. Crown Fibre asked independent advisers whether the Network Infrastructure Project Agreements reflected the best approach to a telecommunications network roll-out. The advisers concluded that they represented best practice in New Zealand.
- 2.12 Crown Fibre also considered the needs of "priority users" – hospitals, schools, and businesses – when designing the architecture. It worked with priority users to understand the size of the task and the best ways of working with them and with commercial partners. People told us that Crown Fibre took the time to understand their needs and worked closely with them to resolve any challenges.

The models used fit the circumstances and long-term aims

- 2.13 In our view, the public-private partnership models adopted suited the arrangements for co-investment and transfer of ownership of the network. The Government wanted the commercial sector to build and run the network. However, the Government knew that it was uneconomic for the commercial sector to build the network without the Government co-investing. The commercial companies building the network would eventually repay the investment and own the network. This was described as "having skin in the game".

- 2.14 Crown Fibre and the then Ministry of Economic Development designed business relationship models to support the commercial sector eventually owning and operating the network. These designs were refined from earlier government models.
- 2.15 Crown Fibre and the then Ministry of Economic Development also drew on international and local telecommunications and investment expertise and experience, including examples that had not worked well. For example, Australia's model of setting up its own government-owned telecommunications provider was considered to be unsuitable. The Australian model did not fit the expectations here of private-sector ownership (and open access) and eventual repayment of the Government's investment.

The process for selecting commercial partners was sound

- 2.16 The Government has established mandatory procurement principles for public entities to follow when engaging the services of the private sector. These principles support a process that is fair, contestable, and transparent. Following sound processes to find capable commercial partners increases the likelihood of success.
- 2.17 In our view, Crown Fibre employed a sound approach to procurement and selecting commercial partners. Crown Fibre got independent advice and assurance on procurement and the selection process from several credible sources. This advice and assurance was positive, with one describing Crown Fibre's actions as consistent with its Invitation To Participate, with internal governance and policy documents, and legal and probity principles for procurement processes.
- 2.18 Crown Fibre's approach ensured that the process was fair and contestable. Crown Fibre's challenge of the first Invitation To Participate, and its recasting to make it more suitable, was evidence of this. The assessment of proposals was extensive. Overall, Crown Fibre's approach helped it to find the commercial partners that it considered best placed to build the network.

Crown Fibre redesigned and recast the first Invitation To Participate

- 2.19 The first proposals that Crown Fibre received highlighted problems with the then Ministry of Economic Development's first Invitation To Participate. Crown Fibre took over the lead procurement role from the Ministry in early 2010 and started assessing the proposals. The proposals did not meet the UFB1 principles and so were considered unsuitable. The Invitation To Participate stipulated componentry that would deliver a broadband network but that would not support "open access" to internet service providers, which was a fundamental principle of UFB1.

- 2.20 Crown Fibre redesigned the Invitation To Participate and consulted on it widely, seeking advice from the telecommunications industry and the companies that had responded to the first Invitation To Participate. Crown Fibre also drew on international experience and expertise. The new Invitation To Participate, widely released in June 2010, explicitly sought proposals to build a network that would support open access.
- 2.21 The new Invitation To Participate included templates to help interested parties submit comprehensive and complete proposals. This also helped Crown Fibre to assess and compare proposals consistently. Crown Fibre also made sure that potential proposers knew they could contact Crown Fibre with questions.

Crown Fibre appropriately assessed potential commercial partners and their proposals

- 2.22 Crown Fibre had to clearly understand its own expectations of proposals to assess and compare them properly. Crown Fibre and the then Ministry of Economic Development set criteria for assessing a proposer's ability and willingness to build on time, within cost constraints, and to the right quality. In our view, the criteria were comprehensive, well thought out, and appropriate.
- 2.23 Crown Fibre applied the criteria to proposals under various scenarios. The scenarios modelled different mixes of commercial partners for the whole roll-out and different geographical allocations of work.
- 2.24 There were two types of criteria – factual (more easily measured) and those requiring judgement. For example, fact-based criteria looked at a proposer's financial performance and their capability. Judgement-based criteria included a proposer's willingness to work and share with others building the network and their motivation to build on time and to the right quality.
- 2.25 Crown Fibre used the criteria to decide which proposals were worthy of closer inspection. Crown Fibre also visited all short-listed proposers to discuss their visions and plans with them and view their existing operations. These steps helped Crown Fibre to get fuller information about each proposer.

Crown Fibre kept its commercial partner selection options open

- 2.26 Crown Fibre kept its selection options open until the final stages. We saw a continuing flow of information and dialogue with the short-listed proposers. Information flowed to Crown Fibre's board at a steady pace in the days before the board made recommendations to Shareholding Ministers and the Policy Minister. Dialogue between the short-listed proposers and Crown Fibre stayed open. Crown Fibre made sure that it clarified and answered any questions proposers asked.

- 2.27 Crown Fibre assessed the potential financial effect of a partnership on the short-listed proposers. Potential commercial partners had to be financially sound, and the scrutiny involved the use of external experts. These experts forecast financial effects in different scenarios, including various mixes of final commercial partners and various allocations of geographical areas.
- 2.28 The short-listing of proposals included a Final Binding Offer process. This means that proposers made commitments to keep to the details of their proposal if they were eventually selected. Details of the Final Binding Offer process and proposals remain commercially sensitive, so we cannot describe it in detail. However, we consider that the process helped select capable commercial partners. Final Binding Offer documents showed a balanced and consistent application of the criteria.
- 2.29 Crown Fibre received updated proposal information until the final decisions. This continued to reshape the Final Binding Offer assessments and potential commercial partner combinations.

Crown Fibre got independent advice to ensure that the process was fair

- 2.30 Crown Fibre sought legal and probity-specific advice from independent experts at various points in the selection process and when it recognised procurement risks. This advice helped ensure fairness and contestability. The advice was independent of Crown Fibre's internal legal team.
- 2.31 Crown Fibre was seen as having done an effective job. For example, one independent expert advised Crown Fibre on adhering to principles of transparency and treating all proposers fairly, without unduly advantaging or disadvantaging any. They were satisfied that Crown Fibre had followed their advice appropriately and that the proposers had a fair opportunity to succeed in a genuinely contestable process. Another adviser considered that the Invitation To Participate probity and process documentation was of a high quality and to the level expected of a high-profile endeavour such as this.
- 2.32 Crown Fibre's board also received assurance from our financial auditors on its procurement approach. Our auditors described it as a "very good process" that was "well planned, formal and consistent with that set out in the Invitation To Participate and its own internal Invitation To Participate guidelines".
- 2.33 We saw correspondence showing that Crown Fibre's board considered, discussed, and, when appropriate, acted on the advice provided.

The board was well informed in making final recommendations

- 2.34 The board of Crown Fibre was highly engaged in the selection process. The board had to give its full attention to a growing volume of complex information with increasing frequency as final selections approached. The board provided challenge and scrutiny to management's views on the recommendations. The board also insisted on external advice when it thought that Crown Fibre needed that advice to deal with proposers.
- 2.35 The board of Crown Fibre got good information to help it make recommendations to the decision-making Ministers. Crown Fibre management made sure that this information was clearly understandable. The board also asked senior management which proposers they considered best able to build the network and therefore best to contract with. The final commercial partner recommendations appeared logical and well thought out.

The contractual documents are comprehensive

- 2.36 Contractual documents are the foundations that business relationships are built on. These documents should make accountabilities and expectations clear, to ensure a common understanding of the objectives and tasks. We expected the content of the contractual documents to uphold the partnership model and set clear expectations for the parties' respective roles and responsibilities. Contractual documents should specify how each party compels the other to meet its accountabilities and the processes to follow when they do not. We call these contracted enforceability rights "performance levers".
- 2.37 Overall, the contracts between Crown Fibre and its commercial partners have helped the parties to understand their accountabilities and responsibilities, and their responsibilities to each other. Provisions in the documents help Crown Fibre exert a strong influence on the performance of commercial partners. The operating framework also includes processes for resolving disagreements between the parties. Crown Fibre and its commercial partners appear to understand the documents and their implications well.

The contractual documents clearly set out obligations, requirements, and accountabilities

- 2.38 Contractual documents need to be suitable for the specific arrangements they document. The contractual documents for the roll-out cover partnership arrangements, co-investment and funding, the transfer of asset ownership, and the build expectations.

- 2.39 Crown Fibre found the standard public-private partnership contracts available from the Treasury unsuitable and, with the then Ministry of Economic Development, designed new contracts for its specific work and partnering arrangements. External legal experts found that the new contract formats contained the kind and level of provisions expected in agreements for a project of this nature.
- 2.40 The contractual documents help set out accountabilities between Crown Fibre and its commercial partners. This helps make roles and responsibilities clear, by specifying arrangements and obligations.
- 2.41 Limited versions of the contracts are available on each commercial partner's website. Publication is a contractual requirement, to provide a degree of public transparency. Crown Fibre told us that this is not usual practice in public-private partnerships.

How Crown Fibre can influence performance is clear and understood

- 2.42 Crown Fibre has a strong influence on the performance of its commercial partners during the roll-out. It can use several performance levers if the commercial partners do not meet expectations. These levers include "liquidated damages", which the commercial partners can be required to pay if they do not meet certain roll-out or connection expectations or if one commercial partner's commitments to marketing ultra-fast broadband fibre to the public are not kept.
- 2.43 One of the strongest influences on performance is the payment arrangement for completed work. The commercial partners are paid only when the quality of completed work has been assured under Crown Fibre's User Acceptance Testing programme. The testing programme measures the work done against the Network Infrastructure Project Agreement standards. We discuss this further in Part 3.
- 2.44 Crown Fibre also oversees and influences the performance of its commercial partners through its membership of partnership governance bodies. Staff and some board members from Crown Fibre are on the boards of the local fibre companies and the Chorus Steering Committee for this work.

There are clear dispute-resolution processes

- 2.45 The framework for contract management includes clear processes for resolving disputes. In our view, these processes suit the arrangements for the roll-out, rely initially on the goodwill of the parties, and are workable. No matter how clearly contractual documents set out expectations, parties can sometimes have

different understandings of the finer detail of the contracted tasks. Documents supporting the contracts set out how disputes processes can be triggered, where any dispute gets escalated to if need be, and how a final decision is made.

- 2.46 The local fibre companies have a generic dispute-resolution process, which starts with an assumption that matters can be resolved in good faith. The process escalates if this proves not to be possible, through various levels of the roll-out hierarchy. If this does not work, matters go to expert determination. The expert's decision will be final, and the parties will share any costs equally.
- 2.47 Chorus has a different contractual arrangement with Crown Fibre and a different dispute-resolution process. Good faith provisions also apply. If they fail and lower-level escalations are unsuccessful, a specifically established Senior Committee makes the final decisions. This committee comprises the chairperson of the Chorus Steering Committee, the Chorus board chairperson, and the Crown Fibre board chairperson.

Decision-making authority is clear and understood

- 2.48 The distribution of authority for decisions within the roll-out are clear and well understood by Crown Fibre and the commercial partners.
- 2.49 Crown Fibre derives strong decision-making authority from its government-mandated role. We saw an example of this authority in Crown Fibre's board material. This confirmed that, when forming contracts with the commercial partners, Crown Fibre's role was:
- ... to ensure contracts are efficiently and effectively administered to support the on-time completion of the UFB deployment to an acceptable quality within the Government's fiscal envelope.*
- 2.50 To support this oversight, Crown Fibre could determine financial arrangements that would ensure transparency, best support the early deployment of the network and services, and protect value for taxpayers. Crown Fibre had the discretion to enter into arrangements to achieve the Government's objective that differed from specific terms in the Invitation To Participate, provided the cost-benefit analysis was clearly favourable.
- 2.51 We were told that partnership governance bodies and project levels also have a level of decision-making authority over how they meet required standards. People we spoke to at various levels in Crown Fibre and the commercial partners agreed that it is clear who makes particular decisions and that they understand where that authority lies.

Agreeing detailed standards for building the network took longer than expected

- 2.52 It is pragmatic to finalise agreement of the finer details of diverse tasks in complex projects after the parties have committed to their involvement. It is more worthwhile to invest time and effort in such detail once those involved are committed to the venture.
- 2.53 We expected all the commercial partners to have had an opportunity to be heard and their views considered. We also expected agreement to be reached in a reasonable time, without unduly delaying the roll-out. We expected the agreement to result in all parties starting the work with a clear understanding of their tasks.
- 2.54 Reaching final agreement on the standards for building the network took some time because at first not all commercial partners shared Crown Fibre's understanding of the work required. The commercial partners' understanding of the standards improved, and the unexpected delays in reaching agreement did not delay the roll-out.

Detailed standards were confirmed after commercial partners were contracted

- 2.55 Crown Fibre had a strategy of signing contracts with its commercial partners and having them start their part of the roll-out as soon as the partners were ready. Crown Fibre wanted to show the remaining potential commercial partners that it was serious about getting on with the job. This also made clear that Crown Fibre was selecting commercial partners on their capability and capacity, not necessarily on scale or incumbency. This strategy meant a staggered start to the roll-out, and also starting in different parts of the country at different times.
- 2.56 Time and cost expectations were documented clearly, but Crown Fibre had to get agreement on the finer details of the standards for the build after all the contracts were signed. Crown Fibre did this using a "Document Finalisation Process".
- 2.57 Crown Fibre already had clear views on what these standards should be. Crown Fibre had learned from diverse international experiences with rolling out fibre-optic cable networks (successful and otherwise) in the United States of America, Australia, Singapore, and the Netherlands. Crown Fibre told us it consulted with local telecommunications and civil construction experts widely to understand New Zealand's geology and likely technical challenges.
- 2.58 Although Crown Fibre and its commercial partners understood the expectations about time and cost, they had different expectations of the necessary quality.

Reaching agreement on standards through the Document Finalisation Process took longer than Crown Fibre expected. There was an unexpected amount of debate and disagreement between Crown Fibre and its commercial partners. In our view, the level of disagreement shows an initial lack of common understanding between them.

Quality expectations were better understood over time

- 2.59 The commercial partners have always understood well the time constraints on the roll-out as a whole. The commercial partners propose time frames for the whole roll-out to Crown Fibre for endorsement or further discussion, within the contracted time frame. The commercial partners define the overall time frames in the first planning document, called the commercial partner's Master Deployment Plan. These roll-out targets are broken down into annual targets, set each year by the commercial partner for Crown Fibre to endorse. Each commercial partner sets out the annual target time frames in a document called their Network Deployment Plans.
- 2.60 The Government's cost expectations are made clear in each commercial partner's contractual documents and are also well understood. The Government controls the costs by paying a specified price for each home or business premise passed. The commercial partner gets paid when quality is assured.
- 2.61 The commercial partners now understand quality standards well. The quality standards that were eventually agreed are defined in the Network Infrastructure Project Agreement. The commercial partners' understanding of the standards improved as they gained experience in laying the fibre. The gradual development of the commercial partners' understanding of quality has not adversely affected the roll-out, and progress so far has met expectations.

Overseeing the roll-out

3.1 In this Part, we discuss how effectively Crown Fibre has overseen the commercial partners' performance in terms of time, cost, and quality.

Summary of our findings

3.2 Crown Fibre has managed the performance of the commercial partners effectively. Crown Fibre has good oversight of their performance against time and cost expectations. It also has a testing programme to assure the quality of the commercial partners' work. Crown Fibre also has oversight over roll-out performance through its membership on the partnerships' governance bodies for this work.

3.3 Overall, Crown Fibre:

- can influence performance by using contractual mechanisms when performance is lacking;
- uses its insight into roll-out performance effectively to identify and manage risks that threaten the success of the roll-out;
- makes sure that roll-out information gets to the right places; and
- regularly reviews its own effectiveness and prioritises resources appropriately to ensure that it remains useful to the roll-out.

Crown Fibre monitors commercial partners' performance effectively and keeps the roll-out on schedule

3.4 Assurance about performance to time, cost, and quality is important. It measures how well parties are meeting their contracted obligations.

3.5 We expected Crown Fibre to effectively monitor its commercial partners' performance relative to expectations of time, cost, and quality. We also looked at whether Crown Fibre had adequate assurance that the network was being built to the right quality.

3.6 We expected to see roll-out performance information getting to the right places within Crown Fibre and to others that need it.

3.7 We also expected performance levers to be available and used where necessary to motivate and influence commercial partners to fix performance issues.

3.8 Crown Fibre has different ways of understanding and assessing the commercial partners' performance regarding time, cost, and quality. Crown Fibre used various performance levers and influences appropriately to get performance back on schedule.

Crown Fibre has effective oversight of its commercial partners' performance

- 3.9 Crown Fibre has good oversight, at both a managerial and a governance level, of the commercial partners' performance in building the network to time and cost expectations. Crown Fibre's management team works directly with the commercial partners where performance is unsatisfactory or to help the commercial partners face challenges.
- 3.10 Crown Fibre oversees actual roll-out progress by collecting standardised information from the commercial partners on a monthly basis. Regular communication with the commercial partners allows this information and any issues that have arisen to be discussed. This reporting arrangement allows Crown Fibre to test and compare information and assess performance.
- 3.11 Crown Fibre governance can look beyond immediate challenges faced by the commercial partners to understand their effect on the whole roll-out. Crown Fibre can then set a strategic or tactical direction to deal with specific issues at an appropriate level.
- 3.12 Crown Fibre receives good-quality information, so it has oversight and can exert influence. Crown Fibre monitors time and cost performance through reporting from the commercial partners. This reporting uses an agreed format and clear definitions. Crown Fibre uses its own information to validate its commercial partners' reporting. Crown Fibre also checks the commercial partners' reporting for early warning signs of issues, at either commercial partner or roll-out level.

Crown Fibre runs a User Acceptance Testing programme

- 3.13 Crown Fibre designed and runs a User Acceptance Testing programme to assure itself of network quality. User Acceptance Testing includes specific processes for Crown Fibre's inspection and testing of the network parts as the commercial partners complete them. The commercial partners confirm the readiness of parts by "handing them over" to Crown Fibre for User Acceptance Testing. The commercial partners also give pertinent fibre layout documents and other information to Crown Fibre for it to inspect. Confirming the built parts ready to be tested through User Acceptance Testing is called "handover".
- 3.14 We consider that the User Acceptance Testing programme and related processes cover the essential elements we expected. User Acceptance Testing is designed to assess work against appropriate standards. User Acceptance Testing complements, but is independent of, the commercial partners' own Quality

Assurance programme and processes. Errors or faults are identified and recorded, and corrective action is evidenced and scrutinised.

- 3.15 The processes we saw on paper were demonstrated to us when we attended a User Acceptance Testing inspection. We observed the professional interaction between the User Acceptance Testing tester and the commercial partner's Quality Assurance representative and the way testing is completed, agreed, and recorded. This interaction complemented our review of the documentation and reinforced our view that User Acceptance Testing covers the right aspects to provide assurance of quality.
- 3.16 User Acceptance Testing involves physically inspecting fibre that goes to hub points (traditionally called "exchanges"), and fibre from hub points to the roadside junction boxes (called "fibre access points") where street fibre can be connected to premises. The process also involves electronically testing the performance of the fibre. Figure 4 shows a typical underground fibre access point.

Figure 4
Example of a typical fibre access point, Lower Hutt



- 3.17 Crown Fibre runs a “three sets of eyes” assurance model:
- inspection by the commercial partner’s site foreman as the building work is done;
 - the commercial partner’s own quality assurance process, when the building work is completed; and
 - Crown Fibre’s User Acceptance Testing, when the completed part is handed over.
- 3.18 User Acceptance Testing includes following up on faults. Faults might be detected by a commercial partner’s quality assurance checks or by Crown Fibre’s User Acceptance Testing. User Acceptance Testing is not signed off until the commercial partners show Crown Fibre that faults are fixed.
- 3.19 Crown Fibre employs five contractors to run User Acceptance Testing throughout New Zealand. They inspect and test according to set User Acceptance Testing procedures. User Acceptance Testing is independent of commercial partners’ quality assurance, but it does look at the method and results of each quality assurance programme, with the option of cross-referencing results.
- 3.20 User Acceptance Testing takes place on site with the commercial partners’ quality assurance people present. The two parties affirm and agree User Acceptance Testing results. This helps prevent later differences about testing and results, and ensures that faults can be fixed promptly.
- 3.21 We observed a User Acceptance Testing inspection. The people involved in the User Acceptance Testing who we spoke to showed their knowledge and experience, and passion for the network.
- 3.22 The size of the User Acceptance Testing sample varies. User Acceptance Testing inspects and tests a percentage of the handover, with the discretion to increase or decrease it, depending on past results, risks, or issues. Which handover parts get tested can be randomly chosen or selected deliberately. We consider this flexibility important. Commercial partners get variable periods of notice about which parts of handovers are selected. This brings an element of surprise to testing.
- 3.23 Timely User Acceptance Testing can be difficult to achieve. The rate of User Acceptance Testing handovers has not been as consistent as Crown Fibre expected. Under annual targets, a commercial partner can opt to complete the same build step throughout the parts of the network it is building before proceeding to the next step. This has resulted in network parts being handed over less regularly, when done in bulk. This has usually occurred approaching target deadlines and has resulted in backlogs of User Acceptance Testing.

- 3.24 People at Crown Fibre told us that bulk handover caused an uneven flow of User Acceptance Testing work. User Acceptance Testing people sometimes did not have enough work to use their full capacity. At other times, heavy workloads would put them under significant strain. In our view, smaller, more regular targets might have encouraged steadier handover rates. We encourage Crown Fibre and its commercial partners to keep trying to make User Acceptance Testing handovers more regular.

Representation on the commercial partners' governance bodies gives Crown Fibre oversight

- 3.25 Crown Fibre's representation on local fibre company boards and the Chorus Project Steering Committee allows it to directly oversee the commercial partners' performance. Crown Fibre people on these boards told us that their position gives them a better picture of the roll-out's performance than reporting and testing alone. This representation also helps Crown Fibre work directly with commercial partners to address performance issues. It gives Crown Fibre insight into the risks and issues faced by the commercial partners and how the commercial partners are addressing them.
- 3.26 The skills needed to govern performance and to manage performance are different. Some commercial partners expressed concern that discussions at the partnership governance level sometimes descended into detail and hampered strategic discussion. They thought this was because of the partnership governance structure. Crown Fibre's management representatives were being asked to operate at a governance level, and some commercial partners felt that it was "difficult for [Crown Fibre management] to decide which hat they were wearing".

Crown Fibre management gives its board good information

- 3.27 The board of Crown Fibre receives good quality and timely reporting about the roll-out. We reviewed board reporting with various levels of detail. The reports we looked at gave the board clear and relevant information and commentary. Board members we spoke to agreed. They thought that the quality of information helped them do their job.

Crown Fibre keeps Ministers and central agencies well informed

- 3.28 The Minister for Communications and the Minister for State-Owned Enterprises get monthly reports from Crown Fibre. Crown Fibre also provides regular information to its monitoring agency (the Treasury) and to the Ministry of Business, Innovation and Employment.

- 3.29 The Ministry of Business, Innovation and Employment told us that it used independent data analysis to get assurance that the reporting it got from Crown Fibre (some supplied by the commercial partners) was accurate. Initially, some work was needed to clarify and align definitions. The Ministry considers the information to be reliable and accurate.
- 3.30 Reporting also includes information on the performance of connections, including those to priority users and the public. This information helps the Ministers to understand the experiences of those who opt to connect. The Government does not fund residential connections, but commercial partners report to Crown Fibre on the timeliness of such connections. This performance is measured against Service Level Agreements that commercial partners have with internet service providers (see Part 5).

Commercial partners' performance was managed through performance levers

- 3.31 Crown Fibre has used performance levers thoughtfully when the commercial partners' performance has fallen short of expectations. In our view, this approach has been largely effective in prompting the commercial partners to address performance issues.
- 3.32 If one party raises the possibility of applying performance levers, this will always draw out differences of perspective between the parties. Performance levers would rarely be mentioned unless one party questioned another's performance. In our view, when performance is not up to expectations, the possibility of applying performance levers is always implicit. Crown Fibre and the commercial partners both understood this.
- 3.33 Some commercial partners did not meet targets early in the roll-out. Crown Fibre discussed performance levers with them strategically, to get the commercial partners in agreement and committed to fixing the issues that caused the shortfall.
- 3.34 Some of the commercial partners felt that Crown Fibre was too quick to raise the prospect of using performance levers. One commercial partner told us it felt that Crown Fibre was pointing to the contract "from day one" in any discussion of targets. Another commercial partner felt that Crown Fibre made little, if any, effort to understand why problems meeting targets were arising or what pressures on the commercial partner might be causing them.

3.35 In our view, a strong commitment to keeping to contracted terms is appropriate. These discussions happened when agreed targets were not being met. In some instances, performance levers were applicable but not enforced – for example, when one commercial partner was not meeting its own targets but the roll-out was on target because other commercial partners were over-performing. Crown Fibre did not enforce payment of the penalties that were applicable, encouraging the commercial partner to concentrate on fixing the causes of the non-performance. However, Crown Fibre kept the option of later enforcement open. Crown Fibre showed it meant business, but it was flexible enough to find less punitive ways to encourage the commercial partner to address the performance issues.

Liquidated damages are redirected to enhance the network

3.36 In our view, Crown Fibre’s application of liquidated damages is creative and appropriate. Liquidated damages for commercial partners materially breaching contracted requirements are a financial penalty payable to Crown Fibre. Throughout the whole roll-out to date, liquidated damages have been applied on only two occasions. These were applied to two commercial partners on different occasions where the existence of, and potential for enforcing, performance levers alone did not influence the desired turnarounds.

3.37 When Crown Fibre enforced penalties in these two instances, rather than retaining the payments, it directed that the payments be reinvested in parts of the network that were additional to what those commercial partners had been contracted to build. This resulted in enhancements to the network.

3.38 This approach meant that the two commercial partners would build and eventually own a better network than the contract initially required. However, the commercial partners did not necessarily see it this way. One told us that, irrespective of the outcome, “It still cost us financially.” In our view, Crown Fibre’s approach resulted in enhancements to the network sooner than might otherwise have occurred.

Crown Fibre manages risks well

3.39 Crown Fibre can proactively manage risks to the roll-out if it understands the internal and external threats to the roll-out’s success. We expected to see a risk-management framework setting out how Crown Fibre should use its oversight to identify and manage risks to the roll-out. We also expected Crown Fibre to follow this framework when managing risk.

3.40 Crown Fibre has a risk-management framework. Crown Fibre follows this framework and uses it effectively to identify threats to the roll-out. Crown Fibre works proactively, including working with the commercial partners, to reduce the likelihood or effect of these risks.

Crown Fibre uses an effective risk-management framework

3.41 In our view, Crown Fibre has an effective risk-management framework. We reviewed documents that showed us that Crown Fibre followed the framework, identified risks, and dealt with them effectively. We saw how:

- Crown Fibre regularly reviews, measures, and prioritises known risks;
- Crown Fibre assigns ownership of risks and management responsibilities;
- specific risks are managed day-to-day;
- the right people are made aware of risks and how they are managed; and
- new or emerging risks entered the risk-management process.

3.42 In our view, Crown Fibre manages and oversees risk effectively, whether it is specific to a commercial partner or more systemic and far-reaching. Crown Fibre's people apply thought and insight to understanding and managing risks, taking account of environments and context.

3.43 Crown Fibre is serious about risks to health and safety. Crown Fibre people told us that they see health and safety as a critical risk to the roll-out. Health and safety risks, controls, and incident management are a standing item on Crown Fibre's board meeting agendas.

3.44 The roll-out is largely a civil works project operating in busy and dangerous urban traffic. We saw this in Auckland, where traffic was moving close to the roll-out worksite. We saw a site foreman taking ownership of visitors' health and safety. He checked that we had registered ourselves and that we understood the rules we had to follow.

3.45 We also saw accountability for health and safety in action when we attended a User Acceptance Testing inspection. We were told clearly what was expected of us as visitors, what to watch for, and what to do if an incident occurred. We were encouraged to ask questions.

3.46 We were told that it took some time for everyone on site to understand their health and safety responsibilities. Crown Fibre listened to feedback and put in place health and safety procedures that work well.

Crown Fibre reviews its strategies regularly

- 3.47 Crown Fibre's role is likely to change as the roll-out progresses and priorities change. We expected Crown Fibre's role to be reviewed regularly for relevance and currency. We expected this review to cover its past performance and strategy. We also expected the review to assess how Crown Fibre could best use its resources to play its strategic role most effectively.
- 3.48 Crown Fibre measures its own performance against strategic goals and reviews these goals regularly to consider its continued relevance. It considers its future role as the roll-out progresses and how to succeed in it.

Crown Fibre reviews its performance against strategic goals and its goals for relevance

- 3.49 Crown Fibre regularly reviews its performance against strategic targets and reports on its own performance targets. Crown Fibre also considers its future relevance and strategic direction. It reviews its main strategic focus areas for continued relevance. These areas include commercial partner-specific strategies and wider aspects of the roll-out, such as contract management.
- 3.50 Senior management and staff participate in workshops to produce each review. The review is reported to Crown Fibre's board for members' input, direction, and endorsement.
- 3.51 In our view, this regular review of strategy is effective and an important way of making sure that Crown Fibre contributes the best it can to the roll-out.

Crown Fibre regularly reviews its strategic direction, capability, and capacity

- 3.52 In our view, Crown Fibre has the right capabilities and capacity to continue performing its useful role in the roll-out effectively. This applies at both management and governance levels.
- 3.53 Crown Fibre decided early to employ staff who could deal with commercial partners on an equal footing. Crown Fibre also decided to pay them similarly to the private sector.
- 3.54 Crown Fibre also considers how to position itself to fulfil its role in the future. Crown Fibre assesses the need for changes to business structures, numbers of full-time equivalent staff, and staff capability as its role changes. Crown Fibre's senior managers told us that a measure of Crown Fibre's success would be its eventual need to scale back to a purely monitoring role.

3.55 Crown Fibre's role has not been scaled back yet. Crown Fibre has evolved from focusing on selecting and contracting commercial partners to focusing on the roll-out. However, managing the performance of the commercial partners has not been easy. Crown Fibre has remained more closely involved for longer than it had expected. Crown Fibre told us that it still needs to manage and influence the commercial partners' performance to ensure that the roll-out stays on schedule.

Working relationships and working together

4

- 4.1 In this Part, we discuss how well Crown Fibre has fostered working relationships with its commercial partners and public stakeholders.

Summary of our findings

- 4.2 Relationships between Crown Fibre and its commercial partners had a difficult start. Early contract negotiations were adversarial and tense. This caused some mutual distrust and set the early tone for the working relationships.
- 4.3 These relationships improved over time, one quite quickly, thanks to efforts on all sides. They are now respectful and largely healthy.
- 4.4 Crown Fibre has always had healthy relationships with its public stakeholders. This has helped Crown Fibre understand stakeholder needs and ensure that the network design and roll-out address them.

There are constructive relationships with commercial partners after difficult starts

- 4.5 Contracts and working relationships are closely related. Contracts provide the foundation for a working relationship. They also help parties reach a common understanding of how they should work together. However, contracts do not deliver on projects, people do.
- 4.6 We expected to see working relationships that were trusting, respectful, and constructive. These are the attributes of a healthy relationship that encourage people to bring their skills and experience to a task. If the relationship is not healthy, the best possible results might not be achieved, to the detriment of the outcome.
- 4.7 Overall, working relationships between Crown Fibre and its commercial partners are now largely healthy, but this was not always the case. Crown Fibre was firm in contract negotiations. This was a deliberate strategy to show the commercial partners that Crown Fibre was commercially minded. Early working relationships between Crown Fibre and the commercial partners were difficult as a result. Over time, the relationships have moved forward constructively.
- 4.8 Crown Fibre has supported the commercial partners' relationships with each other, helping them share what each has learned and how each has dealt with issues that other commercial partners may also face.

Tough contract negotiations set the tone for a difficult start

- 4.9 Crown Fibre was aware that it was representing the taxpayer, who was covering a large part of the roll-out's cost through concessionary funding. Many people told us that Crown Fibre eventually negotiated a financial deal that they would be happy with as taxpayers.
- 4.10 Crown Fibre entered contract negotiations with a "hard-nosed" approach. Crown Fibre (and the Ministry of Business, Innovation and Employment) told us that this was a deliberate and agreed strategy.
- 4.11 Crown Fibre and the commercial partners acknowledged that the contract negotiations were tense and hard. Negotiations have been described to us as "bruising" and as leaving participants feeling "burnt" and "exhausted".
- 4.12 Crown Fibre told us that its negotiating position was that certain core policy matters could not be compromised on, while it had more flexibility to compromise in other areas. In practice, this flexibility was not readily apparent to others involved. We were told that Crown Fibre pressed for "wins" it could have shown more flexibility on (or was focused on not giving any wins away).
- 4.13 We consider that some commercial partners had different expectations of how relationships were to work. They may have had difficulty reconciling a "hard-money contract" approach with the co-investment partnership framework. One representative of a commercial partner thought that the Government would be "the friendly bank". A representative of another commercial partner assumed that Crown Fibre's role was that of a financier, not running work to build the network.
- 4.14 We were told that the early relationships were distrustful and tense. Protracted debate in the Document Finalisation Process did not help. The lack of common ground and understanding between the parties probably contributed to difficulties in finalising the documents. Repairing those relationships took varying lengths of time and required significant effort.
- 4.15 In our view, negotiating purposefully on behalf of the taxpayer is appropriate. All the parties are trying to achieve the best deal for themselves and those they represent. However, the way parties interact should foster mutual respect for the life of the relationship – in this instance, up to 10 years. In our view, parties should look for "win" opportunities on both sides. This helps motivate them to work together and fully contribute towards the common objective.
- 4.16 There is a balance to be struck when agreeing new working partnerships. Discussions need to be purposeful but keep some level of flexibility. We have

commented on this before. In our report on the Ministry of Primary Industries' management of the Primary Growth Partnership fund, we said:

When forming new partnerships, managing human relationships in a way that fosters trust and appropriately manages risk is more important than rigidly following a set formula.⁶

- 4.17 The relationships between Crown Fibre and the four commercial partners are now respectful. They also leave room for healthy challenge. Some of these relationships moved forward quickly from a difficult start, and others took more time. The commercial partners now tend to speak well of Crown Fibre, and Crown Fibre of them.
- 4.18 Actions and approaches by independent people on partnership governance bodies helped. In one example, when there were clear relationship difficulties early in the roll-out, the independent chairperson arranged an open forum to address the tension. The forum involved board members from the commercial partner and from Crown Fibre. We were told that discussion on both sides was blunt with few niceties, but it compelled people to understand each other and work together to resolve issues. The relationship became gradually more respectful and collaborative. It steadily improved and is now healthy.
- 4.19 Another example where the health of early relationships was tested was when another commercial partner made some early decisions outside of the contracted lines of decision-making authority. These decisions caused performance issues that compounded the early tension and distrust. These incidents showed a lack of common understanding of expectations, and the relationship was slower to recover.
- 4.20 The four partner contracts have been, or look likely to be, successfully managed to completion, with Crown Fibre maintaining a focus on the performance results of all commercial partners. People on all sides are committed to a successful roll-out.

Healthy relationships allow commercial partners to share experiences freely

- 4.21 Crown Fibre encouraged the commercial partners to get together to share successes, and to stimulate good performance. Some roll-out progress was needed to learn the lessons and share some success. As relationships recovered and trust developed, the commercial partners and Crown Fibre communicated more openly.

⁶ Controller and Auditor-General (2015), *Ministry for Primary Industries: Managing the Primary Growth Partnership*, Wellington.

- 4.22 Crown Fibre helped share Northpower's early successes with the other commercial partners. It encouraged commercial partners to visit Northpower's operation to see and discuss its approach. Commercial partners could observe Northpower's technical solutions to deploying the fibre overhead. Northpower also discussed its underground techniques and reinstatement work (where footpaths were returned to their original or better condition). As the commercial partners all made progress, Crown Fibre encouraged them to get together to talk through solutions to common issues.
- 4.23 The commercial partners appear to have always had largely healthy relationships with each other. Communication between them remains regular, open, and positive, even though there have been fewer new lessons to share as the roll-out has progressed. When talking to us, the commercial partners tended to speak well of each other.

Crown Fibre works well with other stakeholders

- 4.24 Crown Fibre has built good relationships with its main stakeholders. Crown Fibre made a good effort to understand priority users' and local communities' needs. It supported these stakeholders in determining for themselves how best to use the opportunities the network offers.
- 4.25 Crown Fibre took an open, proactive approach to working with priority users. It communicated well with the two sectors involved, health and education. Crown Fibre also gave presentations to various business community forums (including the Telecommunications Users Association of New Zealand), particularly early in the roll-out.
- 4.26 People representing local authorities and priority users were complimentary of Crown Fibre. They told us Crown Fibre made good efforts to understand their needs and views. Crown Fibre supported local authorities with advice and encouragement to lead their communities in deciding how to get the best benefits from the network. Crown Fibre also helped local communities set up Digital Leadership Forums.
- 4.27 We saw evidence that Crown Fibre also encouraged its commercial partners to work with local authorities to co-ordinate their work. Northpower gave us an example where council-scheduled upgrading of footpaths in Whangarei was co-ordinated with laying fibre underneath. Northpower and the Whangarei District Council shared the costs, which benefited them and the community. The mutual savings allowed many footpaths in the central business district to be upgraded to better standards than originally planned.

Crown Fibre's limited role in broadband uptake

- 5.1 In this Part, we discuss Crown Fibre's limited role in supporting and encouraging people to connect their homes or businesses to the ultra-fast broadband network available in their streets. The demand for these connections is called "uptake".
- 5.2 The demand for, use of, and provision of internet services to residential premises is an arrangement between the public and internet service providers. Internet service providers market products to existing and potential customers and lead other initiatives to increase uptake. These providers negotiate with network owners to use the fibre-optic cable network.
- 5.3 Connecting the fibre-optic cable from the street to the home is the final part of delivering ultra-fast broadband to the public. This last part of the connection is also a private-sector arrangement. It does not involve government funding and is not a direct responsibility of Crown Fibre.
- 5.4 However, Crown Fibre monitors the aggregate performance of the commercial partners' timeliness in making these connections. This monitoring uses information from Service Level Agreements between the commercial partners and various internet service providers.
- 5.5 Uptake is critical to achieving the intended economic and social benefits from ultra-fast broadband. The network risks being unused and ineffective if the public cannot (or does not) connect to it.

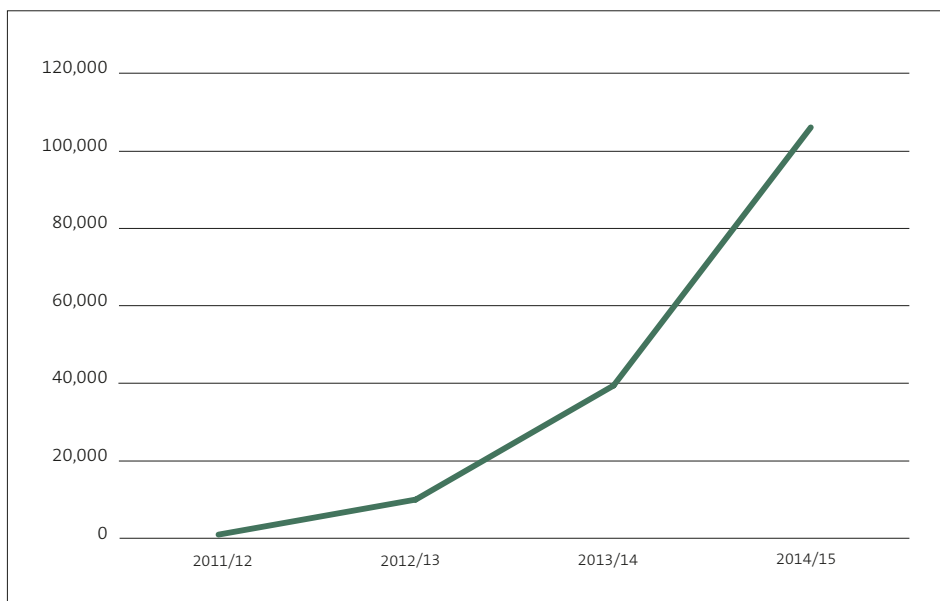
Summary of our findings

- 5.6 Crown Fibre's role in uptake is limited to one of support and encouragement. Crown Fibre understands its role and helps others understand it also. Crown Fibre plays its role well by co-ordinating efforts with other organisations that lead initiatives to drive uptake.
- 5.7 Uptake rates are increasing, and this looks likely to continue. However, people from various organisations and backgrounds told us that they think many New Zealand businesspeople do not fully understand how ultra-fast broadband can help them improve their businesses.
- 5.8 The people we spoke to believe there is a need to improve businesses' awareness of the available opportunities. The Ministry of Business, Innovation and Employment's Digital Economy Work Programme is looking at ways to help New Zealanders embrace the wider benefits of digital technology. In the longer term, work from this programme will help to improve businesses' awareness of ultra-fast broadband opportunities and help achieve the intended social and economic benefits from ultra-fast broadband.

Connections are in line with expectations

- 5.9 Crown Fibre measures the number of “end-users” able to connect against the number of actual connections. It can also track progress against predictions. Actual connections are a good indicator of uptake, but they do not reflect uptake in real time because there can be delays between requests for service and actual connection, and there can also be some cancellations of service requests. To accurately indicate uptake rates, connections need to keep pace with demand.
- 5.10 An independent technology research firm that tracks the New Zealand telecommunications and information technology services markets measured about 163,000 ultra-fast broadband connections at the end of December 2015. It forecast that the number of ultra-fast broadband connections will almost double, to just under 300,000 households and businesses, by the end of 2016. Household and business uptake is forecast to reach 700,000 premises by the end of 2019. This 2019 total would represent an overall uptake rate of 52% of what is possible (that is, 1,340,000 potential connections to households and businesses).
- 5.11 Figure 5 shows the increasing growth in connections by financial year, as an indicator of the growth in uptake.

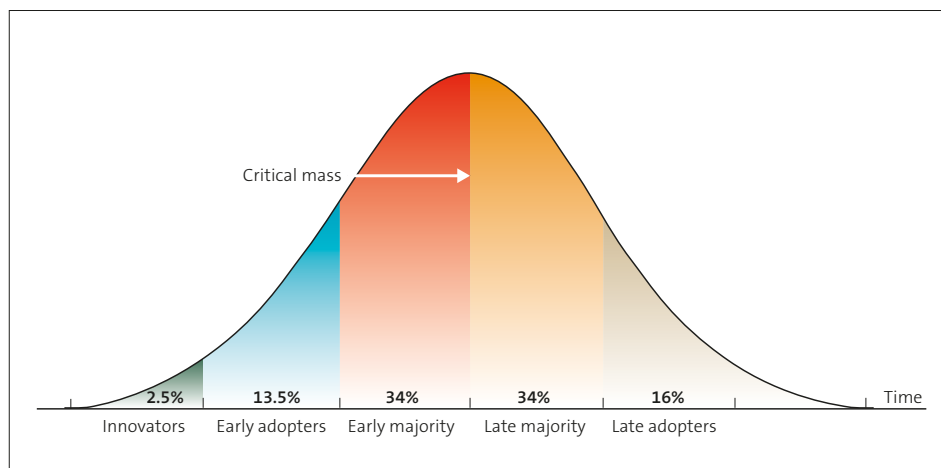
Figure 5
Cumulative number of households and businesses actually connected to ultra-fast broadband, 2011/12 to 2014/15



Source: Crown Fibre Holdings Limited.

- 5.12 Connections continue to grow rapidly. As at the end of the latest quarter (March 2016), the total number of end-users actually connected exceeded 196,000.
- 5.13 Crown Fibre told us that the need to proactively drive uptake will lessen as uptake grows of its own accord. Crown Fibre expects the public to adopt the technology more as they hear and understand more about it. Figure 6 shows a likely uptake pattern as the number of early adopters increases and technology appeals more in the mass market.

Figure 6
Innovation adoption curve, by adopter categories



Crown Fibre understands its role

- 5.14 Crown Fibre's role in uptake is limited to support and encouragement. This is a separate responsibility from Crown Fibre's oversight of the roll-out and the performance of the commercial partners. We discuss it here because uptake is important to achieving the expected benefits of rolling out an ultra-fast broadband network.
- 5.15 In our view, Crown Fibre does support and encourage uptake. It has attended local roll-out milestone events and helped encourage businesspeople who are already (or who intend to be) connected to the network. Crown Fibre has also been available to residential users at these events, although this kind of interaction is more the role of internet service providers.
- 5.16 We also saw examples of Crown Fibre informing groups of priority users about the benefits of ultra-fast broadband. Crown Fibre gave presentations at roadshows to advise people of the potential benefit of broadband fibre to the way they operate. Crown Fibre backed these messages up with information on international roll-out experiences in comparable countries.

- 5.17 Crown Fibre has scaled back its involvement with uptake activities. This is a sensible response to the current high growth and acceleration of uptake. However, Crown Fibre still participates in uptake activities led by others, when it can contribute effectively.

Crown Fibre monitors connection rates

- 5.18 As well as supporting and encouraging uptake, Crown Fibre monitors connection rates to provide assurance that the rate at which residential premises are connected to the network keeps pace with demand.
- 5.19 The commercial partners have entered into Service Level Agreements with internet service providers. Service Level Agreements define the performance expectations for the time taken to connect new users to the network and to fix faults for customers. They also measure the network's performance and availability.
- 5.20 The commercial partners are motivated to ensure that connections keep pace with uptake because internet service providers can apply for a rebate from the commercial partners if Service Level Agreements are not met.
- 5.21 Under its contracts with the commercial partners, Crown Fibre monitors the commercial partners' aggregate performance against all the Service Level Agreements. Crown Fibre reports aggregate Service Level Agreement performance in its annual report. Crown Fibre can also inform Ministers of the end-user's experience of connection time frames and network service performance.

Crown Fibre and its commercial partners understand Crown Fibre's role in uptake, but the wider industry is less clear

- 5.22 Crown Fibre has always clearly understood its role in uptake. Crown Fibre people clearly told us that it is a supportive and encouraging role, not a leadership role.
- 5.23 Crown Fibre's role in uptake is also clear to the commercial partners. Commercial partners are the eventual network owners, and connections represent their future income. Commercial partners have a more direct role in leading work with internet service providers to encourage uptake. They have sometimes asked Crown Fibre to play a supporting role in local celebrations of roll-out milestones. That the commercial partners are leading these events and Crown Fibre is supporting them shows a common understanding of Crown Fibre's role.

- 5.24 The understanding in the wider telecommunications industry (including internet service providers and user interest groups) seems less clear. Some people told us of internet service providers' approaches to Crown Fibre about uptake activities that suggest a lack of understanding of Crown Fibre's role. Crown Fibre's visible work with priority users in the preparatory and early stages of the roll-out might have suggested a more extensive role than Crown Fibre has.
- 5.25 Crown Fibre's role in uptake was clarified by the Policy Minister to the New Zealand Telecommunications Forum in response to a request from the industry. The organisation was asked to share the clarification with its industry members. This lack of clarity is not unduly diverting Crown Fibre from its role or affecting the roll-out.

The gap in business awareness of ultra-fast broadband opportunities

- 5.26 Some people we interviewed told us that some parts of the business sector lacked awareness of how ultra-fast broadband and other technology could benefit their businesses. The Government has recognised the wider need to enhance public education on the benefits of digital technology (of which ultra-fast broadband is a part), and we are encouraged by the planning work under way to do so.
- 5.27 The economic and social benefits of ultra-fast broadband were factors in the Government's commitment to the ultra-fast broadband initiative. Ensuring these outcomes is not Crown Fibre's responsibility, and the intended benefits were not originally in the scope of our audit work. However, we saw a gap that puts these intended benefits at risk.
- 5.28 People we spoke to felt that many businesspeople did not know where to get information or advice on the possibilities the new technology offers. In our view, the benefits are likely to be maximised only if the people running businesses understand how ultra-fast broadband can help them improve their operations – changing how they operate, not just operating faster.
- 5.29 We spoke to people at the Ministry of Business, Innovation and Employment who are involved in a programme called Digital Economy Work Programme. Part of that programme is looking at ways to address the lack of business understanding of the improvement opportunities that new and emerging digital technologies can offer.
- 5.30 The Digital Economy Work Programme seeks to ensure that the Government is collectively focused on initiatives to support digital technology use by businesses,

individuals, and the public sector. It has identified ways of working to help bridge the gap in getting significant existing information to the business sector:

- working with the telecommunications and technology industries (including internet service providers) and business associations;
- identifying the drivers and characteristics of particular business types and tailoring education approaches to business sectors;
- recognising that working with business intermediaries and associations is critical; and
- encouraging regional ownership of education within a consistent framework. This includes using education material from overseas, which the Ministry of Business, Innovation and Employment intends to customise to New Zealand's business needs.

5.31 There is a long way to go to put this planning into action. Our discussions with people at the Ministry were encouraging. The work they are doing on the wider theme of digital technology will help address the business education gap on ultra-fast broadband. We support continuing the work done in the last 18 months to find ways to get information to those who need it. Progress towards addressing the business education and awareness gap in digital technology is important if the outcome sought is to be achieved.

Publications by the Auditor-General

Other publications issued by the Auditor-General recently have been:

- District health boards' response to asset management requirements since 2009
- Education for Māori: Using information to improve Māori educational success
- Immigration New Zealand: Supporting new migrants to settle and work – Progress in responding to the Auditor-General's recommendations
- Effectiveness and efficiency of arrangements to repair pipes and roads in Christchurch – follow-up audit
- Response to query about Housing New Zealand's procurement processes
- Reflections from our audits: *Governance and accountability*
- Draft annual plan 2016/17
- Local government: Results of the 2014/15 audits
- Department of Conservation: Prioritising and partnering to manage biodiversity – Progress in responding to the Auditor-General's recommendations
- Public sector accountability through raising concerns
- A review of public sector financial assets and how they are managed and governed
- Improving financial reporting in the public sector
- Principles for effectively co-governing natural resources
- Governance and accountability for three Christchurch rebuild projects
- Central government: Results of the 2014/15 audits

Website

All these reports, and many of our earlier reports, are available in HTML and PDF format on our website – www.oag.govt.nz.

Notification of new reports

We offer facilities on our website for people to be notified when new reports and public statements are added to the website. The home page has links to our RSS feed, Twitter account, Facebook page, and email subscribers service.

Sustainable publishing

The Office of the Auditor-General has a policy of sustainable publishing practices. This report is printed on environmentally responsible paper stocks manufactured under the environmental management system standard AS/NZS ISO 14001:2004 using Elemental Chlorine Free (ECF) pulp sourced from sustainable well-managed forests. Processes for manufacture include use of vegetable-based inks and water-based sealants, with disposal and/or recycling of waste materials according to best business practices.

Office of the Auditor-General
PO Box 3928, Wellington 6140

Telephone: (04) 917 1500
Facsimile: (04) 917 1549

Email: reports@oag.govt.nz
Website: www.oag.govt.nz