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Digital access to information and services: Learning from examples

Digital access to information and services: Learning from examples

Contents

Overview

E ngā mana, e ngā reo, e ngā karangarangatanga maha o te motu, tēnā koutou.

New Zealanders increasingly expect to be able to access information and services digitally. As part of our *Information* theme, we carried out a performance audit that looked at how three public entities made information and services available through their websites and/or mobile applications.

The public entities that we looked at were the National Library of New Zealand (which is part of the Department of Internal Affairs), Greater Wellington Regional Council, and Quotable Value Limited.

We found good examples of information and services being made available to New Zealanders digitally. These examples had resulted in:

- increased access to services and improved services to more people; and
- improved public perceptions about the reliability of services.

We contracted an independent assessor to assess the three public entities' websites and mobile applications against government-approved web standards and guidelines. Although they did not fully comply, the results were encouraging. For example, the independent assessor told us that the National Library's website received the highest score out of all the government websites that they had assessed.

Lessons for other public entities

The experiences of the three public entities have provided lessons for others considering making their information and services available digitally. The main lessons from our audits are:

- The complexities and challenges of digitising information and providing digital information and services need to be well understood and managed. It can be easy to underestimate the time and intensive work required.
- There is an opportunity to learn more about how people use and reuse digital information and the benefits produced. This will allow public entities to tailor their digital services to people's needs and encourage greater use and reuse of digital information.
- Anticipating future needs means that governors and managers will need to identify emerging technologies and customer expectations that could affect their business. Governors and managers need to keep up with these changes and consider how they affect the way that information, business processes, organisational culture, and behaviour are managed. The need to think about and plan for the future is ongoing, because technology is constantly changing, and these changes will bring new opportunities and new risks.

- Ensuring that digital information is available to third parties could improve people's access to services and lead to new ways to use the information.

I would like to thank the staff from the Department of Internal Affairs (including the National Library of New Zealand), Greater Wellington Regional Council, and Quotable Value Limited for helping us complete this work.

Nāku noa, nā,

Greg Schollum
Deputy Controller and Auditor-General

14 June 2018

Introduction

1.1 In this Part, we discuss:

- why we did this audit;
- what we looked at; and
- the structure of our report.

Why we did this audit

1.2 New Zealanders increasingly expect to be able to access public information and services digitally. Public entities need to continuously improve the accessibility and usability of their digital information and services to meet these expectations.

1.3 This is not easy because technology is constantly evolving, which means that public entities have to keep up with the changing ways people use and access digital information.

1.4 As part of our *Information* theme, we wanted to see whether the shift to providing digital information and services is resulting in benefits for New Zealanders.

What we looked at

1.5 We looked at how three public entities provided digital information and services through their websites and/or mobile applications (apps). The public entities that we looked at were:

- the National Library of New Zealand (the Library), which is part of the Department of Internal Affairs;
- Greater Wellington Regional Council (the Regional Council); and
- Quotable Value Limited (QV).

1.6 We used an independent assessor to assess the usability and the accessibility of the digital information and services that these three public entities provide. We used the web accessibility standards for their websites and the guidelines for their apps. For each, the independent assessor assessed the information and services against the following web standards:

- Web Accessibility Standard 1.0;
- Web Content Accessibility Guidelines 2.0; and
- Web Usability Standard 1.2.[1]

1.7 These standards were approved by Cabinet. Public entities in the State service must comply with them. Cabinet strongly recommended that public entities that are not required to comply with these standards also do so.[2]

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1 The standards are available at https://webtoolkit.govt.nz.

2 A list of the public entities required to comply with the standards can be found at https://webtoolkit.govt.nz.

Structure of our report

1.8   In Part 2, we discuss the Library's management of its digital collections and services. We describe the good job that the Library does of managing its collections and services to implement government policies and standards, and how the Library's website mostly meets the government-approved web standards. We also identify opportunities for the Library to learn more about how people use and reuse digital content.

1.9   In Part 3, we discuss the Regional Council's provision of real-time passenger information. We discuss how real-time information has improved how passengers perceive how reliable public transport services are. We also discuss how transport operators use the Real-time Passenger Information system to monitor service quality and assess existing scheduling to identify improvements.

1.10   In Part 4, we discuss QV's provision of digital information through the QV homeguide app. We discuss how providing digital information to the public through the QV homeguide app has meant that people are able to use a single source to get information from multiple sources.

The National Library of New Zealand's digital collections and services

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2.1 In this Part, we discuss:

- the Library and its role;

- what we looked at and how we carried our audit;

- how the Library's website aligns with government priorities;

- whether the Library's digital information met our expectations;

- how the Library deals with copyright issues;

- the accessibility and usability of the Library's website; and

- the benefits of greater online access to information and services.

Summary of findings

2.2 The Library has been putting information and services online since the early 1980s. Its website provides information and services to a wide range of people and has led to:

- greater access to information about the collections;

- greater access to digital information; and

- increased and improved services.

2.3 The information and services that the Library provides met our expectations about openness, availability, reasonable pricing, and reusability. Its strategic documents also align with the Government's goal of openness and transparency. The Library is continually working to improve access to its collections and improve its services.

2.4 The Library's website meets most of the government-approved web standards for usability and accessibility. However, there are opportunities to improve, and the Library plans to do so.

2.5 The Library has already identified some accessibility issues on its website, and the independent assessor identified some issues that the Library was not aware of. This highlights the value of occasionally having websites independently assessed.

2.6 The Library collects basic information about how many people visit its website. It also publicly reports on a range of measures about new acquisitions to collections, the provision of online records for these, and the provision of content the Library has digitised.

2.7 The Library can use this information to learn more about how people use and reuse digital information and the benefits from it. It can continue to tailor services to people's needs and encourage greater use and reuse of its digital information. We encourage the Library to contact new users and/or target groups and engage with its current users in new ways.

2.8   It can be difficult and time-consuming for the Library to identify which public entity has decision-making responsibility for the Crown copyright status of certain documents. This can be inefficient and does not contribute to the Government's goal of openness and transparency. We consider that it would be helpful if one particular government agency were responsible for managing Crown copyright.

The Library and its role

2.9   The Library consists of the Alexander Turnbull Library and the National Library. In 2011, the Library became part of the Department of Internal Affairs.

2.10   The National Library's collections hold most New Zealand publications. People cannot take documents from the Library. Instead, they can borrow documents through their local public, community, or business library (called an interloan), and people can copy documents in accordance with the provision of the Copyright Act 1994.

2.11   The Alexander Turnbull Library is a research and reference library that holds many unique published and unpublished documents about New Zealand and its people. Its collections also include a substantial collection of material for a selected number of Pacific Island countries.

2.12   The Alexander Turnbull Library must keep its documents forever. The Alexander Turnbull Library collects and accepts donations. It also accepts documents that meet its collecting policies and plans.

2.13   Although the Library's main role is to give people access to documents created by others, it does create a few documents of its own. The main documents that it creates are metadata sets.

2.14   Metadata is the descriptive information about a document, such as the author's name, the publisher, and subject headings.[3] Metadata enables people to find catalogued documents. The Library uses terms set out in the international standards for different types of documents so they can be easily found in online searches.

2.15   So far, the Library has created eight metadata sets. An example of these metadata sets is Index New Zealand, a searchable database that contains abstracts and descriptions of articles from about 1000 periodicals and newspapers from the early 1900s to the present day.

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3   Other metadata could include, for example, a reference number, narrative description, who supplied the collection, how documents are arranged (such as in folders or chronologically), the amount of documents, a physical description, provenance, transfers (which means, for example, categorising posters into the Ephemera collection and cassette tapes into the Oral History collection), access restrictions, and copyright and licensing statements.

2.16 The Library is a lead agency for the country's public, community, and business libraries. It manages nationwide functions, including:

- the Aotearoa People's Network Kaharoa network, a partnership service enabling free internet access in public libraries that are part of the network;

- legal deposit (all publishers in New Zealand must deposit their publications with the National Librarian); and

- the public lending right for authors (this gives authors, illustrators, and editors payments that recognise that their books are available in New Zealand libraries).

2.17 Since the 1930s, the Library has provided the national union catalogue – a combined catalogue of New Zealand libraries. The catalogue was a first step towards a national interloan scheme and was put online in 1982. This early digitisation of the catalogue shows that the Library has a long history of working online.

Overview of the Library's digitisation process

2.18 An increasing number of digital documents are being created in an increasing range of formats. The creation of physical documents being created also continues to increase, but at a slower rate than digital documents. This means that the Library needs to collect, store, and make available digital and physical documents in usable formats.

2.19 Digitising physical documents takes a lot of time and intensive work. Digitisation is not as simple as scanning a piece of paper or a photograph and uploading the scanned file to the Library's website.

2.20 Digitising physical documents is a technical process that must be completed in a particular way, including following relevant legislation and international data standards. Throughout the digitisation process, staff must keep meticulous records showing how they have handled each document and what decisions they have made.

2.21 It takes a longer time for the Library staff to complete the digitisation process for a single document or collection of documents when, for example, the copyright status of the document is unclear, the physical document is in poor condition, or the needed methods, equipment, or staff are not readily available. For some documents, such as audio-visual documents, the digitisation process can take a long time.

2.22 The Library and Archives New Zealand have worked together to identify the steps in their digitisation process. Their process has four phases: scope, plan, process,

and delivery. The four phases are made up of 13 stages and 43 detailed steps. Suitably qualified staff are involved at each step.

2.23   A physical document that has been digitised might need to be re-digitised in future. The situation is the same for documents created in a digital format (born-digital documents). For example, a word processing file from 10 years ago might not be compatible with current software.

2.24   The Library needs to ensure that its digital documents are always in a usable format. Depending on the circumstances, staff might be able to convert the digital document into a new and compatible format or they might need to re-digitise the original physical document. The relevant process will need to be repeated as many times as required to keep documents accessible for as long as they are in the online collections.

> The complexities and challenges of digitising information and providing digital information and services need to be well understood and managed. It can be easy to underestimate the time and intensive work required.

What we looked at and how we carried out our audit

2.25   We looked at whether the Library's collective online presence[4] has led to greater access to information and improved services. In particular, we looked at:

- whether the Library's strategic aims align with the Declaration on Open and Transparent Government (the Declaration);
- whether the Library's collective online presence was open, readily available, reasonably priced, reusable, and well managed;
- whether the Library's website meets the government-approved web standards for usability and accessibility; and
- whether the Library's collective online presence has led to greater access to information and improved services.

2.26   The Government approved the Declaration and the New Zealand Data and Information Management Principles (the Principles) in August 2011. They are not an exact fit for the Library's digital work.

2.27   We applied a broader interpretation of the Declaration's definition of public data to better reflect the Library's work. We based our expectations about the Library's collective online presence on the Principles.

2.28   We reviewed documents that the Library gave us and that are available online. We interviewed many of the Library's senior staff and the Department of Internal

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4   By "collective online presence", we meant all the ways in which the different parts of the Library are available online.

Affairs' senior staff. We sought advice from a former President of the Library and Information Association of New Zealand Aotearoa, and a Victoria University of Wellington professor who has an interest in measuring outcomes for libraries.

2.29   We decided to audit the Library's website against the government-approved web standards because it is the Library's main website. We commissioned an independent assessment of the website's accessibility and usability. The assessment was performed in January 2017. We shared the results with the Library straight away so it could make (or plan to make) any improvements in a timely way.

Strategic documents align with government priorities and requirements

2.30   We expected the Library's strategic documents to align with the Government's goal of openness and transparency. The main strategic documents we looked at were *Turning knowledge into value: Strategic directions to 2030* and the *Digitisation Strategy 2014-17*.

2.31   The Library's strategic documents align with the Government's goal of openness and transparency. The strategic documents aim to ensure that:

- people can access the Library's online collections through catalogues and connect with other libraries' collections through the Te Puna service (a single point of discovery for New Zealand library catalogues); and
- the Library makes increasing amounts of digital information available for people to use, share, and reuse.

2.32   The Library's strategic documents generally align with the Declaration and fully align with the National Library of New Zealand (Te Puna Mātauranga o Aotearoa) Act 2003. The Act directs the Library to preserve, protect, develop, and make accessible its collections with the aim of enriching New Zealanders' cultural and economic life and connecting us with the rest of the world.

2.33   The Library's policies (such as those covering access, collections, collection use and reuse, and preservation) align with its strategic documents, the Declaration, and the Principles.[5]

Digital information and services met our expectations

2.34   The information and services that the Library provides met our expectations that the services available would display openness, ready availability, reasonable pricing, and reusability. The Library is streamlining its rights statements to improve consistency and to customise them to meet New Zealand's cultural and ethical expectations.

5   The policies are available on the Library's website.

2.35   Unless there is a valid reason to restrict access, people can get information about all the Library's collections through its website.

2.36   The Library rarely restricts access to content. We are satisfied that, when it does this, the reasons are valid. The reasons might include when the content:

- is under copyright and permission is not given by the rights holder;

- cannot be released under the Films, Videos, and Publications Classification Act 1993; or

- is deemed sensitive for cultural reasons.

2.37   People can look for documents on the Library's website for free, and many of the documents can be downloaded for free. Where the Library charges for copying documents, the cost is transparent, consistent, and reasonable.

2.38   The Library meets performance measures for releasing catalogue records and documents in a timely way, sets priorities for making digital information available, and makes decisions based on research and the need to preserve at-risk documents. Documents that the Library creates and is the rights holder for (that is, most of the metadata sets on its website) are given Crown copyright and the least restrictive Creative Commons license.[6]

2.39   There is one area in which the Library has made slower progress than planned. Under its *Digitisation Strategy 2014-17*, the Library planned to identify its main collections and prioritise them for digitisation. This work was put on hold until the new strategy to 2030 was completed in December 2016. The new strategy to 2030 takes a broader approach and requires the Library to work with other libraries to set digitisation priorities throughout New Zealand.

2.40   The Library met our expectations for managing its digital information. We found that the Library:

- takes a life-cycle approach to managing the collections, which is supported by a documented process for digitising physical documents;

- through its digital preservation practices, ensures that digital information is kept in usable formats over time;

- caters for changes in the way people access digital information by:

  – ensuring that metadata meets international standards, so documents can be found using search tools and search engines; and

  – adapting to the way that people look for information online – for example, search results will include relevant documents from the Library's collections in the first page of results in a user-friendly format;

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6   Creative Commons is a non-government organisation that provides free, easy-to-use copyright licenses that provide a simple and standardised way to give the public permission to share and use someone's creative work. Information about these licenses is available at https://creativecommons.org.

- works with a wide range of organisations[7] and the public to ensure that tools and shared services support people and library managers throughout the country;

- makes access to the collections easier through various means, such as consolidating its websites (from 75 websites to about 19), using the DigitalNZ application programming interface to power its website search functions, adding digital information that is out of copyright or where no copyright restrictions apply, and sharing digital information through social media;

- enables people to access information from international libraries and makes its online information and services accessible to people overseas; and

- has some projects under way to deal with some copyright issues to improve access to digital information and speed up the pace at which the information is available under the least restrictive permissions.

2.41   The Library has identified some matters that it needs to address to improve its effectiveness, policies, and strategic aims. It has projects under way or scheduled to address these issues. For example, the Library has analysed the feedback from people through various channels and is taking a continuous-improvement approach to its services.

Dealing with copyright issues

2.42   Dealing with copyright and licensing issues is a day-to-day part of the Library's work. Staff need to understand the copyright status of each document so they can inform people about how the digital information can be used. Unless copyright has expired, the Library needs permission from the copyright holder to digitise physical documents.

2.43   The Library has two main copyright projects under way:

- It plans to streamline its rights statements and use of Creative Commons licenses to produce a consistent set of information to people. The aim is to make more digital information available and make it easier for people to know what they can and cannot do with documents.

- It is working with the Department of Internal Affairs – Births, Deaths and Marriages to introduce a more systematic method for knowing when a creator's copyright on a document expires. The aim is to ensure that staff can provide documents with as few restrictions as practicable after a copyright holder's death.

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7   Examples of organisations are Archives New Zealand, public libraries, the Library and Information Association of New Zealand Aotearoa, Te Rōpu Whakahau, the Ministry of Education and selected schools, Local Government New Zealand, the Association of Public Library Managers, and the galleries, archives, community organisations, and museums that share their metadata as partners in DigitalNZ (www.digitalnz.org).

2.44   There is one copyright matter that the Library does not have authority to resolve. For some government documents, the Library can find it difficult to identify a decision-maker for Crown copyright issues. This is particularly difficult when the creating entity no longer exists.

2.45   The result of these difficulties can be that the Library cannot digitise physical documents or needs to apply limits on the use of digital information because it cannot get a decision from "the Crown".

2.46   In these circumstances, it can be time-consuming for the Library to resolve copyright issues. This is inefficient and is a barrier to achieving the Government's goal to release public information in a timely way. We consider that it would be helpful if one particular government agency were responsible for managing Crown copyright.

A usable and accessible website

2.47   We had an independent assessor assess the usability and accessibility of the Library's website against the government-approved web standards.

2.48   The Library's website meets almost all of the government-approved web standards. Even so, there are opportunities to improve, and the Library plans to do so. The independent assessor told us that the Library scored the highest of all the government agencies' websites that they had audited. There were 69 applicable standards, and the Library met 56 of them, as shown in Figure 1. It also met five recommendations of the usability standard.

Figure 1
Government-approved web standards met by the National Library

Web Usability Standard 1.2	Web Accessibility Standard 1.0	Web Content Accessibility Guidelines 2.0		Total
		Level A	Level AA	
6	23	19	8	56

Note: Level A is the least acceptable level of accessibility. Level AA represents good practice, because meeting it makes information accessible to more people.

2.49   The effects of the Library not fully meeting some of the usability standards are that people:

•   might be uncertain about the Library's use of private information; and

•   with limited bandwidth or data caps could be frustrated because links to downloadable files do not show the file's format and size.

2.50 The effect of the Library not fully meeting the accessibility standards are that people with visual impairments, who do not use a mouse and who use screen readers or text-to-speech browsers:

- might miss information;
- must repeat steps before getting the information that they want; or
- find that the information does not display correctly in their browsers.

The Library's awareness of accessibility issues

2.51 The Library has a section on its website that lists some of the website's significant accessibility issues. This is so people know what issues staff have already identified and are working on. The section also discusses the potential problems that these issues could cause people.

2.52 The Library provides an email address for people to report any unidentified accessibility problems. In this way, the Library has made it easy for people to provide feedback when their expectations are not met.

2.53 The independent assessor identified seven issues with the website. The Library was unaware of five of these issues. This highlights the value of government agencies having their websites independently assessed. In our view, the assessment that we commissioned was reasonably priced, ruling out cost as a potential barrier to public entities of occasionally commissioning an independent assessment.

2.54 The Library told us that it plans to improve implementing web standards as priorities, staffing, and budgets allow. The Library staff will add any outstanding improvements to the backlog.

2.55 The Library staff will make most of the improvements as part of the Library's plans to ensure that more of its public-facing websites are adapted to different devices. (Some of the websites have already been adapted.)

2.56 The Library is doing this work because an increasing proportion of people are using mobile devices to browse the internet, which means that websites need to be adaptable to different screen sizes and orientations.

A good start to understanding the benefits of digitising services

2.57 There is no accepted method in New Zealand or internationally that national libraries can use to assess the benefits of increasing people's access to digital information. This is because many of the benefits are intangible. National libraries

from overseas are experimenting with ways to assess the benefits of their digital services.

2.58   The Library is performing some activities, but there is an opportunity for it to consider some new approaches in the next few years.

2.59   The Library takes two main approaches to monitoring access to its collections:
   •   monitoring increased access to information available to people through the Library's websites; and
   •   monitoring website traffic.

2.60   The Library also carries out a limited range of activities to get insight into people's needs and satisfaction. For example, the Library performs surveys of known groups (such as librarians) and considers comments received online and in person. We consider that such information is useful for identifying potential improvements the Library can make to its services and for measuring the effectiveness of their implementation.

2.61   However, these activities do not amount to a co-ordinated approach to understanding the benefits that access to digital information produces for people and their communities. We consider that, when the Library learns more about how people use the collections, it will also learn more about the benefits of increasing access to digital information and how it can be more effective in tailoring services to people's needs.

2.62   The Library recognises that it could do more to fully understand these benefits. We consider that, now that the Library's new strategy to 2030 is completed, it is the right time for the Library to reconsider how it could assess the benefits of digital information to its communities.

2.63   The Library took part in a research project, which we consider is a good first step. The Canadian InterPARES Trust provided funding to Victoria University of Wellington to research how the digitised te reo Māori collection is used and the effects of that use on people and communities. The Alexander Turnbull Library supported the research.

2.64   The project is the first major piece of work in New Zealand to assess the effect of digital information from the viewpoint of the person using it. The first phase of the research has been completed, and a report has been released.[8] The Library told us that the results are already influencing work on Māori Language Strategies.

8   Crookston, Mark, and others (2016), *Kōrero Kitea: Ngā hua o te whakamamatitanga: The impacts of digitised te reo archival collections*. The report is on the InterPARES Trust's website, interparestrust.org, and it can also be accessed through the Library's website.

2.65   We consider that the Library's engagement and reach with new audiences could be improved and that awareness of its collections could be strengthened. The Library could take a multifaceted approach to reaching new and existing users of its website to explore their needs and how the Library could meet them.

2.66   We are aware that there continues to be new techniques for analysing how people use websites and whether websites are effective in meeting their needs. The Library plans to consider which of these techniques would be most useful for its purposes.

> There is an opportunity to learn more about how people use and reuse digital information and the benefits produced. This will allow public entities to tailor their digital services to people's needs and encourage greater use and reuse of digital information.

2.67   We encourage the Library to consider a wide range of methods for working more closely and collaboratively with people. For example, the Library could:

- periodically test its websites to ensure that each website's design continues to meet people's needs and take a structured approach to asking people how they have used digital information (including metadata) with the aim of analysing themes and trends from the results and give ideas on how other people could use the collections;

- launch a trusted online community supported by the Library staff for people with common interests to connect with each other;

- allow people to add their own tags to digital documents, such as names, dates, or key words (these would need to be distinguished from the Library's own metadata to ensure that people know which information is the official metadata that meets international standards); and

- share information with universities' postgraduate schools about potential research topics that students could study as part of their degree requirements, with the aim of increasing the research the Library could otherwise fund, supervise, or perform.

3

Greater Wellington Regional Council's Real-time Passenger Information system

3.1   In this Part, we discuss:

- public transport in the greater Wellington region;
- what we looked at and how we carried our audit;
- how real-time passenger information is contributing to benefits;
- how more open and available real-time information can increase access;
- the accessibility and usability of the Regional Council's website and app; and
- the need for the provision of real-time information to be ongoing.

Summary of findings

3.2   The Real-time Passenger Information system (the system) tracks where a bus or train is along its route to predict its arrival or departure time at selected stops. The system produces real-time information that is communicated through electronic display boards, websites, and smartphone apps.

3.3   Real-time information has improved people's perception of the reliability of public transport services. It is likely that this improved public perception has contributed to more people using public transport.

3.4   Transport operators also use real-time information in their day-to-day management to monitor service quality, assess existing scheduling, and make improvements where applicable. For example, real-time information has been used to identify operational performance issues such as buses using incorrect routes and not following the scheduled times for services.

3.5   We used an independent assessor to assess the Regional Council's Metlink website and app against government-approved web standards for accessibility and usability. The assessment found that the website and the app had only minor non-compliance issues. Generally, the website and the app were reported as very good, especially the service updates that affect the route included in each journey plan.

3.6   The Regional Council initially took a cautious approach to publicly sharing its real-time information. This was to try to minimise risking the integrity of the system by third parties using the information for their own purposes. The Regional Council is now starting to relax its approach.

3.7   The Regional Council needs to make sure it keeps up with changes in people's expectations about technology and the way they use it. Governors and managers need to ensure that they think about these changes in the way they manage information, processes, culture, and behaviour, both internally and externally.

This applies to any public entity that plans to provide information and services digitally.

Public transport in the greater Wellington region

3.8   The Regional Council is responsible for planning and managing public transport in the greater Wellington region. Public transport is funded through a combination of rates, fares, and joint investment by the New Zealand Transport Agency.

3.9   The Regional Council manages the Wellington regional public transport network under the brand name Metlink. Other companies are contracted to operate buses, trains, and ferries, and to manage other network assets. Revenue from fares does not cover the full operational costs, so support from central government is essential to operate the public transport network.

3.10   The public transport network comprises:

- more than 100 bus routes, more than 200 school bus services, about 2700 bus stops, and 517 buses;
- four rail lines, 49 railway stations, 28 "park and ride" free car parks at railway stations, and 98 train and rail units; and
- harbour ferry services using two harbour ferries between four wharfs.

3.11   The greater Wellington region has the highest proportion of public transport use in the country. This is partly because Wellington is densely populated with a bus stop, railway station, or ferry terminal within a six-minute walk (500 metres) for 84% of people living in the region.

The Real-time Passenger Information system

3.12   The system tracks where a bus or train is along its route to predict its arrival or departure time at selected stops.[9] This real-time information is communicated through electronic display boards, websites, and smartphone apps to let people know when they can expect the next service. This information complements other available information such as signs and printed timetables, and also supports call-centre help and audio announcements.

3.13   To communicate digital information, including real-time information, Metlink operates a website[10] and has an app for both iPhone and Android smartphones (the Metlink Commuter App). Several third-party journey planning websites and apps (such as Google Maps, Embark, and Tripit) also use Metlink's information.

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9   The "real" time is actually an estimated time, calculated from the vehicle's current location and accumulated travel time information.

10   The website address is www.metlink.org.nz.

What we looked at and how we carried out our audit

3.14 We carried out a performance audit to assess whether the Regional Council is achieving the expected benefits from the system. We asked:

- What benefits has the system achieved?
- How open and available is information from the system?
- How accessible and usable is the information from the system?

3.15 We expected to find that the Regional Council was:

- monitoring the benefits of using information from the system;
- able to show how the system was used to directly improve services;
- giving people access to the real-time information; and
- improving services to the public.

3.16 We did not audit the implementation, including the Regional Council's procurement, of the system. We did not audit the system's performance or data quality.

3.17 We reviewed project and governance documentation, research conducted on behalf of the Regional Council, and research related to real-time information done for other organisations. We talked to Regional Council staff and some of the contractors responsible for providing real-time information, the Metlink website, and the app. We also interviewed people who use Wellington's public transport system.

3.18 We asked an independent assessor to assess the Regional Council's Metlink website and the app against the government-approved web standards for accessibility and usability. Although local government organisations do not have to follow these standards, the Regional Council was happy for the assessment to take place to identify where improvements could be made.

The Real-time Passenger Information system has achieved benefits

Use of public transport has steadily increased since 2014

3.19 The main goal behind implementing the system was to increase the use of public transport. To achieve this, the Regional Council used the system to improve perceptions about the reliability of public transport and to improve operations.

3.20 There was an increase in people using public transport between 2002 and 2006. There was as much as an 8% increase between some years. Between 2007 and 2013, this growth slowed, and there was a decrease in people using public transport in some of these years.

3.21   Although the system was implemented before a period of steady annual growth of 2-3%, it is difficult to know how much the system contributed to an increase in people using public transport. Other factors can influence how people choose to travel, such as the cost of petrol.

Real-time information improved how reliable people perceived services to be

3.22   A reliable service is possibly the biggest challenge for all public transport service providers. Unreliable services can be frustrating, which can lead to fewer people choosing to travel by public transport.

3.23   Real-time information can significantly improve a person's experience of waiting for a bus or train by letting them know when services are disrupted. Addressing people's frustrations caused by delays was identified as an important benefit of the system.

3.24   Real-time information has improved public perceptions of how reliable public transport is. For example, in a 2015 survey, 10% of respondents said reliability was something the public transport system could improve. However, in a 2016 survey, when asked what improvements could be made to the public transport system, only 4% of respondents said reliability.

3.25   The reliability of services also continues to improve. The percentage of rail services running to time in the region increased from about 88% in 2009/10 to almost 95% in 2015/16.

3.26   By improving the perception that public transport in Wellington is reliable, it is likely that the system has contributed to more people using public transport. It is also likely that actual increases in reliability are partly a result of using the information generated by the system to optimise scheduling.

Real-time information is used for operational improvement

3.27   The Regional Council and transport operators have used real-time information to identify operational performance issues, such as bus drivers using incorrect routes, and buses and trains not arriving on time. Transport operators also use real-time information to monitor service quality and assess scheduling. The Regional Council uses the real-time information for operational schedule optimisation and strategic network planning.

3.28   Although transport operators have used real-time information since it became available, this was on a voluntary basis.

3.29   The Regional Council told is that, in 2019, new contracts between the Regional Council and transport operators will support using real-time information to evaluate service performance. When using real-time information to evaluate service performance, both the Regional Council and transport operators will need to be mindful that this does not displace other aspects of good service, such as face-to-face customer service.

More open and available information could lead to other benefits

3.30   Local authority organisations were invited to apply government plans that give people access to digital information where a local authority considers it appropriate. The Regional Council has thought about how to apply these plans to the system.

3.31   The Regional Council supports the intentions of open data in ways that it thinks are appropriate. It does this by responding to requests for access to the information produced by the system and by providing "static" information, which is a component of the system.[11]

3.32   Making real-time information available to third parties could improve people's access to services. In some instances, this could be as simple as sharing information. It might also lead to the information being used in new ways.

3.33   Initially, the Regional Council took a cautious approach to sharing information from the system. Some third parties are using the real-time information from the Metlink website for their own real-time information apps. This has not caused any issues for the Regional Council.

3.34   The Regional Council no longer considers that providing real-time information to third parties is a risk to the information's integrity. The Regional Council is acting consistently with government plans to share data and apply the New Zealand Data and Information Management Principles. It has signalled in its Public Transport Information Strategy its intention to provide open data and information (including real-time information) through people's channel of choice.

3.35   The Regional Council could further enhance its approach by developing protocols for proactively releasing real-time information. The policy would identify the risks, benefits, costs, and priorities for making this information available.

> Ensuring that digital information is available to third parties could improve people's access to services and lead to new ways to use the information.

11   This is information about scheduled service times, and bus stop, railway station, and ferry terminal locations.

Assessing access and usability produced encouraging results

3.36   Information that is accessible and usable helps people to access services. People can use real-time information to plan their day by finding out the times and locations to catch a bus, train, or ferry.

3.37   The Regional Council is aware that different people have different preferences for how they access the Council's information (such as through printed brochures, apps, or websites), including the Metlink website and the Metlink Commuter App. The Regional Council's research shows that using the real-time information to alert people to service disruptions greatly affects people's overall perception of the performance of the bus, train, or ferry services.

3.38   The Regional Council has recently improved the timeliness of information and increased the number of channels used to communicate disruptions. As a result, people have indicated increased satisfaction with accessing this information.

The Metlink website is an effective platform for providing real-time information

3.39   We had an independent contractor assess the Metlink website and the Metlink Commuter App against government-approved web standards for accessibility and usability. Like other local authorities, the Regional Council does not have to comply with these standards.

3.40   The assessment found that, although Metlink's website and app do not fully comply, the Regional Council created a useful website that people appreciate.

3.41   The independent assessment of the real-time information and Journey Planner parts of the Metlink website found only minor non-compliance issues. The functional coverage was reported as very good, especially such aspects as the service updates that affect the route included in each journey plan.

3.42   The non-compliance issues related to the website using unexplained route numbers or station numbers without reference to their names. This could confuse people new to these codes.

3.43   Although the Regional Council's research identified some areas for improvement, it shows that people find the Metlink website easy to use. This research corroborates the independent assessment of the Metlink website that we commissioned. Together, these findings indicate that the Metlink website is an effective platform for providing information.[12]

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12   The quality of the design of the Metlink website was also acknowledged by a panel of international designers (see https://www.metlink.org.nz).

3.44   The Regional Council could have a "world class" website if it continues to invest in bringing the website up to standard. In our view, the Regional Council should continue to use the government-approved web standards and run regular usability and accessibility reviews to improve its digital presence for all users, including those with visual impairments.

3.45   We strongly encourage the Regional Council to take a consistent approach throughout the organisation when making its data open and available for use by third parties.

Access to real-time information for people with visual impairments

3.46   Wellington City Council's Accessibility Advisory Group noted that accessible information makes it easier for people with visual impairments to use the public transport system. Electronic signs displaying real-time information and transport information that is easy to access were specifically identified as examples of accessible information.

3.47   The Regional Council took steps to ensure that the electronic-display signs met an international standard for visibility.[13] However, there is more work to do to make real-time information services more accessible for people with visual impairments.

3.48   As part of managing the initial costs of the system in 2008, the Regional Council did not implement some features (for example, electronic signs that display the next stop on 75 buses). However, the Regional Council told us that, from 2019, there will be electronic signs and announcements on buses. These will be useful for people with visual impairments and people who are unfamiliar with the bus route.

3.49   The Regional Council needs to identify the channels that are most effective for communicating with different groups of people (such as people with visual impairments) when planning changes or improvements to existing Metlink information channels, including the system.

3.50   We strongly encourage the Regional Council to fully implement the audio messaging capability of the system.

Responding to changes over time is important

3.51   The opportunity to use smartphones to deliver information directly to people was not a feature of the system's business case. This is not surprising because smartphones were not widely used in New Zealand when the project started in 2007.

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13   The standard is found in RTIG (2012), *Meeting the needs of disabled travellers: A guide to good practice for bus passenger technology providers*.

3.52   Since the system was implemented, smartphones have become commonplace. The system is flexible enough to incorporate smartphones as a significant channel for providing information.

3.53   The Regional Council was implementing the system while mobile devices were becoming widely used. This meant that the Regional Council was less able to realise the potential of the real-time information and how it could support improvements to its public transport service.

3.54   The value of the system has increased since 2007. For some time, the Regional Council used the information mainly for people using public transport. However, it has improved how it is using the information.

3.55   For example, information from the system is now used in preparing the Wellington Regional Land Transport Plan 2015 and for optimising the use of the existing transport network. This is to be achieved by using network efficiency tools, intelligent transport systems, and other tools.

3.56   This is progress from previous strategic goals of using the system to increase the number of people using public transport.

Real-time information has become central to a broader information strategy

3.57   The Regional Council has a new Public Transport Customer Information Strategy (the strategy) to use information, including real-time information, to improve people's experience and provide more choice about travelling on public transport.

3.58   The strategy is about managing information and data about public transport services. If successful, it will help the Regional Council to meet people's changing needs and expectations. The Regional Council aims to do this by:

- providing more accurate real-time information;
- providing a greater range of information;
- providing open data (including making real-time information more available) and information through people's channel of choice, including third-party travel websites and apps; and
- ensuring that data and information can be easily integrated into future smart travel and Mobility-as-a-Service platforms.[14]

3.59   The main idea behind the strategy is that information that properly supports travel choices results in a better customer experience. This could lead more people choosing public transport.

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14 Mobility-as-a-Service describes a shift away from personally owned modes of transportation towards mobility solutions that are consumed as a service, such as Uber. This is enabled by information technology.

Thinking and planning for how information is used must be ongoing

3.60   Since implementing the system, the Regional Council's strategic aims have changed from improving people's perceptions of the public transport system's reliability and increasing the number of people who choose to travel by public transport, to focusing on improving people's experience.

3.61   People's experience includes, among other factors, increased reliability, integrated services, and better efficiency. Not all strategic plans have included the same amount of detail and focus about the system and its contribution to the strategic aims. Real-time information is now used to prepare new strategies.

3.62   The emergence of open data, smartphone technology, and apps while implementing the system provides a good lesson for other entities about meeting present needs while anticipating future needs.

3.63   The Regional Council's customer research demonstrates that it is collecting and analysing evidence to help it understand whether present needs are being met, identify potential improvements, and anticipate future needs.

3.64   The Regional Council's plan is to make real-time information more open, accessible, and usable. By acting on these plans, it will improve how the system supports a future public transport network.

> Anticipating future needs means that governors and managers will need to identify emerging technologies and customer expectations that could affect their business. The need to think about, and plan for, the future is ongoing because technology is constantly changing and these changes will bring new opportunities and new risks. Governors and managers need to keep up with these changes and consider how they affect the way that information, business processes, organisational culture, and behaviour are managed.

Quotable Value Limited's
QV homeguide application

4

4.1 In this Part, we discuss:

- Quotable Value Limited (QV) and its QV homeguide app;
- what we audited and how we carried out our audit;
- the benefits achieved by the QV homeguide app; and
- the usability and accessibility of the QV homeguide app.

Summary of findings

4.2 Providing information through the QV homeguide app enables the public to access information from multiple sources in a single location. The public can download a single app to get publicly held information about properties.

4.3 A private company is responsible for getting all this information. QV has a strategic partnership with this company, supporting public access to this information in a convenient way.

4.4 In terms of usability and accessibility, our independent assessor sampled relevant parts of the QV homeguide app and assessed them against the government guidelines for accessibility and usability. This assessment found that parts of the app did not fully comply.

4.5 However, the QV homeguide app did meet three out of the four highest-weighted criteria of the assessment. QV has taken some good steps to ensure that the app is usable and accessible, despite it not fully complying with the guidelines it was assessed against.

4.6 QV was able to leverage its relationship with CoreLogic NZ Limited (CoreLogic) to build an app that delivers digital information and services. The app has realised some benefits to its shareholders, such as generating some revenue and likely contributing to recognition of the QV brand. At the same time, the app has provided New Zealanders with access to information in a convenient way.

About Quotable Value Limited

4.7 QV provides rating and valuation services to central and local government, the public, and financial providers. QV is part of a group of companies owned by Quotable Value Limited, which is a publicly owned valuation and property-services company and a State-owned enterprise (SOE).

4.8 Quotable Value Limited owns a number of property and valuation-related companies that deliver services in the property industry. These include Darroch, a commercial and industrial valuation company, and QV Australia, which provides specialist rating and taxation services to local government organisations.

The QV homeguide app

4.9   The QV homeguide app is a joint venture between QV and CoreLogic (a property information and analytics company).

4.10   The QV homeguide app collects and gives access to the following types of information:

- rating value – a valuation service provider determines the "likely selling price" of a property at a specific date for the local council to use as one of the factors in determining and allocating rates;

- sales activity – sales on a specific property found on the app;

- suburb demographics – median price data, demographic data, current listings, and the latest auction results; and

- which residential properties are for sale in the area and which have recently been sold.

4.11   To get rating value information, local councils contract licensed valuers, such as QV, to value properties in their area. Rating value information is usually made up of three components: capital value, land value, and the value of improvements.

4.12   There are legislated guidelines for determining rating values, which need to be followed and are audited by the Office of the Valuer-General. Rating values are determined for all properties in New Zealand, usually once every three years. Therefore, depending on when a property is sold, the rating value might differ from the sale price.

4.13   Sales activity and suburb demographics come from CoreLogic's national property database, which holds information on every property in New Zealand. The national property database draws on information and sales data from District Valuation Rolls and from each of the councils in New Zealand. Information about property transactions comes from Land Information New Zealand (LINZ).

4.14   The information collected from councils and from LINZ is categorised as Public Register Information and Public Register Supporting Information. Therefore, the information is available to anyone who wishes to search for it.

4.15   The QV homeguide app collates all the information from these sources, as well as the information provided by CoreLogic, and provides it in a single location. The QV homeguide app also enables people to purchase estimated current market values on properties.

4.16   An estimated current market value is the probable price a home would sell for at any given date. It can be affected by market factors at the time, including:

- supply and demand – the number of homes available compared to the number of buyers looking;

- interest rates;

- the existing and potential use of the land;

- the economy – including local, national, and international;

- the property's visual appeal;

- neighbourhood characteristics; and

- access to facilities such as schools, shops, and transport.

4.17   Estimated current market values are calculated by drawing on the information in the CoreLogic national property database.

4.18   The QV homeguide app also provides a link to QV's registered valuation services.

What we audited and how we carried out our audit

4.19   We were interested in QV and the QV homeguide app because QV is an SOE. We wanted to see how an organisation with commercial interests provided government information to the public in a digital format.

4.20   Because QV is an SOE and has limited digital services available to the public, we looked at only a small part of what it did. One reason we chose to look at QV was because it is customer focused and because having usable and accessible digital information should lead to improved services to the public.

4.21   We focused on whether QV was realising any benefits from providing access to government information through the QV homeguide app. We also wanted to assess whether the information provided through the QV homeguide app was usable and accessible.

4.22   We reviewed publicly available documents to gain an understanding of QV and its various divisions, and then spoke with QV staff before carrying out the audit, to help inform our understanding and our approach.

4.23   We interviewed staff from QV's head office. We wanted to understand more about:

- the establishment of the QV homeguide app;

- the QV homeguide app's intended benefits and achieved benefits; and

- any lessons from QV's involvement in the QV homeguide app.

4.24   We had an expert assess the QV homeguide app against guidelines for accessibility and usability.

Some benefits have been achieved

4.25   We expected the QV homeguide app's intended benefits to align with QV's operating intent. The QV homeguide app's intended benefit is to generate revenue for the Crown. This is consistent with the State-Owned Enterprises Act 1986 and the letter of expectations to QV from its shareholding ministers.

4.26   The QV homeguide app has generated some revenue for QV and CoreLogic. We were told that revenue was generated by selling advertising space on the QV homeguide app to a private company in its first year of operation. The arrangement with the private company was not renewed after the first year.

4.27   QV staff told us that the QV homeguide app continues to generate a small amount of revenue by selling services, such as estimated current market values. We have chosen not to report on these financial benefits because this information could be commercially sensitive.

4.28   QV staff also told us that an additional benefit of the QV homeguide app is that it enables people to access the property information for free and supports wider efforts to increase awareness of the QV brand.

4.29   We do not expect QV to be able to quantify the precise contribution that the QV homeguide app has made to increasing overall awareness of the QV brand. However, QV told us that it has carried out surveys on brand awareness and that 82% of those surveyed recognised the QV brand.

Steps taken to create a usable and accessible application

4.30   Because the QV homeguide app makes public information available using a digital format, we wanted to get a sense of how accessible and usable the information is. When we commissioned the independent assessment of the app, we acknowledged that QV had no formal obligation to comply with the guidelines the app was assessed against. We also acknowledged that QV's commercial interests could influence the standards of accessibility and usability achieved by the app.

4.31   We found that QV has taken some good steps to ensure that the app is usable and accessible, despite it not fully complying with the guidelines it was assessed against.

4.32   Usability and accessibility assessments of apps are relatively new. They rely on best practice guidelines rather than the prescribed standards used for websites. However, assessing apps against these guidelines can provide valuable insight into how their usability and accessibility can be improved.

4.33   The independent assessment involved sampling relevant parts of the QV homeguide app and rating each of the user-facing elements against the relevant criteria. The assessment included scoring each criterion and commenting where the app did not fully comply. Each criterion was weighted, so the overall assessment of the app's accessibility and usability was based on a combination of QV's weighted scores.

4.34   Figure 2 presents the assessment findings. It shows that the QV homeguide app:
   • fully met 13 out of 17 applicable guidelines;

- fully met three out of four of the highest-weighted criteria of the assessment; and

- did not meet one of the four highest-weighted criteria, because the app can be viewed only in portrait orientation.

Figure 2
Mobile accessibility assessment of the QV homeguide app against the Web Content Accessibility Guidelines 2.0

2.0 Ref.	Criterion	Maximum possible weighted score	QV score	Comments
2.1	Small screen size – the information on each page is minimised, with a dedicated mobile version or responsive design.	100	100	
2.1	Small screen size – default size for text and touch controls is reasonable.	100	100	
2.1	Small screen size – page length adapts to width without horizontal scrolling.	100	100	
2.1	Small screen size – form fields are below their labels.	80	80	
2.2	Zoom/magnification – OS features (set default text size, magnify entire screen, magnify lens view under finger) and browser features (set default text size, magnify browser's viewport).	90	63	Some clipping of text when set to big size in Android. In iOS, enlargement of text on screen by pinching does not allow a flow of block text, resulting in annoying scrolling from side to side.
2.3	Contrast is at least 4.5 to 1 (or 3.0 to 1 for large-scale text).	80	64	Yellow/orange text and white on yellow/orange insufficient contrast.
3.2	Touch target size and spacing – touch targets are at least 9mm high by 9mm wide, and targets close to the minimum size are surrounded by inactive space.	80	80	
3.3	Touchscreen gestures – easy gestures that are discoverable, unintentional mouse and touch gestures are avoided.	80	80	
3.5	Placing buttons where they are easy to access.	70	70	

2.0 Ref.	Criterion	Maximum possible weighted score	QV score	Comments
4.1	Changing screen orientation (portrait/landscape) – both orientations are supported.	100	0	Portrait only.
4.2	Consistent layout – navigation and regular features are in the same order on each page.	70	70	
4.3	Positioning important elements before the page scroll.	70	70	
4.4	Grouping operable elements that perform the same action.	60	60	
4.5	Providing clear indication that elements are actionable.	80	40	Not obvious what can be touched for action.
5.1	Setting the virtual keyboard to the type of data entry required.	70	70	
5.2	Providing easy methods for data entry.	70	70	
5.3	Supporting the characteristic properties of the platform.	80	80	

4.35 Our independent assessor did not offer any views about how the results of the assessment compared to similar assessments of other apps. In our view, this is expected because assessing apps in this way is relatively new.

4.36 Staff at QV told us that, in practice, they have taken steps to try to create a usable and accessible app.

4.37 There is a space on the QV website for feedback on the app. This can be used to help improve usability. The QV website has examples of people asking questions about the app and QV responding to those questions.

4.38 Someone asked when the QV homeguide app will be available, because it is not currently in an app store. QV responded by adding a download link on its website. This is an example of QV responding to the public's need.

4.39 The other steps QV staff have taken are:

• customer research to see what its potential customers were looking for and what they expected in an app; and

• prototype and user testing to see what works, whether the QV homeguide app was understandable and could be used, and using the User Interface and User Experience guidelines to design the app. These guidelines also note what colours are best to use and set requirements for how the app should work on different types of devices.

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