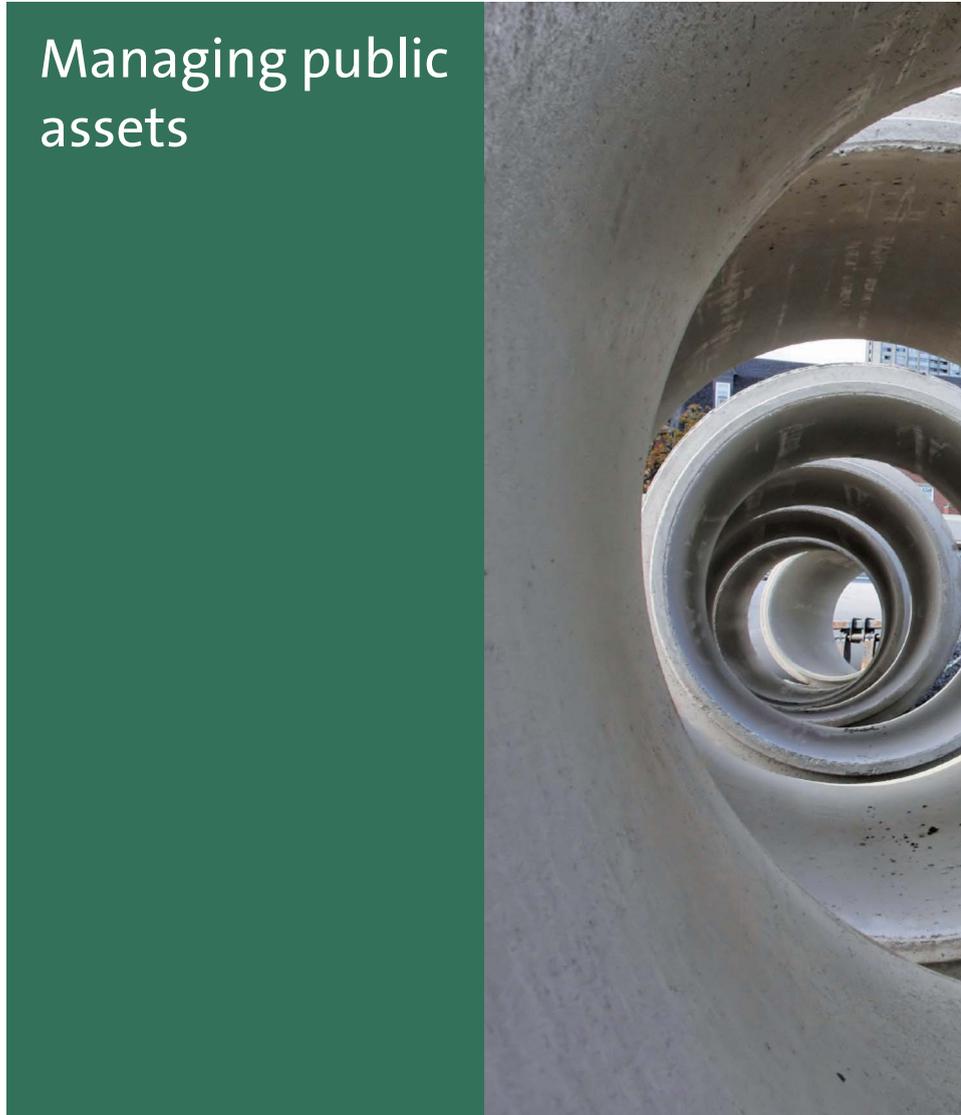




Discussion paper

# Managing public assets





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# Managing public assets

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## Auditor-General's overview

Good management of physical assets is important for the future. The public sector has physical assets valued at more than \$210 billion. Public entities need good information about these assets and future asset needs so that they can continue to deliver services that we all need and want, now and into the future.

I wanted to take stock of how physical assets that deliver services to the public are managed. In this paper, we provide an overview of these assets, their condition and value, maintenance and renewals, and what information is reported to decision-makers about these matters. By doing this, I hope to initiate further discussion by provoking relevant questions about the management of public assets.

In late 2012, I requested high-level information about the management of physical assets for more than 340 public entities. It showed that most public entities understand the importance of planning for assets, with plans in place for about 75% of assets. It also confirms what many of us generally experience in our day-to-day lives – that most public assets are currently in suitable condition to provide the services intended.

However, looking to our future, planning for assets alone will not be enough to continue delivering services and meet our future needs. The information we obtained showed that:

- About 40% of assets were being managed according to plan. The remaining assets were being managed according to plan to varying extents, including some where the plans were not followed at all.
- For nearly 40% of assets, it was not known whether there is any deferred maintenance or renewals. For about 10%, there is a quantified amount of deferred maintenance and renewals. Combined, these assets with unknown and known amounts of asset maintenance and renewal deferrals had lower condition ratings compared with the over 50% of assets without deferrals.

Decision-makers need good information about their assets and future asset needs to manage maintenance and renewal needs and future asset investments. The results of our stocktake suggest that, for many public entities, asset condition information is not being regularly reported to decision-makers.

My Office has focused on asset management and encouraging good management of public assets throughout the range of our audit work since the introduction of accrual accounting in the late 1980s. We consistently see that best results are achieved when asset management is integrated throughout the business. An

integrated management approach involves robust information and systems that are used co-operatively by asset managers, engineers, valuers, planners, corporate finance staff, management, and the governing body to ensure that the right people contribute the right information at the right time.

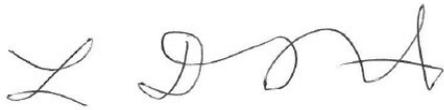
In looking at the analysis of the information that my staff collected, there are six questions that we are not in a position to answer, but that the public sector needs to consider. These are:

- How well are asset management plans and financial plans being aligned, and are those plans addressing affordability and our likely future needs?
- What capability or maturity of asset management systems, information, and expertise will we need to manage the complexity and scale of the public sector's assets in the future?
- What can we learn from the natural disasters (like the earthquakes in Canterbury, which have caused significant damage to assets) about how asset management practices can be developed to help us better prepare for unlikely but potentially catastrophic events?
- What are the public sector's asset maintenance and renewal needs over the life cycle of the assets?
- What is the nature and value of deferred asset maintenance and renewals, and what effect may this have on future services?
- What kind of information and reporting is relevant and useful for public entities' asset management decision-makers?

This is the first time that my Office has looked at asset management across the public sector, although we have often reported on asset management matters for individual public entities and certain sectors within the overall public sector. In 2013/14, with local authorities, we will be trialling a common approach to auditing asset management information. If successful, we will look to apply this methodology across all our audits.

We also propose in 2013/14 to analyse and provide an overview of the life cycle maturity of local government assets. In general, the construction of public assets has been undertaken in stages, following significant events such as the expansion of the railways and the end of World War II. Managing our assets with a life cycle approach is important, as many of our assets are likely to have similar useful lives and maintenance and upgrade profiles.

I encourage the public entities managing large and complex assets that deliver public services to continue the effort that has seen New Zealand recognised as a leader in asset management planning, so that the risks to future services are understood and actively managed. By doing so, we can ensure that our assets are maintained and developed to be ready for our future needs.

A handwritten signature in black ink, appearing to read 'Lyn Provost', written in a cursive style.

Lyn Provost  
Controller and Auditor-General

20 June 2013



# Part 1

## Introduction

- 1.1 Our Office's theme for 2012/13 has been: *Our future needs – is the public sector ready?* During the year, we completed projects that look at different aspects of the public sector to consider whether we are ready for the future.
- 1.2 This paper provides an overview of the assets used to deliver services to the public. Its purpose is to provide a high-level view of the management of public assets, their condition and value, maintenance and renewals, and what information is reported to decision-makers about these matters. By doing this, we hope to initiate discussion by provoking relevant questions about the management of public assets rather than provide a technical assessment of asset management practices.

### Methodology and scope of this paper

- 1.3 For the purposes of this paper, we focused on physical assets (property, plant, and equipment assets and infrastructure assets.) that are “significant” delivering public services. We use the term “assets” to mean both physical assets and classes of assets that provide services to the public.
- 1.4 We collected information about more than 340 large public entities that each hold more than \$2 million of assets (see paragraphs 2.2-2.4). We chose this threshold to focus on major assets (rather than covering all assets held by the public sector) and to manage the effect of our information requests for our auditors and public entities.
- 1.5 In our recently published paper *Insuring public assets*, we identified a total of \$225 billion of assets, based on the information collected from about 400 public entities with assets greater than \$100,000 (\$100,000 being chosen as a threshold of value that could be difficult for an entity to replace in the event of its loss or damage, and for which we therefore might reasonably expect insurance cover to have been considered). That total is different to the total of \$214 billion identified for this paper, which is based on a smaller number of public entities.
- 1.6 Our auditors provided information on three main aspects of asset management:
  - **The assets held and the condition of those assets.** Asset management starts with identifying and quantifying the assets and gathering information about their age and condition.
  - **Whether the assets are being maintained.** Managing assets for their full life cycle requires good integrated planning, good underlying data about the assets and the services that they enable, and good asset management systems. Assets must be maintained if they are to continue delivering the services

intended from them. Deferring asset maintenance for a long time can result in more breakdowns and disruption of services, substandard services, and, in the end, failure of services.

- **The information used in decision-making.** To help good decision-making, relevant asset information needs to be available at the right time, for the right people, about matters such as the condition of assets, investment, and levels of service that assets are required to provide.

- 1.7 The information we got covered technology hardware assets but not software assets. In general, there is no reason why asset management principles should not apply to management of software assets as well as hardware assets.

### Structure of this paper

- 1.8 The structure of this paper reflects the areas of asset management practices that we asked our auditors to provide information about. We also set out examples of some challenges that entities face in managing assets effectively.
- 1.9 Part 1 describes the methodology and scope of this paper. It sets out public sector asset management in a wider context and discusses the importance of managing assets today and for the future.
- 1.10 Part 2 describes service delivery assets, sets out the profile of public assets, and discusses planning to deliver services.
- 1.11 Part 3 discusses what we found out about the condition of assets and the importance of keeping condition information up to date.
- 1.12 Part 4 discusses the maintenance and renewal of those assets.
- 1.13 Part 5 discusses asset condition information and reporting to decision-makers.

### Support for asset management in the public sector

- 1.14 Asset management, which is essential in effective business planning, is about providing desired services by managing assets in the most cost-effective way, for today's and future generations.
- 1.15 Assets are often expensive and require continued attention to ensure that they are managed well. Public entities are responsible for ensuring that their assets are available and properly maintained so that they can continue to provide services. Public entities need robust information about their assets and future asset needs so that they can achieve this objective.

- 1.16 There is emerging concern internationally about “infrastructure gaps” or “infrastructure maintenance deficits”. The identification of such “gaps” is becoming more widespread, with some governments having gone as far as to legislate the value of the gap to be eliminated. An infrastructure gap occurs when assets are worn down over time as the result of decreases in spending (deferring maintenance) and increases in the cost of maintenance or renewal works.
- 1.17 Internationally, New Zealand has a good reputation for managing assets because of our public sector financial management and reporting arrangements and the work of groups such as New Zealand Asset Management Support (NAMS). NAMS was formed to set up and promote infrastructure asset management practices, policies, and systems. NAMS has prepared five manuals, which many local government entities use.<sup>1</sup>
- 1.18 Asset management principles were first developed for property assets and, in general, those principles apply to most types of assets. NAMS has prepared more sophisticated guidance for other public assets, such as water supply and roads. This guidance recognises that many public assets have long lives and assessing their condition regularly can be difficult, particularly as many are underground.
- 1.19 The National Infrastructure Unit (NIU) within the Treasury is responsible for taking a national overview of infrastructure priorities – providing cross-government co-ordination, planning and expertise.<sup>2</sup> The priorities and strategic direction for Infrastructure are set out in the National Infrastructure Plan, released in July 2011. Through the Plan, the Government is looking to deliver two outcomes – better utilisation of existing infrastructure and better allocation of new investment. Both outcomes work together and require effective asset management planning and practice that strongly links the management and performance of infrastructure assets to the services they provide.
- 1.20 A focus for the NIU is on developing a stronger evidence base of how infrastructure assets are performing and their fit for purpose to deliver on the Government’s priorities. A key programme of work targeted at the “Social infrastructure sector” is the Capital Asset Management (CAM) programme, designed to bring a particular focus to the way government agencies manage the portfolio of assets in their financial statements, and new capital investments, in line with the Government’s fiscal and service delivery objectives. The CAM regime operates in two related cycles – one oriented to managing existing asset portfolios

1 NAMS manuals include the *International Infrastructure Management Manual*, *Developing Levels of Service and Performance Measures Guidelines*, *Optimised Decision Making Guidelines*, *Infrastructure Asset Valuation and Depreciation Guidelines*, and the NAMS Property Manual. All are available at the NAMS website, [www.nams.org.nz](http://www.nams.org.nz).

2 See the National Infrastructure Unit website at [www.infrastructure.govt.nz](http://www.infrastructure.govt.nz).

and the other concerned with the value for money of the next tranche of capital investment proposals.

- 1.21 NAMS and the NIU are important in promoting an integrated approach to asset management in the public sector. Along with these groups, we have continued to encourage good management of public assets throughout the range of our audit work since the introduction of accrual accounting in the late 1980s. Our work spans the results of annual audits, audits of local authorities' long-term plans (since 2006), and performance audits of asset management both across sectors and in individual public entities.

## Part 2

# Public assets and the services that they support

2.1 In this Part, we summarise the information we collected about:

- the value of assets;
- the types of assets; and
- how assets are valued,

and we also classify the assets into the groups of services to which they contribute.

### The value of assets

2.2 We know that the public sector has assets valued at more than \$225 billion.<sup>3</sup> However, for the purpose of this paper, we collected information about the significant assets of more than 340 large public entities. Significant assets are those that are important to an entity in delivering its services. Appendix 1 shows the questions that we asked our auditors to use to collect information.

2.3 The entities we collected information about have significant assets with a total value of about \$214 billion, according to their financial statements. We refer to this amount as the carrying value of those assets.

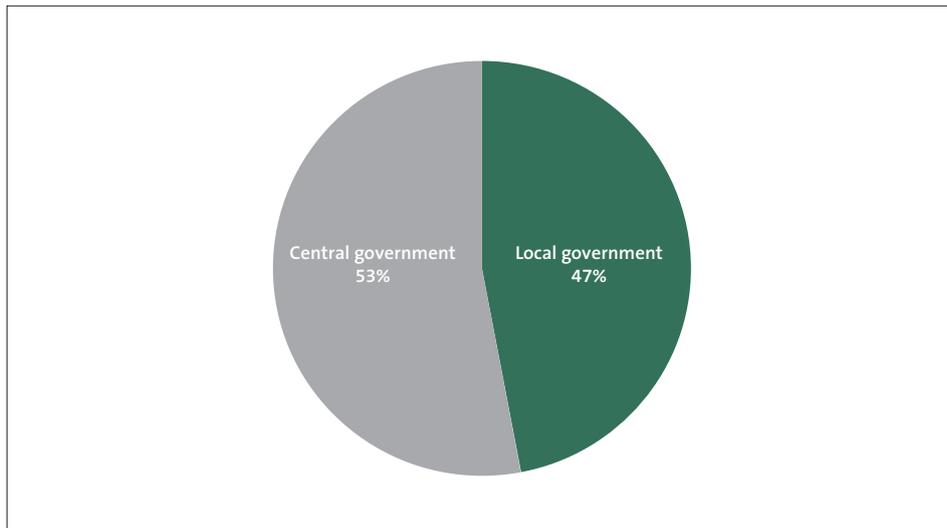
2.4 Appendix 2 shows the number and types of public entities for which we collected asset management information. It also shows the types of public entities excluded from our review because of their smaller size.

2.5 As Figure 1 shows, central government entities have 53% (about \$112 billion)<sup>4</sup> of these assets and local government entities have 47% (about \$102 billion).

3 The total of \$225 billion was identified in our recent paper *Insuring public assets*. The figures presented in this paper represent only those assets that we collected asset management information about.

4 This balance includes all assets of the central government entities received through the returns. This is greater than the total included in the Financial Statements of the Government as at 30 June 2012 which does not include the tertiary education institutes that are recognised on an equity basis under NZ IAS 27 and NZ IAS 28.

**Figure 1**  
Local and central government’s shares of public assets

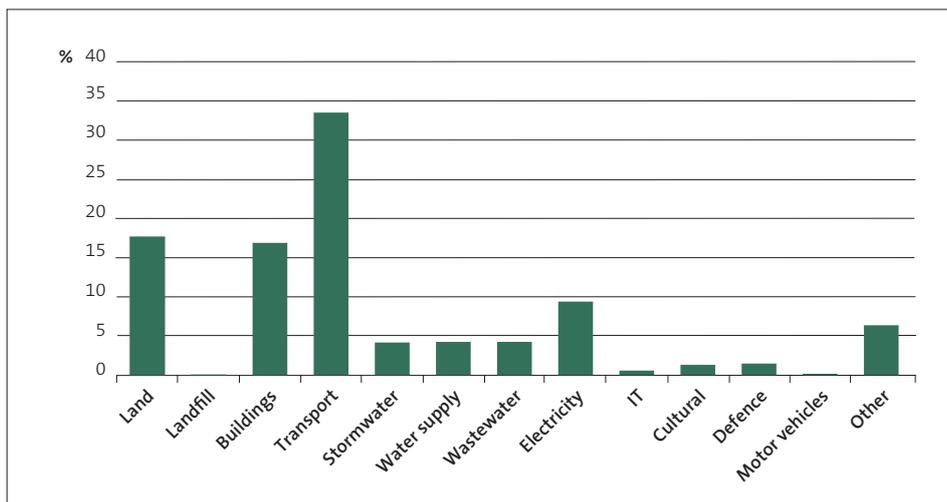


Note: See Appendix 2 for details of the entities we have included in central government and local government.

**The types of assets**

2.6 Figure 2 shows that about one-third of the assets are land and buildings, one-third are transport assets, and the remaining one-third are all other types of assets.

**Figure 2**  
Types of public assets, by value



Note: Landfill assets and motor vehicles are both less than 1% of the total assets.

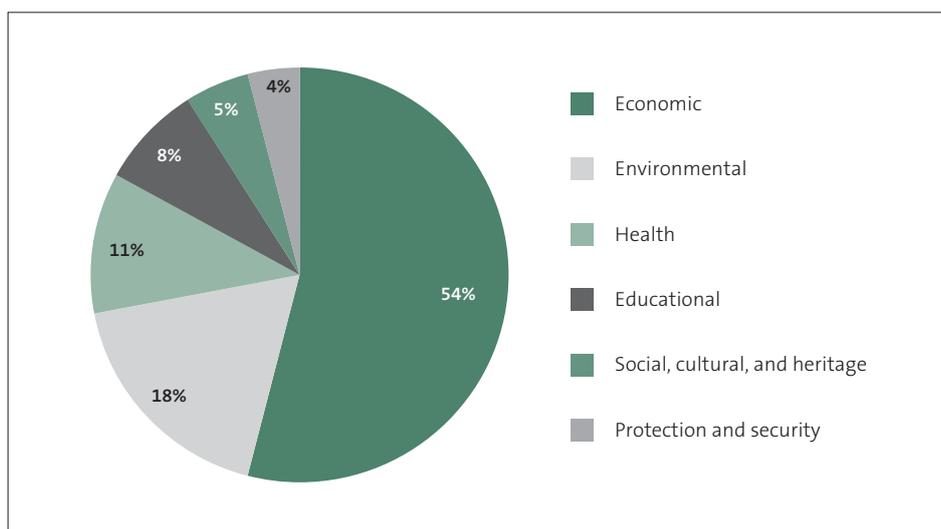
### How assets are valued

- 2.7 Financial reporting standards require assets to be initially measured at cost. After this initial measurement, there is a choice between:
- cost less accumulated depreciation; or
  - fair value.
- 2.8 The information that we collected shows that about 90% of the carrying value of the assets by value is measured using fair value.
- 2.9 The fair value of assets is calculated based on either market information or, where there is no market information, depreciated replacement cost. Most public assets are specialised in nature, which means that depreciated replacement cost is likely to be used to calculate their fair value.

### Classifying assets into groups of services

- 2.10 We have classified the assets of the large public entities into six groups based on the services those assets contribute to. The groups are:
- economic;
  - environmental;
  - health;
  - educational;
  - social, cultural, and heritage; and
  - protection and security.
- 2.11 An individual entity can hold assets that contribute to more than one group. As far as possible, we have included assets in the group to which their purpose most closely relates. For example, a local authority's assets may provide transport (economic group), water supply (health group), and sporting and cultural facilities (social, cultural, and heritage group).
- 2.12 Figure 3 shows the proportion of assets that we allocated to each group.

**Figure 3**  
Public assets grouped by the services they contribute to



Note: The percentages in Figure 3 are based on the carrying value of the \$214 billion of public assets for which we collected information.

### Economic assets

2.13 Economic assets are those that are important to the economic performance of communities and businesses.

2.14 This group of assets includes transport, electricity generation and distribution, information technology hardware, and other financial or economic assets. It also includes most of the assets of state-owned enterprises, port companies, and airports, as well as those of the Inland Revenue Department and the Ministry of Business, Innovation and Employment.

2.15 The economic group is the largest group, with more than \$114 billion of the assets, \$72 billion of which are transport assets, and \$20 billion of which are electricity generation and distribution assets.

### Environmental assets

2.16 Environmental assets include land (including conservation land), stormwater assets, flood protection assets, and landfills.

2.17 Environmental assets total more than \$39 billion.

### Health assets

2.18 Health assets include the assets of district health boards (DHBs) and their subsidiaries, as well as water supply and sewerage assets.

2.19 Although DHBs provide most health-related services, water and sewage schemes are fundamental to preventing disease in communities.

2.20 Health assets total about \$23 billion.

#### **Educational assets**

2.21 Educational assets contribute to knowledge and skills. This group of assets includes those that provide educational opportunities and advancement through research.

2.22 This group includes most of the assets of tertiary education institutions and Crown research institutes, as well as those of the Ministry of Education, the Tertiary Education Commission, the Education Review Office, and the New Zealand Qualifications Authority.

2.23 Educational assets total more than \$18 billion.

#### **Social, cultural, and heritage assets**

2.24 Social, cultural, and heritage assets include social services assets, such as the assets of the Ministry of Social Development, cultural and sporting facilities, and the assets of museums, art galleries, and libraries. Cultural and heritage assets can be difficult to value, and a number of entities that have such assets do not record them in their financial statements.

2.25 Social, cultural, and heritage assets total at least \$11 billion, more than \$7.5 billion of which are buildings, and more than \$2.5 billion of which are cultural assets.

#### **Protection and security assets**

2.26 The protection and security of New Zealand and New Zealanders is a core public service. The defence force, police, corrections, and fire and civil defence services contribute to our protection and security.

2.27 This group of assets includes most of the assets of the New Zealand Defence Force, the Department of Corrections, the Ministry of Justice, the New Zealand Fire Service Commission, and the New Zealand Police.<sup>5</sup>

2.28 Protection and security assets total more than \$8 billion.

<sup>5</sup> Protection and security assets do not include those of New Zealand Customs and the Ministry of Primary Industries, which are included in the Economic group because of their contribution to the economy.



## Part 3

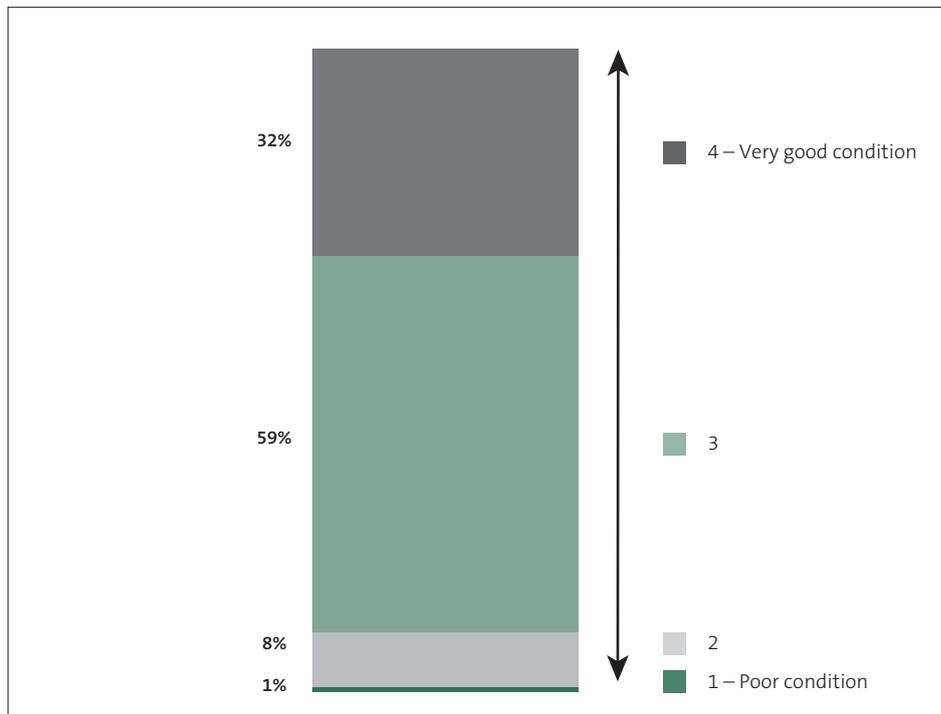
# The condition of assets

- 3.1 In this Part, we summarise the information we collected about
- the current condition of assets; and
  - how often the condition is assessed.

### Current condition of assets

- 3.2 Although we did not directly assess the condition of assets, the information we collected indicates that most assets are in good condition. On a scale of 1 to 4, the average condition rating was about 3.3.

**Figure 4**  
Condition of public assets



Note: Grade 1 was defined as poor condition and grade 4 as very good condition. Grades 2 and 3 were not defined.

- 3.3 Health and educational assets received the lowest ratings, each with an average rating of 3.1. These lower ratings are consistent with the results of recent work by us and others in the health and education sectors.

- 3.4 In 2011, we completed a high-level review of how DHBs manage assets<sup>6</sup> and found that, since 2009, when the Ministry of Health required DHBs to record their approach to asset management in asset management plans, most DHBs had not improved how they plan to manage assets.
- 3.5 We have followed up our findings with individual DHBs as part of our annual audits for 2011/12, and will continue to follow up with individual DHBs on aspects of their asset management planning that need to improve.<sup>7</sup>
- 3.6 We are carrying out a performance audit about regional service planning by DHBs. The audit considers whether regional service planning is informing capital investment and whether it is guided by high-quality information about future needs. We intend to present our report on this audit to Parliament later in 2013.
- 3.7 Asset management continues to be a priority for central government entities, including tertiary education institutions (TEIs), that own or manage substantial assets, mostly land and buildings.
- 3.8 In line with the Treasury's work on a CAM framework for the State sector, the Tertiary Education Commission (TEC) has been working collaboratively with TEIs to encourage stronger planning practices and to seek better information about TEIs' assets. As part of this work, the TEC has been creating a CAM Monitoring Framework for TEIs. This framework includes capital intentions reporting, management standards, independent reviews of asset management, and creating tools such as business case guidelines.
- 3.9 Because of the extent of the assets of TEIs and the service delivery capital investment taking place, asset management remains an audit focus. Although there is financial pressure on many TEIs, several TEIs plan new construction and campus developments.
- 3.10 Most capital development within TEIs has been focused on repairing and replacing assets, although there is a small but material amount of new construction, particularly in metropolitan centres. Campus growth and renewal is seen as necessary, not just to replace old facilities or provide for expansion, but also as a means to attract students from New Zealand and abroad.<sup>8</sup>

6 *Health sector: Results of the 2010/11 audits*, Part 4, pages 25-32.

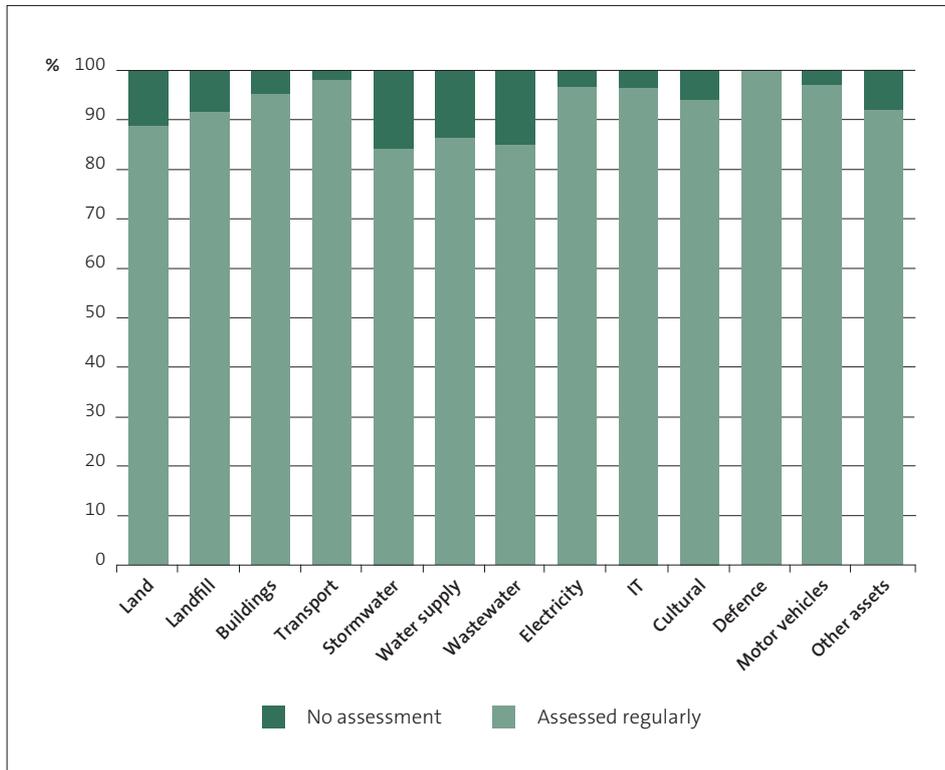
7 *Health sector: Results of the 2011/12 audits*, Part 3, page 35.

8 *Education sector: Results of the 2011 audits (Part 2)* "Capital asset management and expenditure".

### How often the condition of assets is assessed

3.11 The information we collected shows that assessments of the condition of assets are carried out regularly on 93% of assets by value. Figure 5 shows the percentage of assets with regular assessments, by type of asset.

**Figure 5**  
Percentage of assets with regular condition assessments, by type of asset



- 3.12 Land, stormwater, water supply, wastewater, and other assets make up most of the assets that are assessed less regularly. However, we know that it can be difficult to assess the condition of some of these assets, such as underground water pipes.
- 3.13 Difficult-to-assess assets are often inspected during reactive maintenance, rather than through a formal programme of regular sample assessments. This can be a cost-effective way to assess the condition of such assets.
- 3.14 Keeping asset management plans and asset condition information up to date is important for plans to be useful. Regular updating is usually the easiest way to keep information relevant and useful.

## Learning example: Greater Wellington Regional Council

- 3.15 One public entity faced with a challenge in updating condition information was Greater Wellington Regional Council (Greater Wellington), which recently acquired much of the train rolling stock and other assets previously owned by New Zealand Railways Corporation.
- 3.16 On acquisition of those assets, Greater Wellington had little or minimal information about their condition, which presented a challenge to its ability to manage the assets. There were a number of risks and difficulties that Greater Wellington had to overcome.
- 3.17 We set out as an example how Greater Wellington approached this issue and some of the lessons learned.

### Condition assessments are important

Public transport is vital to Wellington's Regional Land Transport Strategy. It helps people travel safely, easily, and efficiently throughout the region, while providing good access to properties, businesses, and other destinations. Greater Wellington provides public transport services (train, bus, and harbour ferry services) to reduce congestion and to help meet the needs of those without private transport, and considers this to be an essential service for the public good.

Every year, more than 11.3 million passengers travel on the Wellington commuter rail network.\* It is therefore very important to manage and maintain the network effectively.

In July 2011, Greater Wellington agreed with the Government, KiwiRail, and the New Zealand Transport Agency to complete the rebuilding of Wellington's commuter rail network and transfer the ownership of the entire network, including trains and stations,† to Greater Wellington. Taking ownership of those assets gave Greater Wellington a better understanding of them than when it was paying for their use but the assets were owned by other public entities.

To effectively plan and manage the maintenance, refurbishment, and replacement of assets over their lifetime requires a good understanding of their current condition. Over time, the condition information tells an important story about the assets and helps create efficiencies though highlighting areas of strength and weakness throughout a network. The rolling stock (trains) is often an area of focus. However, the railway stations are equally important in providing a safe service.

Taking ownership of more than 40 railway stations presented Greater Wellington with a challenge. Without current or historical information about their condition, effective planning was not possible. Unlike new assets, the conditions varied greatly from recently refurbished or near-new stations to those that were old with little maintenance done on them for years.

Greater Wellington engaged a contractor to assess the condition of the stations. This created an opportunity for the asset planners to shape the type of asset information they required for planning, and they sought information about the individual components of the stations.

\* Based on the demand figures between 2006 and 2010. Figure taken from the Greater Wellington Public Transport Asset Management Plan, 29 November 2012.

† Excluding Wellington Railway Station.

Consistency and comparability are critical when assessing condition on this scale. The assessments were all made in line with the NAMS Property Manual (2006) and graded the condition of the assets.

There is now information about each of the individual parts of the stations, including their structure, electrical and other service assets, platforms, and accessways. There is also information about any safety maintenance required.

Greater Wellington is now in an improved position for planning. Incorporating this information in its asset management plans has allowed better prioritising of urgent maintenance and resulted in greater efficiency through better timing of work on the assets.

Its model for prioritisation is simple: Do the most important work first. Individual stations receive a composite rating based on the condition of the individual components. These ratings incorporate factors such as patronage, functionality, deterioration, and safety, to give a weighted average for the station as a whole. Taking this information, Greater Wellington uses these ratings to rank the work required, and starts with the highest urgency ranking.

When combining this model for prioritisation with the budget, asset managers and any other decision-makers are able to reassess priorities quickly. If faced with budget restraints, the lower priority items are deferred or, if a project is no longer required or delayed, funding can be reallocated to the next priority so the maximum amount of work is completed each year.

Keeping the rail network running is critical, and minimising the downtime caused by maintenance and renewals work is important. With the improved information, Greater Wellington now takes advantage of other service downtimes to complete maintenance, which means fewer interruptions to services.

Greater Wellington considers that the benefits of having the condition information outweigh the costs and time involved to collect it and keep it up to date. It has helped to improve asset planning for a significant service. Greater Wellington encourages others to work towards having this type of information and offers some tips from its experience.

Some of the lessons that Greater Wellington learned were:

- **Efforts cannot be effectively prioritised if assets are not understood.**

When faced with budget restraints, condition assessments are often deferred to make way for other maintenance and renewals work. However, the costs of completing assessments are unlikely to be significant when compared to the assets' maintenance budget and the risks of not knowing the condition.

- **Do not underestimate the time it will take to complete condition assessments.**

Completing condition assessments for all assets at once could take months. The best way to avoid a large task is to update condition assessments regularly. Timing this with maintenance work is one way to reduce the costs involved.

- **Information is crucial to the planning process.**

Do not underestimate the value of good asset condition information and how it can help to maintain and renew assets more effectively and efficiently.

- **Understand the assessment methodology and make sure that the data is usable.**

Being able to integrate asset condition information into existing financial models and planning processes is critical for making sure that the most value is gained from the information. Changes in approach can lead to different results, so it is important to ensure that there is consistency between asset management systems and processes and the asset condition assessments.



## Part 4

# Maintaining and renewing public assets

- 4.1 In this Part, we summarise the information we collected about:
- whether public entities have plans for maintaining and renewing their assets;
  - how well those plans are followed; and
  - whether public entities know the extent of deferred maintenance and renewals.
- 4.2 Managing public assets for their full life cycle requires well-integrated planning, good underlying data about assets and the services that they provide or support, and good systems. The condition of assets must be managed effectively for the assets to continue delivering services. Long-term deferring of asset maintenance and renewals can lead to more breakdowns and service disruption, substandard services, and, in the end, failure of services.

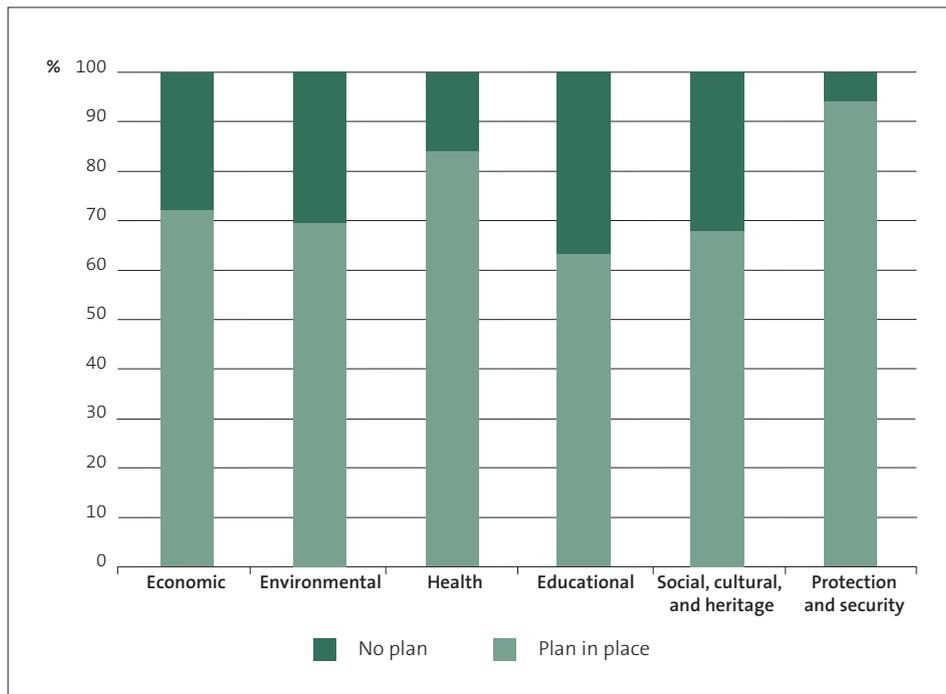
### Entities' plans for maintaining and renewing assets

- 4.3 The information we collected shows that entities have documented maintenance and renewal profiles in place for 75% of assets. Educational assets,<sup>9</sup> social, cultural, and heritage assets, and environmental assets were least likely to have a plan in place.<sup>10</sup>
- 4.4 Figure 6 shows, for each group of assets, the percentage of assets with plans in place for maintenance and renewal.

<sup>9</sup> Educational assets do not include schools individually. Information for schools was collected as part of our audit of the Ministry of Education. This category also includes TEIs, Crown research institutes, and other central government entities responsible for co-ordination of the education sector.

<sup>10</sup> In this paper, we use the term “plans” to describe the profiles of asset maintenance and renewals that we obtained information about.

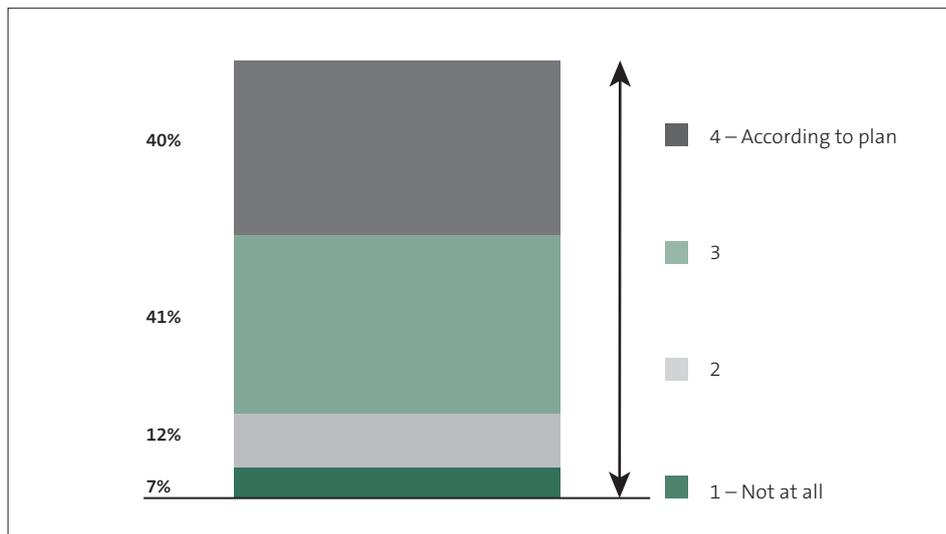
**Figure 6**  
Maintenance and renewal profiles, by service group



**How well entities follow their planned approach**

4.5 Based on the information we collected, maintenance and renewal plans are being followed for about 40% of assets, and those plans influenced the work carried out to some extent for a further 53% (see Figure 7). For the remaining assets, management did not follow their plans at all, or did not have a maintenance and renewal plan in place.

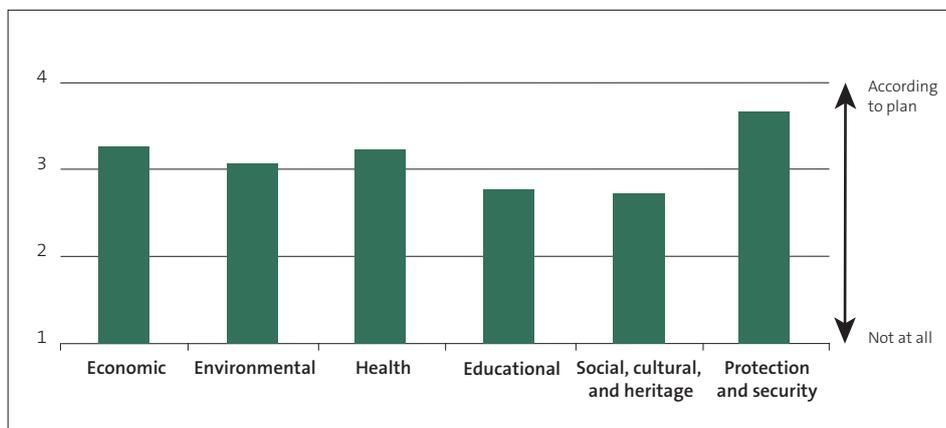
**Figure 7**  
How well maintenance and renewal plans are followed



Note: Those following their plans to some extent are rated as grades 2 and 3.

4.6 Figure 8 shows how well each group follows their maintenance and renewal plans. The plans for social, cultural, and heritage assets and educational assets were the least likely to be followed as set out.

**Figure 8**  
How well maintenance and renewal plans are followed, by service group

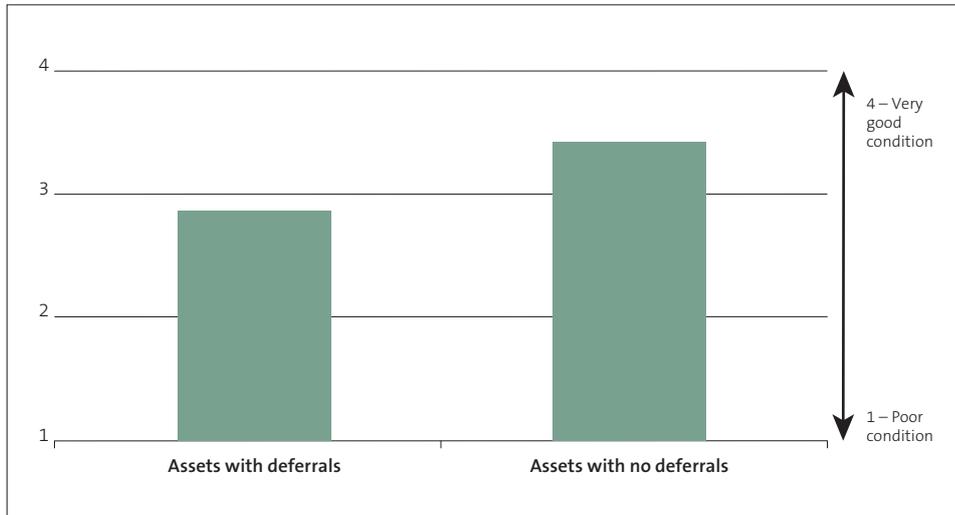


Note: These averages were calculated based on the responses on a scale of 1 to 4, with 1 specified as “Not at all” and 4 specified as “According to plan”. Grades 2 and 3 were not specified.

### Many public entities do not know the value of what has been deferred

- 4.7 We asked whether there was any deferred maintenance and renewals and, if so, to provide the estimated value. The information collected showed that nearly 45% of asset types have no deferred maintenance or renewals, suggesting that those public entities are managing their assets appropriately to meet service requirements. However, for about the same proportion of asset types, entities did not know the value of the deferred maintenance.
- 4.8 While we did not define deferred maintenance and renewals, we expect that entities would know if there had been deferrals, and the value, because they may affect the ability for assets to deliver services. The risks of deferrals cannot be managed if what has been deferred is unknown.
- 4.9 We compared the condition ratings of all assets. Figure 9 shows that assets for which there are deferred maintenance and renewals (both of known value and where there are deferrals but the value is unknown) have a lower condition rating than assets for which there are no deferrals.

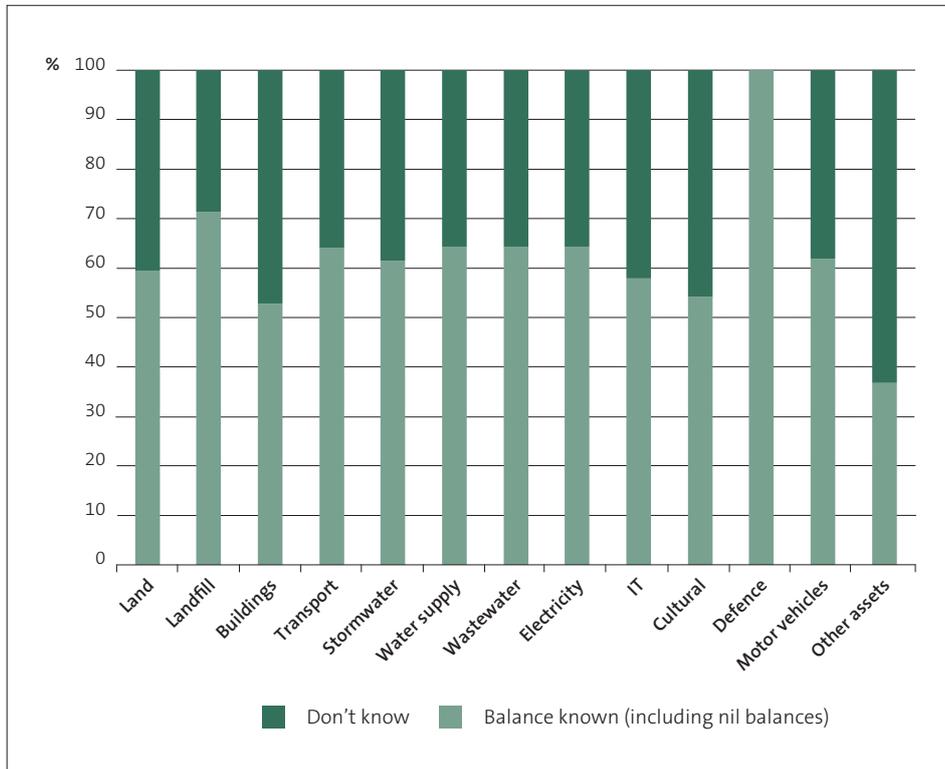
**Figure 9**  
The effect of deferrals on average condition



Note: Grade 1 was defined as “Poor condition” and grade 4 as “Very good condition”. Grades 2 and 3 were not defined.

4.10 Figure 10 shows the percentage where entities did not know their deferrals by type of asset. Buildings and cultural assets<sup>11</sup> are the asset types that are least likely to have a quantified deferrals balance. Most public entities have buildings and we expect that the value of deferrals should be known for this type of asset.

**Figure 10**  
“Don’t know” responses about deferred maintenance and renewals



4.11 For those assets with deferrals, understanding the value of what has been deferred is important for assessing the risk of an effect on services. We were told that, for about 10% of asset types, entities knew the value of what was deferred. The service groups with most deferrals were educational and health.

4.12 Although the value of deferrals is less than 1% of the carrying value of the total assets, funding to reduce this amount could cause strains on budgets. We do not have enough information to understand over what period the value has been accumulated or whether this has affected services.

9 This excludes other miscellaneous assets identified by auditors.

## Learning example: Ruapehu District Council

- 4.13 Deferring expenditure has become a part of business for many entities, particularly those feeling tight budgetary restraints. Local authorities in rural areas are regularly faced with tough decisions about maintaining networks of assets as populations decline. Not all assets – for example, water supply assets – can be easily relocated or used for a different purpose. When budget restraints are necessary, consideration is often given to deferring maintenance and renewals.
- 4.14 Ruapehu District has a large land area with a number of small asset networks that service rural townships. We set out as an example how Ruapehu District Council is looking at the challenge of maintaining these smaller networks and some of the work it is doing to address the consequences of its decisions.

### Understanding deferrals is important for planning

Ruapehu is one of New Zealand's largest districts by area and has a small and dispersed population. The district covers 6700 square kilometres and has a usual resident population of only about 13,500. The environment is largely of high quality, with little heavy industry or dense residential developments.

Although this makes the area an attractive tourist location, Ruapehu District Council faces the challenge of meeting current and future service expectations of residents and tourists within its ability to fund services affordably.

Smaller townships in the district have water supply, stormwater, and wastewater systems that must be maintained to meet the needs of residents and also have the capacity to meet the high demand of peak tourist seasons. In these situations, asset failure could result in a significant health risk and an effect on the tourism reputation.

Raetihi (population 1035 in 2006) is a small rural township servicing farming, market gardening, and forestry, located about 11 kilometres west of Ohakune. The wastewater network in Raetihi provides collection and treatment of the wastewater generated from connected properties. While the network consists of only 12.3 kilometres of main pipes, most of the network infrastructure was built between 1970 and 1979, and some was built before the 1950s.

Underground assets present their own challenges in assessing condition, and obtaining reliable data is often costly. Without digging up these assets, there will always be an element of uncertainty, which can influence how well asset maintenance can be planned. Although asset management plans and infrastructure databases are in place and managed actively, "We only know what we know" and much of the previous information was unreliable.

With a small population, sustainably funding the maintenance and renewal work required can be difficult. This forces the Council to prioritise and consider options carefully. It is also important to consider other factors, such as the potential effect of housing prices in Ohakune, which might force people to seek accommodation further afield. With Raetihi being less than 15 minutes' drive away, there is potential for increased peak demand and an effect on the services required in that area.

Careful consideration of decisions is needed to address maintenance and renewals. Some solutions may have negative effects that mean they would be unsuitable. Downsizing pipes in some areas would be short-sighted, and onsite wastewater disposal could have wider effects on the soil and groundwater quality.

The Council had focused on debt reduction by limiting capital spending with some positive results. However, deferred infrastructure expenditure was driving maintenance up and resulted in the network being overloaded, resulting in overflows at the wastewater pump stations and bottlenecks in parts of the network. In 2007, overflows were common and the Council was forced to act.

Asset infrastructure renewal was essential in Raetihi, as the system was running near its maximum, verging on overflow for even medium rain events. The question is often not whether it is required, but where to start and how to pay for it. There are many options for infrastructure maintenance and upgrade, so involving wastewater operators was seen as key for the Council.

In 2008, the worst places in the system where stormwater was entering the pipes and causing overflows were identified. Using closed-circuit television surveys and condition assessments of each of the mains allowed them to be ranked and an assessment to be made of what the best treatment was for each line. Using this information, the Council was able to prioritise works and their budgets. When resources are limited, it is important to consider the effect that decisions may have on rates today and in the future.

Using technology meant a better understanding of what work was required and the effect of deferrals. Significant expenditure on some sections could be deferred by relining sections of pipe. For the Council, this proved to be a more cost-effective solution and allowed it to complete work on larger sections of the pipes.

In towns like Raetihi, where the main sewer line averages 2.5 metres deep, the cost of digging up pipes increases significantly, and choosing an option to reline the pipes helped the Council to minimise the interruption to the community's services.

After this work, infiltration and inflow no longer overwhelm the network. Medium rain no longer has a significant effect on the pump station, and being able to manage heavy rain reduces the need for reactive maintenance. It has now been two years since the wastewater pump station in Raetihi overflowed.

In 2015, the Wastewater Treatment Plant resource consent will expire and upgrading will be required to meet regional requirements. For Ruapehu, this will require a significant upgrade. However, it is important to ensure that the network is as effective and efficient as it can be before considering the treatment requirements.

To help with this process, the Council has changed how it assesses the condition of assets. Previously, the Council assessed condition every three years, taking a sample across the infrastructure. Now, by including these condition assessments in maintenance contracts, the Council knows that it is combining this with other data collection, such as closed-circuit television images, and will have better information to help form plans.

Knowing what is deferred and the risk to services is important in making good decisions. Balancing funding with required work will always be challenging for organisations like the Council. The Council encourages others to ensure that they record deferrals clearly. Some lessons learned along the way are:

- **Entities are unlikely to be able to afford to fix everything, but, as a minimum, entities must know what needs to be done.**

Knowing what maintenance is required and deferred is important. There are many reasons why it might not be possible to afford everything, but making good decisions requires knowing what is being deferred.

- **Understand the risks to services.**

All deferrals lead to a risk that services may be affected. Understanding such risks is key to prioritising work effectively. Effective decision-making considers these risks and ensures that prioritisation is appropriate.

- **Finding the balance between funding and required maintenance is challenging.**

While the balance may move from time to time, it is essential for entities to find the appropriate balance between budgets and the maintenance and renewals that are required.

## Part 5

# Asset condition information and reporting to decision-makers

- 5.1 In this Part, we discuss:
- how much information public entities hold about the condition of assets;
  - the information needs of decision-makers; and
  - how often entities report asset condition to decision-makers.
- 5.2 Regular reporting about asset condition to decision-makers ensures that they have the information required to make good decisions and that they are able to effectively manage the associated risks.

### Information for decision-makers

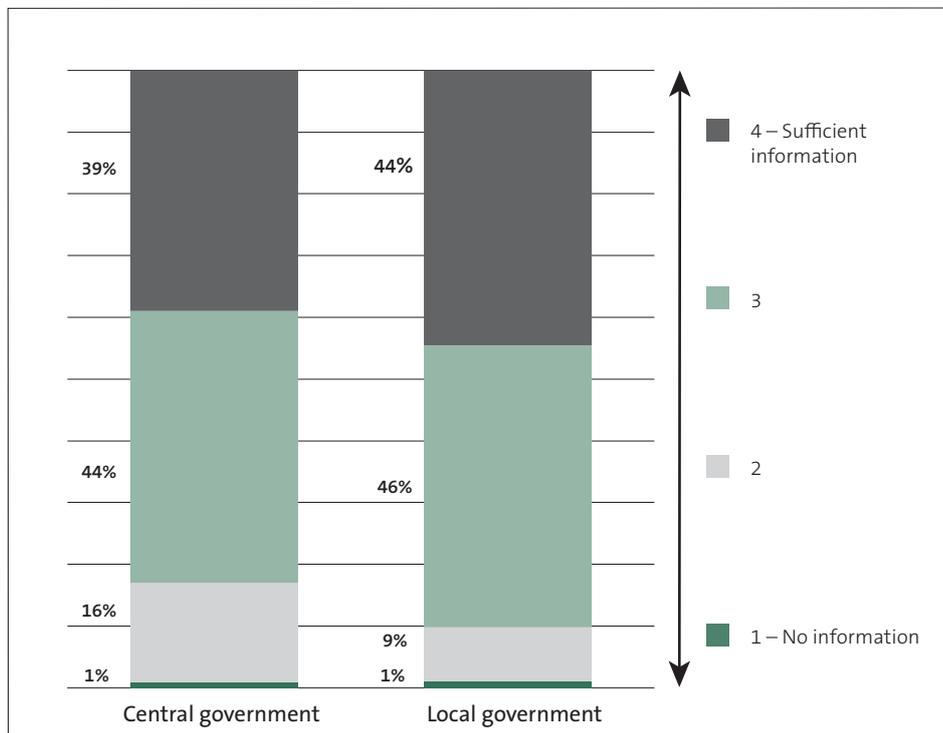
- 5.3 International research and our experience tell us that assets are managed best when an appropriate integrated approach is taken, involving asset managers, engineers, valuers, planners, corporate finance staff, and strategic decision-makers. This ensures that the right people contribute information to the process.
- 5.4 The information provided must be in an understandable form, and received by decision-makers in a timely manner, to be of benefit. The information we obtained showed that overall reporting to decision-makers needs to be improved, as most decision-makers are not receiving information regularly. We expect that decision-makers should receive regular information on risks, expenditure (actual and budgeted), and performance indicators.

### Available asset information

- 5.5 Good asset management relies on good information. Asset information can take many forms, from comprehensive asset management plans outlining future requirements for maintenance, renewal and enhancement, and recording services to more simple information.
- 5.6 We asked how much asset information each public entity records to ensure that assets are in a condition that supports continuing to provide services.
- 5.7 Our analysis of the information collected showed that local government entities have more asset condition information than central government entities, which suggests that there may be room for improvement in the information held by the central government entities. Local authorities having more asset condition information may be a result of the planning requirements that have developed in the last 20 years, such as financial prudence and long-term plans.

- 5.8 Figure 11 shows the average level of asset condition information available in local and central government.
- 5.9 Energy companies and state-owned enterprises are the entity types with the most information available. Crown research institutes and tertiary education institutions have the least.

**Figure 11**  
**How much information is held to ensure that all assets that provide services are kept in a condition that supports the continuing delivery of services**

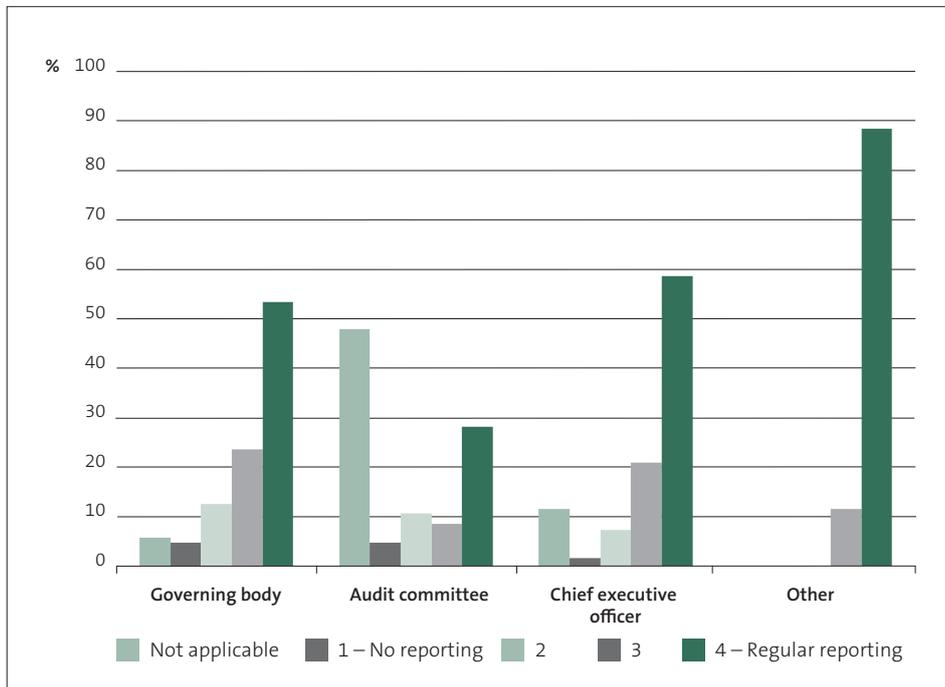


**Regularity of asset condition reporting**

- 5.10 On average, less than 60% of local government and 40% of central government decision-makers were receiving regular asset condition information. For some, more often in central government, asset conditions were reported rarely or not at all.

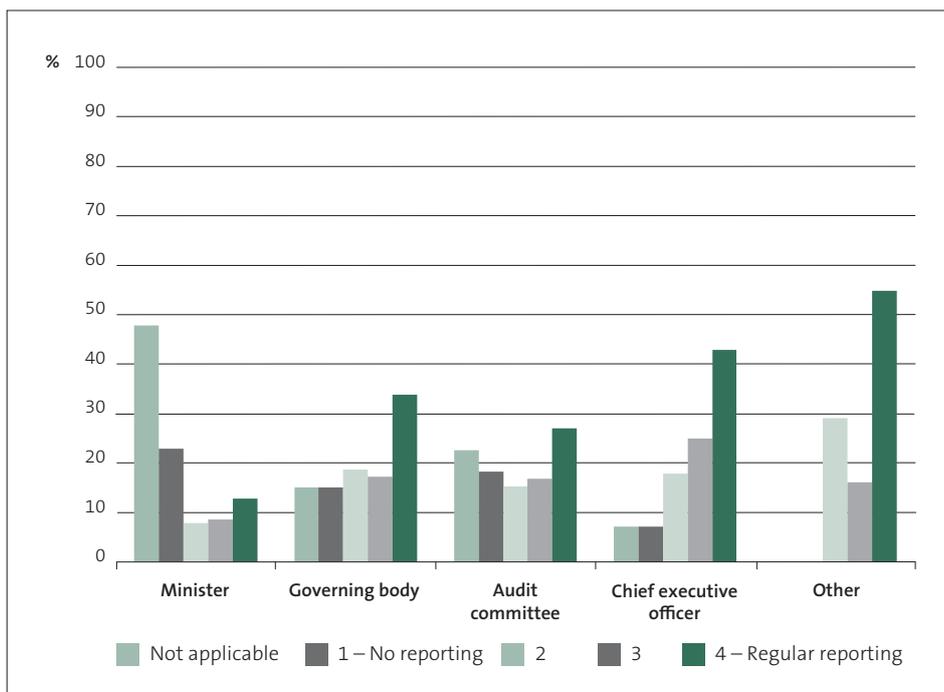
- 5.11 Audit committees can also play a role in the risk management of organisations, but only about 30% of audit committees received regular asset condition information.
- 5.12 Figure 12 shows the frequency of condition reporting to decision-makers in local government and Figure 13 shows the frequency of condition reporting to decision-makers in central government.

**Figure 12**  
Frequency of condition reporting to local government decision-makers



Note: Types of decision-makers specified in the “Other” category include general managers, asset managers, other senior managers, and other public entities.

**Figure 13**  
**Frequency of condition reporting to central government decision-makers**



Note: Types of decision-makers specified in the “Other” category include general managers, asset managers, other senior managers, and other public entities.

### Learning example: Orion New Zealand Limited

- 5.13 The effects of making decisions poorly are not always immediate. Making the best decisions is not always easy and requires asset managers and decision-makers to work together, so that the right people have the right information at the right time.
- 5.14 By considering all options against each other, decision-makers can compare the options using consistent standards. Through identifying potential benefits, costs, and risks associated with each, they can achieve greater value for money.
- 5.15 Applying a consistent framework of factors across services allows better prioritising and helps decision-makers to identify ways to improve or potential efficiencies that might otherwise have been overlooked.
- 5.16 As an example, we set out how Orion New Zealand Limited (Orion)<sup>12</sup> managers reach decisions and what they consider when replacing assets.

12 Orion New Zealand Limited is owned by Christchurch City Council (89%) and Selwyn District Council (11%).

### Information is needed for making decisions

Orion owns and operates one of the largest electricity distribution networks in New Zealand and is responsible for 8000 square kilometres of diverse geography covering central Canterbury between the Waimakariri and Rakaia rivers, and from the coast to Arthur's Pass, including Christchurch, towns, farming communities, and high country areas.

Managing a network of this size has its challenges. Orion has about 190,000 consumer connections and more than 320 major business consumers. Those customers rely on more than 6700 kilometres of overhead power lines, more than 8000 kilometres of underground cables, and more than 10,500 distribution substations to provide the services that they need.

Electricity distribution owners are required to prepare asset management plans every year.\* The asset management plans are public documents, and Orion's asset management plan contains information on how circuit breakers (along with many other types of assets) are managed over their life cycle. In most asset systems, there are individual assets that are vital to the overall functions. In the electricity network, circuit breakers are vital to the safe operation of the network, and it is important that these assets are always operational.

Circuit breakers provide for safe interruption of power (for example, when there is a fault or if the system is overloaded). The placement of circuit breakers in the system is crucial because they protect other assets such as overhead lines, underground cables, and transformers. Orion's network has more than 2000 circuit breakers. In older circuit breakers, oil or gas is used to control large variations in current that create an arc between the contacts. The oil or gas interrupts the power flow and prevents damage to other assets. However, as with most assets, technology has evolved and new equivalents, such as vacuum techniques, are now available.

Replacing more than 2000 circuit breakers is a big task. The annual replacement programme for circuit breakers is approved by Orion's Board as part of the overall asset replacement budget. Decisions about replacing individual circuit breakers are made collectively by a team that includes the infrastructure life cycle manager, network asset manager, technical support manager, operations manager, and a strategic planner.

Ensuring that good asset information is available to inform decisions is critical. In 2011, Orion hired a firm to build a condition-based risk management model for high-voltage circuit breakers.

The model uses asset information, engineering knowledge, and experience to define, justify, and target the renewal of assets. The model calculates the "health index" and probability of failure of each circuit breaker.

This is effectively giving each circuit breaker a ranking, which is then used to prepare the replacement strategy. While the results have shown that the overall condition of the circuit breakers is very good, it is the process of acquiring the information and making those decisions that benefits Orion most.

The model provides Orion's asset managers with good information about specific circuit breakers and when they should be replaced. This information includes details of:

- safety;
- performance;
- condition;
- importance and location;
- maintenance issues;
- logistical support;
- working environment and physical constraints; and
- age.

\* Plans are required in line with the Electricity Distribution Information Disclosure Determination 2012. Orion has published its latest asset management plan for the 10-year period 1 April 2013 to 31 March 2023.

Safety issues are given top priority to ensure protection of the public, employees, and contractors. Circuit breakers that are critical for large parts of the network are also important.

Orion has recognised the importance of vital assets in the system and schedules its inspections and maintenance in line with this. Orion carries out maintenance inspections at intervals of between two and 24 months, depending on the importance of the type of circuit breaker.

By tailoring its approach to the assets with the greatest effect on the network, Orion has been able to make more focused decisions about replacement and maintenance of circuit breakers. The condition model gives a profile of the assets, which has meant that decisions are based on several factors. By applying these factors and using decision-makers from a cross-section of disciplines, Orion has been able to arrive more efficiently at the best replacement decisions for the assets.

Some of the lessons that can be learned from this are:

- **Information is needed to make decisions.**

Making the right decision about which assets to replace or maintain is important. Poor decisions can affect services and risk damaging other assets in the network.

- **Identify vital assets in the system.**

Understanding which assets have a significant effect on services is important. By focusing more on those assets, better decisions can be made about prioritising replacement and maintenance expenditure.

- **The benefits of information affect the business in more than one way.**

Collecting the information on assets helps inform decisions. While Orion found that the overall condition of its circuit breakers was good, it was the process of acquiring the information and making the decisions that provided the most benefit.

# Appendix 1

## Questions that we asked our auditors

To gather information about how public entities manage significant assets, we prepared a questionnaire that was completed for most entities that have more than \$2 million of assets. We defined “significant” assets as those assets important to the entity’s delivery of services. Assets that are “significant” to one entity may not be “significant” to another entity.

The questionnaire sought the following information:

1. Name of the entity.
2. What is the carrying value of property, plant, and equipment as at the 2012 balance date?
3. What are the significant assets for delivering services and their value and valuation method?
  - Land (including parks and reserves)
  - Landfill
  - Buildings
  - Transport infrastructure (including road, rail, ports, and airports)
  - Stormwater and flood protection systems
  - Water supply systems
  - Wastewater and sewerage systems
  - Electricity generation and distribution systems
  - IT and other specialist equipment
  - Cultural and heritage collections
  - Specialist defence assets
  - Motor vehicles
  - Other
4. How much information does the entity have to ensure that all significant assets are kept in a condition that supports ongoing delivery of services?
  - Rated on a scale of 1 to 4 where 1 is “no information” and 4 is “sufficient information for all significant assets”
5. Does the entity have maintenance and/or renewal profiles documented for significant assets?
  - Yes or No
6. To what extent does the entity carry out planned maintenance and/or renewal of significant assets?
  - Rated on a scale of 1 to 4 where 1 is “not at all” and 4 is “according to plan”

7. What is the value of deferred maintenance and/or renewals for significant assets?
  - Responses were required to state either a balance (including nil) or “Don’t know”.
8. What is the condition of the significant assets?
  - Rated on a scale where 1 is poor condition and 4 is very good condition.
9. Does the entity physically check the condition of its significant assets regularly?
  - Yes or No
10. What level of reporting do the following decision-makers receive about the condition of their entity’s significant assets?
  - Rated on a scale of 1 to 4 where 1 is “no reporting” and 4 is “regular reporting” with an option to select “not applicable”.
  - Options included the Minister, the governing body, the audit committee, the chief executive officer, and the opportunity to specify other decision-makers.
11. Are there any features of the entity’s asset management that could make it suitable for a case study?

## Appendix 2

# The number and types of public entities that we collected information about asset management from

We asked our auditors to provide us with asset information about public entities that have assets valued at more than \$2 million, chosen because of their large asset holdings and to represent public assets as a whole.

The entities that we received information about are listed below. Subsidiary public entities with significant assets have been included.

		Number of public entities
Central government	Government departments	28
	Crown entities – tertiary education institutions	31
	Crown entities – Crown research institutes	8
	Crown entities – district health boards	22
	Other Crown entities	22
	State-owned enterprises	18
	Other central government entities	12
Local government	Local authorities	77
	Council-controlled organisations	51
	Airports	12
	Ports	15
	Electricity lines businesses	24
	Other local government entities	14

We did not collect information from the following types of public entities because they are relatively small and own no significant assets:

Excluded entities	Administering bodies and boards
	Cemetery trustees
	Fish and game councils
	Māori trust boards
	Licensing and community trusts
	Rural Education Activities Programmes
	Schools (but school assets are included with the Ministry of Education's assets)



# Publications by the Auditor-General

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

- Insuring public assets
- Evolving approach to combating child obesity
- Public sector financial sustainability
- Education for Māori: Implementing *Ka Hikitia – Managing for success*
- Statement of Intent 2013–2016
- Central government: Results of the 2011/12 audits
- Health sector: Results of the 2011/12 audits
- Transport sector: Results of the 2011/12 audits
- Local government: Results of the 2011/12 audits
- Crown Research Institutes: Results of the 2011/12 audits
- Inquiry into decision by Hon Shane Jones to grant citizenship to Mr Yang Liu
- Ministry for Primary Industries: Preparing for and responding to biosecurity incursions
- Inquiry into the Government's decision to negotiate with SkyCity Entertainment Group Limited for an international convention centre
- New Zealand Police: Enforcing drink-driving laws
- New Zealand Defence Force: The civilianisation project
- Effectiveness and efficiency: Stories from the public sector
- Department of Conservation: Prioritising and partnering to manage biodiversity

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