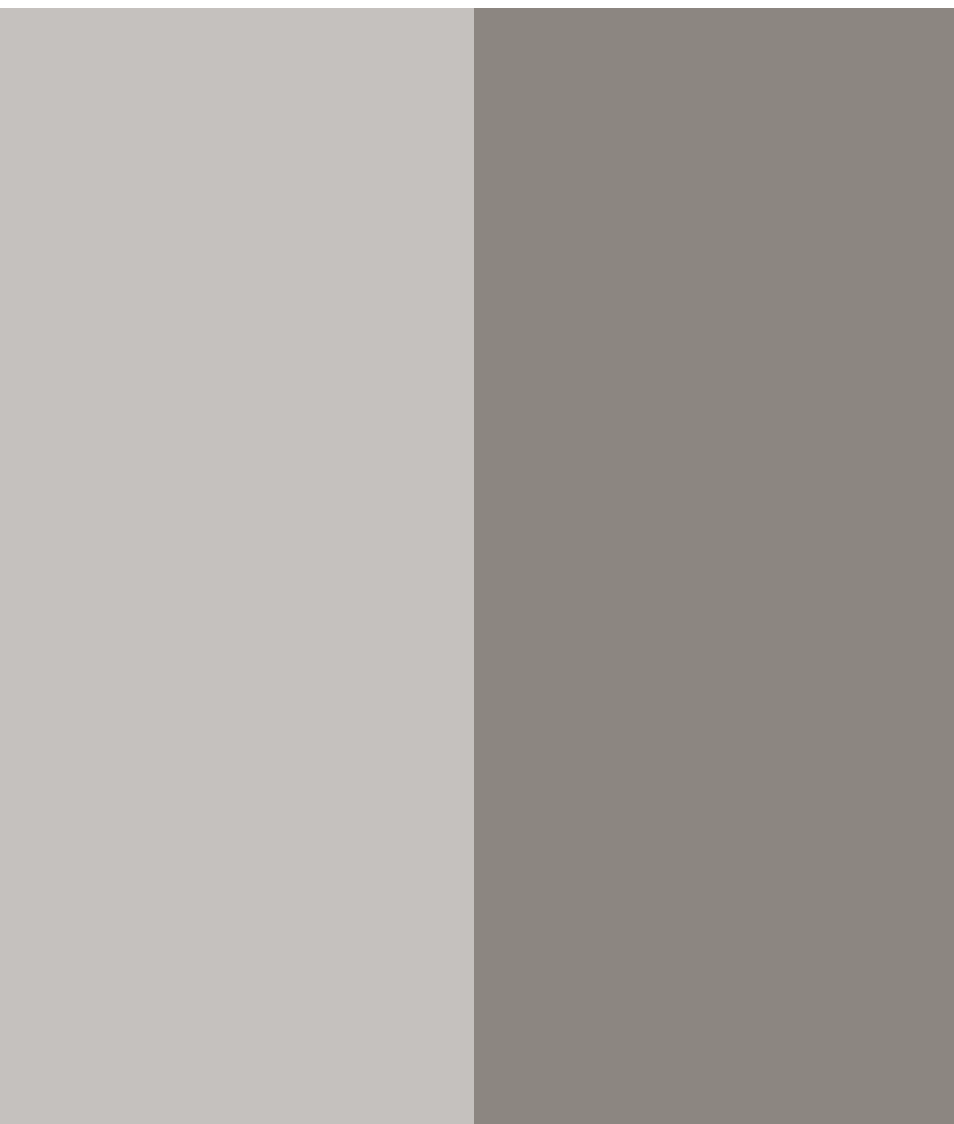




B.29[18p]

## Managing stormwater systems to reduce the risk of flooding





# Managing stormwater systems to reduce the risk of flooding

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

December 2018

ISBN 978-0-478-44299-1

# Contents

Auditor-General's overview	3
Our recommendations	5
Questions to consider	6
For councils	6
For the community	6
Part 1 – Introduction	7
Managing flood risks	7
What we audited	9
What we did not audit	11
How we carried out our audit	11
Structure of this report	12
Part 2 – Better understanding of flood risk is needed	13
Incomplete assessment of flood risk	13
Information about climate change and land use change is needed to understand flood risk	15
Part 3 – Setting well-informed levels of service	18
Better information needs to be provided to councillors when setting the levels of service	18
The community cannot provide informed feedback	20
Part 4 – Better understanding of stormwater systems is needed	23
Better asset information is needed	23
Incomplete understanding of the capacity of the stormwater system	24
Lack of meaningful performance measures	25
Councils need enough information to ensure well-informed decisions	27
Part 5 – Better management of stormwater systems is needed	29
Councils are improving their asset management planning and practices, with further improvement needed	29
Councils need to effectively maintain their stormwater systems	30
Better information would help councils prioritise funding for their most important assets	31
Councils need to improve their delivery of planned capital spending	34
Councils need to work effectively with others	37
Figures	
1 – Illustration of the stormwater system	8
2 – Location of the three councils we looked at	10
3 – The mandatory performance measures for managing stormwater	25
4 – Changes in councils' planned capital spending on stormwater infrastructure for 2019-25 in their 2018-28 long-term plans, compared with their 2015-25 long-term plans	32
5 – Forecast renewal and replacement capital expenditure compared with depreciation for stormwater assets, 2018/19-2027/28	33
6 – Councils' actual capital spending on stormwater infrastructure compared with planned spending, 2014/15 to 2016/17	35
7 – Actual capital spending on stormwater infrastructure as a percentage of planned spending, by council, 2014/15 to 2016/17	36
8 – Illustration of the different roles and responsibilities for the stormwater system	38

# Auditor-General's overview

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

Flooding is New Zealand's most frequent natural hazard. It can have significant social, environmental, and economic implications when it is not managed well.

I am interested in stormwater management because of its role in protecting New Zealanders and their homes from flooding. People need to know that their council is managing the risk of flooding appropriately. They should also be involved in decisions about how to reduce the risk of flooding, and by how much.

According to the Insurance Council of New Zealand, severe weather and floods resulted in about \$260 million worth of claims in 2017/18. Climate change and urbanisation are expected to increase the risk of flooding.

We looked at how Dunedin City Council, Porirua City Council, and Thames-Coromandel District Council (the three councils) managed their stormwater systems to protect people and their property from the effects of flooding.

## Main findings

To date, the three councils have had an incomplete understanding of the flood risk in their districts. Much of their assessment of flood risk has been based on information collected after a flood. This reactive approach risks councils focusing on reducing the effects of the most recent flood, rather than considering all possible flooding events and their effects. It also means that they cannot forecast accurately, and risk being poorly prepared for unanticipated events.

The three councils have gaps in their understanding of the current state of their stormwater systems. These gaps limit their ability to make well-informed and deliberate decisions about how to manage those systems. This means that the councils are unlikely to have had informed conversations with their communities about the potential risk of flooding and the cost of reducing that risk.

Councils are planning to continue spending less than depreciation on renewing stormwater assets, which might indicate that they are under-investing in maintaining those assets. If nothing changes, the under-investment will increase the risk of stormwater systems being unable to cope with rainfall that results in flooding.

The three councils were already aware of some of the issues we identified and are planning improvements. These councils are at varying stages of making improvements. However, all three have more to do.

## My view

Councils need thorough and reliable information about their stormwater systems and flood risks so they can make deliberate choices about what level of service they need to provide to their community now and in the future.

Councils need to prioritise gathering the right information to help them understand their flood risk and the performance of their current stormwater system in reducing that risk. This would enable councils to identify the assets most important in protecting homes and property from the effects of flooding, and identify their investment priorities.

In my view, the historical under-investment in stormwater systems that my Office has previously identified creates a level of urgency. People need to be confident that the stormwater system will continue to protect their homes and property from flooding.

I am aware that many councils outsource the maintenance of their stormwater systems. All councils need to ensure that they effectively monitor and manage a contractor's performance so they can assess whether they are receiving what was contracted.

There is also an opportunity for all councils to work together in new ways to address shared challenges in managing their stormwater systems. For example, councils could collaborate to improve their capability in asset management or in responding to climate change.

Our main findings and recommendations are relevant to all councils. All councils face challenges when managing their stormwater systems, including ageing infrastructure, limited capacity, managing costs to the community, and having the right people and skills in their organisations.

I would like all councils to use this report to identify where they can improve their management of their stormwater systems so they can ensure that their communities are protected from the risks of flooding.

I thank the staff of the three councils for their support, co-operation, and openness throughout our review.

Nāku noa, nā,



John Ryan  
Controller and Auditor-General

# Our recommendations

To better manage their stormwater systems to protect people and their property from the risks of flooding, we recommend that councils:

1. understand the current and likely future flood risks in their district or city sufficiently to take a proactive approach to reduce the risk and effects of flooding;
2. provide elected members with the necessary information and options, including about local flood risks and their stormwater systems, to make well-informed and deliberate decisions about investment in their stormwater systems;
3. improve the information they make available to their communities so that people can understand:
  - the potential risk of flooding;
  - what the council is doing to manage that risk, including how it is managing the stormwater system and at what cost; and
  - what the remaining risk is to the community;
4. improve their understanding of their stormwater systems, which will entail ensuring the adequacy of their stormwater asset data, including condition data and information on the performance and capacity of the stormwater systems; and
5. identify and use opportunities to work together with relevant organisations to more effectively manage their stormwater systems.

# Questions to consider

## For councils

We encourage all managers of stormwater systems to ask themselves where they can improve their management of stormwater systems:

- How extensive is your understanding of your current and future flood risk? What more do you need to know?
- Have you, with your community, defined what the acceptable level of risk is, and the level of protection that your stormwater system needs to provide?
- How do you know whether your stormwater system is delivering the level of service it was designed to deliver?
- How do you know that your maintenance regimes are supporting you in achieving the intended level of service?
- How are you prioritising and planning your work programme to ensure that the stormwater system is achieving, and will continue to achieve, the intended level of service?
- Do you have the right people and skills to deliver your work programme?

We also suggest that councils consider the questions in our reports *Reflections from our audits: Investment and asset management* and *Reflecting on our work about information*.

## For the community

We encourage you to ask your councillor:

- How often is my house likely to be flooded by stormwater?
- How much protection from flooding is the stormwater system going to give me?
- What actions can I take to reduce the amount of stormwater run-off from my property?
- Is the stormwater system delivering the level of protection it was designed to provide?
- How is the council working to address any issues in delivering the intended level of protection?
  - What are the options for addressing those issues?
  - How long will it take?
  - How much will it cost?



# Introduction

- 1.1 In this Part, we discuss:
- managing flood risks;
  - what we audited;
  - what we did not audit;
  - how we carried out our audit; and
  - the structure of this report.

## Managing flood risks

- 1.2 Flooding is New Zealand’s most frequent natural hazard and causes significant social, environmental, and economic costs. According to the Insurance Council of New Zealand, severe weather and flood events resulted in claims costing about \$260 million in 2017/18.
- 1.3 Roles and responsibilities for managing flood risks are divided between central government agencies and councils (regional councils and city and district councils). Businesses and individuals also have a role in managing flood risks – for example, by insuring their home or business and understanding the flood risk to their home.
- 1.4 Central government agencies help communities to prepare for and recover from large events (civil defence), provide councils with the necessary powers, fund the science system, and provide weather forecasts and warnings. For example, the Ministry for the Environment provides guidance to councils on managing the effects of natural hazards through regional and district plans.
- 1.5 Regional councils and city and district councils have roles in managing flood risk by controlling land use and through physical works such as building stop banks, and maintaining and clearing channels. Their risk management activities are subject to several Acts.<sup>1</sup>
- 1.6 City and district councils are responsible for managing the stormwater system of drains and pipes. Regional councils are responsible for flood protection activities and managing water catchments.
- 1.7 In this report, we describe flood risk in terms such as a “one-in-100-year flood”. This does not mean that an event will happen only once every hundred years. It means that there is a 1% chance of the event occurring each year.
- 1.8 When we use the term councils, we mean city and district councils. When we need to include regional councils, we are more specific (regional councils and city and district councils). We have not referred explicitly to unitary councils because

<sup>1</sup> These include the Resource Management Act 1991, the Local Government Act 2002, the Soil Conservation and Rivers Control Act 1941, the Building Act 2004, the River Boards Act 1908, and the Land Drainage Act 1908.

they are always included in a general reference to councils (unitary councils have the functions of a regional council as well as a city or district council).

### The stormwater system

- 1.9 A stormwater system is made up of the piped network, natural features such as streams, green infrastructure such as constructed wetlands, and designated overland flow paths (such as roads and parks) (see Figure 1). The main function of a stormwater system is to protect people and property from flooding by diverting or safely dispersing the rainwater that runs off from property, public reserves, and roads. Different parts of the system are designed to handle different intensities of rainfall.

**Figure 1**  
**Illustration of the stormwater system**

Stormwater systems include places for water to overflow, as well as pipes to carry water away.



Source: Office of the Auditor-General.

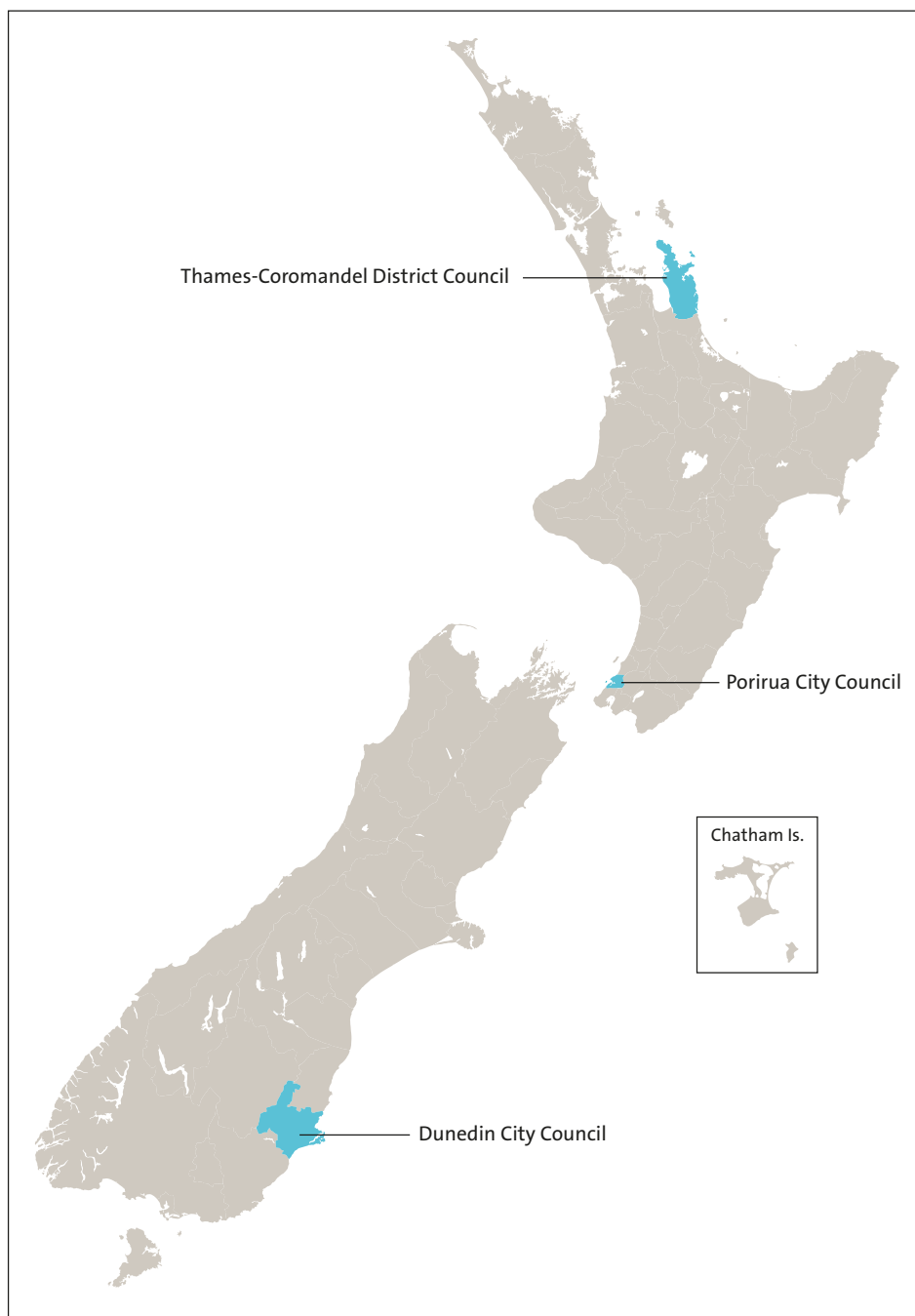
- 1.10 In New Zealand, stormwater systems are managed by, or on behalf of, 67 councils.
- 1.11 Councils do not typically invest as much in their stormwater systems as they do in their water supply and wastewater networks, with limited exceptions. Urban stormwater systems are often referred to as the “poor cousin” of the three waters (drinking water, wastewater, and stormwater).

### **What we audited**

- 1.12 We chose to focus on councils’ management of stormwater systems because we have concerns that councils are not adequately reinvesting in their stormwater systems to maintain levels of service (in this report, the level of protection the stormwater system provides). If nothing changes, the under-investment will increase the risk of the stormwater system being unable to cope with heavy rain, resulting in the flooding of people’s homes and commercial properties.
- 1.13 Our concerns are based on the gap between the depreciation of stormwater assets and what councils are spending on the renewal of those assets (we discuss forecast depreciation and renewals in paragraphs 5.22-5.28). This indicates that the assets are likely to be wearing out faster than they are being renewed.
- 1.14 The effects of climate change and urbanisation are also putting increasing pressure on stormwater systems.
- 1.15 To understand how councils are managing these issues, we audited how Dunedin City Council, Porirua City Council, and Thames-Coromandel District Council (the three councils) manage their stormwater systems to reduce the risk of flooding (see Figure 2).

**Figure 2**  
**Location of the three councils we looked at**

The councils are far apart geographically and vary in the size of area they are each responsible for.



Source: Office of the Auditor-General.

- 1.16 We chose these councils to understand the range of challenges councils have in managing their stormwater systems to reduce the risk of flooding. These challenges include understanding the effects of current and future heavy rainfall (including the effect of climate change and urbanisation), affordability issues, and lacking some information about their stormwater assets.
- 1.17 Of the three councils, two are managing stormwater systems directly (Dunedin City Council and Thames-Coromandel District Council) and the third (Porirua City Council) is outsourcing that work to a council-controlled organisation (Wellington Water Limited<sup>2</sup>).
- 1.18 We assessed the three councils’:
- understanding of their current and future flood risk;
  - process for determining the levels of service for their stormwater systems; and
  - management of their stormwater system to deliver the agreed levels of service now and in the future.

### What we did not audit

- 1.19 We did not audit the environmental aspects of stormwater systems. For example, stormwater systems sometimes overflow into the wastewater network and cause significant environmental issues during heavy rainfall.
- 1.20 We also did not audit:
- any other methods councils use to reduce the risk of flooding, such as controlling land use through district plans;
  - the process used to put information about flooding and stormwater on land information memorandums; and
  - the adequacy of councils’ spending on their stormwater systems.

### How we carried out our audit

- 1.21 We carried out our fieldwork and analysis in early- to mid-2018.
- 1.22 To carry out our audit, we:
- reviewed documents, including asset management plans, long-term plans, and reports;
  - interviewed staff at the three councils, Wellington Water, and the respective regional councils;

2 Wellington Water Limited was set up in September 2014. It was the result of a merger between Greater Wellington Regional Council’s water supply group and Capacity Infrastructure Services. Wellington Water is owned by Hutt City Council, Porirua City Council, Upper Hutt City Council, Wellington City Council, and Greater Wellington Regional Council. The councils are equal shareholders. Wellington Water manages the drinking water, wastewater, and stormwater services of the shareholding councils but does not own the assets used to deliver those services.

- surveyed elected members from the three councils; and
- analysed data from the three councils and financial data for all councils.

### **Structure of this report**

- 1.23 In Part 2, we discuss the three councils' understanding of their flood risk and use of information about climate change and land-use changes, including urbanisation, to inform their understanding of their future flood risk.
- 1.24 In Part 3, we examine the information and process councillors of the three councils use to set the levels of service for the stormwater system. We also discuss the information the three councils provide to the community to understand those levels of service and the implications of that.
- 1.25 In Part 4, we describe the need for good asset information, including condition and performance information. We also talk about how better information will help councils make well-informed and deliberate decisions about the stormwater system.
- 1.26 In Part 5, we talk about the challenges councils face in asset management planning and delivering their planned capital programme. We also describe the need for councils to work effectively with others to manage flood hazards and the stormwater system.

# Better understanding of flood risk is needed

# 2

- 2.1 In this Part, we discuss the three councils':
- incomplete assessment of their flood risk; and
  - use of information about climate change and land use to understand flood risk.

## Incomplete assessment of flood risk

- 2.2 To date, the three councils have an incomplete understanding of the flood risk in their districts. This limits the three councils' ability to make informed decisions about whether to reduce flood risk and by what methods.
- 2.3 Flood risk is determined by combining the likelihood of a flood and the potential consequences (or effects) of that flood. The severity of a flood's consequences depends on how many people and assets are exposed to the flood and how vulnerable those people and assets are to the flood.
- 2.4 Weather systems, land forms, watercourses, people, development, and economic activity all influence flood risk. If the expected size or frequency of a flood increases, or the potential effects of a flood increase, so too does the risk.
- 2.5 There are different sources of flood risk. These include rivers and streams after heavy rainfall, ponds that form in urban areas as a result of heavy rainfall, and inundation by groundwater or high sea levels.
- 2.6 We expected councils to have enough information about their flood risk to take a structured long-term planning approach to reduce the risk and effects of flooding, including through using a stormwater system.
- 2.7 The three councils have used hydraulic modelling<sup>3</sup> for some assessments in response to specific events or regulatory pressure, such as to comply with resource consents.
- 2.8 In 2011/12, Dunedin City Council completed 11 integrated catchment management plans.<sup>4</sup> Of these, 10 were in response to Otago Regional Council's consent requirements for discharging stormwater into Otago Harbour, and one was for Mosgiel.<sup>5</sup>

3 Hydraulic modelling uses a mathematical model to develop an understanding of flood risk and the performance of the stormwater system. It can also be used to develop options for reducing flood risk and to measure their effectiveness.

4 An integrated catchment management plan takes a holistic approach to managing the inputs and outputs of a stormwater catchment. Because stormwater travels from roads and roofs to streams, rivers, and seas without treatment, contaminants in stormwater contribute to pollution of the receiving environment. An integrated approach means taking a range of factors into consideration – activity and urban development in the catchment, the state of the stormwater and wastewater networks, levels of contamination, flooding – when planning how to make improvements.

5 Dunedin City Council published an updated integrated catchment management plan in 2017. This combined 10 of the 11 original plans, and contains updated stormwater management information as necessary. The update did not contain any new information about Dunedin City Council's flood risk.

- 2.9 As part of these integrated catchment management plans, Dunedin City Council modelled each catchment to understand their current and future flood risks and the capacity of the stormwater system. However, except for Mosgiel, the plans did not cover inland areas, had limited information about the effect of groundwater on flood risk, and generally did not consider the flood risk from watercourses.
- 2.10 Both Porirua City Council and Thames-Coromandel District Council have assessed flood risks in specific areas in response to flooding issues. For example, Wellington Water has modelled flooding in Porirua's central business district to help develop options to reduce the risk and effects of flooding.
- 2.11 The three councils use other sources of information, such as complaints from the public, field visits by staff, and post-event reviews, to confirm the flood risks that the modelling has identified.
- 2.12 The three councils also use these sources of information to identify flood risks for areas that have not been modelled. For example, Wellington Water has processes and procedures to identify the cause of any flooding issues and any actions that need to be taken. In some instances, this includes asking people to fill out questionnaires about flooding.
- 2.13 These sources of information are unlikely to provide a complete picture and are available only after flooding occurs. For example, staff members from Dunedin City Council told us that not everyone in an area will inform the Council that their house has been flooded. This means that the Council would need to talk informally with people in the area to get a more accurate picture and better define the problem.
- 2.14 Porirua City Council and Thames-Coromandel District Council are working towards improving their information about flood risks. Thames-Coromandel District Council is planning further modelling to identify their flood risks and assess the capacity of the stormwater system for the main towns in the district.
- 2.15 Porirua City Council is in the process of finalising stormwater models and hazard maps with Wellington Water. The Council will use this information in its district plan and to identify priorities for future stormwater work.
- 2.16 To get a broader understanding of their flood risks, councils also need to work with regional councils. We talk further about this in paragraphs 5.41-5.45.
- 2.17 This incomplete view of the flood risks is not unique to the three councils. A paper by an associate at Beca Limited for Water New Zealand's 2016 Stormwater Conference used case studies to show that council funding becomes available for stormwater and flood mitigation works in the years immediately after local flood events, often for a limited time.



2.18 This approach also risks councils focusing on reducing the effects of the most recent event rather than considering all possible events and effects throughout a city or district.

2.19 We were told that most councils have not determined their flood risk other than through the experience of actual floods. This is consistent with the findings from the 2008 Ministry for the Environment report *Meeting the Challenges of Future Flooding in New Zealand*, which is about flood risk management more generally. The report stated:

*Current flood risk management strategies on the whole tend to mitigate known hazards rather than address actual risks across a region. That is, there is a focus on large rivers that have flooded in the past with a known flood history, rather than where flooding could occur in an area. While this approach has been sufficient in the past, it is unlikely to be a sustainable approach in the future with climate change increasing the risk of flooding.<sup>6</sup>*

2.20 Having a fuller understanding of their flood risks is critical for councils to take a structured long-term planning approach to reduce the risk and effects of flooding, including through managing stormwater systems. As Wellington Water stated in its *Three Waters Strategy – Wellington Metropolitan Region*:

*Underpinning our future investment strategy is the need to better understand the limitations of our networks so that improvements can be planned on the basis of risk and the achievement of service standards. Hydraulic modelling is an important tool for understanding the “capacity” of our pipe networks. Although complex and costly to develop they not only assess the potential impacts of flooding but determine the effectiveness of proposed mitigation options.<sup>7</sup>*

---

### Recommendation 1

We recommend that councils understand the current and likely future flood risks in their district or city sufficiently to take a proactive approach to reduce the risk and effects of flooding.

---

## Information about climate change and land use change is needed to understand flood risk

2.21 The three councils have acknowledged the need to plan and design for the effects of climate change and land-use changes, including urbanisation. For the flood risk assessments based on modelling, the three councils considered and used information about climate change and land use.

6 Page 25.

7 Page 31.

- 2.22 However, to make better decisions that incorporate the effects of climate change and land use changes, the three councils need to address the limitations of their flood assessments described in paragraphs 2.2-2.20. Understanding their future flood risk will help councils ensure that stormwater assets are appropriately designed to maintain their effectiveness in reducing the effects of flooding.
- 2.23 Improving councils' understanding of current and future flood risks would also enable them to answer people's questions about the flood risk to their home, now and in the future.
- 2.24 Climate change is expected to increase existing risks and create new risks. Climate change will affect flood risk through:
- projected changes in rainfall, with some parts of the country becoming wetter and other parts becoming drier, depending on the season and interactions with existing natural processes such as El Niño climate cycles;
  - a likely increase in extreme rainfall in most areas, meaning an extreme rainfall event that is currently considered a one-in-50-year event will become more frequent;
  - an increase in sea levels that decreases the effectiveness of stormwater systems in draining the rainfall away, because of the backflow of water into pipes and watercourses; and
  - an increase in sea levels that increases the level of groundwater in coastal areas, because it leads to more infiltration into stormwater pipes and reduces their capacity.<sup>8</sup>
- 2.25 Increased urbanisation, such as new housing areas and increased density of housing in existing areas, results in more impervious surfaces. This can result in larger rainfall run-off that needs to drain away through the stormwater system.
- 2.26 As a consequence, flooding in New Zealand is likely to become more intense and more frequent. We expected the three councils to consider the effects of climate change and urbanisation to understand their future flood risk and ensure that their stormwater systems maintain their effectiveness in reducing the risk of flooding.
- 2.27 Councils need to consider changes in flood risk during the life of flood mitigation assets to ensure that the assets maintain their effectiveness in reducing the risk and effects of flooding. This is important because flood mitigation infrastructure, including stormwater assets, can last a long time. For example, the estimated useful life for a stormwater concrete pipe is about 80 years.

8 For more information about climate change, see the Ministry for the Environment's website [www.mfe.govt.nz/climate-change](http://www.mfe.govt.nz/climate-change). The Deep South national science challenge website also provides useful information about the implications of climate change (see [www.deepsouthchallenge.co.nz](http://www.deepsouthchallenge.co.nz)).

- 2.28 The three councils are doing some work to consider the change in flood risk. For example, in its *Three Waters Strategy – Wellington Metropolitan Region*, Wellington Water highlights the effect that climate change and the increase in impervious surfaces because of urbanisation will have on the management of stormwater systems.
- 2.29 Dunedin City Council and Thames-Coromandel District Council base their climate change projections on guidance from the Ministry for the Environment and update the projections when new information became available.
- 2.30 Porirua City Council uses a report commissioned by Greater Wellington Regional Council on the effects of climate change in the Wellington region.
- 2.31 The three councils have also done, or are planning, further work about the effects of climate change.
- 2.32 In 2010, Dunedin City Council commissioned its own report on the expected effects of climate change. The Council recognises that it needs to update this report.
- 2.33 Thames-Coromandel District Council is planning further work on investigating coastal hazards in the district.
- 2.34 Wellington Water has changed the climate change projections it uses to ensure that they are consistent with the projections that Greater Wellington Regional Council uses.
- 2.35 For the flood risk assessments based on modelling, the three councils considered and used information about climate change and land use. For example, as part of the hydraulic modelling done for Dunedin City Council’s integrated catchment management plans, the consultant modelled 14 scenarios representing different land use, rainfall, climate change, and tide combinations.
- 2.36 The three councils also incorporate the effects of climate change and land use changes when designing stormwater infrastructure and in their financial forecasts. For example, adding a factor for an increase in rainfall when designing the capacity of a stormwater pipe.
- 2.37 Incorporating information about these changes helps the three councils to understand their future flood risk and to make decisions about the need for current and future flood mitigation work.

**Questions to consider**

**For councils:**

How extensive is your understanding of your current and future flood risk? What more do you need to know?

**For people to ask their councillor:**

How often is my house likely to be flooded by stormwater?

# 3

## Setting well-informed levels of service

- 3.1 In this Part, we discuss the need for the three councils to provide better information:
- to councillors when setting the levels of service; and
  - to the community, so people can engage with their council about the levels of service they receive now and can expect to receive in the future.
- 3.2 We focused on the 2018-28 long-term plan process to make our assessment because this was the most recent asset management process that involved the three councils deciding levels of service and providing information about them to the community. However, this is not the only time that conversations about the management of their stormwater system occur between councillors and the community.

### **Better information needs to be provided to councillors when setting the levels of service**

- 3.3 Weaknesses in the three councils' information about their flood risk and the current state of their stormwater systems mean councillors have not had all the information they need to make well-informed and deliberate decisions about their stormwater systems.
- 3.4 As part of councils' asset management processes, councils should make decisions about what type of event the stormwater system is expected to withstand. This decision is also known as levels of service.
- 3.5 We expected councillors to receive relevant and reliable information about their stormwater systems and flood risks to make well-informed and deliberate choices about the levels of service they are going to provide their community with, now and in the future. This includes making trade-offs, mainly in terms of what level of service the community is willing to pay for.
- 3.6 Councillors need information in a form they can understand. This will depend on the nature of the decision and the requirements of councillors.
- 3.7 As part of the long-term plan process, councillors from the three councils received information about the cost and funding of stormwater systems, significant issues, and priorities. This information was presented in workshops, reports, and other documents related to the long-term plan.
- 3.8 Councillors also received information about specific issues. For example, staff and consultants presented proposals to reduce flooding in South Dunedin to Dunedin City councillors.

- 3.9 We sought feedback from councillors and community board members on whether they were given enough information to make informed decisions about stormwater systems during the 2018-28 long-term plan process.
- 3.10 To get this feedback, we surveyed councillors at Porirua City Council, and councillors and community board members from Thames-Coromandel District Council. We received a total of 14 responses. We also received feedback from a councillor at Dunedin City Council.
- 3.11 Generally, Porirua City and Dunedin City councillors thought:
- they got enough information to make the necessary decisions;
  - the information was focused on the right issues and at the right level; and
  - the information was presented in a useful way.
- 3.12 However, Thames-Coromandel District councillors and community board members had more mixed views.
- 3.13 Respondents also identified some matters for improvement. These included:
- information about, and consideration of, different levels of service options, including cost, benefit, and risk;
  - performance information about the stormwater system; and
  - planning to improve the protection for areas prone to flooding.
- 3.14 We expect councillors to receive better information. In particular, we consider that, to make informed decisions about stormwater systems, councillors need information about:
- current and future flood risks and options for managing them – for example, land-use controls or flood-mitigation infrastructure;
  - the current levels of service for the stormwater system and how they might be achieved – for example, the stormwater piped network might be designed to handle a one-in-10-year event, while overland flow paths might be designed to handle a one-in-50-year event;
  - the current performance of the stormwater system – for example, whether the system is performing to its design standards; and
  - the implications – for example, the risk from events that exceed the design standards of the stormwater system, the effect on insurance premiums for home and business owners, or other benefits such as improved urban amenity and water quality.
- 3.15 We also found that there was a lack of clarity about the process used to set the levels of service.

- 3.16 The three councils already have some of the information available. For example, under the *Regional Standard for Water Services*, Porirua City Council's overall stormwater system should be able to handle up to a one-in-100-year event. This is to be achieved by the:
- initial protection (called primary protection) through the stormwater piped network, formed drainage channels, and soakage systems being designed to handle up to a one-in-10-year event;
  - primary protection being designed to handle up to a one-in-100-year event where secondary flow paths are not available; and
  - secondary flow paths being designed to handle up to a one-in-100-year event.
- 3.17 However, there are weaknesses in the three councils' information about their flood risk (see paragraphs 2.2-2.20) and about the current state of their stormwater system (see paragraphs 4.2-4.29).
- 3.18 In our view, this means that, to date, the three councils have not had all the information they need to make well-informed and deliberate decisions about managing their stormwater systems. As Local Government New Zealand states in a 2015 position paper:
- ... applying asset management disciplines require detailed and well-understood information on the state of the physical assets and the level of likely demand in the future.*<sup>9</sup>

---

## Recommendation 2

We recommend that councils provide elected members with the necessary information and options, including about local flood risks and their stormwater systems, to make well-informed and deliberate decisions about investment in their stormwater systems.

---

## The community cannot provide informed feedback

- 3.19 As part of the long-term plan process, the three councils compiled relevant information about the cost, funding, and significant issues for the management of stormwater, which is available to their communities. However, these communities had limited information to help them understand the remaining level of flood risk and decide whether it is acceptable.

<sup>9</sup> Local Government New Zealand (2015), *Improving New Zealand's water, wastewater and stormwater sector*, Wellington, page 13.

- 3.20 A long-term plan sets out what a council intends to deliver to its community and how the council intends to pay for it. Consulting with communities on the long-term plan is a crucial step in making sure that this plan is the right one for the community.
- 3.21 Councils need to provide their communities with information that is relevant, reliable, and accessible, so they can have the “right debate” to plan for the future. This also includes providing the information their community needs to understand the trade-offs associated with providing the desired levels of service, if they wish to.
- 3.22 Even if councils were not specifically consulting on levels of service, they are expected to make relevant information available on the levels of service for their stormwater systems and the implications of that as part of the information supporting the consultation document and the final long-term plan.
- 3.23 Making this information available would help people provide well-informed feedback to their council, if they choose to do so, and allow them to hold the council to account for the performance of the stormwater system.
- 3.24 The three councils made available relevant information about the cost, funding, and significant issues for the management of stormwater through the long-term plan (such as in the 30-year infrastructure strategies). For example, Thames-Coromandel District Council highlighted the significant issues for stormwater as being:
- the age and condition of its stormwater pipe network in Thames and Coromandel township, and parts of the network in Whitianga; and
  - the effect of increasing national and regional standards for the discharge of stormwater into the sea or freshwater bodies such as rivers.
- 3.25 Thames-Coromandel District Council also highlighted climate change, coastal hazards, and resilience as significant issues for all of its activities.
- 3.26 However, the three councils could have made more information available to their communities to help them understand the remaining level of flood risk and decide whether that level of risk is acceptable. Information that could help the community understand the remaining level of risk, but is not currently available, includes:
- the current levels of service for the stormwater system (such as the event size the system is designed to handle) and how they will be achieved;
  - the current performance of the stormwater system; and
  - the implications in terms of remaining risk and cost.

- 3.27 If councillors and the community do not fully understand what the stormwater system is designed to achieve and the remaining level of flood risk, they cannot make informed decisions about how to invest in stormwater systems and prioritise their limited resources effectively.

---

### Recommendation 3

We recommend that councils improve the information they make available to their communities so that people can understand:

- the potential risk of flooding;
  - what the council is doing to manage that risk, including how it is managing the stormwater system and at what cost; and
  - what the remaining risk is to the community.
- 

### Councils provide relevant information to their community during significant flooding events

- 3.28 Councils have a role in responding to large floods by co-ordinating with emergency services, relevant commercial businesses such as electricity providers, and other agencies to minimise the effect of flooding. This includes providing information to the community to help them minimise health and safety risks and property damage during a flood.
- 3.29 The three councils have provided relevant information to the community during and after significant events. For example, on 1 February 2018, Dunedin City Council informed the community that it should start preparing for possible flooding. During the next two days, the Council provided several updates on the actions it was taking to reduce the risk of flooding and on the declaration of a state of emergency. After the emergency had ended, the Council provided a further update on actions to help people and businesses to recover from the flood.

#### Questions to consider

##### For councils:

Have you, with your community, defined what the acceptable level of risk is and the level of protection that your stormwater system needs to provide?

##### For people to ask their councillor:

How much protection from flooding is the stormwater system going to give me?

What actions can I take to reduce the amount of stormwater run-off from my property?



# Better understanding of stormwater systems is needed

- 4.1 In this Part, we discuss the three councils’:
- need for better asset information;
  - incomplete understanding of the capacity of their stormwater systems;
  - lack of meaningful performance measures for their stormwater systems; and
  - need for enough information to make well-informed decisions.

## Better asset information is needed

- 4.2 Having robust information about physical assets and their condition helps public organisations make effective and sustainable decisions about how to manage those assets. Public organisations might not have detailed information about all of their assets, but they should have a good understanding of the most important assets.
- 4.3 If a public organisation does not have a good understanding of its most important assets, particularly the condition of those assets, it risks making poor long-term decisions. Long-term planning that is based on inaccurate information or poorly informed assumptions could result in costly or unsustainable decisions.
- 4.4 To assess the three councils’ understanding of their stormwater assets, we analysed the data in their asset register against the primary asset attribute data that the *International Infrastructure Management Manual* considers should be collected. The primary asset attribute data are:
- type;
  - material;
  - dimensions;
  - quantity; and
  - construction date.
- 4.5 We found that the three councils generally collected this data for their stormwater assets. However, in some instances, the data in the asset register was incomplete. For example:
- Dunedin City Council did not have a complete data set in its asset register about the material of its stormwater mains.
  - Porirua City Council did not have a complete data set for the construction date of some of its stormwater assets.
- 4.6 The three councils also have limited knowledge about the condition and performance of their stormwater assets. For example:
- Thames-Coromandel District Council does not know the condition of 64% of its above-ground stormwater assets and 75% of its stormwater pipes.
  - Dunedin City Council does not know the condition of about 90% of its piped stormwater network.

- The three councils described their knowledge about the performance of their stormwater assets as unknown, less reliable, or uncertain.

- 4.7 The three councils have acknowledged the need to improve their asset data. Improved asset data on stormwater assets would allow the three councils to better identify and prioritise their work programme to achieve the levels of service and the cost of doing so.
- 4.8 Our findings are consistent with the results from Local Government New Zealand's 2015 National Information Survey, which revealed that a large proportion of water supply, wastewater, and stormwater assets are ungraded and that some councils' entire networks have not been graded according to their condition.
- 4.9 In our recent work, we have reported on the importance of accurate and reliable asset information and the need for councils to better understand the condition of their assets.<sup>10</sup>

### **Incomplete understanding of the capacity of the stormwater system**

- 4.10 To date, the three councils have had an incomplete understanding of the capacity of their stormwater systems to handle current and future demand.
- 4.11 Councils need to have a good understanding of the capacity of their stormwater systems to handle current and likely future demand so they can ensure that levels of service will be met, now and in the future.
- 4.12 Thames-Coromandel District Council and Porirua City Council have completed limited assessments as part of specific investigations. For example, Thames-Coromandel District Council assessed the stormwater system for Whitianga by modelling its performance for different land use and rainfall scenarios.
- 4.13 As part of its integrated catchment management plans (see paragraph 2.8), Dunedin City Council has assessed the capacity of its stormwater system to handle current and future demand, including the effects of climate change and land use changes. However, it has not assessed all of its stormwater systems.
- 4.14 As described in paragraphs 2.14-2.15, Thames-Coromandel District Council and Porirua City Council are working towards improving their information about their flood risks. Doing this work will also improve their understanding of the capacity of their stormwater systems to cope with flood events.

<sup>10</sup> For example, *Matters arising from the 2015-25 local authority long-term plans* (November 2015), *Getting the right information to effectively manage public assets: Lessons from local authorities* (November 2017), *Managing the assets that distribute electricity* (June 2017), and *Managing public assets* (June 2013). These reports are available on our website, [www.oag.govt.nz](http://www.oag.govt.nz).

- 4.15 A better understanding of the constraints on the three councils' stormwater systems' capacity would help identify and prioritise the work needed to achieve their agreed levels of service, now and in the future.

### Lack of meaningful performance measures

- 4.16 The three councils' reported performance measures do not provide a meaningful indication about each stormwater system's performance against what it is designed to achieve. This limits the ability of people to understand the performance of the stormwater system.
- 4.17 Appropriate monitoring of the performance of assets is needed to ensure that services are provided as intended. This is supported by measurable and relevant performance measures.
- 4.18 Since 2015/16, under an amendment to the Local Government Act 2002, the Secretary of Local Government (who is the chief executive of the Department of Internal Affairs) has required all councils to report on five performance measures for managing stormwater, covering four aspects of their performance (see Figure 3). The purpose of the indicators is to provide standard, non-financial performance measures so the public can compare service levels.

**Figure 3**

#### The mandatory performance measures for managing stormwater

Aspects of performance	Performance measure
<b>System adequacy</b>	The number of flooding events that occur in a territorial authority district.
	For each flooding event, the number of habitable floors affected (expressed per 1000 properties connected to the territorial authority's stormwater system).
<b>Discharge compliance</b>	Compliance with the territorial authority's resource consents for discharge from its stormwater system, measured by the number of: <ul style="list-style-type: none"> <li>a) abatement notices;</li> <li>b) infringement notices;</li> <li>c) enforcement orders; and</li> <li>d) convictions;</li> </ul> received by the territorial authority in relation to those resource consents.
<b>Response times</b>	The median response time to attend a flooding event, measured from the time that the territorial authority receives notification to the time that service personnel reach the site.
<b>Customer satisfaction</b>	The number of complaints received by a territorial authority about the performance of its stormwater system, expressed per 1000 properties connected to the territorial authority's stormwater system.

Source: Department of Internal Affairs.

- 4.19 Dunedin City Council and Porirua City Council report on their own measures as well as the mandatory measures. These includes measures on resident satisfaction with the stormwater system, the number of blockages, and the effect of stormwater on the quality of water in the receiving environment.
- 4.20 We did not see any performance measures from the three councils that provided a meaningful indication about each stormwater system's performance against what it is designed to achieve, including the mandatory performance measures.
- 4.21 For example, in its 2018-28 long-term plan, Thames-Coromandel District Council has the performance measure targets of zero flooding events and less than one habitable floor being flooded for stormwater. If the district experiences a flooding event that is larger than what the stormwater system is designed to handle, the Council will not achieve its performance measures.
- 4.22 This would happen even if the stormwater system performed exactly as designed. Therefore, the performance measures do not inform people about whether the stormwater system is achieving what it is designed to do.
- 4.23 Other issues with the mandatory measures include different interpretations of what a habitable floor is, and the variability about which flooding events councils consider when measuring the number of flooding events.
- 4.24 The three councils, and other councils we know of from our other work, have had difficulties in collecting accurate and complete information for these measures.
- 4.25 Thames-Coromandel District Council disclosed in its 2016/17 annual report that, although the district had suffered several large weather events, only one instance of habitable floor flooding was reported.
- 4.26 The Council stated that many calls went straight to emergency services or civil defence, rather than through its "Request for Service" system. This means that the Council was unable to accurately determine how many habitable floors were flooded.
- 4.27 A staff member from Dunedin City Council told us that people did not want to tell the Council about flooding because they were afraid it would be recorded on their land information memorandum, potentially affecting the value of their house.
- 4.28 The issues we identified with the mandatory measures are not limited to those for stormwater. We have previously reported that councils do not report on all the water supply indicators in the same way and that there are gaps in their information.<sup>11</sup>

- 4.29 In our view, the performance measures do not provide a meaningful indication about each stormwater system's performance against what it is designed to achieve. This limits the ability of people to understand the performance of the stormwater system.

### **Councils need enough information to ensure well-informed decisions**

- 4.30 The three councils need to address the issues we identify in Parts 2-4 to ensure that they have enough information to make well-informed and deliberate decisions about their stormwater systems.
- 4.31 We have previously reported on weaknesses in councils' understanding of their assets. Our 2014 report *Water and roads: Funding and management challenges* noted that many councils did not have a complete understanding of the performance and condition of their assets. Some councils had low confidence in the reliability of their asset data.
- 4.32 Further, when we looked at all councils' infrastructure strategies for their 2015-25 long-term plans, more than half of them discussed the need to collect better information about assets. Underground networks posed the greatest challenge in terms of asset condition information.
- 4.33 Our 2018 report *Managing the supply of and demand for drinking water* highlighted that gaps in data can reduce the reliability of planning documents, make it harder for council management to provide advice to councillors, and make it harder for a council to make informed decisions.
- 4.34 Councils should prioritise gathering more information that helps them better understand their flood risk and the performance of their current stormwater systems in reducing that risk. This would then enable councils to identify the assets most important in protecting their community from flooding and the assets that they need more certain and relevant information about to ensure well-informed flood and stormwater-related decisions.
- 4.35 Until the three councils make these improvements, they will be making decisions based on inadequate information. In our view, the three councils should give priority to improving their information so that they can make well-informed and deliberate decisions.

---

**Recommendation 4**

We recommend that councils improve their understanding of their stormwater systems, which will entail ensuring the adequacy of their stormwater asset data, including condition data and information on the performance and capacity of the stormwater systems.

---

**Questions to consider**

**For councils:**

How do you know whether your stormwater system is delivering the level of service it was designed to deliver?

**For people to ask their councillor:**

Is the stormwater system delivering the level of protection it was designed to provide?

# Better management of stormwater systems is needed

# 5

- 5.1 In this Part, we discuss the three councils’:
- improvements in their asset management planning and practices;
  - maintenance of their current stormwater systems;
  - need to improve their information to help them prioritise funding for their most important assets;
  - need to improve the delivery of planned capital spending; and
  - need to work effectively with others.

## **Councils are improving their asset management planning and practices, with further improvement needed**

- 5.2 The three councils are in the process of improving their asset management planning. These improvements should lead to the three councils managing their stormwater systems better. However, they need to do more, such as addressing weaknesses identified in their asset information.
- 5.3 Asset management planning helps organisations manage their assets effectively to support the delivery of services. We expected the three councils to have effective asset management planning to ensure that their stormwater system continues to deliver the agreed levels of service now and in the future.
- 5.4 Thames-Coromandel District Council has improved its asset management practices, including by introducing new asset management software that it expects will provide consistent and sustainable management of all of its assets. It has also put in place a council-wide asset management policy.
- 5.5 The Council is planning to improve its asset management practices further, including by:
- strengthening the connection between the infrastructure strategy and asset management plans;
  - basing renewal planning on the condition of the assets; and
  - completing an asset management maturity review of the three waters activities.
- 5.6 Wellington Water is integrating and improving asset management approaches developed by its shareholding councils. Wellington Water is also working to align asset management planning and investment decisions throughout the Wellington region with:
- a strategic asset management plan;
  - regional service plans; and
  - a regionally based framework for prioritising projects (also called the smart investment approach).

- 5.7 Porirua City Council and Wellington Water staff told us that they consider that this new smart investment approach means that investment in the stormwater system is more evidence-based, more strategic, and proactive rather than reactive.
- 5.8 An internal audit of Dunedin City Council's three waters asset management planning, completed in December 2017, found that there was:
- a lack of overarching asset management plans;
  - a lack of a structured approach to asset maintenance planning;
  - poor quality of asset plant data; and
  - a lack of integration between asset management systems.
- 5.9 Dunedin City Council told us that it is addressing these issues through an asset management improvement programme.
- 5.10 These improvements by the three councils should lead to better management of stormwater systems. However, they need to do more, including improving asset information. We encourage the three councils and Wellington Water to continue improving their asset management planning practices.

### **Councils need to effectively maintain their stormwater systems**

- 5.11 Councils need to effectively maintain their stormwater systems to ensure that they operate at design capacity during rainfall. If the maintenance of the stormwater system is outsourced, this needs to be supported by effective contract management, including through setting appropriate performance measures. Councils need to monitor and manage a contractor's performance so they can assess whether they are receiving what was contracted.
- 5.12 Thames-Coromandel District Council and Dunedin City Council outsource the maintenance of their stormwater systems to external contractors. Wellington Water has a contract with Porirua City Council's Works Operations Unit to maintain Porirua's stormwater system. These contractors are responsible for planned and unplanned maintenance, such as responding to people's complaints.
- 5.13 The three councils have a schedule of planned maintenance for their stormwater systems. For example, contractors inspect and clear critical inlets in Porirua monthly. The three councils and Wellington Water ensure that the work is done to the required standard through spot checks and audits.
- 5.14 The three councils also carry out maintenance of their stormwater systems before a predicted extreme rainfall event, such as checking that inlets into the stormwater infrastructure is clear. This helps ensure that the stormwater systems can disperse rainfall without blockages.



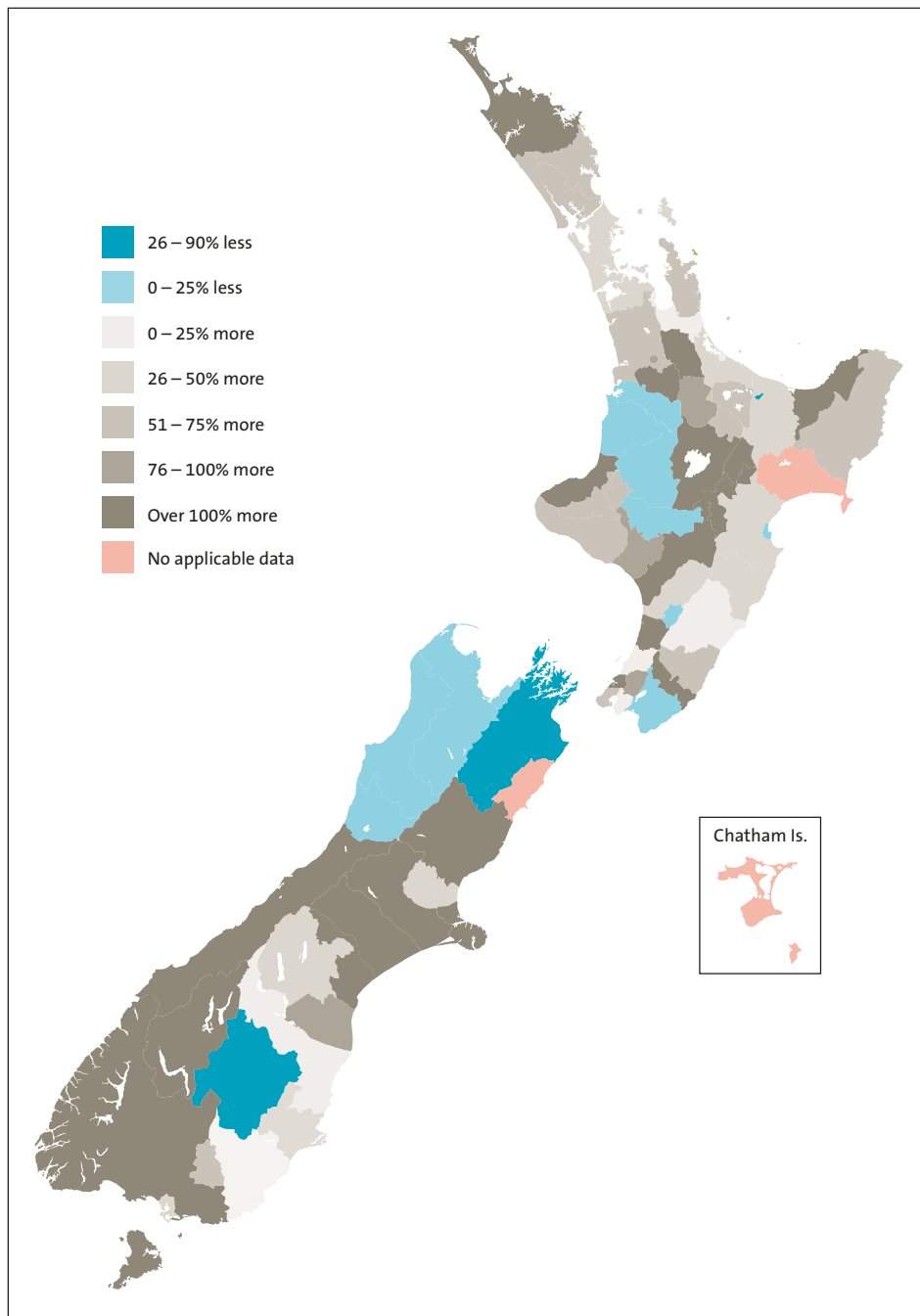
- 5.15 A lack of maintenance caused some of the flooding in South Dunedin in 2015 because blockages in the stormwater system meant that water was not being dispersed as fast as it could have been. Since 2015, Dunedin City Council has improved the maintenance of its stormwater system by amending contracts with higher service standards when they have been renewed, better monitoring of contracts, and spending more on maintenance.
- 5.16 Staff from Porirua City Council, Wellington Water, and Thames-Coromandel District Council did not raise any issues about the maintenance of their systems. However, there are some matters for improvement. For example:
- an internal audit found that Dunedin City Council does not have a structured approach to planning asset maintenance; and
  - Thames-Coromandel District Council could make more use of maintenance information in renewals planning.

### **Better information would help councils prioritise funding for their most important assets**

- 5.17 The three councils have increased their planned capital spending for stormwater infrastructure compared with previous forecasts. We cannot provide assurance about whether this spending is focused in the right areas because of the weaknesses in the three councils' information about their flood risk.
- 5.18 Addressing the identified weaknesses in information and the current state of their stormwater systems would help the three councils to better identify and prioritise the work needed to achieve the agreed levels of service, and the cost of doing so.
- 5.19 We compared the three councils' planned capital spending for stormwater infrastructure for 2019-25 in their 2018-28 long-term plans with what they forecast in their 2015-25 long-term plans.
- 5.20 Porirua City Council has increased its planned capital spending by 131%, Thames-Coromandel District Council by 72%, and Dunedin City Council by 31%. The increases are mainly for renewing their stormwater infrastructure and increasing levels of service.
- 5.21 The three councils are not alone in increasing their planned capital spending on stormwater infrastructure. Figure 4 shows that, generally, councils have increased their planned capital spending. The national average increase is by 59%. This consists of a:
- 98% increase in planned capital spending to increase the levels of service;
  - 45% increase for renewing stormwater infrastructure; and
  - 32% increase to cater for growth.

**Figure 4**  
Changes in councils' planned capital spending on stormwater infrastructure for 2019-25 in their 2018-28 long-term plans, compared with their 2015-25 long-term plans

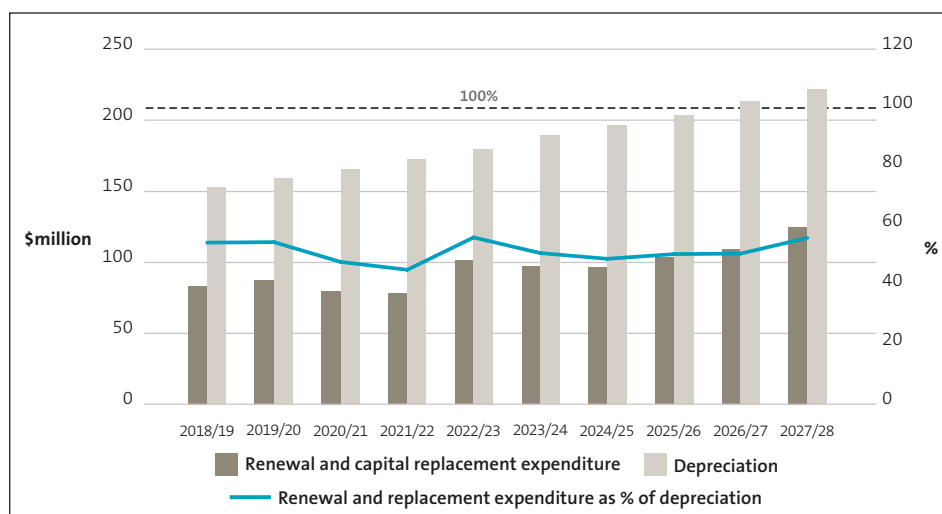
Most, but not all, councils are planning to spend more on capital.



- 5.22 In previous years, we have outlined our concern that some councils are not adequately reinvesting in their assets to maintain current levels of service.<sup>12</sup> If nothing changes, the under-investment will increase the risk of the stormwater system being unable to cope with heavy rainfall, resulting in people’s properties being flooded.
- 5.23 Our concerns are based on the gap between the depreciation of stormwater assets and what councils were spending on the renewal of those assets. This gap indicates that the assets are likely to be wearing out faster than they are being renewed.
- 5.24 To understand how councils are planning to reinvest in their stormwater assets, we compared planned renewal and replacement capital spending with depreciation for 2019-28. Most councils (46 out of 67) are planning to spend less than 60% of depreciation on renewing and replacing stormwater assets from 2019 to 2028.
- 5.25 Figure 5 shows the forecast renewal and replacement capital expenditure compared with depreciation for 2019 to 2028. The national average for the period from 2019 to 2028 is 52%. This is the equivalent of wearing out stormwater assets twice as fast as they are being replaced.

**Figure 5**  
**Forecast renewal and replacement capital expenditure compared with depreciation for stormwater assets, 2018/19 to 2027/28**

The bars would be close to 100% if assets were replaced at the same rate as they were used up.



Source: Office of the Auditor-General.

12 For example, *Matters arising from the 2015-25 local authority long-term plans* (December 2015), paragraphs 2.11-2.19; *Local government: Results of the 2014/15 audits* (April 2016), paragraphs 1.37-1.45; *Local government: Results of the 2015/16 audits* (April 2017), paragraphs 1.22-1.29; and *Local government: Results of the 2016/17 audits* (May 2018), paragraphs 1.14-1.19. These reports are available on our website, [www.oag.govt.nz](http://www.oag.govt.nz).

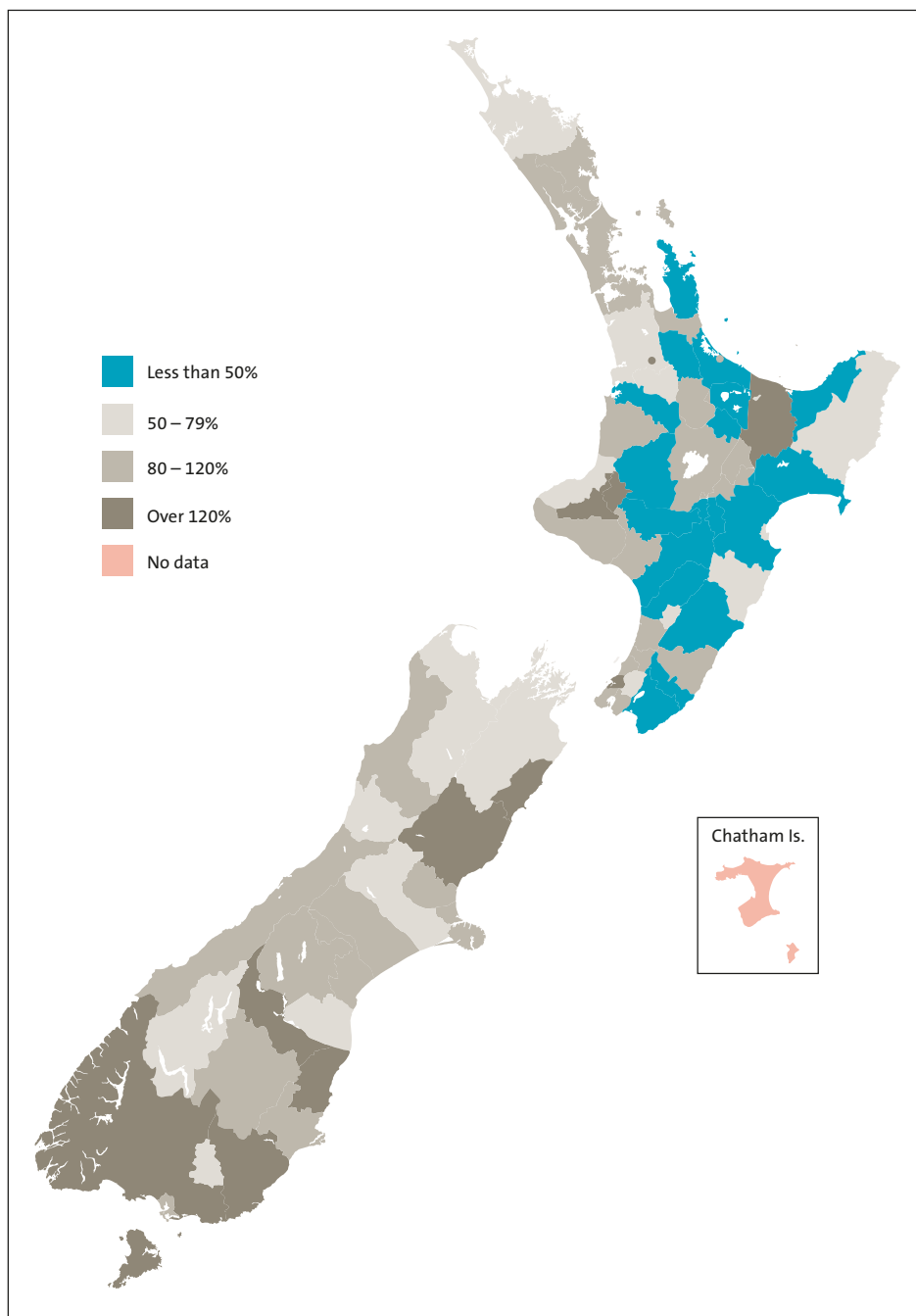
- 5.26 For the councils we looked at:
- Porirua City Council is not planning for any spending on renewing stormwater assets.
  - Dunedin City Council is planning to spend 115% of depreciation on renewing and replacing stormwater assets.
  - Thames-Coromandel District Council is planning to spend 89% of depreciation.
- 5.27 However, these figures do not tell the whole story. For example, Porirua City Council is planning to spend more than \$15 million during 2019-28 to increase the levels of service its stormwater system provides. This will include some renewing of stormwater infrastructure that is not recognised in the figures above since the main reason for doing the work is to increase the capacity of the stormwater system rather than renewing it. Porirua City Council does not expect to carry out major renewals until the 2030s because that is when the Council expects its stormwater infrastructure to start reaching the end of its useful life.
- 5.28 This is in contrast with Dunedin City Council. The Council is catching up on a backlog of assets that need replacing because they are past their useful lives. It has also had issues in delivering its planned capital spending, which has meant that this backlog has increased over time (see paragraphs 5.31-5.40 for more information).
- 5.29 Addressing the identified weaknesses in information about their flood risk and the current state of their stormwater systems would help the three councils to better identify and prioritise the work needed to achieve the agreed levels of service and the cost of doing so. It would also allow the Council to give people confidence that the stormwater system will continue to protect their homes from flooding.
- 5.30 For example, the three councils primarily based their renewals planning on the age of their assets. However, if they had better information about the condition and performance of their assets, the councils would have more certainty about when these needed to be replaced.

### **Councils need to improve their delivery of planned capital spending**

- 5.31 Some councils have had issues in delivering their planned capital work programmes. Better information would help councils prioritise funding. However, there is still a risk that, if councils continue to under-deliver their planned capital spending programme for stormwater infrastructure, their stormwater systems will not deliver the agreed levels of service in the future. This could lead to more flooding.
- 5.32 The three councils are making changes to improve their delivery of their capital spending programmes.

**Figure 6**  
**Councils' actual capital spending on stormwater infrastructure compared with planned spending, 2014/15 to 2016/17**

Many councils in the North Island spent less than half of what they had planned for.

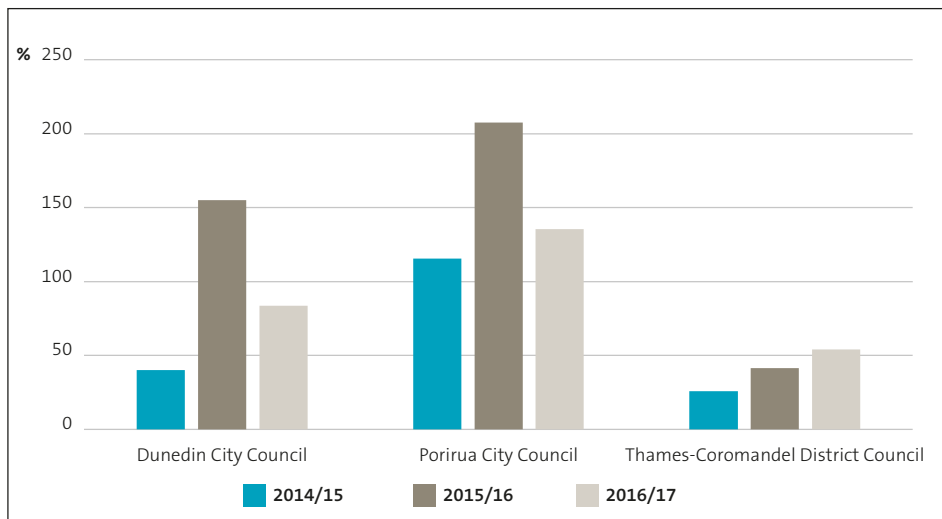


Source: Office of the Auditor-General, based on figures in councils' 2015-25 long-term plans.

- 5.33 Figure 6 shows that, from 2014/15 to 2016/17, 33 of 67 councils spent less than 80% of their overall planned capital expenditure for stormwater infrastructure. Only two councils consistently spent 80%-120% of their planned capital expenditure each year.
- 5.34 Between 2014/15 and 2016/17, Dunedin City Council spent 87% of planned capital expenditure, Porirua City Council spent 141%, and Thames-Coromandel District Council spent 36%. However, Figure 7 shows that there were significant variances in the three councils' actual spending on stormwater infrastructure compared with planned spending during those three years.

**Figure 7**  
**Actual capital spending on stormwater infrastructure as a percentage of planned spending, by council, 2014/15 to 2016/17**

For the last three years, none of the three councils consistently spent close to what they had planned.



Source: Office of the Auditor-General, based on figures in the three councils' 2015-25 long-term plans.

- 5.35 Some of the reasons for the three council's under- and overspending include:
- delays in projects;
  - unspent money from projects completed under-budget being added to next year's budget;
  - over-budgeting and changes in scope;
  - internal capacity and capability;
  - procurement processes;

- contaminated ground; and
- the availability of contractors.

- 5.36 These reasons are similar to what we reported in our 2018 report, *Managing the supply of and demand for drinking water*.
- 5.37 The three councils are making changes to improve their delivery of their capital programmes. For example, Dunedin City Council is setting up an engineering support consultancy panel, and Thames-Coromandel District Council has created a new team to manage the delivery of capital projects.
- 5.38 The situation of historically underspending planned capital expenditure while planning to significantly increase capital expenditure on stormwater infrastructure is not unique to the three councils.
- 5.39 We identified 20 councils that increased their planned capital expenditure by more than 10% in 2019-25 compared to previous forecasts but spent less than 80% of their planned capital expenditure from 2014/15 to 2016/17.
- 5.40 In our view, if councils are going to deliver the planned increase in capital expenditure on stormwater infrastructure, they will need to make improvements, including improving their information to plan better (see Recommendations 1 and 4) and increasing internal capacity and capability (see Recommendation 5). Otherwise, there is a risk that the stormwater system will not deliver the agreed levels of service in the future.

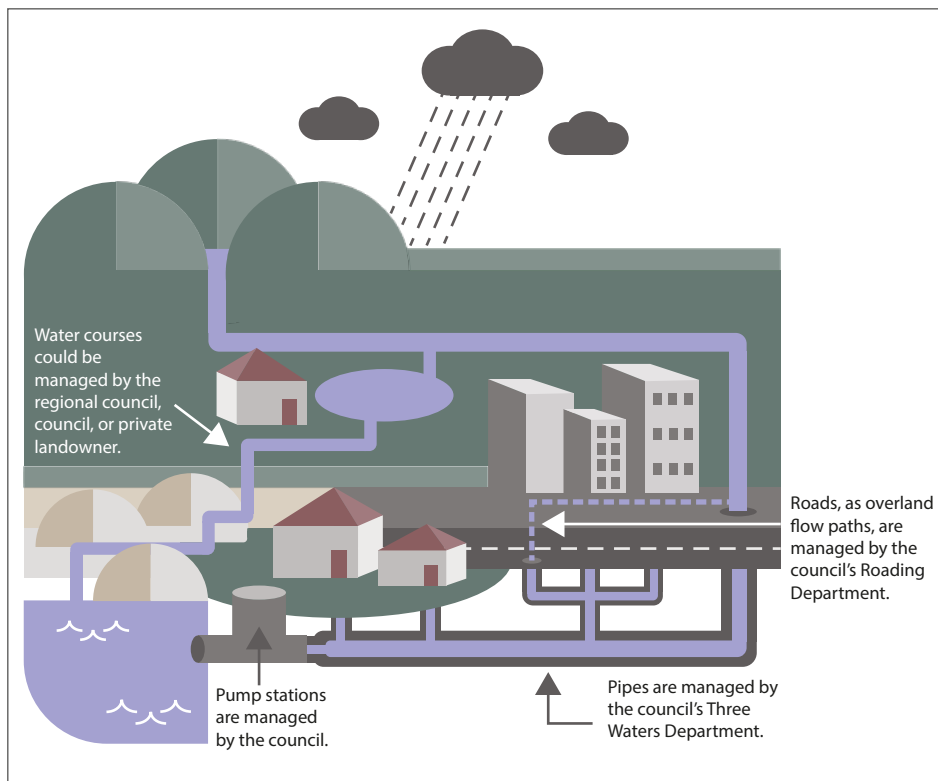
### **Councils need to work effectively with others**

- 5.41 Regional, city, and district councils' roles and responsibilities for hazard management, including flooding, are interconnected (see paragraphs 1.3-1.6).
- 5.42 For example, Dunedin City Council's stormwater piped network discharges into the Taieri River and tributaries, for which the Otago Regional Council manages the flood protection. When the Taieri River and tributaries are high, stormwater discharge is hindered, leading to backflow and flooding in Mosgiel.
- 5.43 We expect city and district councils to work effectively with regional councils to manage flood risk in their areas.
- 5.44 We observed in each of the three councils that greater clarity about roles and responsibilities would support more effective management of flood risks. This includes co-ordinating work programmes, sharing hazard information, and being clear about who is responsible for maintaining what.

- 5.45 Waikato Regional Council is leading work to understand some flood risks in the Thames-Coromandel district and to share hazard information in the Waikato region. Staff from Thames-Coromandel District Council and Waikato Regional Council told us that they had a good relationship but that roles and responsibilities between the councils could be clearer – for example, responsibility for managing coastal hazards.
- 5.46 Councils also need to manage the different parts of their stormwater systems holistically. This can be challenging because separate departments within a city or district council, the regional council, or private landowners can manage different parts of the system (see Figure 8).
- 5.47 For example, Dunedin City Council has little information on watercourses and private drains. Responsibility for these are split between the Council, Otago Regional Council, and private landowners. This means that there is a lack of clarity about who is responsible for watercourses. There are also concerns that a lack of renewals and maintenance for watercourses and private drains will increase the risk of flooding.

**Figure 8**  
**Illustration of the different roles and responsibilities for the stormwater system**

Different parts of the stormwater system are managed by different agencies or individuals.





- 5.48 In our view, there is also an opportunity for all councils to work together in new ways to address shared challenges in managing their stormwater systems, such as collaborating to improve their capability in asset management and in responding to climate change. During our audit, we saw two examples of councils collaborating in this way.
- 5.49 Wellington Water's predecessor, Capacity Infrastructure Services, took over management of Porirua City Council's stormwater system in 2013. Porirua City Council observed that Wellington Water raised technical, operating, and management capabilities in the Wellington region. This observation was supported by staff from the Council and Greater Wellington Regional Council, who told us that Wellington Water has improved the management of Porirua City Council's stormwater system.
- 5.50 A report commissioned by the Local Government Commission in 2016 reported that the Wellington Water model was showing signs of providing a more efficient and effective service than previous arrangements. It also noted that the model was still maturing.
- 5.51 Thames-Coromandel District Council and eight other Waikato councils have recently agreed to prepare a business case to set up a centre of excellence under a Water Asset Technical Accord to support the councils to improve the management of their water assets.
- 5.52 The new Water Asset Technical Accord is aiming to establish best practice in water and wastewater management and provide the councils with guidance on asset and environmental management, compliance frameworks, and investment decision-making. This builds on the region's Road Asset Technical Accord.
- 5.53 In our view, there is an opportunity for councils to collaborate more to address their shared challenges.

---

**Recommendation 5**

We recommend that councils identify and use opportunities to work together with relevant organisations to more effectively manage their stormwater systems.

---

- 5.54 Councils might need help from organisations that have an interest in the local government sector, such as the Department of Internal Affairs, the Ministry for the Environment, and Local Government New Zealand, to facilitate this.

- 5.55 Some councils noted that this could include central government providing greater direction to councils. Current central government guidance includes these guides issued by the Ministry for the Environment:
- *Climate change effects and impacts assessment: A guidance manual for local government in New Zealand*, May 2008;
  - *Climate Change Projections for New Zealand*, September 2018;
  - *Coastal Hazards and Climate Change: Guidance for Local Government*, December 2017; and
  - *Preparing for future flooding: A guide for local government in New Zealand*, May 2010.
- 5.56 There is also a voluntary New Zealand Standard *Managing Flood Risk – A Process Standard*, published in 2008. However, there is currently no mandatory national standard for managing flood risk or natural hazards. A national policy statement for natural hazards is currently proposed.
- 5.57 During our audit, the Government announced the Three Waters Review. This review is looking at how to improve the management of New Zealand’s drinking water, wastewater, and stormwater. The review is looking at the options for improving the management of the three waters, including the service delivery, funding, and regulatory arrangements.

<b>Questions to consider</b>
<b>For councils:</b>
How do you know that your maintenance regimes are supporting you in achieving the intended level of service?
How are you prioritising and planning your work programme to ensure that the stormwater system is achieving, and will continue to achieve, the intended level of service?
Do you have the right people and skills to deliver your work programme?
<b>For people to ask their councillor:</b>
How is the council working to address any issues in delivering the level of protection?
– What are the options for addressing those issues?
– How long will it take?
– How much will it cost?

# About our publications

## **All available on our website**

The Auditor-General's reports are available in HTML and PDF format, and often as an epub, on our website – [www.oag.govt.nz](http://www.oag.govt.nz). We also group reports (for example, by sector, by topic, and by year) to make it easier for you to find content of interest to you.

Our staff are also blogging about our work – see [blog.oag.govt.nz](http://blog.oag.govt.nz).

## **Notification of new reports**

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

## **Sustainable publishing**

The Office of the Auditor-General has a policy of sustainable publishing practices. This report is printed on environmentally responsible paper stocks manufactured under the environmental management system standard AS/NZS ISO 14001:2004 using Elemental Chlorine Free (ECF) pulp sourced from sustainable well-managed forests.

Processes for manufacture include use of vegetable-based inks and water-based sealants, with disposal and/or recycling of waste materials according to best business practices.

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

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

Email: [reports@oag.govt.nz](mailto:reports@oag.govt.nz)  
Website: [www.oag.govt.nz](http://www.oag.govt.nz)