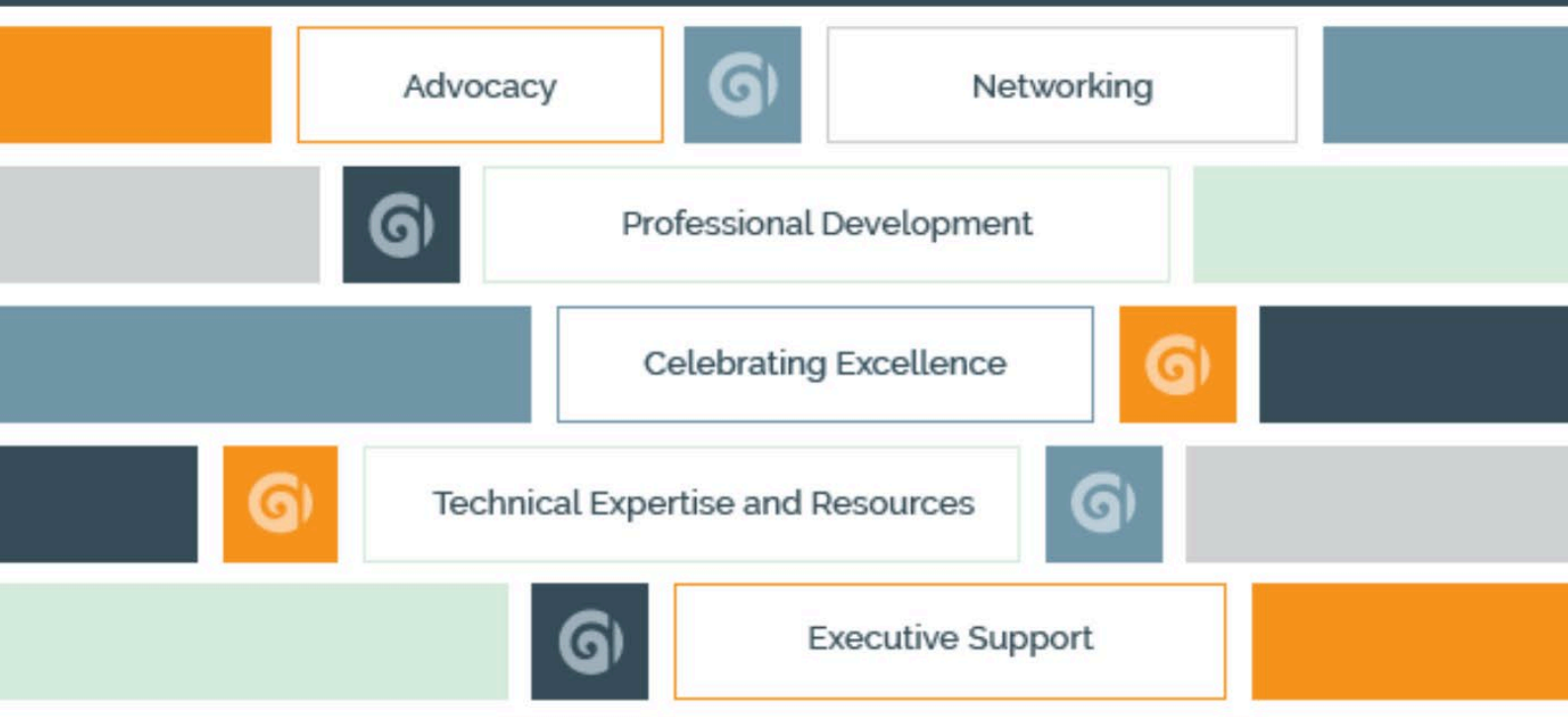
Taituarā
Local Government Professionals Aotearoa

A Practical Approach to the Economic Regulation of Water Services

A conversation starter from Taituarā – Local Government Professionals Aotearoa

May 2024



Foreword

This paper is intended as a contribution to a significant aspect of the ongoing development of your Government's *Local Water Done Well* reform programme.

Economic regulation will be critical to the success of any reform of water services. The anticipated levels of future investment required will be such that the public will demand transparency as to the use of the fees and charges they pay, and for the outcomes generated by that funding.

This paper sets out a series of proposals for the design of a future regime of economic regulation of the water services. The paper provides an outline of the key features of the regulatory system and more detailed discussion about the basket of measures and other information an economic regulator would ask providers for.

We have approached this with the following design features in mind:

- economic regulation would apply regardless of the actual model of service delivery that local authorities and their communities select. (That is to say economic regulation will apply equally to council provided services and those provided on behalf of councils)
- economic regulation will apply to all water services i.e. no exclusions for stormwater
- a regulatory regime must provide for the sustainable delivery of water services over the long-term
- the likely policy settings for water services point to a less intrusive regulatory approach that has transparency as its main objectives and
- the economic regulator should, in the first instance, seek to re-use or re-purpose existing information collected by other agencies (for example, Taumata Arowai).

As we write this, we had the benefit of participating in discussions with the Department of Internal Affairs and Water New Zealand around the sustainability of service delivery plans. Those discussions have influenced our approach to the selection of financial measures.

We trust that you will find this paper helpful to the development of proposals around service delivery planning, the foundational information disclosure and, of course, the economic regulation of water services.

Jo Miller
President
May 2024

What is this paper?

Taituarā — Local Government Professionals Aotearoa ('Taituarā') is Aotearoa New Zealand's leading membership network for professionals working in, and for, local government. We have a membership base of 1,010 members drawn from local authority Chief Executives, managers, and staff across all 78 local authorities.

Taituarā strengthens the local government sector as a whole by using our members' insight and experience to influence the public policy debate. We encourage thought leadership by enabling our members to step back from the day-to-day agenda, taking time to share wisdom, create value, and build knowledge.

One of the key elements of the Government's *Local Water Done Well* policy is the establishment of a Water Infrastructure Regulator ('the regulator') within the Commerce Commission. *Local Water Done Well* states that the regulator will have three main functions.

"First, it will monitor councils to ensure they are investing adequately in maintaining pipes and upgrading their water infrastructure to accommodate growth. Where councils have allowed their assets to be run down, they will be required to restore them to meet minimum standards. ….

Second, the Water Infrastructure Regulator will ensure that water pricing or charges for connection are fair – for communities and councils. Water assets should be self-funding, but communities should never be overcharged.

Third, the Water Infrastructure Regulator will set quality standards for water infrastructure – so communities receive safe, reliable services." [1]

This paper has been prepared as a contribution to the development of policy around the future of water services in Aotearoa New Zealand. It is intended to assist the Government to further develop the proposed roles and responsibilities of the regulator including advice on the basket of indicators and data points that the regulator could use in meeting these obligations.

[1] National Party of New Zealand (2023), Local Water Done Well, page 5. Downloaded from https://www.national.org.nz/local_water_done_well on 21 March 2023.

As we write this the overarching policy is still under development. Aspects of the design of Local Water Done Well will play a significant role in shaping how the regulator would approach their role. To take an example, the previous Government's reform legislation prohibited water entities from distributing any profit or surplus to the shareholding entities. If such a provision were to carry forward into these reforms, then there would be little incentive for water providers to make excess profits, reducing one of the common sources of perceived 'unfairness, in charging.

This paper is far from the last word on the economic regulation of water services. We expect that the regulatory framework will develop with the rest of Local Water Done Well. We look forward to helping further shape these ideas.

Why economic regulation?

Water services are an example of a natural monopoly in that each is a service where there are high barriers or start-up costs that prevent others from readily entering the sector. Water services require an infrastructure of treatment, distribution or disposal facilities that come with substantial initial capital costs and ongoing life cycle costs. While there are examples of small-scale private schemes, private sector involvement in the delivery of larger schemes in this country has always been through the acquisition of an existing scheme (or rights to operate the scheme).

The purpose of economic regulation is "to protect consumers from the problems that can occur in markets with little or no competition." These problems are described as the three evils of monopoly: higher prices or excess profits; lower quantities than economically efficient; or lower/deficient quality of service.

Economic regulation provides protection for consumers in one of two ways:

- requiring the regulated providers to disclose certain information about their performance and operations providing transparency to consumers and thus enabling them to detect differences in performance between providers and hold them accountable for these (For example, enabling customers to ask questions such as "why is the price I'm paying for this service different from that in the next town?")
- directly controlling the price and/or quality of services.

Any reform of water services is likely to founder if there is any suggestion that water users are being 'overcharged' for this service, or that the funds raised are not being spent 'appropriately.' Taituarā has therefore been an active supporter of the need for economic regulation of water services.

Types of economic regulation can include price-quality regulation and information disclosure requirements. Information disclosure regimes and the associated 'benchmarking' are a commonly-used tools to introduce some degree of competitive tension into monopoly services. Information disclosure regimes and the associated 'benchmarking' are a commonly-used tools to introduce some degree of competitive tension into monopoly services.

The government policy decisions to date point to a regime that is relatively 'light-handed' and more about supporting the accountability of the providers to the public for their planning and financial management (thus minimising price shocks or avoiding them altogether).

Who should the regulator be?

Which agency should be undertaking the role of an economic regulator? There are three options. Responsibilities could sit with:

- the Commerce Commission alongside its role the economic regulator for other network infrastructure providers such as energy and telecommunications or
- Taumata Arowai as the health and environmental regulator or
- a purpose-built economic regulator for water services.

Previous work undertaken by the Ministry of Business, Innovation and Employment suggests that smaller economies tend to co-locate the economic regulation of different sectors together – as New Zealand does with energy, telecommunications, and groceries. Tasmania takes a similar approach. Larger economies or those with ready access to skills are more likely to establish stand-alone economic regulators. The Water Industry Commission for Scotland and the English Office of Water are examples.

We do not favour establishing a stand-alone economic regulator. We are concerned that such an office would need a critical mass of regulators to function and would draw on a small pool of skills in economic regulation. We see establishing a separate entity as unnecessary cost and duplication of resources.

We are also unconvinced of the merits of locating economic regulation within Taumata Arowai. This too would draw on the pool of skilled economic regulators – though possibly not to the same extent as a stand-alone entity would. Our concerns with this model are that there is a potential for role conflict i.e. that the roles of an economic regulator might temper or colour the approach they take to their function as a health and environmental regulator. Our understanding is that the Commerce Commission has a greater level of statutory independence.

We therefore favour locating the economic regulation of water with the Commerce Commission. It would allow for learning from regulation of other network industries and minimum role conflict.

Principles

In the coming 12-15 months local authorities will make choices about their preferred service delivery option as part of the service delivery planning required under upcoming legislative change. Part of central government's assessment of those plans will involve an assessment of the financial and asset sustainability of the plans. There are common elements to such an assessment and the role of an economic regulator.

We have used the following principles to develop the remainder of the proposals included in this paper:

- *Customer-focus* – the purpose of economic regulation is to promote the interests of the customer/user of water services
- *Sustainability of service* - the economic regulator must achieve the above purpose in a way that encourages and supports providers to manage their assets sustainably over the long-term and in accordance with their other legal obligations (for example, compliance with the Water Services (Drinking Water Services for New Zealand) Regulations 2022)
- *Support for the role of water services in promoting urban growth and strategic planning objectives* - water services are not provided for their own sake, but to support the development of our communities, especially of our urban areas. Poorly designed economic regulation could disincentivise investments to support investment in growth-supporting infrastructure (for example to fit within an excessively tight revenue cap)
- *Efficiency* – economic regulation of water services should encourage and support providers to seek efficiency gains, innovate and look for productivity improvements. For example, pricing and funding approaches based on 'last year plus an allowance' basis need rigorous interrogation.
- *Simplicity* – a regulatory regime should require collection and disclosure of only that information necessary to fulfil the purpose of the regulations. Wherever possible the economic regulator and other agencies (such as Taumata Arowai) should coordinate the contents and timing of their requests.
- *Transparency* – the regulator should provide evidence that the regulatory regime is achieving the intended purpose, water service providers should therefore expect that their data will be publicly available *at provider level* as well as any analysis or compilation undertaken by the provider.
- *Consistency and certainty* – the regulator must clearly set out definitions and methodologies to be followed by providers in supplying the information (the repealed legislation referred to these as input methodologies).

Scope

Our understanding of *Local Water Done Well* is that it will empower councils to make decisions about the service delivery options that work best in their given local circumstances. The range of information collated and reported about the 'current state,' and financial and performance matters will inform delivery arrangements for water services and explain how councils will deliver services in a financially sustainable manner.

These judgments will form a core element of the service delivery planning all local authorities will have to undertake, and a requirement that these plans show how services will be delivered on a sustainable basis.

As a result, there is likely to be wide variation in the future delivery of water services. Some local authorities may choose to retain water services 'in-house;' some may use the council-controlled organisation (CCO) options in the Local Government Act 2002, others may choose the 'modified CCO' option.

Some may take different views in how they deliver each of these activities. Based on feedback in the reform process to date it seems likely that some local authorities will elect to retain stormwater in-house and aggregate drinking water and sewage treatment into a CCO.

Regardless, economic regulation should apply to providers of the regulated services regardless of organisational form that the provider takes i.e. regulation should apply to council delivered water services, and CCOs alike.[2] Excluding some types of organisational form from economic regulation may provide incentives at the margin to select one option over another. As we have already observed, one of the key benefits of economic regulation is the ability to compare performance across entities through information – a benefit that would be partially compromised were coverage of the regime not universal.

Which water services should be included?

Noting that the purpose of this work is not to revisit or contest the policy settings of *Local Water Done Well,* the question then becomes "is there any sound rationale for excluding any of drinking water, sewage treatment and disposal, or stormwater treatment and disposal?"

[2] We would also extend economic regulation to government agencies that deliver water services such as the Ministry of Education, the Ministry of Defence, and the New Zealand Transport Agency. . .

MBIE has previously stated that:
"Internationally, whether or not stormwater networks are economically regulated appears to hinge on the structure of the water sector, the desire for comprehensive performance improvement across the water sector, and overall regulatory coherence. Where stormwater networks are operated alongside drinking water and wastewater networks, they tend to be economically regulated because this is in the best interests of consumers and provides a more cohesive regulatory regime."

We understand the Government's preference is that stormwater be managed with other water services.

Stormwater networks are more complex than drinking water or wastewater systems, with most comprising a piped stormwater network as well as above-ground, watercourses, secondary, and overland flow paths. Currently there are significant gaps in stormwater flood risk information and how it is developed, variations between councils' levels of service, design standards and policies related to flooding and protection.

The size and scale of the likely future investment in stormwater services is less well quantified which may lend itself to a greater user demand for transparency, pointing to a preference for the economic regulation of stormwater management.

In making this recommendation we acknowledge that stormwater disposal is often provided alongside other non-water services. For example, the curbing and channelling that runs alongside streets in many urban areas. The regulator must take care than any regulation of stormwater disposal does not impose reporting (or other) obligations in respect of non-water services.

Regulatory Periods and the Planning Horizon

Economic regulators set price-quality paths, which is to say a combination of prices and service expectations that form the basic regulatory test or tests that providers are expected to meet. Those paths cover a set period of time to provide users and providers with some degree of certainty.

Economic regulation in New Zealand tends to operate regulatory periods of five years, though we are aware of three-year and four-year periods applying historically in the telecommunications industry.

Some may baulk at the notion of a four - or five-year regulatory period – sitting as it does outside the statutory shelf-life of a long-term plan and the electoral cycle. But while a long-term plan has a shelf life of three years, its planning horizon is longer with the long-term plan requiring a minimum of ten years asset and financial data. Water services must also be included in an infrastructure strategy that must, at minimum, contain thirty years of financial and service information.

We anticipate that whatever the service delivery options pursued in future (local authority, shared CCO or modified CCO) that the owners will be subject to economic regulation. Further we also expect that providers will be required to manage water services to deliver the same set of health, environmental and economic benefits in a financially sustainable way. We would expect all providers will be required to prepare some form of long-term charging plan (the former reforms referred to this as a funding and pricing plan) and a long-term plan for managing each group of assets (an infrastructure strategy).

We suggest that an economic regulator work on a regulatory period of five years once the regime is established, but that all regulatory decisions must be cognisant of the expenditure and asset needs over a thirty-year period. This would apply regardless of the period legislation sets for service delivery planning.

Indicators of Long-term financial sustainability and costs

The revenue sufficiency ratio – is a test that considers whether the provider is generating enough cash revenue to meet operating needs. A long-serving practitioner once observed that 'funding is about cash, and cash is king.' The information on the face of the Statements of Comprehensive Revenue and Expenses contains non-cash items such as vested assets and gains and losses on assets that do not represent available cash.[3] Other revenues might be tied for a specific purpose – such as the development and financial contributions councils receive.

This is based on the so-called balanced budget benchmark of the Local Government (Financial Reporting and Prudence) Regulations 2013 (the prudence regulations).

A result of one or more indicates a sufficient level of revenue, a result of lower than one is an indicator of a sufficiency concern especially where the result is deteriorating or sustained over a period of time. The regulator would most probably look at the individual result for each year of a thirty-year period while looking for the overall trend.

Revenue sufficiency revenue

Total revenue (excluding development contributions, financial contributions, vested assets gains in derivatives on financial instruments and revaluations of property, plant, or equipment/operating expenses (excluding losses on derivative financial instruments and revaluations of property, plant or equipment) for the year.

Renewals expenditure / depreciation ratio (also known as the asset sustainability ratio) - is a measure of the extent to which infrastructure assets are being replaced as they reach the end of their useful lives. This measure effectively uses depreciation expense as a proxy for the deterioration of infrastructure throughout its life. A ratio of one (or close to it) implies that providers are, broadly speaking, replacing infrastructure at the rate at which reaches its end of useful life.

Ratios significantly below one are potentially an indicator that a provider might not be spending a sufficient amount on renewals to replace capital, particularly where this occurs over a period of time.[4]

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[3] Indeed, a provider that receives a vested asset inherits an ongoing liability to maintain those assets.

[4] The result is indicative only. A council that has made large capital investments (as for example might be the case in a provider that operates in an area with rapid housing) might justifiably not be spending up to the depreciation expense.

Asset sustainability ratio

Renewals expenditure / depreciation expense

Growth investment efficiency ratio – there are around 15-20 local authorities for whom meeting the needs of growth are the significant driver of the capital programme (with an ongoing 'echo' of renewals and maintenance in later years). This ratio considers whether the provider is optimising its investment in growth related capital expenditure. It asks for a cost per new connection.

A high number of new connections with low programmed capital expenditure is a sign that growth is occurring in and around catchments that are already served by trunk infrastructure. The reverse may be a sign of infrastructure being provided in advance of a new catchment. The regulator will need to assess this against the relevant growth planning.

Growth investment efficiency ratio

Capital expenditure to support growth over the thirty-year period covered by the provider's infrastructure strategy/ the additional connections expected in the same period.

For context, the regulator will need the relevant future development strategy, growth strategy, and district plan.

Asset renewal funding ratio – the asset renewal funding ratio is a long-term sustainability measure.

This ratio is a measure of the extent to which the provider is translating the theory of asset management planning into a funded 'reality.' It is calculated as planned renewals over ten years from the long-term plan / total renewals over the years signalled in the asset plans.[5]

A ratio significantly below one may indicate a systematic underfunding of the renewals programme.

[5] We assume that all providers of water services will be required to prepare an asset management plan (i.e., a document prepared by professional staff that sets out levels of service and the necessary maintenance, other operating expenses, renewals, and improvement expenditure) and a long-term plan (a document approved by the governing body).

Asset renewal funding ratio

Total renewals expenditure over 30 years from the adopted long-term plan / total renewals expenditure over 30 years from the asset management plan.

Asset maintenance funding ratio – this ratio is a measure of the extent to which the provider is translating the theory of asset management planning into a funded 'reality.' It is calculated as planned maintenance over ten years from the long-term plan / total maintenance over the years signalled in the asset plans.[6]

A ratio significantly below one may indicate a systematic underfunding of the maintenance programme

Asset maintenance funding ratio

Total maintenance expenditure over 30 years from the adopted long-term plan / total maintenance expenditure over 30 years from the asset management plan

*Net debt to total revenue - t*his ratio measures the level of debt a provider has relative to its income. It is a measure in common use by the financial sector, especially the rating agencies and the Local Government Funding Agency (LGFA). There is public interest in the measure – the levels of debt water providers might require and how much they may be able to attract has been the subject of much comment in the reform process.

Like the LGFA we choose to focus on a provider's net debt – that is to say its level of debt considering any facilities that the provider may have to retire that debt. For example, some providers may have, or choose to establish, investment portfolios that can be used to pay down debt.[7] This measure also excludes holdings of cash and cash-like assets. It excludes accounts receivable as it is not clear to this writer how quickly accounts receivable could be converted to cash (for example, these debts could not be factored).

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[6] We assume that all providers of water services will be required to prepare an asset management plan (i.e., a document prepared by professional staff that sets out levels of service and the necessary maintenance, other operating expenses, renewals, and improvement expenditure) and a long-term plan (a document approved by the governing body).

[7] Our analysis of local authority accounts shows that some actually have a negative net debt to revenue ratio as a result of investment funds generated by asset sales.

An assessment of financial sustainability must, of necessity, focus on the availability of cash to meet the ongoing expenditure involved in providing water services. Modern financial accounting recognises some non-cash items as revenue. In particular, those assets vested in a water provider (such as those built in a development and subsequently transferred to the water provider) are recognised as revenue yet are a non-cash item.

In a similar vein, some revenues are provided for specified purposes, which do not usually include the retirement of debt. For example, a grant from central government is always tied to the construction of a specified project or asset.

Net debt to revenue ratio

Total borrowing less cash and liquid investments / total revenue less vested assets, grants and subsidies, development, and financial contributions.

Interest to total revenue ratio - another measure commonly used by the financial sector (including the rating agencies) This a measure of a provider's ability to service the debt it has.

Interest to revenue ratio

Interest expense / total revenue less vested assets, grants and subsidies, development, and financial contributions.

Cash/Absolute Liquidity Ratio – a measure of liquidity i.e. the ease (or otherwise) with which a water services provider can meet any short-term liabilities. There are a variety of measures of liquidity – this measure focusses on the ability to clear short-term liabilities using highly liquid assets (cash and cash equivalents such as investments).

Absolute liquidity ratio

Cash and equivalent assets / Current liabilities.

Maturity profile of debt – a maturity profile is a schedule or table that shows how much a provider has borrowed and the timing that these borrowings fall due. Spikes in the retirement of debt point to how and where the end charges may increase.

Weighted average cost of borrowing, sometimes referred to as the weighted average cost of capital (WACC) - in the context of a water provider this is the average cost of the funds that the provider has borrowed be it from a financial institution issuing bonds and so on.[8]

WACC is calculated as the cost of debt raised from each source weighted by the percentage of the total debt that particular source makes up. For example, Kiwi Water has borrowed 100 million from entity A at 6 percent interest per annum and 20 million from entity B at 5.8 percent. The WACC for Kiwi Water is therefore 5.97 percent ((100/120) *0.06) + ((20/120) *0.058)

An economic regulator would consider WACC as a factor when considering whether an entity was making an excessive rate of return. We recommend including a measure of WACC due to the public interest in the cost of borrowing. One of the drivers for water reform, whether Local Water Done Well or the affordable water reforms, has been the ability of water providers to access sufficient amounts of finance and the terms and conditions on which that finance has been provided. This may be a piece of information useful to the public in making a judgment about the effectiveness of the service delivery choices the local authority 'owners' have made.

Weighted average cost of capital

The cost of debt raised from each source weighted by the percentage of the total debt that particular source makes up.

Unit costs - we have observed that economic regulation of water services should provide the consumer with transparency and accountability for the use of 'their' charges.

A measure or measure of unit costs would be a must have in any basket of public-facing indicators. Any information disclosure regime without such a set of measures would struggle for public credibility and undermine other aspects of the reform programme.

[8] In a private sector organisation, the WACC would include some expected rate of return for those holding equity in the organisation. As we have assumed that these reforms will include some form of prohibition on water providers distributing a surplus to shareholders, there is no return on equity.

Unit cost measures lend themselves well to comparisons between providers, indeed it is one of the primary sources of the competitive tension that transparency generates. These comparisons need to be presented and interpreted with caution as the influence of physical geography and land-use on water costs give rise to significant differences in the cost of provision that go well beyond the efficiency or otherwise of performance.

Unit cost measures for the supply of drinking water are easy to define – they are the cost per a defined unit of measurement of water supplied. The regulator will need to specify the unit of measurement (the denominator) be it cubic metres or units of supply etc.

Unit cost measures for stormwater services use proxies for the size of the service for example costs per property served, or cost per kilometre of drains/pipes etc. Both are imperfect.

A unit cost measure for sewage treatment and disposal appears to sit somewhere between the other two. Local authorities should have some robust records of the volumes of wastewater treated (compliance conditions will require it – but may not be universal).

Unit cost

The cost of drinking water per unit of water supplied. The cost of sewage treatment and disposal per unit of wastewater treated. The cost of stormwater disposal per property served.

*Capital delivery ratio - w*hether a council, or some form of council organisation, providers of water services are investing billions of dollars and raising that money from the public to do so. The public will view a project left undelivered as funds unjustifiably gathered by the provider.

Of course, there are valid reasons why projects are carried over from one year to another. Unexpected delays in receiving consents are common with large infrastructural projects – especially with those involving discharges to land or to water. More recently supply chain disruptions and a 'tight' labour market for civil construction have been cited as factors. Capital delivery has always been a challenge with historic estimates suggesting the local government sector has not often delivered more eighty percent of the planned programme.

An economic regulator would use the historic levels of capital delivery and the reasons for this in forming a judgement about the reasonableness of the capital delivery programme. A provider with a serially low level of capital delivery, is less likely to deliver on current and future plans and call the forecast expenditure and associated revenue raising into doubt.
We propose to control for year-to-year variation by taking a rolling average of the last five years of delivery.

Capital delivery ratio

The total value of capital projects completed during the previous five years/ the total value of capital projects planned for those years.

(In the initial establishment phases the regulator will need to look year by year and identify trends).

Other financial information – forecast financial statements prepared under the relevant standards of Generally Accepted Accounting Practice are a staple of any economic regulator's requests for information. There are some additional requirements imposed by the financial prudence regulations that would provide information for the economic regulator such as:

- requirements to disclose asset values – with the values of reticulation and treatment assets separately shown
- a requirement to prepare a funding impact statement (a statement showing movements of cash into and out of each activity), including a requirement to separately show actual and forecast capital expenditure separated by the primary driver (supporting growth, changing levels of service or renewal of assets)
- requirements to disclose actual and forecast revenues received from metering of water (in almost all local authorities this is undertaken under the authority of section 19 of the Local Government Rating Act 2002).[9]

[9] There is an option to meter water under the authority of Section 12 of the Local Government Act 2002. This is not in wide use as this power is reliant on the local authority and the user entering into an individual agreement, and the enforcement mechanisms of the Local Government Rating Act are not available.

Long-term Asset Sustainability

Economic regulators are generally provided with a purpose phrased around securing the *best long-term outcomes* for consumers (emphasis supplied). The terminology is a deliberate choice that reflects that water services are provided for the long-term, and generate a suite of health, economic and environmental outcomes.[10] Regulators are expected to balance the pricing of these services alongside the other outcomes e.g. what value are water services providers offering for the cost?

An effective economic regulator will avoid focussing solely on the financial outcomes. Indeed a water provider might well demonstrate a low level of cost, a low level of debt and not meet other objectives.

In addition to a suite of measures that indicate financial sustainability the regulator should be looking to the long-term fitness for purpose of the assets and seeking assurance that the provider is adequately providing for this. It is this aspect of the regulator's task that calls for the long-term view that is one of the core principles we recommend.

The regulator is likely to need two sets of information. The first is contextual information about the services themselves such as levels of service, demand forecasts and the like. The second is more detailed information about asset condition and performance (we will use the term asset information).

Contextual Information

A description of the network by asset class
The regulator needs an understanding of what it is they are regulating. Taumata Arowai has produced a classification that serves as a point to start. We show these in Appendix B.

The definition of stormwater from the Water Services Acts Repeal Act 2024, lifted and shifted into the Water Services Act 2021 (includes overland flow paths, green infrastructure, and watercourses) into Water Services Regulators Act 2021 (and Urban Development Act). Suggest specific mention for water sensitive /stormwater devices (beyond pipes) is included in the stormwater asset information required.

We suggest these - especially stormwater devices- are included with the Appendix B definitions.

[10] It is not clear whether the current government will legislate for powers to develop a Government Policy Statement for Water Services similar to those in the repealed legislation. We have assumed that Local Water Done Well would include these powers but severely limit its scope.

A description of the asset

A list of the network assets by class (information to include age, type, condition, performance, data confidence, and criticality).

Asset values

An infrastructure provider must have quality information on the valuation of their assets. Asset values provide the basis for calculating depreciation which is an input into developing asset management strategies and an input into setting fees.

The present financial reporting regulations require the disclosure of the following for each of the three water services:

(a) the closing book value:

(b) the value of acquisitions made during the relevant financial year, distinguishing between—

(i) assets constructed by the local authority; and

(ii) assets transferred to the local authority:

(c) the local authority's most recent estimate of the replacement cost unless the asset is valued on a historic cost or deemed cost valuation basis .

One of the implications of this information requirement is that the regulator will need to develop methodologies for:

- the valuation of each class of asset within each of the three services and
- determining the depreciation on each class of asset. Such a methodology is likely to require standard assumptions about useful lives of assets and well as a methodology for estimating depreciation (the straight-line methodology is not always appropriate for infrastructure). This may create significant disruption to financial practice amongst local authorities that elect to retain services 'in house.'

Asset values

The valuation information required under the Local Government (Financial Reporting and Prudence) Regulations for each of drinking water, sewage treatment and disposal and stormwater treatment and disposal.

The regulator will need to set out a standard methodology for the valuation of each category of assets, and a standard methodology for the depreciation of each category of assets.

Growth and Demand

Population growth ratio - providing for growth is one of the major drivers of new capital in many water providers, and the infrastructural echo of maintenance and renewal has consequences across the life of the asset. Understanding growth needs is therefore a piece of critical contextual information.

A ratio that is greater than one is an indicator of a population that is increasing. In the long-term that may mean a greater capacity to raise revenue, in the short-term that may come with a more immediate need to invest in infrastructure. A ratio less than one indicates population decline – in the long-term this may point to declining revenue generating capacity.

Of course, many water providers are of a size where parts of their service areas are declining and part growing. For example, a Bay of Plenty based water provider might be managing rapid growth in the western part of the service area and decline in the eastern and southern parts. Regulators might use this ratio as a prompt or indicator to request more detailed growth catchment by growth catchment data.

Population growth ratio

Population at the end of the current period / Population at the end of the previous period.

Demand forecasts – the demand for water services is not simply a matter of the number of residents in the district. For example there is a productive element to drinking water that is correlated with the level of economic activity in the service area. It may be that a single water dependent business such as food processors might create the same level of demand for drinking water as many thousands of households.

One measure of demand that is common to local authorities is the so-called household unit equivalent (or HUE, pronounced 'huey'). This is a measure of the volume of demand for each different type of infrastructure that is used as the denominator in calculating development contributions under the Local Government Act.

While a commonly used term, and one that is consistent across each of the individual water services, it is not necessarily true that there is a consistent methodology across the sector for determining the present and forecast HUE. Not all local authorities assess development contributions under the Local Government Act.[11] The economic regulator may need to specify a methodology (or more likely methodologies) for estimating HUE.

Demand forecasts are only as good as the methodology that was used to produce them. The regulator should expect providers to supply an explanation of the forecasting methodology and some analysis of the degree of past accuracy.

Providers need to adopt a combination of demand strategies – it is not always a case of meeting demand; optimal asset management often includes strategies to manage demand as well as providing capacity to meet it. Plans for incentivising efficient water use and conservation within a catchment between water takes and discharge (water leaks and unaccounted for water can increase the water take). The introduction of volumetric charging is often cited as having demand management benefits.

The existing Non-financial Performance Measures Rules 2013 require local authorities to disclose a proxy measure for demand management - the average consumption of drinking water per day per resident within the territorial authority district.

Demand forecasts

- **Forecast number of connections to the service (drinking water/sewage treatment and disposal)**
- **The forecast number of household unit equivalents serviced (drinking water/sewage treatment and disposal/stormwater treatment and disposal)**
- **Forecast volume of drinking water supplied (drinking water)**
- **Forecast volume of wastewater treated or disposed (sewage treatment and disposal)**
- **Average drinking water consumption per resident per day within the district/city supplied by the bulk water system**
- **Number of properties served (stormwater treatment and disposal)**
- **The methodology used to develop each of the demand forecasts with an analysis of past performance.**

[11] For example, Western Bay of Plenty District Council and Napier City Council each assess financial contributions under the Resource Management Act 1991. There may also be some local authorities that elect not to assess either development or financial contributions at all.

Levels of service

The other key piece of contextual information is present and forecast levels of service for each of the three water services. The textbook definition of levels of service is *"those aspects or attributes of the service that provides value to those who use or experience the service."*[12]

Sometimes levels of service are set by regulation. For example, the safety of the drinking water supply is subject to regulation set under the Water Services (Drinking Water Services for New Zealand) Regulations 2022.

Under the Water Services Act 2021, Taumata Arowai can set wastewater performance standards and targets[13], and stormwater performance standards and targets which Regional Councils would then adopt, monitor compliance, and enforce. This framework provides a potential mechanism for offsetting risks on unintended consequences as they relate to wastewater and stormwater.

While the present crop of water service providers might measure them differently, and certainly set quite different service expectations against each, there is an unsurprisingly high degree of commonality in levels of service for each of the three water services.

Levels of service for drinking water

Common levels of service for drinking water involve safety of the water supply, security of supply (sometimes termed reliability), responsiveness (in the sense of how quickly issues are resolved) and aesthetic value (water may be safe to drink yet not be acceptable to consumers for taste, smell, or appearance issues).

The safety measure involves an assessment of the level of compliance with the requirements of the Water Services (Drinking Water Standards for New Zealand) Regulations 2022 set by Taumata Arowai. These set maximum acceptable values for amounts of contaminants in samples of water -be they bacterial (e coli) and protozoal (pathological protozoa). Providers would need to disclose whether they have met each of the standards with respect to each of the supplies under control of provider.

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[12] Taituara (2021). *Your Side of the Deal 2021: Performance Management and the Long-term Plan,* page 29.

[13] This power came into force in October 2023.

Insecurity in the drinking water supply compromises the achievement of other levels of service. A secure supply is continuous and a measure of security of supply should focus on those interruptions to supply that are unplanned.[14] The regulator and the general public will look for comparative evidence and for reasons why provider x has a higher level of outages than provider y. Some adjustment for provider scale is essential, this could be either based on the number of customers served or the number of connections to the system.

The pressure of the water supply is also a key aspect of the customer experience. It is interesting to note that the present Non-Financial Performance Measures Rules require only a disclosure of customer satisfaction with water pressure. There is no objective measure currently required.

A common measure tracked by systems used for delivering water is the metres of pressure head, the higher the count, the higher the level of pressure. While a technical measure there are formulae to translate metres of pressure head to comparators that describe a pressure level necessary to support household use.

Responsiveness to faults and complaints will also be a key aspect of the customer experience. There are two aspects to a response:

- attendance – how long does it take the provider to get someone to investigate or assess the complaint or fault?
- resolution – how long does it take the provider to 'fix;' the fault/address the complaint (in some instance addressing may be concluding that no further action is necessary.

Present measures require disclosure of the median response times to complaints and faults segmented into urgent and non-urgent complaints/faults. This is an objective factual measure that sits within control of the provider.

This will require a common methodology (for example – what is considered 'resolution' of a complaint or fault, how is urgent or non-urgent defined?). A regulator may also need to specify that providers use a common technological solution to receive, record and report against these measures. The absence of a common approach to recording these has been one of the issues with the present Non-Financial Performance Measures.

Continuity and security of supply – one of the other major drivers of investment in drinking water is the need for security of supply. Part of this goes to investment in the network to ensure that leakage is kept to optimal issues. Locating additional sources will increasingly become part of investment plans with climate change.

[14] A planned interruption of supply might occur where service needs to be halted to allow for maintenance work etc.

The present Non-financial Performance Measures Rules require local authorities to report the r*eal water loss from the local authority's networked reticulation system*. This measure is a proxy for the condition of drinking water reticulation, mains etc with a higher level of water loss being a proxy indicator of a network that is in poorer condition.[15] Real water loss includes the volume of water lost through all types of leaks, bursts and overflows on mains, service reservoirs and service connections, up to the point of the customer meter. The economic regulator is likely to require a mandatory methodology for calculation – the present regulations require only a description of the methodology the provider uses.[16]

A simpler measure of continuity is the number of unplanned outages – simply put the number of times the water system 'goes down.' Differences in provider size would be controlled for by requiring that this be reported as a number per 1000 customers. While this is a far simpler measure to calculate than real water loss, it makes no attempt to introduce any measure of the impact of the outage e.g. are twenty minor outages more disruptive than one major outage?

Measuring security of supply requires some attempt to match demand and the ability to access water supply (rainfall, bringing new sources online etc). Local authorities should have assessments of both available as part of their asset management planning. The Ministry of Primary Industries is currently leading a review of levels of service for water security which would inform the regulator's work in the medium term. For now we have taken the same approach as Water New Zealand and recommended that sufficient water be available to meet demand up to a '50-year drought'.

Aesthetic values –the aesthetics of the water supply are an important aspect of the overall user experience. Water may be perfectly safe to drink, but not consumed because of the way it looks, smells or tastes.

The present Non-Financial Performance Measure Rules currently require disclosure of the number of complaints against each of the taste, odour and pressure of the water supply and the responsiveness of their provider to complaints and faults.

We can more objectively assess each of the responsiveness and the pressure using other alternatives. As to the rest, the regulator will need to set out a standard definition for what constitutes a complaint and how these are logged.

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[15] Of course, this does not necessarily imply 'fault' per se – it may be that the reticulation network has been damaged by a natural disaster such as an earthquake.

[16] Having said that the regulations are supported by a practice note setting out alternative methods for calculating real water loss.

Levels of service for drinking water

Safety **- the percentage of samples of drinking water that meets the maximum acceptable values for bacterial and protozoal contaminants expressed in the Water Services (Drinking Water Standards for New Zealand) Regulations 2022.**

Continuity and security of supply **–**
- number of unplanned outages per 1000 customers.
- percentage of real water loss from the networked reticulation system
- sufficient water is available to meet normal demand except in a drought with a severity of greater than or equal to 1 in 50 years.

Pressure **– metres per pressure head.**

Aesthetic values **– number of complaints about each of drinking water taste, colour, and odour.**

Levels of service for sewage treatment and disposal

So what are the common levels of service for wastewater treatment and disposal?

There is no national standard for setting environmental performance of wastewater networks or stormwater networks. Under the Water Services Act 2021, Taumata Arowai can set wastewater performance standards and targets,[17]and stormwater performance standards and targets which Regional Councils would then adopt, monitor compliance, and enforce. This framework provides a potential mechanism for offsetting risks on unintended consequences as they relate to wastewater and stormwater. Longer term these may provide further information of assistance to an economic regulator.

A fundamental aspect of the performance of a wastewater treatment system is that it has been designed to an adequate standard and is being operated in a way that

[17] This power came into force in October 2023.

minimises harm to the community. A proxy for this is the prevalence of the dry weather overflows. This is one of the measures in the present Non-Financial Performance Measures Rules. To quote the Department of Internal Affairs *"Dry weather overflows are a fundamental failure of a sewerage system. Overflows caused by wet weather are not included in the measure because they are regulated through district plans and resource consents issued under the Resource Management Act 1991."*[18]

Comparison between providers requires a degree of control for provider size. The current rules achieve this by requiring reporting the number of these overflows per 1000 connections to schemes.

Although regulated under the Resource Management Act (RMA) and partly captured by other measures, we have included a measure of wet weather overflows as well. With increasingly lower tolerance for environmental failures and an associated trend toward increasingly more stringent consent conditions, this will be driver of the capital programme for wastewater and stormwater. We have linked this to environmental damage by requiring disclosure of the number of beach and river closures during rainfall events.

As with drinking water, the present Non-Financial Performance Measures Rules require disclosure of the median response times to complaints and faults segmented into urgent and non-urgent complaints/faults. This is an objective factual measure that sits within the control of the provider.

This will require a common methodology (for example – what is considered 'resolution' of a complaint or fault, how is urgent or non-urgent defined). A regulator may also need to specify that providers use a common technological solution to receive, record and report against these measures.

Managing the environmental impacts of the provision of sewage treatment and disposal schemes is (alongside public health) the key driver of expenditure. This is an area where there may be measures for immediate use and a set of measures for future development.

The immediate approach is to use a proxy – the number of enforcement actions (abatement notices, infringement notices, enforcement orders and convictions

[18] Department of Internal Affairs (2014), Non-Financial Performance Measures Rules 2013: Supporting Guidance for Sewerage and the Treatment and Disposal of Sewage, pp 2-3.

received by the provider in relation to discharges). We observe that enforcement actions do not always happen consistently from region to region – adding a factor that makes this less useful as a tool for comparison.

The number of enforcement actions tells us only that standards/requirements have been breached. They tell us little about the actual standards themselves as consent conditions vary from scheme to scheme. Might the economic regulator and Taumata Arowai collaborate on a single set of standards (considering different sizes, types of system etc) over the longer-term, and in future providers report pass/fail.
The level of greenhouse gas emissions is of increasing public and regulator interest. Consent conditions are likely to require increasing levels of monitoring and (where possible) mitigation measures. While we regard this as an important aspect of providing a wastewater service, we suspect that this is an indicator that the regulator may need to provide a future date at which providers of wastewater services will be expected to report and a methodology for measuring. This would need some controlling for the size of scheme.

Levels of Service for Sewage Treatment and Disposal

Adequacy - reporting the number of dry weather overflows per 1000 connections to schemes.

Responsiveness – the median response times to complaints and faults segmented into urgent and non-urgent complaints/faults.

Environmental sustainability - compliance with consent conditions in each entity as measured by the number of each abatement, infringement notices, enforcement notices and prosecutions.

Environmental sustainability – the volume of tonnes of carbon dioxide equivalent greenhouse gas emissions (tCO2-e) calculated by summing methane and nitrous oxide per 1000 connections to the system.

Levels of Service for Stormwater Disposal

With a stormwater system, the protection it provides is a binary state – it removes stormwater and prevents flooding, or it does not.

A measure that is required by the current Non-Financial Performance Measures Rules asks territorial authorities to disclose the number of flooding events in given reporting period and the number of habitable floors affected. (A habitable building

includes any floor or any residential or commercial building excluding ancillary buildings such as garages or sheds).

We do not favour retaining this measure. It is notoriously difficult to assess especially in less developed areas, we observe that in a flooding event no-one will be counting all the ancillary buildings impacted. A simple count of the number of flooding events expressed per 1000 properties provides sufficient for an economic regulator's purpose.

A measure like this is a measure of failure (and the consequences of failure). In the longer term a regulator should develop a common approach to assessing the level of protection provided by the network.

As with sewage treatment and disposal, the environmental impacts of the stormwater network form a key level of service. While subject to the same limitations as for sewage treatment and disposal, providers should report their compliance with consent conditions in each entity as measured by the number of abatement notices, infringement notices, enforcement notices and prosecutions. We note that there are far fewer stormwater consents in existence.

Fault response times – median response time to attend a flooding event, as measured by the time from the provider receiving notification of a flooding event to the time at which staff arrive at the event.

Levels of Service for Stormwater

Responsiveness – the median response times to complaints and faults segmented into urgent and non-urgent complaints/faults.

Adequacy – the number of flooding events expressed per 1000 properties.

Environmental sustainability - compliance with consent conditions in each entity as measured by the number of each of abatements, infringement notices, enforcement notices and prosecutions.

Climate

Water services are likely to be one of the first and hardest hit by the impacts of climate change. Impacts include but are not limited to, challenges with water availability through increased incidence of drought, deterioration of drinking water quality (for example through increased incidence of algal blooms, and rapidly changing flow regimes, rising salinity of aquifers), more rapid deterioration of acids (for example through pipe cracking in drying soils, increased salinity surrounding pipes), increased incidence intensity and duration of rainfall inundating waste and stormwater networks.

Currently, the water sector is a net greenhouse gas emitter. Energy and chemicals are consumed in the treatment and conveyance of water and there's considerable inbuilt carbon dioxide created in building new infrastructure. Our wastewater treatment plant processes also release methane and nitrous oxide from their processes, both potent greenhouse gases.

The local government sector recognises climate change as a significant challenge that requires immediate and urgent action. Councils and their communities are already mitigating and adapting to the impacts of climate change – and are generally committed to doing more.

Managing climate risk must be given significant weighting and priority in the water service delivery plans. The information disclosure framework for both mitigation and adaptation action must be stronger.

The regulator should require the implications of climate impacts and carbon emissions to be considered on lifecycle asset management decisions and in all water services asset management plans, infrastructure strategies, funding & pricing plans. The regulator must also give effect to such a requirement rather than using market rate discount analysis (short term) for investment decisions.

Asset condition

An economic regulator will look for evidence about the present and projected future condition of the assets and for confidence in the accuracy of the information that water service providers are sending them.

Of course, assessing the condition of much of the water service network is subject to one particular challenge - much of the asset is located underground. Once these are removed from the ground they have to be replaced.

Condition grading is a tool in common use as a means of indicating levels of risk and prioritising renewal and maintenance spending. Condition rating involves identifying a series of performance indicators of asset condition and then developing a scoring

system for each with the aggregate determining the overall rating. Local authorities are (or should be) well used to applying these methodologies – agencies such as Water New Zealand have developed methodologies for drinking water and sewage treatment and disposal assets.

Of course these methods rely on the provider self-assessment. A regulator will look for some level of assurance as to data quality. Those local authorities that retain water services in-house or elect to form CCOs under the Local Government Act, will see those services remain subject to the audit of their long-term plans (and the associated asset plans and underpinning information).

At the time of writing it was not certain that modified CCOs would be subject to the same processes. We expect that lenders are likely to look for a similar level of assurance and therefore that some level of external prospective audit will be required.[19]

As a further assurance mechanism providers should also be required to provide an assurance that the condition ratings (and other asset information) has been prepared using the approved methodology and using best information available. Governance level attention to these matters can be secured by requiring that this assurance be signed by the provider's Chief Executive and by the Chair of the provider's governing body (council, board of directors etc).

Asset condition

Above ground and below ground asset condition as assessed by the provider. This would be reported as the proportion of the asset falling within each condition grading e.g. for reticulation the measure would be based on the percentage of pipes by length, for an above ground asset the measure would be based on the percentage by asset value.

A disclosure of those assets where condition has not been assessed.

This will require a standard methodology for the grading of each category of assets.

Asset criticality

[19] External audit was a feature of the accountability arrangements under the previous Government's water reform model.

Critical assets are those that are likely to result in more significant financial, environmental, and social cost in terms of the impact on agreed level of service. They may not necessarily have a high probability of failure. The more critical – or significant – an asset, the better management it requires.

Te Waihanga - the New Zealand Infrastructure Commission recommends that there is a common definition of what counts as critical infrastructure and a framework for identifying specific infrastructure assets. There is also increasing policy interest in this from agencies such as the National Emergency Management Agency.

The 2015 edition of the International Infrastructure Management Manual presents the following table for categorising asset criticality based on an assessment of the consequences of an asset failure. As a definition in current use this serves as a basis to start pending the conclusion of other current reviews.

1. Major, region wide, long-term disruption, and significant cost to restore service which is essential to public health
2. Significant disruptions over an extended period
3. Serious localised impacts and cost
4. Minor service disruption.
5. Negligible social or economic impact

Asset criticality

An assessment of the criticality of each asset based on an agreed methodology.

Asset Lives

The useful life of an asset is an important piece of information for an economic regulator. Estimates of the useful life are critical in calculating the rates of depreciation. In conjunction with the age of the asset, useful life provides a rough and ready indicator of where the asset sits in the asset lifecycle.

Consent Conditions

Resource consents and the conditions that they impose are a major driver of capital expenditure and ongoing financing and funding needs. Knowledge of the current condition, the constraints that they impose on abstraction and discharge/disposal, and their date of expiration is essential for a long-term view of the provider's operations.

Consent conditions

For each resource consent the provider holds – the type of consent, the conditions imposed and the date of expiration.

Appendix A – Data from Financial Statements

At activity level i.e. for each of drinking water, stormwater, and wastewater

Operating Revenue
Revenue from volumetric charges
Revenues from other charges to customers
Grants/subsidies for operating purposes
Other operating revenue

Operating expenditure
Wages and salaries
Maintenance
Depreciation
Finance costs
Other operating expenditure

Capital Revenues
Grants/subsidies for capital purposes
Revenues from development

Capital Expenditure (capital classified by primary driver as per prudence regulations)
Capital expenditure to improve levels of service
Capital expenditure to meet growth in demand
Capital expenditure to renew/replace assets
Increase/decrease in investments

Balance Sheet – at provider level

Current assets
Cash
Receivables
Other current assets

Fixed assets
Infrastructure assets – segmented by activity and into storage, treatment, disposal, and reticulation (where relevant)
Term investments
Other fixed assets

Current Liabilities
Payables
current portion of term debt (segmented by activity)
Other current liabilities

Term liabilities
Debt – divided by activity
Other term liabilities – typically these are not separable by an activity.

Appendix B – Network descriptions by Asset Class

Drinking Water

Number of water treatment plants
Number of reservoirs
Number of pumping stations
Kilometres of pipe
Number of drinking water abstraction point

Wastewater Treatment and Disposal

Number of wastewater treatment plants
Number of wastewaters pumping stations
Total length of public wastewater pipes (including and excluding any combined wastewater and stormwater reticulation)

Stormwater

Total length of public stormwater network
Total length of public stormwater mains - this includes all pipes, culverts and lined channels that form part of the primary stormwater reticulation network.
Stormwater pump stations - SWA7: The number of stormwater pump stations.

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